Augmenting the Short-term Water Supply for Dili via Reduction in NRW and Expansion of Coverage

LOCATION SNAPSHOT

Location & description

Dili, the capital of Timor Leste, has experienced rapid population growth and urbanisation. The population is estimated at around 317,000 for 2018[1] and expected to rise on average by 2.5% per annum[2] to about 429,000 by 2035. The current reticulated water coverage is estimated at 30%. The reticulation system that serves those that do receive centralised water is in poor condition, with around 70% leakage and 50% illegal connections. The Asian Development Bank and the World Bank are to appraise and potentially commence new water projects in early 2022, with the ADB concentrating on western Dili and the WB concentrating on eastern Dili.

All is awaiting completion of the DED of Dili Urban Water Supply by Dongsung Eng. (for BTL) that has been COVID delayed. BTL has advised that the DED will be ready by Dec. 2021.

As ADB and EIB have a cooperative agreement for projects, this fiche has assumed that the EIB could conceivably co-finance the effort for western Dili. This project is a precursor and a short-term strategy to amplify the water supply for the rapidly expanding city of Dili.

PROJECT CONTEXT AND RATIONALE

Sector & Sub-sector(s)

Sector: **Water, Sanitation/Sewerage and Drainage**

The activity is classified under the following NACE codes:

E) Water supply; sewerage, waste management and remediation activities
36.00 – Water collection, treatment and supply

Rationale for PPIP intervention and IFI loan

The current Dili water system is extracted from the Comoro River and its tributaries and the Dili aquifer, that is mainly recharged by the Comoro River. The ADB-funded 20-year Water Supply Investment Master Plan (2017) put existing Dili's water sources as i) 26 boreholes with a production capacity of around 38 ML/d and ii) 6 surface water intakes with 4 WTPs with a production capacity of about 15 MLD (Mega Litres/day or 15,000 m3/d) for a total capacity of 52.5 MLD. However, due to operational restrictions, this capacity is not fully utilised and the average production was 41.3 MLD in September 2016. Future water demand by 2030 has been projected at 60 MLD. Assuming an NRW of 20% in 2030 puts the production need to meet the demand at 75 MLD, with a peak production requirement of 90 MLD[3].

Twelve percent (12%) of the total raw water is untreated. This is the amount of Dili's water supply that originates from bores and is directly put into the reticulation network without treatment. The current system suffers from electrical problems and low producing boreholes that restricts the output

[1] Consulting Services for DED of Dili Urban Water Supply, Inception Report by Dongsung Engineering (18Mar20).
[2] Twenty-year master plan for city of Dili, GTL & ADB 2017: TA 8750-TIM: Urban Services Improvement Sector Project, Dili Metropolitan Area Water Supply Master Plan 2016-2030, Draft Master Plan Report (March 2017)
[3] *Op cit.*, pg 13.

to less than the aforementioned figures. There are 22 (or 23) storage reservoirs with a capacity of about 13 ML, although the stated objective is to have a 50% storage of daily production or around 26 ML.

Water distribution is via 390 km of piping/reticulation, with segments of various ages, laid in various periods (some all the way back to the Portuguese) of asbestos cement, PVC and HDPE. NRW is estimated by others to be 70% and physical losses are high including large number of illegal connections.

During the wet season, nearly half of Dili's water supply is extracted from surface waters. Rain falls mainly in the upper catchment of the Comoro River, about 2.5 times more than in the lower catchment. Discharge of the Comoro River was considered less reliable than the Gleno River's base flow. In-stream storage on the Comoro River was therefore considered insufficient to secure Dili's long-term water supply. No large springs are known from the Comoro and Loes / Gleno catchments.

The ADB-funded Water MP (2017) proposed to develop/rehabilitate the whole of the Dili system in three phases:

Phase 1. (Urgent) No increase in water production until the actual potential of the Dili aquifer is better assessed; during this phase, investments will be mainly directed to the improvement of the efficiency of the network and the quality of the service levels;

Phase 2. (Short-term)
a) Increase water production through increased access to elements of the Dili aquifer, subject to its actual potential.
b) If the potential of the Dili aquifer is determined to be already reached, mobilisation of an alternative [short-term] resource, most probably desalinated water; this phase would be envisaged as a temporary phase, until Phase 3 has been developed and can be operationally implemented, subject of course to its feasibility (failing which, Phase 2b would be considered as the long-term option); and

Phase 3. (Long-term) **Mobilisation of surface water resources from the Comoro and Gleno Rivers through a river basin transfer scheme (or dams)**.

A DED document, that will ultimately contribute to the Dili water projects of ADB, WB and possibly EIB, is being prepared by two international companies Dongsung Eng. and Kunhwa and two national companies KWK and Markim. The main objectives of the DED project are to:

- Rehabilitate and expand the Dili Metropolitan area water supply system
- Establish fully functional water supply infrastructure that is effectively operated, maintained and managed to provide a minimum level of services and
- Achieve new or improved household connections in all households (by 2030) in the Dili Metropolitan areas.

The rehabilitation of the Dili water system is proposed to occur in two phases:

Phase 1. (Short-term)
Rehabilitation of existing groundwater (GW) facilities with two new boreholes, NRW and illegal connection reduction efforts and extension of the surface water treatment capacity to curtail the supply of untreated surface water; and

Phase 2. (Medium to Long-term)
Supply surface water from the Gleno/Railaco dams of 2 m3/s to a new Comoro WTP or 43.2 MLD (by 2030), 86.4 MLD (by 2040) and 173 MLD (by 2050)

The broad Scope of Services of the DED consists of:

1. Preparing maps of the existing pipe network
2. Undertake a GPS survey of all properties in the distribution area and transfer the data to a GIS mapping system
3. Reviewing existing urban drinking water technical guidelines
4. Prepare a hydraulic model of the Dili water supply
5. Prepare detailed engineering designs, technical specifications, bills of quantities, engineer's estimates and any other relevant documentation
6. Prepare a functional description for the new Dili water supply
7. Reviewing of source flow information, including any update information from the pre-feasibility study

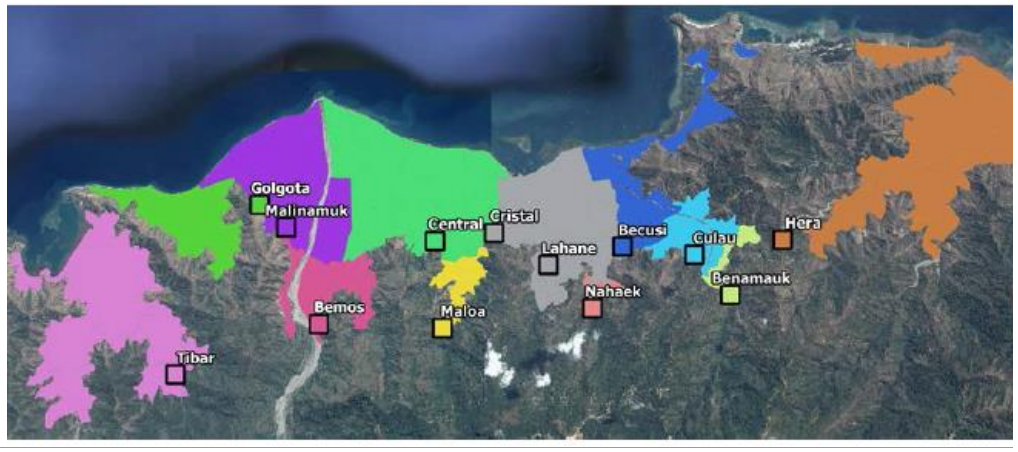
8. Purchasing and installing flow measuring equipment and setting up a monitor program to determine reliable flow from the surface sources
9. Undertaking topographic, detail and cadastral surveys
10. Undertaking geotechnical assessments, including site surveys and field and laboratory tests
11. Researching engineering standards and drawings related to water supply components
12. Researching engineering standards and drawings regarding special accessibility of children, elderly, or disable persons
13. Providing drawings and technical specifications of water system components
14. Scoping the likely environmental impact
15. Assessing potential social safeguards impacts
16. Preparing all detailed cost estimates and specifications
17. Carry out all necessary surveys, field verification, studies, collection of data, and analysis
18. Prepare all design and specifications in accordance with ISO standards and with requirements of the Government and of the ADB.

The DED Inception Report has been used for this fiche due to the DED documentation being only available in late 2021 or early 2022. The original completion timeline for this DED was 19Feb21.

What is intrinsically planned by the DED are the below activities:

1. *The introduction of a water distribution block system (DBS) to improve the operation and maintenance conditions of the whole Dili distribution network.* A DBS is basically breaking up the Dili ten (10) water supply [hydraulic] zones into sub-zones or District Metered Areas (DMAs). This was the approach of some of the previous ADB projects[4] in which some NRW reduction and revenue collection success was achieved. These previous projects focused on targeted sub-zones and the population in adjacent areas were quick to notice and complain. The focus has to therefore eventually be on all the zones/DMAs as shown in **Figure 1** and **Figure 2**.

Figure 1. Outline of hydraulic zones in Dili (ADB MP, 2017)



[4] Specifically, ADB TA 4646-TIM, 2006: *Dili Urban Water Supply & Sanitation Project* and Grant Project Number: 38189-002 *Dili Urban Water Supply Sector Project* of 2008 to 2016 with 6 extensions.

Figure 2. Outline of Dili sectors with storage volumes required (ADB MP, 2017)

The DED is to decide the service zones and layout of the network.

2. *Supply of Water from Bores*: The 26 intake boreholes are scattered all over the city along with storage volumes (see **Figure 2**) and the underground intake pumps are connected to the distribution network and distribution main. This system is unduly complicated for operation and maintenance. The DED proposes to change this system into an indirect supply system (via the tankages) for more stable operation.

3. *Amplification of Existing WTPs (that treat only surface water):* The sites for the expansion of existing WTPs are very limited. (Please refer to **Figure 5** for locations.)

   a) The current capacity of Benamauk WTP is 0.6 MLD or 600 m3/d, of two conventional treatment trains of 0.3 MLD each. It is to be expanded to 0.9 MLD by adding another train but there is insufficient space to include the additional train plus a new reservoir on site without resettlement/compensation for several houses.

   b) The status of the Lahane WTP (2.6 MLD) is to be reviewed as it was not originally included in the project.

   c) The current capacity of Bemos WTP is 2 MLD (2,000 m3/d) of four (4) trains of conventional treatment that is to be expanded to 4.2 MLD. Again, there is inadequate space for the planned capacity expansion without resettlement/compensation of several houses.

   d) The Central WTP (6 MLD) was not originally included in the project.

4. *Building of New WTPs* (refer to **Figure 5**)*:*

   a) The new Maloa WTP (1 MLD) will also include a new reservoir (in addition to the existing) such that the total volume will be 1 ML.

   b) The Nahaek WTP (1 MLD) will include dismantling the existing reservoir and adding a new 0.35 ML reservoir.

5. *Reservoirs*: The proposed distribution system according to the master plan will form 25 DMAs (District Metered Area) as shown in **Figure 3**.

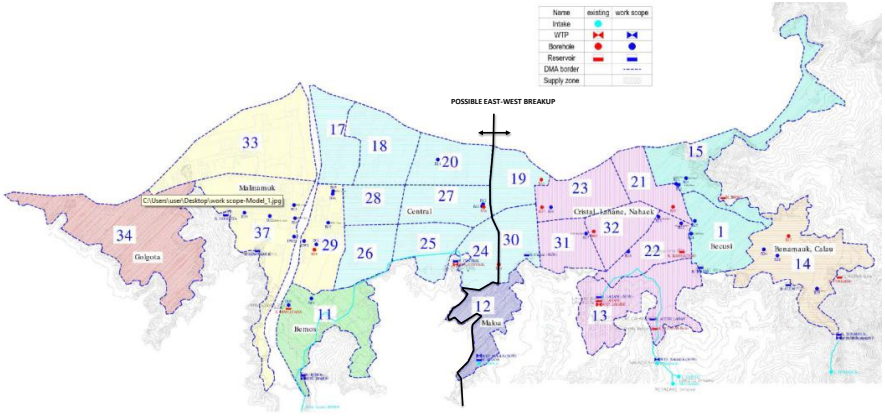


Figure 3. DED proposed Dili Water DMAs (ADB MP, 2017)

Each DMA is to have a reservoir volume equivalent to 0.5 days of water consumption. The volume of the storage for each DMA is to be ultimately nominated during the DED but the Inception Report included those shown in **Table I**.

Table I. Reservoirs and DMAs in the DED TOR

No.	Name of Reservoir	Current Volume (CM)	Additional Volume (CM)	Name of DMA
1	Central	3,000	9,300	17, 18, 19, 20, 24, 25, 26, 27, 28, 30
2	Benamauk	100	500	14
3	Culau	600	1,300	
4	Bemos	1,000+500	1,700	11
5	Maloa	400	600	12
6	Nahaek	60	Dismantle +350	Higher area of 13
7	Cristal	New	6,300	Lower area of 13, 21, 22, 23, 31, 32
8	Lahane	800	New to be confirmed	
9	Malinamuk	1000	3,700	29, 33, 37
10	Becusi	800	2,200	1, 15
11	Golgota	600	1,700	34

6. *Water Reticulation System and the New Comoro WTP*: This WTP will cover most of the city and therefore require an associated reticulation system. The proposed transmission main is in the long-term plan of the ADB MP (2017) as shown in the **Figure 4**.

Figure 4. ADB MP (2017) proposed transmission main with reservoir locations

Currently the borehole pumps, reservoirs, and networks are connected all together. The transmission and distribution reticulation are not clearly separated and the DMAs cannot currently be isolated. This situation is the reason the proposed water distribution block system.

The transmission main that is currently connected to the distribution network is to be disconnected from the distribution network and only connected to the zone reservoir. The treated water from the WTP and the groundwater from the boreholes will be supplied to its zone dominating reservoir. The zone dominating reservoir supplies treated water and groundwater to the DMAs through the dedicated distribution main and branch pipeline.

The long-term plan of the ADB MP (2017) had a new large Comoro WTP (or a desalination plant) to supply treated water instead of groundwater and the current WTP produced water. The transmission main the Comoro WTP will need to be designed for the long-term plan.

After the borderline between the DMAs is determined, the required storage volume of each dominating reservoir will be decided based on the future water demand of each supply zone. This subsequently determines the final required capacity of each WTP.

7. *Service Connections*: According to the ADB MP (2017), there were around 14,000 legal connections out of total around 47,000 households (30%). The future households by 2030

	were expected to number 57,600. Around 50% of the 14,000 legal connections were metered and the number of illegal connections is still unknown. The DED will include a GPS survey of the properties in the distribution area. 8. *Redundant Pipelines*: There are a number of pipelines for which the location and design information is incomplete or unknown. Some will require decommissioning, particularly to make way for new pipework. Those not easily removable will be backfilled (or plugged with concrete). 9. *Hydraulic Modelling*: Currently, flows from the WTPs and the boreholes (with no treatment) are being mixed in the distribution network itself, which has operational issues. JICA projects in the past laid primary and secondary pipelines alongside existing older pipes. The relevant drawings were not systematically undated and thus many are inaccurate. These older pipes are likely the major cause of leakage. The best hydraulic modelling of the current situation can be achieved only when the modelling is based on the exact pipeline network drawing. The DED team has some work to do before this can be accomplished.
Relevance to Strategic Development Plan & overall planning framework	The Timor Leste Strategic Development Plan (SDP) 2011-2030 commits the government to providing all citizens with access to clean water and improved sanitation by 2030. The two most significant causes of infant and child mortality in Timor-Leste – lower respiratory infection and diarrhoeal disease – are directly related to a lack of water supply and poor sanitation and hygiene. The SDP states that "Proper sanitation will reduce the spread of communicable diseases transferred in waste and improved water supplies will reduce the amount [sic] of stomach-borne illnesses and infections". Issues with drainage are also cited in the SDP, particularly with stormwater pollution in Dili and district centres. Stated strategy and actions proposed are: "*We will continue to take action to overcome the many challenges involved in improving access to clean water and sanitation across Timor-Leste, including building a major sewerage collection system in Dili, providing a safe piped 24-hour water supply to households in 12 district centres and installing water systems and community latrines in rural areas as part of the Rural Water Supply and Sanitation Program. Our aim is that by 2030, all citizens in Timor-Leste will have access to clean water and improved sanitation*."
Relevance to Sustainable Development Goals	The project directly contributes to the following Sustainable Development Goal(s): Goal 1: End poverty in all its forms everywhere Goal 3: Ensure healthy lives and promote well-being for all at all ages Goal 6: Ensure availability and sustainable management of water and sanitation for all Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all (See attached table for a more detailed description of contributions to achievement of SDGs)
Project promoter(s)	The project promoter is: Ministry of Public Works, through BTL. Financing: EIB and ADB (TBC) is a distinct possibility for the western part of Dili. WB is also a possibility for the eastern part of Dili.
General institutional set-up	MPW transformed the Water and Sanitation Directorate to become an autonomous agency. This agency is responsible to assist the process of water and sanitation development in the future to be more effective and efficient. This institutional transformation came in effect when the President of the Republic promulgated the decree-law Nº 38 /2020 dated 23 September 2020, for the establishment of a Public Institution named **National Authority for Water and Sanitation** (ANAS). ANAS, I.P. is aimed at proposing, monitoring and ensuring the implementation of national policy in the field of water resources, in order to guarantee its sustainable and integrated management, as well as the supervision and inspection of the sectors of public water supply, sanitation of urban wastewater and urban solid waste. In particular, ANAS, I.P., is entitled to carry out the following duties: a) support the Government in the definition of the water resources management, water supply and sanitation policy; b) prepare proposals for water resources management plans to be submitted to the tutelage; c) support the work of the Coordination Council for Integrated Water Resources Management; d) promote the rational use of water through Water Resources Management Planning;

e) propose the creation of areas in the public water domain;

f) coordinate, at the national level, the adoption of exceptional measures in extreme drought or flood situations;

g) ensure the monitoring, inspection and licensing of the use of water resources in accordance with the law and water resource management plans;

h) propose to the Government the approval of regulatory norms related to the water resources sector, water supply and sanitation;

i) regulate water supply and urban wastewater sanitation services and the quality of the service provided to users by management entities;

j) ensure the monitoring, inspection and licensing of the activity of entities managing water supply and sanitation systems, in accordance with the law;

k) control the correct use of water supply and sanitation systems by consumers, etc.

Decree-law Nº 41 /2020 dated 25 September 2020 created a Public Company called Bee Timor-Leste (BTL) to manage the services related to the national water supply and sanitation network. The corporate object of **Bee Timor-Leste**, E.P. ("BTL, E.P.") includes, amongst others:

a) promoting an efficient use of water, ensuring public water supply (through the design, construction, operation and management of water supply systems),

b) ensuring public sanitation (through the design, construction, operation and management of wastewater sanitation systems) and

c) establishing control and inspection measures for the prevention of illegal connections to the public water supply system and injections into the public water sanitation system.

The establishment of these two institutions was considered vital for the development of water and sanitation sector in Timor-Leste and was also one of the requirements for the MCC investment in WTSD in Timor-Leste.

INVESTMENT PROJECT INFORMATION

Scope of proposed project and type of investment measures to be implemented

A proposed EIB project for Dili NRW will ultimately depend on the results of the Kongsung Eng. DED as well as the final proportioning of the eastern and western areas of Dili for the WB and ADB projects, respectively. The aforementioned **Figure 3** has the eastern and western Dili areas almost equally split in terms of DMAs. However, if the WTPs are considered as shown in **Figure 5**, the split may be better on the eastern side of DMA 12 to more equally distribute the WTPs (assuming this is desired). **Figure 5** is only an estimate at this early stage as the DED will not be completed until the end of 2021 but may not appear until the first quarter of 2022. A projected east-west Dili split is necessary to project possible ADB and EIB responsibilities in a co-funding arrangement for the western Dili area.

Of the nine aforementioned activities planned by the DED, one way (there are of course other alternatives) of approaching the western area of Dili is that the ADB could conceivably take all the activities not related to the WTPs. EIB could then take responsibility for the **new Maloa WTP** (1 MLD or 1,000 m3/d) and for amplification of the **Bemos WTP** (from 2 to 4.2 MLD).

This approach has been adopted for this draft fiche.

It is known that the Bemos WTP has 4 conventional treatment trains (**Figure 6**), will have to more than double its treatment capacity and is space limited. The DED will presumably address these issues, either by proposing the acquisition of more land (this could involve forced relocation and compensation) and/or the use of a more intensive treatment system for the expansion, like direct

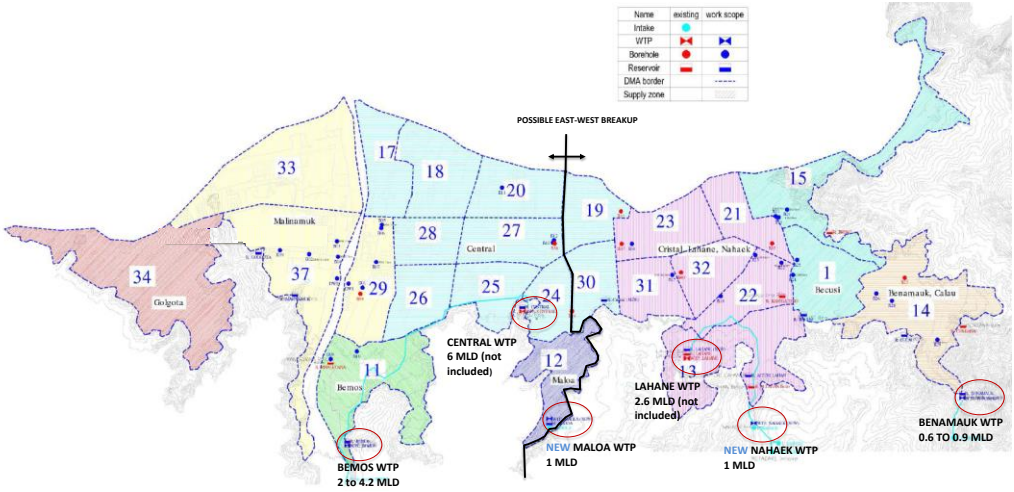


Figure 5. Potential split of Dili into eastern and western areas considering WTPs

filtration, use of microfiltration, or other. Regardless of which of approach is taken for the expansion, there is still the space requirement for a new 1 ML (1,000 m3) reservoir.

Figure 6. The four parallel treatment trains of the Bemos WTP

Little is known at this point regarding the proposed new Maloa WTP, except there is a current 0.4 ML reservoir that needs to be expanded by 0.6 ML. The intake sites are apparently difficult to access.

The proposed activities for the suggested approach of EIB taking responsibility for the WTPs for the western area of Dili (the western area being defined by **Figure 5**), assuming the DED is complete enough for tendering, would include:

1. Hiring of TA Consultant for tendering, monitoring and supervision, capacity building and relocation activities;
2. Expansion of the Bemos WTP from 2 to 4.2 MLD and its associated reservoir and piping. This may mean building essentially a new 2.4 MLD [package] WTP that would run in parallel with the existing 2 MLD WTP, perhaps on an adjacent site;
3. Construction of the new 1 MLD Maloa WTP and its associated reservoir and piping. This has also been assumed to be a package plant due to its small size.

Level of maturity	The DED is expected to be finalised by the end of 2021 or early 2022. The ADB and the WB will then meet and partition the service area and decide responsibilities. This discussion should include the EIB as early as possible.
Approach chosen for project implementation	The proposed Institutional set-up for project implementation is as follows (refer to **Figure 7**):

PMU (Project Management Unit)	Implementing Agency: Established by the Promotor (Ministry of Public Works via BTL), comprising representatives from relevant regional representatives and supported by a Technical Assistance (TA) Consultant to oversee, monitor, and overall management of all components of the project in all phases
TA Consultant:	The TOR and tendering documents for the TA consultant would be prepared by the PPIP. Responsibilities would include tendering for contractors to deliver the water supply infrastructure. Works delivery would likely be via design and build (D&B) contracts or even DBO (design, build, operate) contracts for a limited time period to help with local capacity building. Other responsibilities would include Institutional Development, Tendering and Evaluation, Design Review, Monitoring, Capacity Building, relocation and assistance and Public Education.
Private Contractors (Implementation phase):	<u>WTPs and Reservoirs</u>: *Envision one Civil Contractor, who could subcontract many of the other items like mechanical/electrical, pipe laying etc. - Contract with the PMU *An alternative is two contracts: one for the WTPs and another for the piping, reservoirs or other such arrangement that suits – Contracts would be with the PMU.

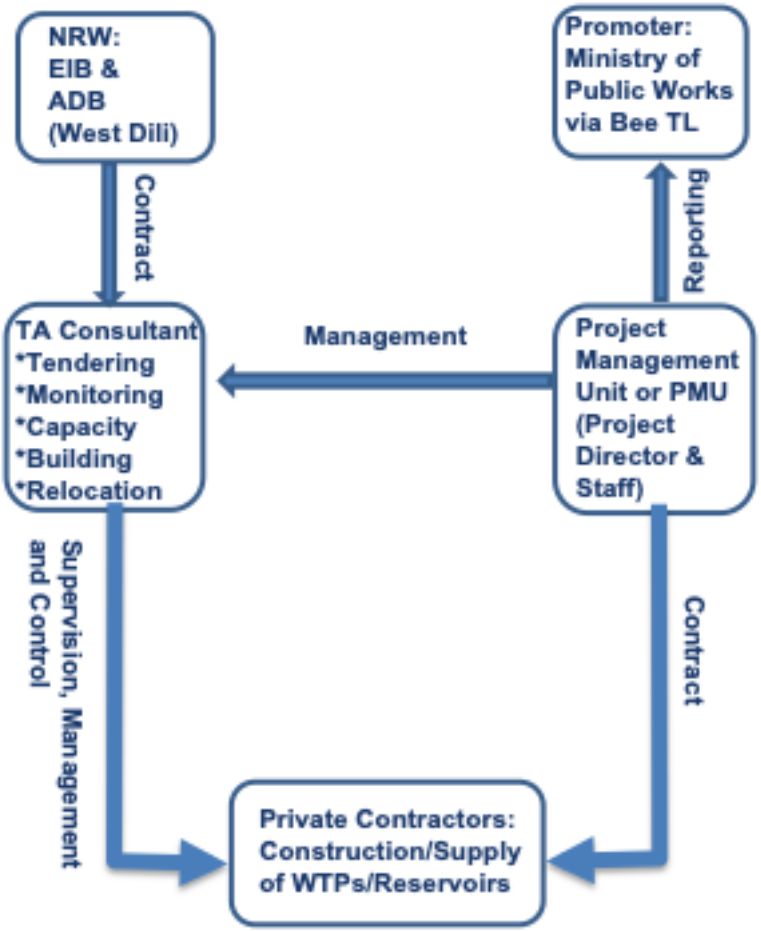


Figure 7. Proposed project delivery mechanisms

Identification of preliminary alternatives for the works	This would be difficult to assess at this early stage.
Total estimated project investment costs	The costing estimate has been based on the EIB assuming responsibility for the WTPs in the afore defined partitioning of Dili is given in **Table II**. It is a potential scenario as more detailed information will not be available until some time in 2022. **Table II. Estimate of EIB participation with ADB in the Dili NRW project for western Dili**

Dili NRW (USD=0.85Euro)	Estimated Costs (MEURO)			
	New Maloa WTP (10 MLD)		Amplification of Bemos WTP (add 2.4 MLD)	
COSTS	Package Conventional Treatment	Package Pressure Filtration	Package Conventional Treatment	Package Pressure Filtration
Estimated Construction Cost of Package WTP (Filtration at 50m3/hr)	0.51	0.46	1.18	0.77
Transport to Timor Leste and Site (40% Allowance)	0.21	0.18	0.47	0.31
Sodium Hypochlorite Disinfection Systems	Incl.	Incl.	Incl.	Incl.
Piping (Allowance)	0.1	0.1	0.1	0.1
New Water Reservoirs & Rehabilitation (Allowances)	0.25	0.25	0.4	0.4
Site Modification Allowance, Incl. Roads & Drainage	0.2	0.2	0.2	0.2
Intake Modification Allowance	0.1	0.1	0.25	0.25
Electrical Allowance & Connection to the Mains/Transformer	0.1	0.1	0.1	0.1
Addition of Photo Voltaic Panels	0.1	0.1	0.1	0.1
Allowance for TA Project	2.5	2.5	Incl. w/Maloa	
Subtotals Without TA	**1.6**	**1.5**	**2.8**	**2.2**
TOTAL (NRW Participation with TA, Low Est.):	**6.2**	**7.47**	(with 20% contingency)	
TOTAL (NRW Participation with TA, High Est.):	**6.9**	**8.24**	(with 20% contingency)	

Approach to finance the project

Considering that the EIB's contribution to a project's cost is limited to 50% of the overall investment, the ADB has been identified as there is in existence a cooperative agreement between the EIB and the ADB for projects. It is quite likely that the identified financing of just the WTPs would be less than 50% of the entire project but this is just an estimate at this point.

IMPLEMENTATION ARRANGEMENTS

Provisional schedule for project implementation

The provisional schedule for project implementation is 24 months, including 6 months for the ordering and to receive the package WTPs. Whilst the package plants are on order the sites can be secured and prepared according to what is needed for each. As Maloa WTP is a new WTP it will definitely require that a site be secured. Amplification of the Bemos WTP will likely also mean a new site due to the restrictions of the current site.

Estimated time and resources for PFS and FS

The estimated time and resources required are as follows:

Phase	Time (months)	Level of Effort (person days – KE and Backstopping)	Level of Effort (person days - NKEs)
Pre-Feasibility study	6 to 10	70	225
Feasibility study	6 to 8	150	600
Total	12 to 18	220	825

Main barriers to develop the project

The main barriers to develop and implement the project identified at this stage are:

- Completion of Donsung Engineering's DED
- Competition from other fund sources
- Partitioning of Dili and agreement as to activities in the [presumably] the western area
- Financing sources, including tariff setting, fee collection, billing practices, (to be identified during pre-feasibility and Feasibility studies)
- Institutional set-up, i.e., setting up structures and establish responsibility for operating regional structures To be outlined in PFS study and executed during Project implementation.

Estimation of required TA activities to

The TA activities required to implement the investment include:

implement the planned investment

- International tendering for contractors to deliver the water supply works. Delivery would likely be via design and build (D&B) contracts or even DBO (design, build, operate) contracts for a limited time period to help with local capacity building.
- Provision of a supervisory engineer(s), one for the water side, one for the wastewater management side. Activities would include review of designs and monitoring of progress.
- Institutional Development to assure that the infrastructure being delivered will be maintained and is financially sustainable and that there is sufficient emphasis on local capacity building
- Public education as to what is being provided and why. This will help with illegal connections as well as assist with having the systems accepted by the communities

SAFEGUARDS AND ELIGIBILITY

Environmental and Social issues, recommended ESIA needs

A screening of environmental and social aspects will be performed at the pre-feasibility stage; the environmental and social safeguards that may become relevant are listed below:

Assessment and management of environmental and social impacts and risks	Y	Involuntary resettlement	Y
Pollution prevention and abatement	Y	Rights and interests of vulnerable groups	Y
Biodiversity and ecosystems	Y	Labour standards	Y
Climate-related standards	Y	Occupational and public health, safety and security	Y
Cultural heritage	N	Stakeholder engagement	Y

Eligibility: Alignment with Paris Agreement

The proposed investment falls within the following sector(s) supported by the EIB Group under the Paris alignment framework (low carbon):

Water, wastewater, and flood management

- New or rehabilitation of water treatment, water distribution, wastewater treatment, wastewater collection, nonrevenue water reduction; flood management and protection, coastal protection, sludge digestion.

Eligibility: Alignment with EU Taxonomy

A summary of the technical screening criteria for "substantial contribution" and "do-no-significant-harm" (DNSH) in relation to the six environmental objectives of the EU Taxonomy are shown below.

The following project activities are/will be aligned with the EU Taxonomy:

Environmental objective	**Activity:** Construction, extension and operation of water collection, treatment and supply systems - Construction, extension and operation of water collection, treatment and supply systems. The economic activities in this category could be associated with several NACE codes, in particular E36.00 (Water collection, treatment and supply) and F42.99 (Construction of other civil engineering projects) in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.
Climate change mitigation	Substantial contribution: The water supply system complies with one of the following criteria (a) the net average energy consumption for abstraction and treatment equals to or is lower than 0.5 kWh per cubic meter produced water supply. Net energy consumption may take into account measures decreasing energy consumption, such as source control (pollutant load inputs), and, as appropriate, energy generation (such as hydraulic, solar and wind energy); (b) the leakage level is either calculated using the Infrastructure Leakage Index (ILI)[5] rating method and the threshold value equals to or is lower than 1.5, or is calculated using another appropriate method and the threshold value is established in accordance with Article 4 of

[5] The Infrastructure Leakage Index (ILI) is calculated as current annual real losses (CARL)/unavoidable annual real losses (UARL): The current annual real losses (CARL) represent the amount of water that is actually lost from the distribution network (i.e. not delivered to final users). The unavoidable annual real losses (UARL) take into consideration that there will always be some leakage in a water distribution network. The UARL is calculated based on factors such as the length of the network, the number of service connections and the pressure at which the network is operating.

	Directive (EU) 2020/2184 of the European Parliament and of the Council[6]. That calculation is to be applied across the extent of water supply (distribution) network where the works are carried out, i.e. at water supply zone level, district metered area(s) (DMAs) or pressure managed area(s) (PMAs).
Climate change adaptation	DNSH: Climate risk and vulnerability assessment performed. The PPIP anticipates this for the PFS and FS stages.
Water and marine resources	DNSH: Environmental degradation risks related to preserving water quality and avoiding water stress are identified and addressed with the aim of achieving good water status and good ecological potential (EU Water Framework Directive), and a water use and protection management plan is developed for the potentially affected water bodies in consultation with relevant stakeholders. However, no assessment is needed if such risks are considered in an EIA in accordance with the EU EIA Directive and Water Framework Directive.
Circular economy	DNSH: N/A
Pollution prevention & control	DNSH: N/A
Biodiversity and ecosystems	DNSH: EIA has been completed in accordance with EIB Environmental and Social Standards and with national regulations and standards. For sites/operations in/near biodiversity-sensitive areas (including protected areas) an appropriate assessment has been conducted and necessary mitigation measures implemented.

Environmental objective	**Activity:** Renewal of water collection, treatment and supply systems - Renewal of water collection, treatment and supply systems including renewals to water collection, treatment and distribution infrastructures for domestic and industrial needs. It implies no material changes to the volume of flow collected, treated or supplied. The economic activities in this category could be associated with several NACE codes, in particular E36.00 and F42.99 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.
Climate change mitigation	Substantial contribution: The renewal of the water supply system leads to improved energy efficiency in one of the following ways: (a) by decreasing the net average energy consumption of the system by at least 20% compared to own baseline performance averaged for three years, including abstraction and treatment, measured in kWh per cubic meter produced water supply; (b) by closing the gap by at least 20% either between the current leakage level averaged over three years, calculated using the Infrastructure Leakage Index (ILI) rating method and an ILI of 1.5[7], or between the current leakage level averaged over three years, calculated using another appropriate method, and the threshold value established in accordance with Article 4 of Directive (EU) 2020/2184. The current leakage level averaged over three years is calculated across the extent of water supply (distribution) network where the works are carried out, i.e. for the renewed water supply (distribution) network at district metered area(s) (DMAs) or pressure managed area(s) (PMAs).
Climate change adaptation	DNSH: Climate risk and vulnerability assessment performed. The PPIP anticipates this for the PFS and FS stages.
Water and marine resources	DNSH: Environmental degradation risks related to preserving water quality and avoiding water stress are identified and addressed with the aim of achieving good water status and good ecological potential (EU Water Framework Directive), and a water use and protection

[6] Directive (EU) 2020/2184 of the European Parliament and of the Council of 16 December 2020 on the quality of water intended for human consumption (recast) (OJ L 435, 23.12.2020, p. 1).
[7] The Infrastructure Leakage Index (ILI) is calculated as current annual real losses (CARL)/unavoidable annual real losses (UARL): The current annual real losses (CARL) represent the amount of water that is actually lost from the distribution network (i.e. not delivered to final users). The unavoidable annual real losses (UARL) take into consideration that there will always be some leakage in a water distribution network. The UARL is calculated based on factors such as the length of the network, the number of service connections and the pressure at which the network is operating.

		management plan is developed for the potentially affected water bodies in consultation with relevant stakeholders. However, no assessment is needed if such risks are considered in an EIA in accordance with the EU EIA Directive and Water Framework Directive.
	Circular economy	DNSH: N/A
	Pollution prevention & control	DNSH: N/A
	Biodiversity and ecosystems	DNSH: EIA has been completed in accordance with EIB Environmental and Social Standards and with national regulations and standards. For sites/operations in/near biodiversity-sensitive areas (including protected areas) an appropriate assessment has been conducted and necessary mitigation measures implemented.
Eligibility: Clean Oceans Initiative	N/A	

Relevant Sustainable Development Goals (SDGs) and indicators

Goals and targets	Indicators
Goal 1. End poverty in all its forms everywhere	
1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance	1.4.1 Proportion of population living in households with access to basic services
Goal 3. Ensure healthy lives and promote well-being for all at all ages	
3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases	3.3.3 Malaria incidence per 1,000 population
	3.3.4 Hepatitis B incidence per 100,000 population
The project will provide: Reliant and regular supply and treatment of water for Dili. This will lessen water-borne diseases as well as pathogenic sources often in untreated wastewater.	
Goal 6. Ensure availability and sustainable management of water and sanitation for all	
6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all	6.1.1 Proportion of population using safely managed drinking water services
6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations	6.2.1 Proportion of population using (a) safely managed sanitation services and (b) a hand-washing facility with soap and water
6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally	6.3.1 Proportion of wastewater safely treated 6.3.2 Proportion of bodies of water with good ambient water quality
6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes	6.6.1 Change in the extent of water-related ecosystems over time

The WTPs will deliver a disinfected and reliable water to the people of western Dili as well as provide water supply insurance.	
Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all	
7.2 By 2030, increase substantially the share of renewable energy in the global energy mix	7.2.1 Renewable energy share in the total final energy consumption
The water treatment projects proposed herein will consider the use of photovoltaic panels to offset the requirements for grid-supplied power, at least during the daylight hours.	