

# Water Supply Authority

## Planning and Regulatory Reporting

Edition 2  
May 2004

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## **Amendments to guidelines from edition 1**

1. Foreword from Minister added



# Foreword

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## **From the Minister of the Ministry of Communications Transport Posts and Construction.**

Good planning is possibly the most essential ingredient for a successful business, without which failure is almost certain. The decentralised NPSEs are no exception to this rule. Although a significant degree of capital investment planning has been managed from central government on behalf of the NPSEs it is necessary for the management of the businesses to take on greater responsibility for their planning.

Furthermore, WASA as the regulator for the urban water supply sector requires detailed information on performance, both real and expected. WASA has already initiated a reporting system on past performance for publication in the annual report for which the co-operation of the management of the NPSEs is greatly appreciated. However, it is necessary for WASA to have a clearer picture of the future operations including investment plans, operational plans, efficiency improvements etc.

Much of this data will be employed for tariff determinations taking a longer term perspective for financial sustainability as opposed to the inadequate short term approaches adopted in the past.

It is recognised that the data required is quite comprehensive and will involve significant management input once every three years with simpler interim plans submitted annually. We do believe, however, that the benefits of good planning will far outweigh the costs.

# 1 Introduction

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## 1.1 Background and objectives

The planning activities of the NPSEs falling under the regulatory responsibility of WASA are fragmented; investment planning is undertaken by the central government, operational planning is the responsibility of the NPSEs and although they do impact upon each other they are not brought together into an overall plan.

Although the performance of the NPSEs is measured against each other in the form of comparative competition, there is no means whereby WASA can measure performance against planned objectives and targets.

Furthermore, the long-term tariff determination responsibilities of WASA are very much dependent upon knowing the longer term plans of the NPSEs with respect to service coverage, demands, costs (capital and operational), etc.

WASA has therefore requested that the NPSEs comply with these minimum planning information requirements for regulatory purposes. Although necessary for regulatory reporting the information requested shall effectively comprise the basis of a corporate plan useful to management, employees, customers, donors and investors.

The principal objectives of the planning and regulatory reporting process are:

- To ensure proper co-ordination between capital investment and operations
- To improve performance and therefore deliver improved value to the customers
- To ensure that tariffs reflect the longer term demand and sales projections
- To improve customer and donor confidence in the NPSEs

## 1.2 Concept

The basic ingredients for the planning process for regulatory reporting are:

- Setting of appropriate planning horizons for specific activities
- Establishment of targets and programmes (technical):
  - Service areas
  - Service levels (coverage and hours per day)
  - Production and sales forecasts



- Water loss reduction programme
- Water quality improvement programme
- Human resources planning
- Efficiency improvement programme
- Capital investment programme
- Other policies
- Establishment of targets and programmes (financial):
  - Income projections
  - Operational cost projections
  - Capital investment projections
  - Debt service projections
  - Revenue collection efficiency improvement programme
  - Financial report projections
  - Tariff policy
  - Tariff projections

In addition to regulatory reporting the management of the NPSEs is recommended to extend the process to incorporate plans for its own benefit, e.g.

- Management planning (organisational structure, monitoring and reporting, response mechanisms, corruption policies)
- Staff planning (restructuring, overtime policy, out-sourcing, recruitment (and redundancy) salary structures, incentives etc.)
- Training requirements
- Operational improvements (equipment servicing, contractors, waste reduction, meter reading and billing improvements, etc.)

This document confines itself to the regulatory reporting requirements only. Corporate planning for management benefit that is outside of the regulatory requirements is a matter for the NPSEs themselves although WASA shall provide advice and assistance from time to time in this respect.

## 2 Planning horizons

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### 2.1 Principle

Planning horizons shall be appropriate to the needs of the operator and WASA in meeting its regulatory obligations.

Short-term plans, by their very nature have limited scope for uncertainty and can therefore include a much greater level of detail than longer-term plans that have much higher levels of uncertainty. Short-term plans shall be reasonably rigid with only limited scope for revision whereas longer-term plans shall be subject to regular revision to accommodate changing conditions and circumstances.

The planning process shall comprise short (0 – 3 years), medium (4 – 10 years) and long-term (10 – 20 years) plans.

The short term plans shall be reviewed annually as part of the regulatory reporting process. The medium and long term plans shall be reviewed every five years or at other pre-determined periods as specified by WASA.

Table 2.1 summarises the technical information requirements and Table 2.2 summarises the financial information requirements for the three types of plans. The full format for planning reporting is set out in Technical Submission (forms T1 to T10) and Financial Submission (forms F1 to F6).

Table 2.1 – Planning requirements summary (financial)

	Short (0 – 3 yrs)	Medium (4 – 10 yrs)	Long (10 – 20 yrs)
<b>Service areas</b>	Define existing service areas plus any confirmed expansion and/or new service areas within 3 years including populations served.	Schedule of expansion and/or new service areas expected within 10 years including populations served and population growth expectations	Schedule of expansion and/or new service areas expected or hoped for within 20 years.
<b>Service coverage</b>	Define existing service coverage plus targets for improved coverage within 3 years.	Expected targets for improved service coverage within 10 years, should be near 100%.	Not required
<b>Water demands, losses and production requirements</b>	Based upon demand per capita, population, service coverage etc. Define current levels and realistic short-term targets for reduced losses measured on basis of loss per connection per day	Medium term demands factoring in other aspects such as income elasticity of demand. Include potential uncertainty.	Not required
<b>Commercial losses and water sales</b>	Rapid reduction of commercial losses in early years	Continued reduction in commercial losses	Not required
<b>Water quality</b>	Define current water quality control mechanisms and existing status of water quality. Include any short term plans to improve facilities and improved quality	Medium-term targets for improved water quality control facilities and new water quality targets	Long-term, steady state, water quality targets
<b>Human resource planning</b>	Existing organisational structure and changes confirmed as taking place within 3 years	Proposed changes to organisational structure and staff levels within 10 years	Not required
<b>Efficiency improvement programme</b>	Proposed efficiency improvements within 3 years	Proposed efficiency targets within 10 years	Not required
<b>Capital investment programme</b>	Approved capital investment plans within 3 years	Expected investment activities within 10 years	Not required
<b>Other</b>	Customer care improvement policies, social assessments <sup>1</sup> etc.	Social assessment expectations for 10 years	Not required

<sup>1</sup> Social assessments include aspects such as household income levels, affordability and willingness to pay etc.

Table 2.2 – Planning requirements summary (technical)

	<b>Short (0 – 3 yrs)</b>	<b>Medium (4 – 10 yrs)</b>	<b>Long (10 – 20 yrs)</b>
<b>Income projections</b>	Income based upon sales figures and agreed tariffs, including agreed periodic increases	Not required	Not required
<b>Operational cost projections</b>	Operational costs for 3 years based upon agreed budgets	Cost estimates for 10 years assuming efficiency gains etc.	Not required
<b>Capital investment projections</b>	Agreed capital investment programme based upon cost estimates from DHUP and/or consultants.	Cost estimates for expected investments within 10 years.	Not required
<b>Debt service projections</b>	Based upon existing contracted loan agreements.	Medium term debt service profile based upon investment plans and capital maintenance obligations.	Longer term debt service profile but assuming less grant and more loans over time.
<b>Revenue collection efficiency</b>	Short term targets capturing past accounts receivable and short term efficiency improvements	Medium term improvements leading to steady state condition (should be over 95%)	Not required
<b>Financial report projections</b>	Profit and loss, balance sheet, cash flow and asset register projections for 3 years.	Not required	Not required
<b>Tariff policy</b>	Individual NPSE tariff policy in line with national policy for 3 years	Proposed policy changes within 10 years	Not required
<b>Tariff projections</b>	Detailed estimates of tariff requirements for 3 years, including any annual adjustment formulae	Not required other than outline estimates	Not required

## **3 Submissions**

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### **3.1 Number of plans to be submitted**

In general each PNP shall be obliged to submit one plan in accordance with the requirements specified herein. However, it is recognised that when considering the medium and long-term plans there is an increased level of uncertainty, especially with respect to capital investment. Consequently, each NPSE may be required to submit more than one plan depending upon various investment scenarios.

### **3.2 Timetable and process**

#### ***3.2.1 Complete short, medium and long-term plans***

The NPSEs shall submit draft short, medium and long term plans every five years by 30 June prior to the commencement of the planning period. The first complete plan for the period 2005 – 2024 inclusive shall be submitted to WASA by 30 June 2004. The next plan shall be submitted to WASA by 30 June 2009 for the planning period 2010 – 2030.

WASA shall review these draft plans and, if necessary, ask for further details and/or supporting information. If WASA feels that the plans do not meet reasonable expectations with respect to level of service targets and or efficiency gains they will be returned to the NPSEs for revision prior to final acceptance. Final plans shall be submitted to WASA by 30 September of the year preceding the planning period, i.e. the final version of the first plan to be submitted by 30 September 2004.

#### ***3.2.2 Rolling 3 year plans***

The NPSEs shall prepare 3 year short term plans on an annual basis, e.g. the plan for 2005 to 2007 inclusive shall be submitted in 2004, the plan for 2006 – 2008 inclusive shall be submitted in 2005 etc. These plans shall be submitted in accordance with the 30 June and 30 September deadlines for draft and final submissions.

### **3.3 Format**

NPSEs shall submit their plans in the format described in this document comprising the completion of the forms set out in this document (T1 to T10 and F1 to F6)

If more than one plan is required to be submitted, e.g. to allow for uncertainty in capital investment, complete sets of forms shall be prepared and submitted for each plan.

The NPSEs shall provide any additional information they consider necessary as annexes to their plans.

## 4 Regulatory requirements - technical

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### 4.1 Service areas

Each NPSE shall submit a Schedule T1 for each town (collection of bans) that is served by the NPSE. If a town is not currently served by the NPSE but it is anticipated that it will be at some time in the future (within 10 years) a Schedule T1 shall also be produced for that town.

Short-term plans shall only include towns or bans currently served or where plans have been approved for new towns or bans to be incorporated in the service areas within three years.

Medium term plans shall include towns or bans where there is a reasonable expectation that they will be included within the NPSEs' service areas within 10 years.

### 4.2 Service levels

#### 4.2.1 *Population and service coverage (domestic customers)*

The NPSEs shall estimate populations and service coverage based upon investment plans and new connection targets.

The number of connections shall be derived from NPSE records for the current year and projected forwards in accordance with calculated population projections (refer [page 32](#) for an example as to how populations are calculated).

These population projections shall be used to estimate the number of new connections required on an annual basis.

The service level projections shall be presented in Schedule T2 for each town.

#### 4.2.2 *Population and service coverage (non-domestic customers)*

The NPSEs shall estimate the number of non-domestic connections that will be added to the system, e.g. schools, shops, industry etc.

### 4.3 Water demands, losses, production and sales forecasts

#### 4.3.1 *Water demands*

The NPSEs shall determine domestic water demands based upon:

- average per capita demand (current)
- expected increase in per capita demand (future) due to increased sophistication in water use

Non-domestic water demands shall be estimated from existing data projected to allow for increased numbers of non-domestic users and any specific activities that will have a marked effect on demand.

Seasonal variations in demand shall be estimated from monthly production figures to determine the seasonal peak demand: average demand ratio, e.g. if average monthly demand is 100 m<sup>3</sup> per day but the peak monthly demand is 120 m<sup>3</sup> per day then the seasonal peak factor is 1.2.

Demands projections shall be presented in Schedule T3.

#### **4.3.2 Losses**

Losses fall into two categories: commercial and physical. Commercial losses include consumption that is not sold, e.g. illegal connections, faulty meters etc. Physical losses are leaks, bursts and overflows etc.

The NPSEs shall estimate their current level of losses (total volumes, not percentage of production) separated between commercial and physical losses.

Physical losses shall be expressed as losses per connection. The NPSEs shall set targets for the reduction of these losses, e.g. to fall from 250 litres per connection per day to 150 litres per connection per day within 3 years.

The NPSEs shall demonstrate the financial viability of the reduction in losses, i.e. financial savings in energy and chemicals etc. against increased costs of leakage control.

The NPSEs shall set targets for the reduction of commercial losses which should be reduced to zero within a reasonable period of time.

#### **4.3.3 Production**

The NPSEs shall determine their required production outputs based upon the sum of water demands and losses.

Production forecasts shall not exceed actual production capacity. If the sum of water demand and losses exceeds production capacity then production output shall be production demand reduced accordingly<sup>2</sup>. The demand forecasts for each category shall be adjusted pro-rata after the deduction of physical losses.

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<sup>2</sup> In the absence of confirmed or reliable data the following formula can be applied for an assumed seasonal peak factor of 1.2:

$$\text{If } C > 1.20 \times D \text{ then } Q = D$$

$$\text{If } 0.80 < C < 1.20 \text{ then } Q = D - (1.20D - C)^2 / 0.8D$$

$$\text{If } C < 0.80 \text{ D then } Q = C$$

Where C = capacity, D = total production demand including losses, and Q = production output (refer to for explanation of calculation).

It is important to note that although average demand and losses may be less than production capacity, the seasonal peak factors may result in a suppression of demand for several months of the year.

Production capacity shall be the total installed output production capacity of the system. It is important to note that a system comprising more than one production zone may have over capacity in one zone but under capacity in another. Although the total may exceed total demand, there may still be a suppressed demand effect that shall be incorporated in the demand and production analysis.

Water loss reduction projections and suppressed demand effects shall be presented in Schedule T4

#### **4.3.4 Consumption and sales**

Water consumption projections are determined as the water demand less any allowances for restricted capacity (refer Schedule T5). Water sales projections are determined as the water consumption less any commercial losses (refer Schedule T6)

### **4.4 Water quality**

The NPSEs shall schedule their intended dates for compliance with the draft regulations on water quality. The key dates are:

1. The date by which water quality monitoring facilities are to be established.
2. Date by which compliance with bacteriological standards (Schedule B of the draft regulations) is required.
3. Date by which compliance with health related chemical composition standards (Schedule C of the draft regulations) is required.
4. Date by which compliance with aesthetic standards (Schedule D of the draft regulations) is required.

In addition the NPSEs shall furnish additional information supporting these dates. This information shall include:

- The current facilities in place, e.g. chlorine testing.
- The capital requirements to meet these requirements, e.g. number of laboratories needed, etc.
- Institutional arrangements, e.g. to sub-contract the testing to a private partner, or to share facilities with a neighbouring NPSE etc.
- Capital cost estimates where applicable.
- Staffing requirements including training
- Operational costs



## 4.5 Human resources planning and efficiency improvement

The NPSEs shall set out their estimated employment requirements based upon their planned activities and service expansion as presented in form T8.

By combining the plans for human resources with sales and number of connections forecasts the following two primary indicators of efficiency can be determined:

1. Number of staff per 1000 connections, and
2. Sales (m<sup>3</sup>/year) per employee

It is expected that as the systems develop and expand these indicators will show continued improvement although short term fluctuations may occur, e.g. a sudden increase in staff with a new town being added to the area of supply.

## 4.6 Capital investment programme

The NPSEs shall set out their planned investment programme for each town within their areas of supply for the next 20 years.

The capital investment shall be categorised as follows:

1. **Capital maintenance:** the replacement and/or repair of existing assets including short life assets such as vehicles.
2. **Service area expansion:** investment in expanding the services areas to include new customers, bans and towns.
3. **Security of supply:** investment to ensure that supply can meet demand.
4. **Level of service improvement:** investment to improve service levels including water quality improvement.

In many cases planned investments may fall into more than one category in which case management judgement shall be applied to split the costs into the appropriate categories.

The investment plans shall be presented in form T9

## 5 Regulatory requirements – financial

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### 5.1 General principle

The financial planning requirements fall into two principal categories:

1. **Short term budgets:** Firm budgetary estimates of income and expenditure for the three year short term plan, and
2. **Medium term estimates:** Estimates of income and expenditure over the medium term planning period.

The requirements for the longer term estimates are generally confined to capital and operational cost estimates whereas the short term budgets require more detailed estimates of accounts, including profit and loss statements, balance sheets, cash flow etc.

### 5.2 Income

Short term (3 years) income projections based upon existing tariffs and expected increases (and decreases) shall be determined. The income projections shall be calculated from the expected sales projections determined in the technical planning. The income projections shall incorporate recovery of accounts receivable etc. The income projections shall be determined in accordance with the Regulatory Accounting Guidelines.

Long term income projections are not required to be submitted by the NPSEs. However, as part of WASA's tariff determination responsibilities WASA shall estimate longer term cash flow streams using the technical and financial data provided by the NPSEs and the tariff determination outputs.

Income projections shall be reported in the 3 year financial forecast as presented in schedule F1

### 5.3 Operational costs

Operational budgets for the short term plans shall be presented in schedule F1 in accordance with the Regulatory Accounting Guidelines. These costs shall match the technical inputs for water production, sales, staffing and other associated costs as set out in the technical schedules.

Current cost depreciation shall be estimated for the three year plan on the basis of zero inflation over the three year period. WASA shall readjust depreciation estimates during the tariff determination process.

Longer-term operational cost estimates shall be detailed on schedule F2, also in accordance with the Regulatory Accounting Guidelines.

## 5.4 Capital investment profile

The capital investment plans as detailed in schedule T9 shall be sufficient for the reporting requirements.

## 5.5 Debt service profile

The debt service obligations for the NPSEs shall be reported in schedule F3. The NPSEs shall prepare separate schedules for all current and expected loans.

For future loans the following terms shall be assumed where no other information is available.

		Nam Papa Vientiane Prefecture	All other NPSEs	
		All loans	Loans taken out before 2010	Loans taken our after 2010
1	% of capital investment financed by loan	50%	85%	50%
2	Currency of loan	Lao Kip		
3	Duration of loan	25 years		
4	Interest rate	6.4% per year		
5	Grace period before repayment of principal	3 years		
5	Repayment of principal schedule	22 equal instalments		

# Technical submission

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The following schedules make up long term plans that are required to be submitted to WASA in accordance with the submission schedule specified in Section 3.2.

- T1 Service areas
- T2 Service levels
- T3 Water demands
- T4 Water loss reduction programme and suppressed demand effects
- T5 Water consumption projections after allowance for suppressed demand effects
- T6 Commercial losses and water sales projections
- T7 Water quality
- T8 Human resources planning
- T9 Capital investment programme
- T10 Customer care and social indicators

The first medium term plan shall be for the period 2005 to 2014 inclusive and shall be updated every 5 years.

The short term plans (3 years), prepared and submitted annually, comprise the first three years of the following schedules:

- T1 Service areas
- T2 Service levels
- T3 Water demands
- T4 Water loss reduction programme and suppressed demand effects
- T5 Water consumption projections after allowance for suppressed demand effects
- T6 Commercial losses and water sales projections
- T9 Capital investment programme

The first three year plan shall be for the period 2006 to 2008 inclusive.

## T1 Service areas

Town<sup>1</sup> . . . . .

No	Ban (village)	Current population (2004)	Short term			Medium Term						
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014

**Notes:**

1. Form T1 to be completed for each town
2. If a town is not currently served but is expected (or hoped to be served) by the NPSE within the next 20 years then this form T1 shall still be submitted with the details of each ban in the proposed town and when it is to be incorporated into the NPSE.

## T2 Service levels

Town<sup>1</sup> . . . . .

		Current	Short term			Medium Term						
		(2004)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1	Total population <sup>2</sup>											
2	Population served <sup>3</sup>											
3	Connections total											
4	<i>Domestic</i>											
5	<i>Government</i>											
6	<i>Commercial</i>											
7	<i>Foreign</i>											
8	<i>Other</i>											
9	New connections											
10	Hrs service per day (ave)											
11	<i>Dry season</i>											
12	<i>Rainy season</i>											

Notes:

1. Form T2 to be completed for each town.
2. Total population (Row 1) includes the all bans scheduled to be serviced within the next 20 years and shall allow for population growth in the individual bans over the planning period.
3. Population served indicates new bans added plus growth rate.

### T3 Water demands

Town<sup>1</sup> . . . . .

		Current	Short term			Medium Term						
		(2004)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1	Population served <sup>2</sup>											
2	Demand per capita <sup>3</sup> (lpcd)											
3	Domestic demand (m <sup>3</sup> year) ((1x2)x365/1000)											
4	Non-domestic demand (5+6+7+8)											
5	<i>Government</i>											
6	<i>Commercial</i>											
7	<i>Foreign</i>											
8	<i>Other</i>											
9	Total Demand (3+4)											

Notes:

1. Form T3 to be completed for each town.
2. Population served from form T2.
3. Demand per capita determined from existing data with allowances for changes in water use patterns.

## T4 Water loss reduction programme and suppressed demand effects

Town<sup>1</sup> . . . . .

		Current	Short term			Medium Term						
		(2004)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1	Number of connections <sup>2</sup>											
2	Leakage per connection <sup>3</sup> (l/day)											
3	Total leakage (m <sup>3</sup> /year) (1x2)x365/1000											
4	Total demand <sup>4</sup> (m <sup>3</sup> /year)											
5	Total production demand (m <sup>3</sup> /year) (3+4)											
6	Total production capacity <sup>5</sup> (m <sup>3</sup> /year)											
7	Production output <sup>6</sup> (m <sup>3</sup> /year)											
8	Suppressed demand (m <sup>3</sup> /year) (5-7)											

### Notes:

1. Form T4 to be completed for each town.
2. From form T2
3. Based upon current levels and expectations of leakage reduction programme.
4. From form T3
5. Based upon current levels and capital investment programme.
6. Allowing for any suppressed demand effects where capacity cannot meet demand.



## T5 Water consumption projections after allowance for suppressed demand effects

Town<sup>1</sup> . . . . .

		Current	Short term			Medium Term						
		(2004)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1	Domestic consumption (m <sup>3</sup> /year)											
2	Non-domestic consumption (m <sup>3</sup> /year)											
3	<i>Government</i>											
4	<i>Commercial</i>											
5	<i>Foreign</i>											
6	<i>Other</i>											
7	Total Consumption (1+2)											

### Notes:

1. Form T5 to be completed for each town.
2. Consumption calculated from adjusting demands to suit production capacity, i.e. if suppressed demand is 0, then consumption equals demand, but if suppressed demand >0, then consumption equals demand less suppressed demand. The reduction is made pro-rata for all customer categories unless there is evidence that suggests otherwise.

## T6 Commercial losses and water sales projections

Town<sup>1</sup> . . . . .

		Current	Short term			Medium Term						
		(2004)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1	Commercial losses (m <sup>3</sup> /year)											
2	Percentage of consumption (1/(T5, row 7))											
3	Domestic sales (m <sup>3</sup> year)											
4	Non-domestic sales (5+6+7+8)											
5	<i>Government</i>											
6	<i>Commercial</i>											
7	<i>Foreign</i>											
8	<i>Other</i>											
9	Total sales (3+4)											

### Notes:

1. Form T6 to be completed for each town.
2. Sales calculated from deducting commercial losses from consumption. The reduction is made pro-rata for all customer categories unless there is evidence that suggests otherwise, i.e.

$$\text{sales} = \text{consumption} * (1 - \text{percentage of consumption})$$

## T7 Water quality

<b>Water quality monitoring facilities to be established.</b> Date.....
<b>Estimated capital costs</b> Equipment (US\$) ..... Buildings (US\$) .....
<b>Compliance with bacteriological standards (Schedule B of the draft regulations).</b> Date.....
<b>Compliance with health related chemical composition standards (Schedule C of the draft regulations).</b> Date.....
<b>Compliance with aesthetic standards (Schedule D of the draft regulations).</b> Date.....
<b>Existing facilities</b> ..... .....
<b>Planned facilities</b> ..... .....
<b>Institutional arrangements</b> ..... .....
<b>Staffing requirements</b> ..... .....
<b>Estimated annual operating costs</b> ..... .....

# T8 Human resources planning

Town<sup>1</sup> . . . . .

		Current	Short term			Medium Term						
		(2004)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1	Senior management											
2	Technical (skilled)											
3	Technical (unskilled)											
4	Customer services											
5	Clerical/administration											
6	Casual/contract labour											
7	<b>Total</b>											

Notes:

- 1. Form T8 to be completed for each town.

## T9 Capital investment programme

Town<sup>1</sup> . . . . .

	Investment description	Estimated capital costs (US\$)	Planned year	% category allocation <sup>2</sup>			
				Capital maintenance	Service area expansion	Security of supply	Level of service improvement
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							

**Notes:**

1. Form T9 to be completed for each town.
2. Insert the percentage category allocation here, e.g. if a planned investment for a town is a new water treatment plant sized to increase output management may determine that 30% of the investment is capital maintenance (replacing the existing plant), 20 % to improve level of service (water quality) and the remaining 50% for service area expansion. The percentages shall add up to 100%.

# T10 Customer care and social assessment

Town<sup>1</sup> . . . . .

<b>Social indicators</b>	
Estimated average household income	.....kip/month
Estimated average income of poorest 10 %	.....kip/month
Estimated average household size (no of persons)	.....persons
Estimated average monthly consumption	.....m <sup>3</sup> /month
Estimated average monthly consumption of poorest 10 %	.....m <sup>3</sup> /month
Date determined (year)	.....
How determined (statistics, survey or other method)	.....
<b>Connection policy<sup>2</sup></b>	
.....	
.....	
.....	
.....	
<b>Disconnection policy<sup>3</sup></b>	
.....	
.....	
.....	
.....	
<b>Customer care activities<sup>4</sup></b>	
.....	
.....	
.....	
.....	

Notes:

1. Form T10 to be completed for each town.
2. Target time taken to install new connection from customer request, any restrictions on new connections etc.
3. Disconnection for non-payment, how many days before disconnection, disconnection notices, disconnection of government customers etc.
4. Complaints register established, target time taken to respond to a complaint etc.

## Financial & economic submission

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The following schedules make up long term and short term financial plans that are required to be submitted to WASA in accordance with the submission schedule specified in Section 3.2.

All figures in the plans shall be determined on the basis of the regulatory accounting guidelines.

- F1 Profit and loss estimates for short term plans
- F2 Medium and longer operational cost estimates
- F3 Debt service projections
- F4 Revenue collection efficiency
- F5 Tariff projections and tariff policy

## F1 Operational income and cost projections (short term)

Item	Current 2004 Estimated	2005	2006	2007
<b>1. Revenue (excluding turnover tax)</b>				
Water sales				
Connection charges				
Meter rental				
Other income (excluding subsidies)				
<b>2. Expenditure</b>				
Personnel				
Power				
Chemicals				
Fuel				
Maintenance				
Office and administration				
Installation costs				
Write off bad and doubtful debts				
<b>3. Gross income (excluding depreciation, finance charges and tax)</b>				
Depreciation				
<b>4. Net operating income</b>				
Net interest and finance charges				
Provision for bad debts				
Net income from disposal of assets				
Increase (decrease) in inventory				
<b>5. Net profit (loss) before tax</b>				
Profit taxes				
<b>6. Net profit (loss) after tax</b>				
Add government subsidies				
<b>7. Net profit (loss)</b>				



## F2 Medium and longer term operational cost projections<sup>1</sup>

		Medium Term						
		2008	2009	2010	2011	2012	2013	2014
1	Personnel							
2	Power							
3	Chemicals							
4	Fuel							
5	Maintenance							
6	Office and administration							
7	Installation costs							
8	<b>Total</b>							

Notes:

1. Estimates recorded in Kip x 1000
2. Cost estimates based upon zero inflation.

### F3 Debt service projections

Loan agreement . . . . .

		Short term			Medium Term							Long term									
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
1	Balance at year start (5 from previous year)																				
2	Interest payments																				
3	Repayment of principal																				
4	Total debt service (2+3)																				
5	Balance at year end (1-4)																				

Notes:

1. Form F3 to be completed for each loan agreement.

## F4 Revenue collection efficiency

	Current	2005	2006	2007
<b>Revenue collection efficiency:</b> Accounts receivable (days turnover) <sup>1</sup>				

Notes:

1.  $(\text{Accounts receivable} / \text{annual turnover}) \times 365$ . Accounts receivable determined after write-off of bad and doubtful debts

## F5 Tariff projections and tariff policy<sup>1</sup>

		Current	2005	2006	2007
<b>Tariffs</b>	Volume range				
<b>Domestic customers (kip/m<sup>3</sup>)</b>	0 - __ m <sup>3</sup>				
	__ - __ m <sup>3</sup>				
	__ - __ m <sup>3</sup>				
	__ - __ m <sup>3</sup>				
	Meter rental (kip/month) Connection charge (kip)				
<b>Commercial customers</b>	0 - __ m <sup>3</sup>				
	__ - __ m <sup>3</sup>				
	__ - __ m <sup>3</sup>				
	__ - __ m <sup>3</sup>				
	Meter rental (kip/month) Connection charge (kip)				
<b>Government customers</b>	0 - __ m <sup>3</sup>				
	__ - __ m <sup>3</sup>				
	__ - __ m <sup>3</sup>				
	__ - __ m <sup>3</sup>				
	Meter rental (kip/month) Connection charge (kip)				
<b>Industrial customers</b>	0 - __ m <sup>3</sup>				
	__ - __ m <sup>3</sup>				
	__ - __ m <sup>3</sup>				
	__ - __ m <sup>3</sup>				
	Meter rental – small (kip/month) Meter rental – large (kip/month) Connection charge – small (kip) Connection charge - large(kip)				
<b>Foreign customers</b>	0 - __ m <sup>3</sup>				
	__ - __ m <sup>3</sup>				
	__ - __ m <sup>3</sup>				
	__ - __ m <sup>3</sup>				
	Meter rental (kip/month) Connection charge (kip)				
<b>Tariff policy<sup>2</sup></b>					
.....					
.....					
.....					
.....					
.....					
.....					

Notes:

1. Use additional sheets if necessary.
2. Tariff policy includes long term plans for (within the scope of the national tariff policy):
  - Rising block structures
  - Connection charges and fixed fee meter rental
  - Foreign customers
  - Other plans with respect to tariffs

## Example for demand and sales projections

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### Background information

A town comprises 3 bans (Abc, Def, Ghi) with current populations of 567, 345 and 234 people respectively. From development plans it is estimated that the population will grow in each of these bans at rates 1%, 2% and 2.5% respectively. Only Abc is served by the NPSE, but Def is expected to be connected in 2007 and Ghi in 2011.

Average domestic demand per connection per month from recent sales figures is to 12.5 m<sup>3</sup> per month per domestic connection equating to 83 litres per person per day.

It is anticipated that average per capita demand will increase by 10% over the next 10 years at a simple rate of 1% per month. This is attributed to increased sophistication in water use, e.g. internal plumbing, flush toilets, etc.

Non-domestic demands are currently: Government: 2.2 m<sup>3</sup> per day and commercial: 3.4 m<sup>3</sup> per day, and are assumed to marginally increase (0.5% per year) with the exception of a planned textile factory to be built in 2006. Discussion with investors suggest that this facility will consume approximately 5 m<sup>3</sup> day when fully operational.

Production for 2003 was 25 800 m<sup>3</sup>, with sales of 16 300 m<sup>3</sup> (domestic: 13 600, non-domestic 2 700 m<sup>3</sup>). Total losses are therefore 9 500 m<sup>3</sup>, of which commercial losses are estimated as 1 300m<sup>3</sup> and physical losses are estimated as 8 200 m<sup>3</sup> equating to 187 litres per connection per day.

Production capacity is limited to 80 m<sup>3</sup> per day (although originally designed for 100 m<sup>3</sup> per day. It is anticipated that capital investment for system expansion will be made to accommodate Ban Def in 2007 and Ghi in 2011. The investment for 2007 will include refurbishment of the existing facilities to its original design production capacity.

## T1 Service areas

Town .....

N o	Ban (village)	Current population  (2004)	Short term			Medium Term						
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1	Abc	567	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	Def	345			✓	✓	✓	✓	✓	✓	✓	✓
3	Ghi	234							✓	✓	✓	✓

### Notes:

1. Form T1 to be completed for each town
2. If a town is not currently served but is expected (or hoped to be served) by the NPSE within the next 20 years then this form T1 shall still be submitted with the details of each ban in the proposed town and when it is to be incorporated into the NPSE.

### Calculation of total population and population served (not required for regulatory submission)

Year		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
<b>Total population (1+4+7)</b>		<b>1146</b>	<b>1164</b>	<b>1183</b>	<b>1202</b>	<b>1222</b>	<b>1242</b>	<b>1262</b>	<b>1282</b>	<b>1303</b>	<b>1325</b>	<b>1346</b>
<b>Population served (3+6+9)</b>		<b>454</b>	<b>487</b>	<b>521</b>	<b>560</b>	<b>785</b>	<b>871</b>	<b>908</b>	<b>1024</b>	<b>1141</b>	<b>1227</b>	<b>1262</b>
<b>Abc</b>												
1	Population (1% p.a. growth)	567	573	578	584	590	595	602	608	614	620	626
2	Percentage served	80%	85%	90%	93%	95%	95%	96%	96%	97%	97%	97%
3	Population served (1 x 2)	454	487	521	540	561	566	578	584	596	602	608
<b>Def</b>												
4	Population (2% p.a. growth)	345	352	359	366	373	380	389	396	404	412	421
5	Percentage served	0%	0%	0%	30%	60%	80%	85%	90%	93%	95%	95%
6	Population served (4 x 5)	0	0	0	110	224	305	330	357	374	392	400
<b>Ghi</b>												
7	Population (2.5% p.a. growth)	234	240	246	252	258	265	271	278	285	292	300
8	Percentage served	0%	0%	0%	0%	0%	0%	0%	30%	60%	80%	85%
9	Population served (7 x 8)	0	0	0	0	0	0	0	83	171	234	255

## T2 Service levels

Town<sup>1</sup> . . . . .

		Current	Short term			Medium Term						
		(2004)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1	Total population <sup>2</sup>	1146	1164	1183	1202	1222	1242	1262	1282	1303	1325	1346
2	Population served <sup>3</sup>	454	487	521	650	785	871	908	1024	1141	1227	1262
3	Connections total	120	126	134	166	194	212	221	250	274	292	300
4	<i>Domestic</i>	91	97	104	130	157	174	182	205	228	245	252
5	<i>Government</i>	7	7	7	8	8	8	8	9	9	9	9
6	<i>Commercial</i>	15	15	16	20	21	22	23	27	28	29	30
7	<i>Foreign</i>	3	3	3	3	3	3	3	3	3	3	3
8	<i>Other</i>	4	4	4	5	5	5	5	6	6	6	6
9	New connections		6	8	32	28	18	9	29	24	18	8
1 0	Hrs service per day (ave)	20	20	20	24	24	24	24	24	24	24	24
1 1	<i>Dry season</i>	18	18	18	24	24	24	24	24	24	24	24
1 2	<i>Rainy season</i>	22	22	22	24	24	24	24	24	24	24	24

### Notes:

1. Form T2 to be completed for each town.
2. Total population (Row 1) includes the all bans scheduled to be serviced within the next 20 years and shall allow for population growth in the individual bans over the planning period.



### T3 Water demands

Town<sup>1</sup> . . . . .

		Current	Short term			Medium Term						
		(2004)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1	Population served <sup>2</sup>	454	487	521	650	785	871	908	1024	1141	1227	1262
2	Demand per capita <sup>3</sup> (lpcd)	83	84	85	86	86	87	88	89	90	91	92
3	Domestic demand (m <sup>3</sup> year) ((1x2)x365/1000)	13742	14894	16087	20295	24734	27728	29202	33250	37415	40654	42221
4	Non-domestic demand (5+6+7+8)	2044	2054	2064	3900	3910	3921	3931	3942	3952	3963	3974
5	<i>Government</i>	803	807	811	815	819	823	827	832	836	840	844
6	<i>Commercial</i>	1241	1247	1253	3085	3091	3097	3104	3110	3117	3123	3129
7	<i>Foreign</i>	0	0	0	0	0	0	0	0	0	0	0
8	<i>Other</i>	0	0	0	0	0	0	0	0	0	0	0
9	Total Demand (3+4)	15786	16948	18152	24195	28644	31649	33133	37192	41367	44617	46195

Notes:

1. Form T3 to be completed for each town.
2. Population served from form T2.
3. Demand per capita determined from existing data with allowances for changes in water use patterns.

## T4 Water loss reduction programme and suppressed demand effects

Town<sup>1</sup> . . . . .

		Current	Short term			Medium Term						
		(2004)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1	Number of connections <sup>2</sup>	120	126	134	166	194	212	221	250	274	292	300
2	Leakage per connection <sup>3</sup> (l/day)	187	170	160	155	150	145	140	135	130	125	120
3	Total leakage (m <sup>3</sup> /year) (1x2)x365/1000	8191	7818	7826	9391	10622	11220	11293	12319	13001	13323	13140
4	Total demand <sup>4</sup> (m <sup>3</sup> /year)	15786	16948	18152	24195	28644	31649	33133	37192	41367	44617	46195
5	Total production demand (m <sup>3</sup> /year) (3+4)	23976	24767	25977	33586	39266	42869	44426	49510	54369	57940	59335
6	Total production capacity <sup>5</sup> (m <sup>3</sup> /year)	29200	29200	29200	51100	51100	51100	51100	87600	87600	87600	87600
7	Production output <sup>6</sup> (m <sup>3</sup> /year)	23976	24753	25790	33586	39266	42866	44288	49510	54369	57940	59335
8	Suppressed demand (m <sup>3</sup> /year) (5-7)	0	14	187	0	0	3	138	0	0	0	0

### Notes:

1. Form T3 to be completed for each town.
2. From form T2
3. Based upon current levels and expectations of leakage reduction programme.
4. From form T3
5. Based upon current levels and capital investment programme.
6. Allowing for any suppressed demand effects where capacity cannot meet demand

## T5 Water consumption projections after allowance for suppressed demand effects

Town<sup>1</sup> . . . . .

		Current	Short term			Medium Term						
		(2004)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1	Domestic consumption (m <sup>3</sup> /year)	13742	14882	15921	20295	24734	27725	29081	33250	37415	40654	42221
2	Non-domestic consumption (m <sup>3</sup> /year)	2044	2053	2043	3900	3910	3920	3915	3942	3952	3963	3974
3	<i>Government</i>	803	806	803	815	819	823	824	832	836	840	844
4	<i>Commercial</i>	1241	1246	1241	3085	3091	3097	3091	3110	3117	3123	3129
5	<i>Foreign</i>	0	0	0	0	0	0	0	0	0	0	0
6	<i>Other</i>	0	0	0	0	0	0	0	0	0	0	0
7	Total Consumption (1+2)	15786	16935	17964	24195	28644	31645	32995	37192	41367	44617	46195

### Notes:

1. Form T5 to be completed for each town.
2. Consumption calculated from adjusting demands to suit production capacity, i.e. if suppressed demand is 0, then consumption equals demand, but if suppressed demand >0, then consumption equals demand less suppressed demand. The reduction is made pro-rata for all customer categories unless there is evidence that suggests otherwise.

## T6 Commercial losses and water sales projections

Town<sup>1</sup> . . . . .

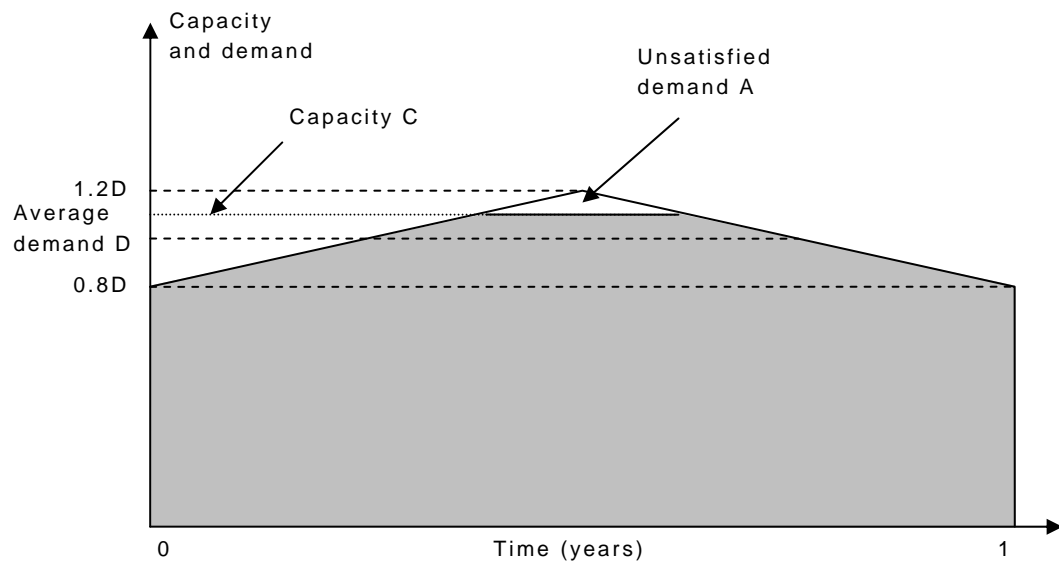
		Current	Short term			Medium Term						
		(2004)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1	Commercial losses (m <sup>3</sup> /year)	1300	1000	800	600	500	400	300	200	200	200	200
2	Percentage of consumption (1/(T5, row 7))	8.24%	5.91%	4.45%	2.48%	1.75%	1.26%	0.91%	0.54%	0.48%	0.45%	0.43%
3	Domestic sales (m <sup>3</sup> year)	12610	14003	15212	19791	24302	27375	28816	33071	37234	40472	42038
4	Non-domestic sales (5+6+7+8)	1876	1931	1952	3803	3842	3871	3879	3920	3933	3945	3956
5	<i>Government</i>	737	759	767	795	805	813	816	827	832	836	840
6	<i>Commercial</i>	1139	1173	1185	3008	3037	3058	3063	3093	3101	3109	3116
7	<i>Foreign</i>	0	0	0	0	0	0	0	0	0	0	0
8	<i>Other</i>	0	0	0	0	0	0	0	0	0	0	0
9	Total sales (3+4)	14486	15935	17164	23595	28144	31245	32695	36992	41167	44417	45995

### Notes:

1. Form T6 to be completed for each town.
2. Sales calculated from deducting commercial losses from consumption. The reduction is made pro-rata for all customer categories unless there is evidence that suggests otherwise, i.e.

$$\text{sales} = \text{consumption} \times (1 - \text{percentage of consumption})$$

## Annex 1 – Seasonal peak factor



$$\text{Satisfied demand (B)} = 0.8D + 0.4D/2 - A = D - A$$

$$A = (1.2D - C) \times \text{Base length} / 2$$

$$\text{Base length} = (1.2D - C) / (1.2D - 0.8D) = (1.2D - C) / 0.4D$$

$$\therefore A = (1.2D - C)^2 / 0.8D$$

$$\therefore \text{Satisfied demand} = D - (1.2D - C)^2 / 0.8D$$