



# Luganville Water Tariff Review

## Final Decision

### WATER SECTOR

May 2013

**UTILITIES  
REGULATORY  
AUTHORITY**



### A letter from the Chairman

The Utilities Regulatory Authority is pleased to present its Final Decision in the tariff review of water services provided by the Public Works Department in Luganville. This is the culmination of a process that started in October 2012 that has involved extensive consultation with all stakeholders and detailed analysis of all available data and evidence. The result of this tariff review will help ensure a safe, reliable and affordable water service in Luganville that is sustainable for the long term. The URA Commission would like to thank all those who have contributed to this process, including participants in all of the consultation sessions, Government departments, and in particular the staff of the Public Works Department.

Until this tariff review, the price of water in Luganville had not changed since 1991. Over that time, the costs of operating the service have increased, in particular the costs of electricity. As a result of this, the revenue generated from water bills has not been sufficient to finance adequate investment in the water network to cope with the growth of the town of Luganville, consequently quality and reliability of the water service has gradually decreased over that time.

Our consultations have shown that water customers in Luganville are concerned with the level of quality, and want to have confidence in the safety and reliability of the water network. This decision has been designed to ensure the long-term future of the water service in Luganville by providing adequate revenue to cover operating costs and to finance investment.

Clear actions by the Government are required to improve the provision of water services in Luganville. This document provides advice to the Government on what needs to be done to improve the operational and financial management of the water utility in Luganville – change that should lead to better quality and reliability for customers. It would not be reasonable for customers to pay more for their water without clear evidence of the Government taking necessary steps to improve the service.

During our consultations with customers in Luganville, we heard their concerns about the affordability of any increase in prices. In our analysis, we have considered several alternative pricing structures to balance the interests of all customers in the fairest way possible. In arriving at this Final Decision, we have weighed all the evidence, as well as the need to ensure the long-term viability of the water service.

Another issue that is described in this Final Decision is that of price subsidisation. The government has benefitted in the past from donations of infrastructure, aid grants, and “soft” loans. The financial benefit of this has been passed to customers in the form of lower prices. Looking forward, however, the financial viability of the water service requires that water bills provide sufficient revenue to cover the full cost of service. This document makes these subsidies explicit and defines a price level where subsidies of existing infrastructure are retained, but future investment is self-funded by the utility.

All stakeholders are encouraged to read this document in order to fully understand the basis of this decision. We will continue to assist the Government in ensuring that actions are taken to ensure improvements are made to the water service in Luganville, and to secure its future in the long term interests of customers.

Yours sincerely,

**Johnson NAVITI *Matarulapa Marakipule***

*Chairperson*

## Executive Summary

The Utilities Regulatory Authority (the Authority) has reached a decision regarding the tariffs charged by the Public Works Department (PWD) for water services in Luganville. This decision is based on an extensive consultation process that began in October 2012 and included all relevant groups of stakeholders including residential, commercial and industrial customers, and municipal, provincial and central Government departments. All available information has been gathered and analysed to give the best possible view of the cost of providing the water service.

Based on the analysis carried out by the Authority, **the reasonable price for water services in Luganville is 59 vatu per m<sup>3</sup>**. This represents an increase from the current price level. A summary of all fees and charges is shown in the table below:

Type of fee	New tariff, vatu
Fee per m <sup>3</sup> used (local customers)	59
Fee per m <sup>3</sup> used (ships)	59
Standard deposit fee	2,500
Reconnection fee	990

During the course of the tariff review, the Authority has found systemic problems impacting the operations of the water service in Luganville. Actions have been identified to make improvements and to ensure better quality is delivered to customers. **The Authority will only allow the price increase after specific actions have been completed to improve the water service in Luganville.**

These actions are:

- To change the financial and operational management structures for the Luganville water service, including separation of budget, expenses and revenue from other Government activities;
- To establish an independent annual Performance Audit to review the utility's performance against targets and budget;
- To improve information and data gathering processes;
- To define safety and reliability standards for water;
- To develop a comprehensive plan to improve the water network infrastructure in Luganville, and secure funds for such investment;
- To secure the current and any future water source against the risk of contamination; and
- To adopt clear and effective Government policy to enable the improvements to take place.

Following the publication of this Final Decision, the Authority will continue to monitor the delivery of these actions, and notify customers and other stakeholders when the price will change.

## How to respond to this paper

This paper describes the Authority's Final Decision in the Luganville Water Tariff Review. If a utility feels aggrieved by this decision, it may request the Authority to perform an internal review of the decision by giving a Notice of Grievance within 30 days of the decision. The Notice of Grievance should contain:

- A detailed description of any facts or matters supporting the grievance; and
- Copies of any documents supporting the grievance; and
- A detailed description of any alleged error of law; and
- A detailed description of any relevant changed facts or circumstances since the decision.

Notices of grievances can be received until

**27 June 2013**

And can be:

- delivered in person at the  
Office of the Utilities Regulatory Authority  
on the Ground Floor of the VNPF Building in Port Vila
- mailed to  
Luganville Water Tariff Review  
Utilities Regulatory Authority  
P.M.B 9093  
Port Vila, Vanuatu
- or emailed to  
Maureen Malas  
*Project Manager – Luganville Water Tariff Review*  
Utilities Regulatory Authority  
[mmalas@ura.gov.vu](mailto:mmalas@ura.gov.vu)

If the Authority receives a notice of grievance, it may revoke, amend or vary the decision, based on the merits of the grievance. Should this happen, the Authority will notify all stakeholders of any changes.

# Contents

Preface .....	2
Executive Summary .....	3
How to respond to this paper.....	4
1. Introduction.....	7
1.1 Purpose of this paper.....	7
1.2 Structure of this paper .....	7
1.3 Tariff review process.....	7
1.4 About the Utilities Regulatory Authority.....	8
1.5 Useful documents and links.....	9
2. New tariff.....	10
2.1 Tariff level.....	10
2.2 Tariff structure .....	11
2.3 Proposed adjustment formula .....	11
2.4 Reconnection fees .....	11
2.5 Security deposit fee.....	12
2.6 Affordability analysis.....	13
2.7 International comparison .....	13
3. Tariff assumptions .....	15
3.1 Elements of the tariff methodology .....	15
3.2 Quality .....	15
3.3 Demand forecast.....	16
3.3.1 Pumping capacity constraint .....	16
3.3.2 Leakages.....	16
3.3.3 Initial demand.....	17
3.3.4 Consumption growth .....	18
3.3.5 Reconnections .....	18
3.3.6 Billing losses.....	18
3.4 Operating Costs Forecast.....	18
3.4.1 Electricity costs.....	18
3.4.2 Staff costs .....	20
3.4.3 Materials costs .....	21
3.5 Infrastructure.....	21

3.5.1	Installed infrastructure .....	22
3.5.2	Asset lives .....	22
3.5.3	Investment .....	23
3.5.4	Regulated Asset Base.....	24
3.6	Cost of Capital .....	24
3.7	Subsidies.....	25
3.8	Revenue.....	26
3.8.1	Provisions.....	26
3.8.2	Bad debt.....	27
3.8.3	Revenue forecast .....	27
3.9	Tariff Structure.....	28
3.10	Adjustment formula components .....	29
4.	Conditions for tariff increase .....	31
4.1	Definition of organisational, financial and management structures.....	31
4.2	Establishment of an effective monitoring and evaluation mechanism.....	32
4.3	Improving infrastructure and source security.....	32
4.4	Clarifying Government policy and commitment to action.....	33
5.	Next steps .....	34

# 1. Introduction

## 1.1 Purpose of this paper

This paper sets out the Utility Regulatory Authority's (the Authority) Final Decision in the review of water prices in Luganville. The aim of this review has been to establish a fair price for customers to ensure the long-term viability of the water service in Luganville. The review process has included extensive consultation with the public, industry and Government stakeholders around the process, method, and assumptions used to calculate the fair price. The final decision has taken into account all information gathered and feedback from all stakeholders.

In addition to the fair price level, this final decision includes a description of certain conditions that must be met before the new price will take effect. These conditions have also been discussed extensively with all stakeholders, and are designed to ensure that actions are taken to improve water quality, ensure reliability, improve management and secure the long-term viability of water provision in Luganville. Once these conditions are fulfilled, it will be reasonable for customers to pay a higher level for water as quality improvements are likely to be delivered.

This paper also includes detailed advice to Government regarding a policy of subsidizing water prices for customers in Luganville. In the past, the Government has benefitted from reduced costs as a result of infrastructure having been funded through aid grants and "soft" loans. One consequence of this has been chronic underinvestment in the Luganville water network by the Government. This tariff review has examined the implicit subsidy and suggests an appropriate future level that will move towards business sustainability while maintaining affordability for customers.

## 1.2 Structure of this paper

This paper is structured into the following sections:

- Chapter 2, 'New tariff', describes the new level of all fees and charges, compares with the existing tariff, describes an analysis of affordability and shows an international comparison.
- Chapter 3, 'Tariff assumptions', describes the assumptions used in the calculation of the new tariff, and provides all supporting evidence and reasoning.
- Chapter 4, 'Conditions for tariff increase', describes the actions that must be taken to improve the water service before the new tariff will take effect.
- Chapter 5, 'Next steps', describes the actions following this Final Decision, including the steps to implement the new tariff.

## 1.3 Tariff review process

The process of this water tariff review has been designed to ensure that stakeholders are able to participate and contribute at each stage. The different stages and timings of the tariff review process have been:

Table 1: Tariff review process

Stage	Description	Status
Issues Paper	Description of key issues that impact the tariff review	Published 8 November 2012
Consultation Stage 1	Stakeholders are invited to comment on the Issues Paper	Closed 7 December 2012. Consultation Stage 1 Report published on 21 December 2012
Framework paper	Description of the tariff-setting methodology and process	Published 21 December 2012
Tariff application	Initial proposal of new tariff level from the utility with supporting evidence	Published 21 December 2012
Consultation Stage 2	Stakeholders are invited to comment on the Framework Paper and Tariff Application	Closed 21 January 2013. Consultation Stage 2 Report published on 22 February 2013
Draft decision	Draft tariff determination by the Authority	Published 22 February 2013
Consultation Stage 3	Stakeholders are invited to comment on the Authority's draft tariff decision	Closed 22 March 2013. Consultation Stage 3 Report published on 27 May 2013
Final decision	Stakeholders are informed of the Authority's final tariff decision	This paper

## 1.4 About the Utilities Regulatory Authority

The Utilities Regulatory Authority was established on 11 February 2008 under the *Utilities Regulatory Authority Act No 11 of 2007* (the URA Act). The URA Act established the Authority as an independent economic regulator for pricing, access, standards and monitoring of concession agreements. The regulated services defined in the URA Act are the supply of electricity and water services.

The Authority provides continued and expanded support to the Vanuatu Government's microeconomic reform program. This program was designed to improve the efficiency and competitiveness of Vanuatu's economy through the reform of the electricity and water sectors.

The Government perceived the establishment of an independent regulatory body as necessary to ensure that the benefits of the industry restructuring and concession arrangements were passed on to all residential, commercial and industrial customers.

The primary objective of the Authority is to improve access to electricity and water services and to protect the long-term interests of Vanuatu's consumers with regards to the price, quality and reliability of electricity and water services.

This objective is central to the framework of economic regulation that facilitates the efficiency and financial viability of regulated utilities, prevents abuse of monopoly power and ensures that customers benefit from quality improvements and efficiency gains over the longer term.

The functions of the Authority, as expressed in the URA Act under which it is constituted, are:

- to exercise the functions and powers conferred by the URA Act or by any other Act in furtherance of the purpose of the URA Act;
- to provide advice, reports and recommendations to the Government relating to utilities;
- to inform the public of matters relating to utilities;
- to assist consumers to resolve grievances;
- to investigate and act upon offences under the URA Act ;
- to advise the Minister on any other matter referred to the Authority by the Minister; and
- to administer and monitor compliance of Concession Agreements under the URA Act.

In accordance with its Charter of Consultation and Regulatory Practice the Authority aims to be:

- independent, balanced and fair by ensuring its advice does not reflect undue influences and is consistent with its statutory objectives; and
- open and transparent by publishing its findings and conclusions.

Section 18 of the URA Act grants the Authority the power to determine the maximum price which may be charged in relation to any aspect of a regulated service in any place.

## 1.5 Useful documents and links

All sources of external information and data quoted in this paper are provided in subscript or footnotes. All other information originates from the Authority.

Readers of this report may also find it useful to review the following reports and documents, available on the Authority's website [www.ura.gov.vu](http://www.ura.gov.vu):

- URA Luganville Water Tariff Review Consultation Stage 3 Report, May 2013
- URA Luganville Water System Fixed Asset Valuation and Expenditure Estimates, February 2013, (by Wilson Cook Ltd)
- URA Luganville Water Tariff Review Draft Decision Paper, February 2013
- URA Luganville Water Tariff Review Consultation Stage 2 Report, February 2013
- URA Luganville Water Tariff Review Tariff Application Report, December 2012
- URA Luganville Water Tariff Review Framework Paper, December 2012
- URA Luganville Water Tariff Review Consultation Stage 1 Report, December 2012
- URA Luganville Water Tariff Review Issues Paper, November 2012
- Utilities Regulatory Authority Annual Report 2011
- Utilities Regulatory Authority Act No. 11 of 2007 and Amendment (2010)
- Water Supply Act 1955 and Amendments
- Public Health Act 1994

## 2. New tariff

The URA has calculated a new tariff level for water services in Luganville. A “fair” tariff is defined as one where funds raised from customer bills covers the reasonable cost of providing water services at a suitable level of quality. In the case of Luganville water services, part of the cost of the service (in particular certain infrastructure costs) have been subsidised through aid and grant donations. This level of subsidy is also taken into account in this final decision, with advice provided to the Government on an appropriate future subsidy level.

The tariff calculation consists of a financial model containing a five-year forecast of demand, costs, and infrastructure investment for the water network in Luganville. All information used to inform each of the assumptions used in the financial model is described in chapter 3 of this document.

This tariff will be valid for the next five years, until May 2018. A future tariff review will define the “fair” tariff for use after that date.

### 2.1 Tariff level

The table below compares the new tariff with the current level.

Table 2: Tariff summary

Type of fee	Current tariff, vatu	New tariff, vatu	Change
Fee per m <sup>3</sup> used (local customers)	52	59	+13.5%
Fee per m <sup>3</sup> used (ships)	65	59	-9.2%
Standard deposit fee	5,000	2,500	-50%
Reconnection fee	3,000	990	-67.0%

The following table shows the absolute value change for customers (not ships) based on different levels of consumption.

Table 3: Impact of new tariff on customer bills

Quarterly consumption (m <sup>3</sup> )	Old bill, vatu	New bill, vatu	Difference, vatu
11	572	649	+77
25	1,300	1,475	+175
43	2,236	2,537	+301
105	5,460	6,195	+735
185	9,620	10,915	+1,295
500	26,000	29,500	+3,500
3,000	156,000	177,000	+21,000
6,000	312,000	354,000	+42,000

## 2.2 Tariff structure

Based on the analysis of different alternative tariff structures described in section 3.9 below, the Authority has decided that a flat-rate tariff is the fairest option for Luganville, with the same price charged to all customers. This includes removing the different price currently charged to ships. This flat rate tariff is more consistent with the cost structure of the utility, and is very simple for the utility to administer.

## 2.3 Proposed adjustment formula

In addition to the tariff level described above, an adjustment formula will be implemented that will change the tariff according to fluctuations in the cost of electricity. An explanation of how the elements of the formula have been calculated is given in section 3.10 below.

The proposed formula is:

$$P = P_0 \times \left[ 0.54 + \left( 0.46 \cdot \frac{E}{E_0} \right) \right]$$

Where:

P = The base price for the quarter to be charged to customers

P<sub>0</sub> = 59 vatu

E = The average base price of electricity for the three months prior to the quarter, weighted according to the billed amount

E<sub>0</sub> = 52.22 vatu

Using this formula, water prices for customers will change according to future changes in the price of electricity. For example, a 10% increase in the price of electricity over three months will result in a 4.6% increase in the price of water for that period.

Before customer bills are calculated each quarter, the utility will provide the Authority with the required information from electricity bills, and the Authority will notify the utility of the updated base price. The result of the formula will be rounded to the nearest whole vatu, giving the base price for that quarter. Customers will then be billed according to the new base price.

## 2.4 Reconnection fees

Reconnection fees are charged when a customer has been disconnected due to not paying their bill. These fees are expected to cover the cost of disconnecting and reconnecting a customer. These costs are assumed to be primarily made up of labour and transport costs. A similar activity is carried out by other utility companies in Vanuatu, so the Authority is able to benchmark the fees across the different utility companies. A table showing this comparison is given below.

Table 4: Reconnection fee comparison, vatu

	PWD water supply Luganville	VUI electricity supply Luganville	UNELCO water supply Port Vila	UNELCO electricity supply Port Vila
Reconnection fee	3,000	990	1,550	1,550

Source: PWD, UNELCO, VUI

The comparison shows that the current reconnection charges are high. The evidence from the water and electricity utilities in Port Vila shows that the costs of carrying out disconnections and reconnections are similar for water and electricity connections. The electricity utility in Luganville would therefore face similar costs of performing disconnections and reconnections to PWD. Based on this, the Authority is setting the new reconnection fee to be 990 vatu.

## 2.5 Security deposit fee

A deposit fee is an advance on consumption which will be refunded to the customer upon termination of the customer's water supply agreement with PWD. The refunded amount will be equivalent to difference between the deposited amount and any outstanding debt that the customer may have with PWD.

To determine whether the current security deposit is reasonable, the Authority compared the average bill that PWD water customers in Luganville pay every quarter to the security deposit. This was to see whether the security deposit was sufficient to cover on average any advanced consumption per customer within a billing period. The result is shown in the table below.

Table 5: Security deposit comparison, vatu

Measure	Value, vatu
Average quarterly bill (mean)	5,481
Average quarter bill (median)	2,537
Old deposit fee	5,000
New standard deposit fee	2,500

Source: PWD

By comparing the average quarterly bill per customer to the deposit fee, the Authority finds that while the current deposit fee is close to the average bill when calculated as a mean, it is much higher than the median bill. This means that for most new customers, the security deposit is much higher than their average quarterly consumption. The Authority will therefore reduce the standard security deposit fee to closer to the median bill level, while also allowing PWD to determine a higher security deposit in the case where customers are likely to use very large amounts of water (for example commercial or industrial users of water). In this case, PWD should provide a reasonable estimate of the customer's consumption for the first quarter. If such a situation creates a customer dispute, the Authority can assist in determining an appropriate level of security deposit.

## 2.6 Affordability analysis

In order to consider the affordability of such a tariff increase for domestic customers, the quarterly absolute increase in bills has been compared to the average quarterly household income for Luganville.

Table 6: Affordability analysis

Item	Amount
Average monthly household income	64,200 vatu
Average quarterly household income	192,600 vatu
Comparison with 30 <sup>th</sup> percentile bill increase	0.11%
Comparison with 50 <sup>th</sup> percentile bill increase	0.18%
Comparison with 80 <sup>th</sup> percentile bill increase	0.45%

Source: *Vanuatu Household Income and Expenditure Survey 2006*, National Statistics Office

The table above shows that the increase in bills reflects an impact of less than half of one percent of quarterly income for 80% of all water customers. It is the Authority's position that this increase is within a reasonable definition of affordable for domestic customers.

For commercial customers, data is less available to provide information on affordability. In order to inform its decision, the Authority has compared the impact on bills for a number of customers who are presumed to be relatively water intensive. The results were a range of impact of between 0.11% and 0.3% of reported net income (profit). This also appears to be an affordable increase in the view of the Authority.

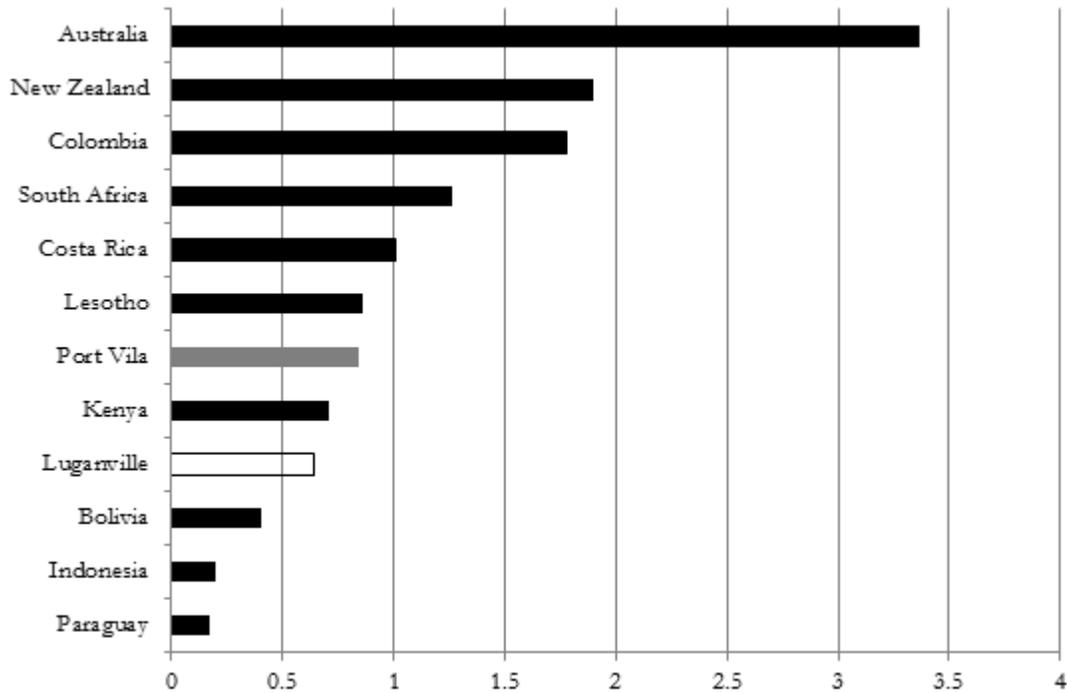
During Consultation Stage 3, the Authority carried out a survey of affordability of those customers who attended the briefings on the draft decision. This survey highlighted clear concerns of customers around the impact of the proposed price increase, in particular in communities where there is high unemployment. Based on these concerns the Authority carried out a detailed analysis of alternative tariff structures, as described in section 3.9 below.

On balance, while there are natural concerns among certain customer groups, the Authority's view is that this Final Decision provides a tariff that is comparable to other markets, and represents an appropriate balance of the interests of different customer groups with the long-term financial viability of the water service in Luganville.

## 2.7 International comparison

The following chart shows the new tariff level in comparison with water tariffs from other utilities in Vanuatu and other countries. It shows that the new tariff level is below average on an international scale, and remains lower than the current water tariff in Port Vila.

Figure 1: Average revenue per m<sup>3</sup> delivered, USD



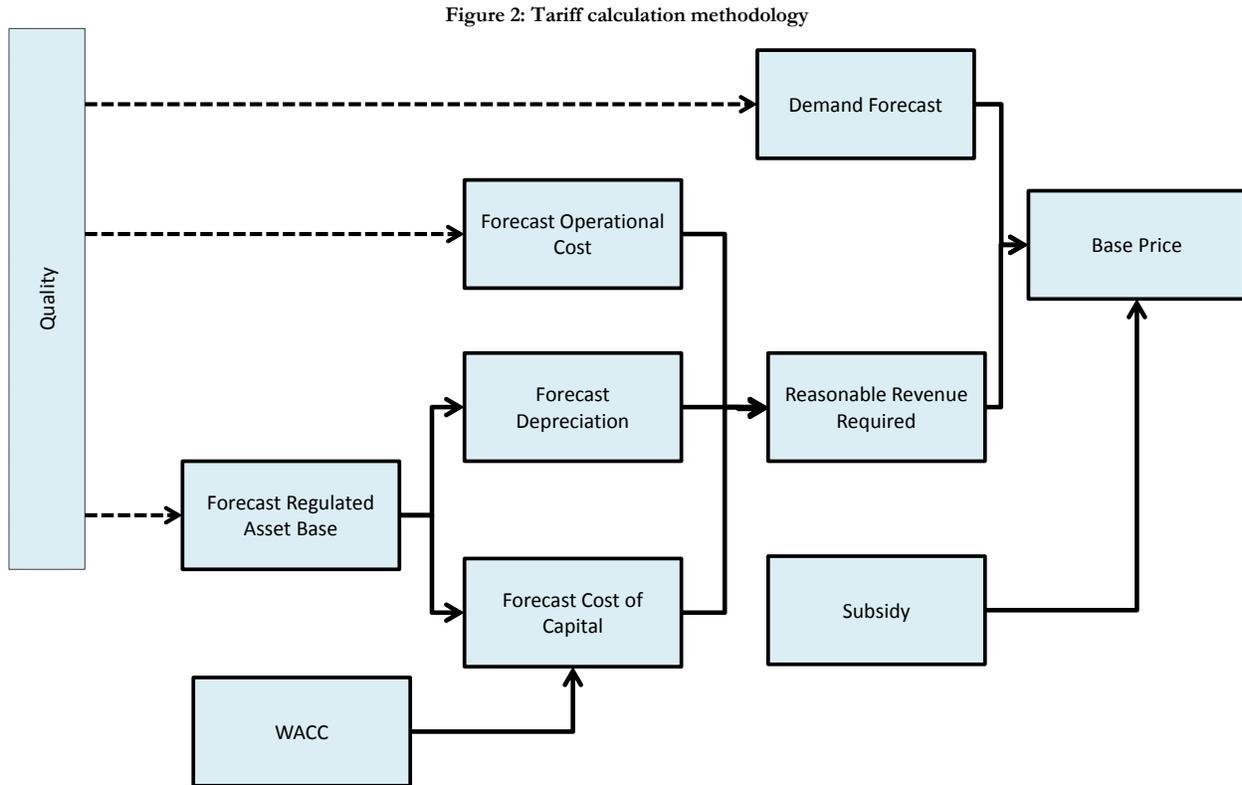
*Source: International Benchmark Network for Water and Sanitation Utilities*

There was no available data on other water utilities from the Pacific region. The Authority will continue to research possible sources of data to provide regional comparisons for the next water tariff review carried out by the Authority.

## 3. Tariff assumptions

### 3.1 Elements of the tariff methodology

The diagram below illustrates the different components of the tariff setting methodology and how they interact.



The tariff calculation methodology is described in detail in the *Luganville Water Tariff Review Framework Paper*, although some elements of the methodology around infrastructure subsidies have been updated. These changes are described in the relevant sections below. The tariff is calculated based on a set of forecasts for the five-year period 2013-2017.

### 3.2 Quality

The Authority's investigations of water quality in Luganville have shown that there is a need for improvement. The public survey carried out as part of Consultation Stage 1 indicated that customers are concerned with the current quality levels and have a desire for better quality water. (The full results of the survey are available in the *Luganville Water Tariff Review Consultation Stage 1 Report*.)

One issue that has impacted water quality in the past has been inconsistent chlorination. This tariff assumes the correct level of chlorination throughout the period.

While the Government has adopted World Health Organisation (WHO) standards of water quality, there has not been regular testing in Luganville, nor have there been any sanctions imposed when quality has dropped below the required standard. Proposals for ensuring that quality standards are more effectively enforced are described in Chapter 4 of this document.

There are plans to move the water source from the current position at Sarakata to Solway. During its consultations, the Authority has heard statements indicating a risk of contamination of the current source. However, no data has been provided to the Authority that shows clear evidence of this. This tariff review does not assume that the source needs to change, nor provides for any large scale investment to do so.

### 3.3 Demand forecast

The tariff is calculated based on a forecast of the demand for water.

Table 7: Demand forecast, m<sup>3</sup>

Year	2013	2014	2015	2016	2017
Total m <sup>3</sup> delivered to customers	847,149	858,737	870,325	881,913	893,501

Source: Utilities Regulatory Authority Luganville Water Tariff Review Financial Model

The Authority’s method used for estimating the amount of water to be sold by PWD over the five-year forecast period is described below.

#### 3.3.1 Pumping capacity constraint

Information from PWD has indicated that the water pumps in Luganville are currently operating at capacity, i.e. it is not possible to pump any more water into reservoirs than is currently being pumped. Until the pumping capacity is increased, this means that the only way to supply more water to customers is to repair leaks. The demand forecast used in this tariff review assumes that this capacity constraint will exist throughout the tariff period, subject to repairs of leakages as described below.

#### 3.3.2 Leakages

A significant amount of water is lost daily through leakages. It has not been possible to obtain a consistent estimate for the amount of total leakages. Based on the information and analysis received by the Authority, it appears likely that repairing leaks is the activity that will have the biggest impact on the efficiency of the network, water pressure and quality for customers.

An investigation of the “billing losses” described in the *Luganville Water Tariff Review Tariff Application Report* has provided an estimate of the amount of water lost through leaks at customer properties after the meter. The average total amount of this type of leakage for the period 2008-2012 is 14,485 m<sup>3</sup> per quarter. It has been assumed that this leakage amount can be repaired over the next five years. The Authority notes that it is likely that this represents only a small proportion of the potential leaks that could be repaired.

It is very important that the utility establish an appropriate mechanism for measuring the volume of water lost, for example a meter to measure the volume of water pumped into the reservoirs. In addition, the amount of leakages should be measured and reported on at regular intervals.

### 3.3.3 Initial demand

Demand at the start of the forecast period has been estimated based on the number of customer connections and the historical average consumption per customer. The following table shows the number of customer connections, based on PWD's records. It is assumed that all the customers not yet connected will be connected by the start of the forecast period.

**Table 8: Number of customers**

Current active customers	Customers not yet connected	Total number of customers
2,106	25	2,131

*Source: PWD records*

In addition to customer connections, water is supplied to ships. Data has been provided on the number of ships supplied to from 2008 to 2012. It is assumed that the number of ships is equal to the average for the period 2008-2012.

**Table 9: Average number of ships supplied with water, 2008-2012**

Year	2008	2009	2010	2011	2012	Avg. 2008-2012
Number of ships	4	3	2	5	2	3

*Source: PWD meter reading database*

The average consumption per customer has been estimated using the historical average for the period 2008-2012. Separate assumptions are used for ships and for customer connections. The table below shows the average consumption per customer for the period 2008-2012

**Table 10: Average quarterly m<sup>3</sup> consumed per customer, 2008-2012**

	2008	2009	2010	2011	2012	2008-2012
Customers	100	97	97	100	94	98
Ships	138	166	176	159	347	174

*Source: PWD meter reading database*

The total water consumed at the start of the forecast period is calculated in the table below.

**Table 11: Quarterly consumption at start of forecast period**

	Number	Quarterly consumption per customer or ship, m <sup>3</sup>	Quarterly consumption, m <sup>3</sup>
Customers	2,131	98	209,456
Ships	3	174	521
<b>Total</b>	<b>2,134</b>	<b>98</b>	<b>209,977</b>

*Source: Utilities Regulatory Authority Luganville Water Tariff Review Financial Model*

### 3.3.4 Consumption growth

As previously noted, the water pumps are currently operating at full capacity. The repair of leaks through the period will allow for customers to consume more water. Total consumption growth, therefore, is based on the assumed rate of leakage repair. This is equivalent to an annual growth rate of 1.35%.

### 3.3.5 Reconnections

Reconnection fees are charged to customers who have been previously disconnected. These fees constitute a revenue stream for the utility. 152 reconnection fees were charged in 2012. It is assumed that this rate will remain constant through the tariff period. The costs of disconnections and reconnections are assumed to be included in the operating costs described in section 3.4 below.

### 3.3.6 Billing losses

In the *Luganville Water Tariff Review Tariff Application Report*, billing losses was defined as the difference between the amount recorded on water meters and the amount billed to customers. Following an investigation by the Authority, it was found that this was largely a result of significant leakages in government properties that have not been repaired (see the *Luganville Water Tariff Review Consultation Stage 2 Report* for more details). Rather than charging for the amount of water wasted, a fixed amount was charged to these customers. It is the Authority's view that there is no valid reason for customers to be billed a different amount than is metered. If there is significant leakage on a customer's property, it is the responsibility of the customer to repair the leak. Therefore no allowance is made in the tariff for billing losses.

## 3.4 Operating Costs Forecast

The operating cost forecast estimates the reasonable costs of providing water services in Luganville. It is a summation of the forecasted electricity costs, staff costs, and materials costs.

The table below summarises the total operating costs for the forecast period.

Table 12: Total operating cost forecast, vatu

2013	2014	2015	2016	2017
39,201,481	41,384,488	41,654,964	41,925,575	42,196,320

Source: Utilities Regulatory Authority Luganville Water Tariff Review Financial Model

### 3.4.1 Electricity costs

Electric pumps are used to extract water from boreholes and transfer it to reservoirs. The cost of the electricity required is determined by the kilowatt hours (kWh) consumed, charges associated with the connection and the electrical efficiency of the system. There are two pump stations: the main pumping station with a high voltage connection and a booster pump with a low voltage connection.

PWD have supplied historical monthly electricity bills for the years 2011-2012 for the main pumping station and for 2012 for the booster pump. The average electricity consumed and monthly bill is shown in the table below. The monthly electricity consumed varied +/- 13% of the average for the period.

**Table 13: Average monthly electricity consumption and costs**

Year	Main pumping station		Booster pump	
	Avg monthly consumption, kWh	Avg monthly electricity bill, vatu	Avg monthly consumption, kWh	Avg monthly electricity bill, vatu
2011	48,044	1,762,425	n.a.	n.a.
2012	48,165	1,820,578	468	30,666

*Source: PWD*

Due to the lack of reliable data around leakages and the amount of water pumped from the pump station and through the booster pump, the historical amount of kWh used per m<sup>3</sup> (kWh/m<sup>3</sup>) of water pumped could not be determined. Therefore, the electricity cost could not be forecasted using the method proposed in the *Luganville Water Tariff Review Framework Paper*.

It is assumed that the total kWh consumed by both pump stations during the first quarter of 2013 will be the same as the average monthly consumption in 2012. As the pumping infrastructure continues to age, it is expected that there will be a gradual decrease in the electrical efficiency of the system. The average growth rate in electricity consumption from 2011 to 2012 was 0.25%. This rate is assumed to continue through the forecast period due to continued reduction of electrical efficiency of the system.

**Table 14: Summary of electricity cost assumptions**

Item	Quantity
Main pumping station consumption	48,165 kWh per month
Subscribed kVA	135 kVA
Transformer charge	8,125 vatu per month
Booster pump consumption	468 kWh per month
kWh annual growth rate	0.25% per annum
Electricity base price (P)	52.22 vatu

*Source: Utilities Regulatory Authority Luganville Water Tariff Review Financial Model*

The subscribed power and electricity connection contractual conditions for both pumping stations are assumed to remain the same over the 5 year tariff period, meaning that any transformer charges and monthly fixed charges will remain constant. There are currently no plans to change the electrical infrastructure at either pump station. The forecasted electricity cost over the tariff period is:

**Table 15: Forecast electricity costs, vatu**

2013	2014	2015	2016	2017
23,677,132	23,730,808	23,784,614	23,838,562	23,892,641

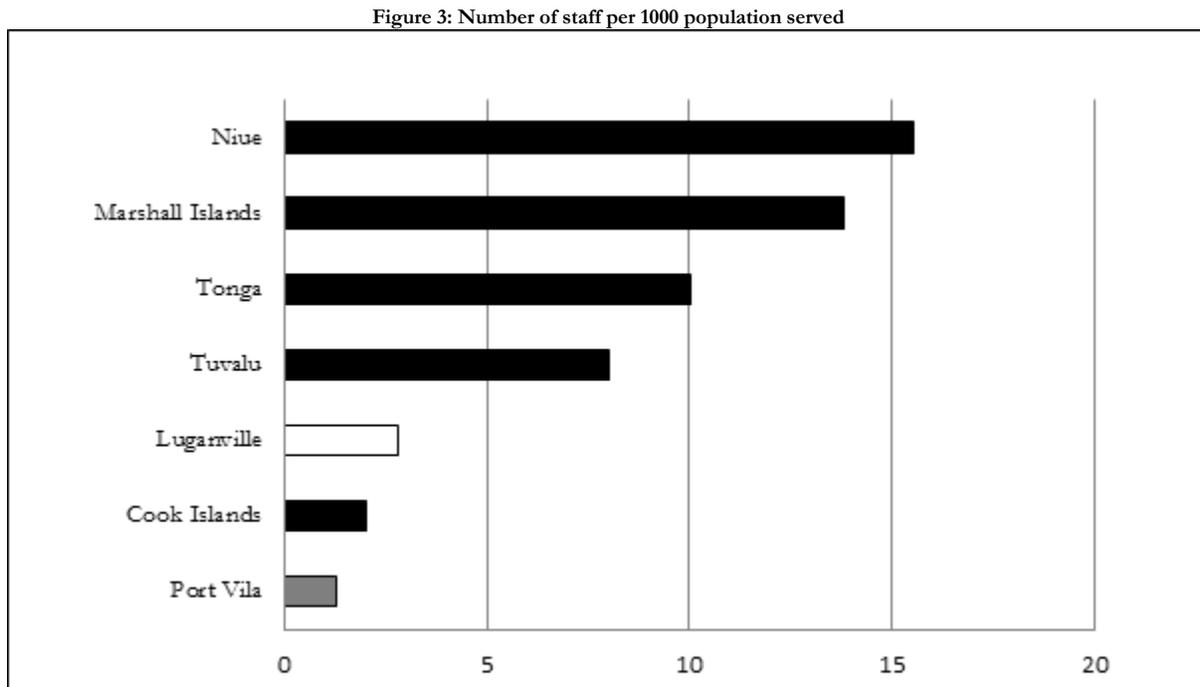
*Source: Utilities Regulatory Authority Luganville Water Tariff Review Financial Model*

### 3.4.2 Staff costs

Staff costs are the salaries, overtime costs and severance allowance of staff directly involved in the provision of water.

In accordance with the PWD 5-year plan the URA forecasts an increase in the number of designated staff from 7 to 10 by 2014. It is assumed that the number of staff will increase to 8 in 2013 and then to 10 in 2014. This amount of staff will remain to the end of the forecast period.

Number of staff per 1000 population served is an indicator that measures the level of staffing relative to the population that is serviced by the water supply network. This is shown in the graph below, comparing water utilities in Vanuatu with international benchmarks from the Pacific region.



*Source: Pacific Water and Waste Association Benchmarking Report 2011*

When comparing the number of staff per 1000 population served to international benchmarks, the current number of designated staff is below average, indicating a reasonable level of efficiency. Therefore the Authority finds the proposed number of staff to be reasonable.

The estimated average annual salary for PWD staff is 882,768 vatu. It is assumed that each year half of the staff will receive an incremental salary increase of 40,000 vatu. This is consistent with previous salary performance and staff turnover at PWD.

Overtime allowance per staff is forecast to remain the same at 312,000 vatu per quarter through the forecast period. PWD do not anticipate any changes to the after-hours shift schedule meaning that the same number of total overtime hours will be required through the forecast period.

In order to allow for severance costs, 1/12<sup>th</sup> of the quarterly salary cost is included to cover one month of severance per year of service.

The total staff costs included in the model is shown in the table below:

**Table 16: Forecast staff costs, vatu**

2013	2014	2015	2016	2017
11,394,656	13,523,987	13,740,653	13,957,320	14,173,987

*Source: Utilities Regulatory Authority Luganville Water Tariff Review Financial Model*

### 3.4.3 Materials costs

Material costs are the costs of consumable materials used for operating and maintaining the water supply system that are not capital investments. This includes fuel costs, water treatment costs, and other materials costs.

Fuel costs are estimated based on an assumed monthly usage of 720 litres and a cost of 150 vatu per litre.

Chemicals such as sodium hypochlorite are used to treat the water. The cost of these chemicals has been estimated based on information provided by PWD.

**Table 17: Summary of water treatment chemical assumptions**

Item	Value
Amount of chemicals used per day	40 litres
Price of chemicals	178.875 vatu per litre

*Source: PWD*

Due to the capacity constraints described above, the amount of treatment chemicals used is assumed to remain constant through the tariff period.

The office equipment cost is estimated to be 48,279 vatu per quarter and is assumed to remain the same during the tariff period.

The cost of water and safety boots for the PWD team is forecast to be 7,251 vatu per quarter.

The forecast total materials cost is shown in the table below:

**Table 18: Forecast materials costs, vatu**

2013	2014	2015	2016	2017
4,129, 693	4,129, 693	4,129, 693	4,129, 693	4,129, 693

*Source: Utilities Regulatory Authority Luganville Water Tariff Review Financial Model*

## 3.5 Infrastructure

In order to estimate the reasonable costs of providing water services in Luganville, the Authority must estimate the level of infrastructure required. The cost of infrastructure assets is treated differently to operating costs, as infrastructure assets retain usefulness and value across many years. Each type of infrastructure asset has a useful life, and at the end of its useful life the value is assumed to be zero. The annual reduction in asset

value is referred to as “depreciation”, and is calculated as an equal portion of the value of the asset for each year of its life. This method of calculating depreciation is referred to as “straight line” depreciation.

The assets of the utility that are included for consideration in the tariff calculation are referred to as the Regulated Asset Base (RAB). The Regulated Asset Base should include all assets required to provide and manage the water supply. This definition of the RAB is different to that used in the *Draft Decision*. Instead of discounting infrastructure that has been funded by other parties, these subsidies will be treated explicitly. This means calculating the full market-based cost of providing the service, and then subtracting subsidies separately. The treatment of subsidies in this Final Decision is described separately below.

Depreciation of the RAB represents a real cost of doing business, and is included in the tariff calculation. Estimating a reasonable level of depreciation costs requires the following assumptions to be made:

- The remaining value of the installed infrastructure at the start of the tariff period;
- The lives of the installed assets; and
- The value of investment in new infrastructure installed during the tariff period.

### 3.5.1 Installed infrastructure

The current assets of the water service in Luganville includes the source well, pumping stations, reservoirs, mains pipes, connecting pipes, valves, fixtures, meters as well as other assets required to provide the service. These installed assets have been installed for various periods of time and have various useful lives. Different sources of funding have been used to finance these assets. This section describes the assumptions that have been used to estimate the current value of installed assets in Luganville water service.

An independent assessment has been carried out by infrastructure valuation experts to estimate the current value of assets. This assessment has been carried out using all available information on the current network and the dates of installation. The valuation has been calculated according to a Depreciated Replacement Cost (DRC) methodology. This means that the cost of replacing the existing assets has been estimated, and then adjusted according to the age of the assets and inflation. The result should give a reasonable indication of the current net value of the installed infrastructure.

Table 19: Estimated value of installed infrastructure, vatu

Replacement cost of infrastructure	Depreciated Replacement Cost (DRC) of infrastructure
558,251,126	229,530,843

*Source: URA Luganville Water System Fixed Asset Valuation and Expenditure Estimates, February 2013, (by Wilson Cook Ltd)*

### 3.5.2 Asset lives

The assumed lifetime of assets indicates the associated depreciation costs for the utility. Different classes of assets have a wide range of useful lives. The asset lives used in the calculation of the annual depreciation amount are shown in the table below.

Table 20: Asset lives, years

Asset Category	Estimated Total Life
<b>Water Collection</b>	
Wells	50
<b>Pumping Stations, Reservoirs, etc</b>	
Site establishment & misc. site development works	50
Buildings (masonry)	50
Buildings (wooden superstructure)	40
Chlorination and water testing equipment	10
Reservoirs and tanks (steel)	60
Reservoirs and tanks (wood)	50
Bulk water lift pumps and motors	15
Station pipework, valves, pressure relief vessels	30
Switchboards, motor drives, cabling	20
Standby generator sets	20
Instrumentation and controls	15
Flow meters (bulk supply)	20
<b>Pipelines and Distribution Assets</b>	
Pipes (cast iron)	80
Pipes (PVC or high-density polyethylene)	50
Pipes (galvanised steel)	45
Valves	30
Pressure reducing valves	30
Meters (customer)	20
Fire hydrants	30

Source: URA Luganville Water System Fixed Asset Valuation and Expenditure Estimates, February 2013, (by Wilson Cook Ltd)

### 3.5.3 Investment

It is expected that additional investment will be required during the tariff period in order to renew and replace the existing network, as well as to deliver improvements in service delivery and water quality. The cost of new investment is included in the tariff through the forecast depreciation costs of the new assets. A reasonable expectation of the level of investment would be to cover the renewal of assets as they pass their expected useful life, and to expand the network in line with the growth of the town of Luganville. The estimate of the reasonable level of investment is shown in the table below.

Table 21: Estimated future investment, vatu

Item	Investment per year
Network growth	6.1m
Replacement of customer meters in the network	10.5m
Replacement of bulk supply assets (pumps and chlorination equipment)	6.2m
<b>Total</b>	<b>22.8m</b>

Source: URA Luganville Water System Fixed Asset Valuation and Expenditure Estimates, February 2013, (by Wilson Cook Ltd)

### 3.5.4 Regulated Asset Base

Based on the assumptions described in sections 3.5.1., 3.5.2, and 3.5.3 above, the following table shows the forecasts for the RAB and related depreciation costs.

Table 22: Forecast RAB calculation, vatu

Year	2013	2014	2015	2016	2017
Opening net total asset value (RAB)	229,530,843	242,248,749	254,553,974	266,611,715	278,649,517
Investment	22,800,000	22,800,000	22,800,000	22,800,000	22,800,000
Depreciation	10,082,095	10,494,775	10,742,260	10,762,198	11,152,872
Closing net total asset value (RAB)	242,248,749	254,553,974	266,611,715	278,649,517	290,296,644

Source: Utilities Regulatory Authority Luganville Water Tariff Review Financial Model

## 3.6 Cost of Capital

The tariff-setting methodology assumes that funding used for investments has an associated cost. For example, bonds may be issued or loans taken in order to provide the cash to finance infrastructure investment. The interest due on such bonds or loans is an example of the cost of capital. The tariff must include an assumption for the cost of the capital required to fund the RAB.

Standard regulatory practice is to use a capital asset pricing model (CAPM) to estimate the weighted average cost of capital (WACC) for a particular market. These are described in more detail in the Luganville Water Tariff Review Framework Paper. The only precedent for calculating a WACC for utility markets in Vanuatu is from the tariff review of electricity carried out in 2010.

Two assumptions in the WACC calculation have been changed from the 2010 precedent. The risk free rate has been updated based on the latest data available, and calculated using the same methodology as used in 2010. The new risk free rate reflects the significant reduction in government bond yields since 2010. The

market risk premium is assumed to be 6%. This is consistent with all recent reviews of water utilities by Australian regulators.

The components used in the calculation of the WACC are shown in the following table.

**Table 23: WACC assumptions**

Item	Value
Nominal risk free rate	2.45%
Market risk premium	6.00%
Country risk premium - equity	4.10%
Country risk premium - debt	2.70%
Debt margin	2.00%
Corporate tax rate	0.00%
Gearing ratio	50%
Inflation rate	3.00%
Equity beta	0.9
Post-tax nominal WACC	9.55%
<b>Post-tax real WACC</b>	<b>6.36%</b>

*Source: Utilities Regulatory Authority Luganville Water Tariff Review Financial Model*

### 3.7 Subsidies

The current price of water in Luganville (52 vatu per m<sup>3</sup>) generates revenue that is significantly less than the full market-based cost of service. This is due to the fact that the Government has historically benefitted from lower infrastructure costs through donation of infrastructure that was built prior to independence, aid grants and “soft” loans from development partners. The benefit of this lower cost has been passed to customers in the form of lower prices, representing an implicit subsidy. The table below shows the current level of this subsidy.

**Table 24: Current level of price subsidy**

Item	Amount
Current base price of water	52 vatu per m <sup>3</sup>
Expected revenue at current price (2013)	44,259,394 vatu
Market-based full cost of water service (2013):	
Operating costs	39,201,48 vatu
Infrastructure costs (depreciation and cost of capital)	25,487,233 vatu
Total market-based full cost of service	64,688,715 vatu
Subsidy rate	30%

*Source: Utilities Regulatory Authority Luganville Water Tariff Review Financial Model*

When considering a possible subsidy level going forward, it is important to take the following factors into account:

- Financial sustainability and viability of the service
- The long-term plans for service ownership
- Affordability of the service to customers

It is important that over the medium-to-long term the water service in Luganville become financially self-sustaining. This means that the revenue generated by customers should become sufficient to cover not just the operating costs but also investments to ensure the infrastructure is replaced and upgraded to accommodate the growth of the network. In addition, any form of subsidy creates a market distortion that may result in inefficient resource allocation. Currently in Luganville, these subsidies have resulted in under-investment in the water network.

During the consultation process with Government stakeholders, the privatization of water services in Luganville has been mentioned as a medium-term goal. One of the barriers to the possible privatization is the continued subsidization of water prices. Having a service that is not reliant on subsidies will further enable the involvement of the private sector investment.

On the other hand, it is important that water services are affordable, thus ensuring the population of Luganville have access to clean and safe water. The tariff review has carried out a survey of affordability and our consultation did reveal a significant concern among domestic water customers about the cost of water. Therefore a gradual reduction of the subsidy level will ease the burden on customers while allowing the utility to become financially self-sufficient in the medium term.

The table below shows a comparison of three scenarios: a) the current subsidy level; b) a level where existing assets remain subsidized but future investments are self-funded; c) no subsidy level.

**Table 25: Options for future subsidy level**

Scenario	Subsidy level	Price	Price change for customers
Current subsidy level	30%	52 vatu per m <sup>3</sup>	-
Future investments self-funded	25%	59 vatu per m <sup>3</sup>	+13.5%
No subsidy	0%	80 vatu per m <sup>3</sup>	+52.9%

*Source: Utilities Regulatory Authority Luganville Tariff Review Financial Model*

The Authority has advised the Government that the most appropriate subsidy level is one where the benefit of previous donations of infrastructure is retained by customers, but future investment is funded through revenue from water bills. This equates to an overall reduction in the price of water of 25%.

## 3.8 Revenue

### 3.8.1 Provisions

The current PWD budgeting cycle makes no allowances for any kind of provisions, so no additional funds or provisions have been included in the financial model.

### 3.8.2 Bad debt

Bad debt is defined as lost revenue from bills that are not paid by customers. It is normal to expect some level of bad debt for any utility, but it is the responsibility of the utility to ensure that payments are effectively collected from customers.

The revenues collected by PWD from water customers go to the general public fund. Historically, the amount of revenue generated has not directly impacted the budget assigned to PWD to deliver water services in Luganville. The result of this arrangement is that PWD have not had a strong incentive to be effective in collecting revenue from customers. As a result, some customers may have become accustomed to not paying their full water bills.

In the tariff calculation, losses from bad debt result in a higher tariff for customers. It is not acceptable for bill-paying customers to bear an unfairly high cost of customers who do not pay.

A comparison has been made with the provisions for bad debt made by UNELCO assumed in the electricity tariff review. These represent 0.5% of revenue. This is significantly lower than the figure currently estimated for Luganville water services. It is therefore assumed that PWD will be able to move towards the performance level currently achieved by UNELCO, with losses on bad debt assumed to be 1% of revenue through the tariff period.

Table 26: Summary of bad debt assumptions

Item	Value
PWD Losses on bad debt, 2008-2012	5.68%
UNELCO average bad debt losses 2010	0.5%
Assumption used in draft decision	1%

*Source: Utilities Regulatory Authority Luganville Tariff Review Financial Model*

The Authority notes that this assumed level of losses is lower than the current levels faced by the utility. Therefore, the Authority strongly advises the utility to make a concerted effort to improve its revenue collection practices.

### 3.8.3 Revenue forecast

The estimated revenue required to finance water services in Luganville is calculated according to the following table, and is compared with the revenue that would be generated by the current tariff.

Table 27: Forecast required revenue calculation, vatu

	2013	2014	2015	2016	2017
Operating costs	39,201,481	41,384,488	41,654,964	41,925,575	42,196,320
Depreciation	10,082,095	10,494,775	10,742,260	10,762,198	11,152,872
Cost of Capital	15,405,139	16,187,656	16,954,434	17,719,945	18,460,612
Subsidy	18,684,166,	18,185,807	17,572,645,	16,806,993	16,335,112
Provisions	0	0	0	0	0
Bad debt	460,045	498,811	517,790	536,007	554,747
<b>Total required revenue</b>	<b>46,464,594</b>	<b>50,379,922</b>	<b>52,296,803</b>	<b>54,136,732</b>	<b>56,029,440</b>
Revenue from current tariff	44,259,394	44,861,970	45,464,546	46,067,122	46,669,698

Source: Utilities Regulatory Authority Luganville Tariff Review Financial Model

### 3.9 Tariff Structure

As a result of the concerns voiced by customers around the affordability of a water price increase, the Authority carried out a detailed analysis of different potential tariff structures. The aim of this analysis was to identify a tariff structure that resulted in the most fair and affordable price for all customers. The following options were considered:

- **Flat-rate:** The simplest tariff structure is a flat-rate tariff structure. This is defined by all customers paying the same price per unit of water consumed. A customer's bill depends only on the amount of water consumed. The total bill is directly proportional to the amount consumed.
- **Tranche tariff:** A tranche tariff is one where the price varies according to the amount of water consumed. There are two kinds of tranche tariff - either the price can increase with higher consumption, or decrease. This creates a situation where there is a cross-subsidy between different groups of customers based on their consumption levels. A tranche tariff is normally most appropriate where the costs of service vary according to consumption levels, i.e. where there are economies of scale due to higher consumption (where higher consumption should be given a lower tariff), or where the resource being supplied is scarce (where higher consumption should be given a higher tariff).
- **Category-based tariff:** This type of tariff is where different prices are set for different definitions of customer, for example for residential or commercial customers. A category-based tariff is appropriate in situations where the cost of service is significantly different for different categories of customer (for example due to different customer service needs), or if there is an explicit Government policy to encourage expansion of a particular type of customer through cross-subsidisation between categories.

The Authority considered each of the options above, including performing an analysis of the impact of each of these options on the financial viability of the water service. The conclusions of the analysis are shown in the table below.

Table 28: Comparison of tariff types

Tariff type	Analysis of applicability	Conclusion
Flat-rate	There is currently a flat-rate tariff for customers (with a minor exception for ships). This is the simplest and fairest tariff structure.	Most appropriate for Luganville water service
Tranche tariff	The cost of supplying customers does not vary significantly with different levels of consumption. Water scarcity is not a significant issue in Luganville, as fixing leaks could dramatically increase network capacity. Also, affordability analysis showed many instances of low-income customers with large households and relatively high consumption.	Not appropriate for Luganville water service
Category-based tariff	The cost of supplying customers does not vary significantly for different categories of customer. There is no explicit Government policy to provide cross-subsidies for any particular customer group. It is not possible to define a different tariff for customer categories that results in a significant benefit for one group without creating a significant detriment for another group.	Not appropriate for Luganville water service

Apart from the overall subsidization of the base price, the current tariff structure defines a different price for Ships that is 25% higher than the standard price. As the costs of supplying this group is the same as for other customers, this higher price is in effect a cross-subsidy from one group of customers to another. The tariff review has calculated the impact of this subsidy on overall prices and found that the amount of water sold to Ships is too small to make an impact on the price of customers. In the absence of any clear and explicit policy from Government, the Authority has decided that customers and ships should pay the same price.

### 3.10 Adjustment formula components

The tariff adjustment formula is designed to adjust the tariff according to fluctuations in the price of electricity. Electricity costs represent the only input cost that has potential price variability that may have a significant impact on the tariff level. The table below summarises the different sources of input cost variation, and assess their impact on the overall costs of the utility.

**Table 29: Impact of variable input costs**

<b>Input cost</b>	<b>% of costs</b>	<b>Comment</b>
Electricity	46%	Potentially variable, and significant impact on costs
Staff	26%	Cost changes already included in the tariff forecasts
Chlorine	5%	Small potentially for variability, and will not have a significant impact on overall costs
Fuel	3%	Potentially variable cost, but will not have a significant impact on overall costs
Other operating costs	0.4%	Insignificant

*Source: Utilities Regulatory Authority Luganville Tariff Review Financial Model, URA analysis*

## 4. Conditions for tariff increase

The reasonable tariff level determined in this Final Decision is an increase in prices for customers. This tariff has been calculated based on assumptions around a level of performance on the part of PWD and a level of quality delivered to customers. Before approving a tariff increase, the Authority wishes to ensure that it is reasonable to assume that improvements in performance and quality will be delivered. To this end, this Final Decision includes a set of conditions that must be met before the new tariff will come into effect.

The conditions are designed to ensure that specific actions are taken that solve some systemic issues with the provision of water in Luganville. The required improvements are:

1. Definition of organisational, financial and management structures for the Luganville water service;
2. Establishment of an effective monitoring and evaluation mechanism;
3. Improving infrastructure and water source security; and
4. Clarifying Government policy and commitment to action.

These conditions are discussed in more detail in the sections below. A full implementation matrix for the actions related to these conditions is provided in Annexe 1.

### 4.1 Definition of organisational, financial and management structures

Currently, PWD do not effectively differentiate between activities associated with the provision of water services in Luganville and other activities undertaken under their responsibility (e.g. road maintenance). In addition, the revenue collected from water customers in Luganville is not separated from the general Public Fund. As a result, funds are often appropriated between different PWD activities, and there is little incentive to improve revenue collection. These problems make it very difficult for the Government to operate the utility in an efficient and effective manner.

Specific actions that should be taken to improve the organisational, financial and management structures include:

- Definition of an organisation structure specific to Luganville Water Services, consistent with the staff levels described in section 3.4.2 above, endorsed by the Public Services Commission;
- Separation of the budget request for Luganville Water Service from other MIPU activities, approved by Ministry of Finance and Economic Management (MFEM);
- Definition of separate accounting activity codes for Luganville Water services, with clear guidelines that budget must not be appropriated to fund other activities;
- Creation of a separate register of assets for Luganville Water Services, including type of asset purchased, purchase date, cost, asset life and source of funds; and
- Definition of separate revenue codes for Luganville Water Services to differentiate from the general public fund, and confirmation of intended use of this revenue only for the purposes of funding Luganville Water Services.

## 4.2 Establishment of an effective monitoring and evaluation mechanism

There is currently no effective monitoring or compliance regime in place for water services in Luganville. As the utility is a government-operated service, financial penalties are unlikely to incentivise adequate performance improvement. Therefore, in order to provide a suitable compliance and monitoring regime, the Authority will require the government to establish an annual performance audit before any tariff increase will be approved. Such an independent audit will establish suitable Key Performance Indicators (KPIs) for the Luganville Water Service and provide an independent assessment of the utility's performance.

The following areas would be included in an annual Performance Audit:

- Survey of customer satisfaction;
- Review of revenue collected, expenditure and investment against budget and plan;
- Service quality measures such as water quality, treatment and reliability of supply;
- Review of performance against safety and reliability standards;
- Review of organisation structure against plan;
- Review of issues register;
- Review of complaints register;
- Review of work programmes (i.e. maintenance, investment, training); and
- Review of annual report.

In order for the Performance Audit to be effective, PWD must put in place routines to collect data on operational performance. This may require the addition of measurement apparatus to key parts of the network, i.e. to measure the total amount of water pumped into reservoirs (to enable the accurate measurement of non-revenue water). The results of the performance audit should be presented to senior Government officials, including relevant Ministers, Director-Generals and Directors for scrutiny, and also made public.

The Authority must make clear the expected standards of quality and reliability that must be achieved. The Authority is empowered under the URA Act to issue safety standards, but no such standards have been established for water services. The Authority plans to define and publish these standards in 2013.

## 4.3 Improving infrastructure and source security

In order for the quality of water services in Luganville to be improved, there needs to be a comprehensive plan to improve and proactively maintain the installed water network infrastructure. To this end, PWD must develop an investment plan for the water network of Luganville. If this plan requires significant capital to be invested, the Government should demonstrate how the funds will be raised, i.e. agreements with aid donor partners.

During the consultation process, consumers raised concerns about the security and potential contamination of the water source. The Authority has not seen any clear evidence that comprehensively shows that the current source is already compromised. Nevertheless, it is important that the Government properly establish appropriate Water Protection Zones in order to prevent future contamination of the current and any future water source in Luganville. The Government has these powers under the Water Resource Management Act, yet no Water Protection Zones have been established for Luganville.

## 4.4 Clarifying Government policy and commitment to action

In order to successfully deliver improvements to the Luganville water service, the Government must take steps to provide clear policy and commitment to specific actions. This includes the adoption of an explicit policy around price subsidization (as described in section 3.7 above), the actions described in sections 4.1, 4.2 and 4.3 above, and any required amendments to legislation.

The Authority will provide advice to the National Water Resources Advisory Committee on the content of any proposed policy document relevant to the Luganville Water Service. Given that this utility is fully owned and operated by the Government, it is vital that a suitable policy is adopted to secure its long-term future.

## 5. Next steps

Following this Final Decision, there is a series of activities that will continue up to the point when the new tariff will come into effect. These are described in the table below.

Table 30: Next steps

Action	Owner	Estimated date
Publication of the Luganville Water Tariff Review Final Decision	URA	Complete
Briefing for National Water Resources Advisory Committee (NWRAC) and other Government stakeholders	URA	June 2013
Draft policy document for Luganville Water Service	NWRAC	August 2013
Adoption of policy document by Council of Ministers	NWRAC	August 2013
Completion of actions defined in Implementation Matrix (see Annexe 1)	Various	June 2014
Gazettal of new tariff by URA and Minister of MIPU	URA	June 2014
<b>New tariff charged to customers</b>	<b>PWD</b>	<b>Q3 2014</b>
Monitoring & evaluation, annual Performance Audits	URA	2014-2018
Next tariff review completes	URA	May 2018

## Annexe I. Implementation matrix

Requirement	Ref	Action	Estimated timing	Responsible agency	Required evidence
<b>Organisational and management improvement</b>	1.1	Organisational structure for Luganville Water Service to be established in line with staff level assumed in Financial Model (e.g. 8 staff in Y1, increasing to 10 staff)	Q4 2013	PWD	PSC Endorsement of approved Organization Structure
	1.2	MIPU to request budget for LWS as a separate activity. Budget application to reflect a 5 year plan and assumptions defined in the Final Decision of the LWS Water Tariff Review undertaken by URA. The Budget application to include operating expenses and sufficient capital expenditure to cover day- to – day renewal and replacement asset.	Q4 2013	MIPU/MFEM	Approval of Budget amount by MFEM to a budget specified for Luganville Water Services
	1.3	PWD to define separate activity codes Luganville Water Services. There should be no appropriation of budget from LWS to fund other activities.	Q1 2014	MIPU	List of Approved Account Codes provided to the URA
	1.4	PWD to have a separate full register of all LWS assets. Register to include data such as type of asset, date purchased, purchase amount, standard asset life and funding sources and means.	Q3 2014	MIPU	Asset register completed and submitted to the URA for review
	1.5	Revenue for Luganville Water Services accounted for separately to other revenue in the public fund. New codes to be implemented for all kinds of water invoices (i.e. water bills, new connections, re-connections fees)	Q1 2014	MFEM	List of Revenue Codes for Luganville Water Services, Report from the Director General of Finance on use of Revenue from Luganville Water Services

Requirement	Ref	Action	Estimated timing	Responsible agency	Required evidence
<b>Monitoring and Evaluation</b>	2.1	Definition of scope of Performance Audit (including: review of the organizational structure against plan; review of revenue, expenditure and investment against budget and plan; water quality, treatment and reliability of supply including notices; review of issues register; review of complaints register; review of work programs (i.e. maintenance, investment and training); review of annual report; customer satisfaction survey; operational assessment (including leakages)) approved by URA	Q4 2013	MIPU/URA	Performance Audit scope approved by URA
<b>Infrastructure Funding</b>	3.1	Investment plan including improved revenue collection-support LWS with necessary plant and tools to timely complete meter readings and invoice customers; to disconnect meters on overdue payments and recover through Recovery Unit; to install new meters that has locking devices; procure 2 quad bikes for meter readers; major leakages to be repaired in the water mains; all Government houses to have plumbing repairs done; reduce subscribed demand from VUI; asset replacement: daily replacement to valves, seals and connection fittings; repairs and procurement of parts for pumps, vehicles, etc.; install alternate energy source to reduce electricity cost.	2013/2014		Copy of an Investment Plan received and reviewed by the URA

Requirement	Ref	Action	Estimated timing	Responsible agency	Required evidence
	3.2	Establishment of Water Protection Zones for the Luganville water source	Q1 2014	PWD / NWRAC / Dept. of Water	Gazettal of Water Protection Zones at current source or new water sources.
<b>Water safety standard</b>	4.1	Establishment of a water safety standard that defines minimum quality levels for drinking water, and reporting requirements on the part of utilities to inform customers when quality levels change.	Q4 2013	URA	Gazettal of Water Safety Standard by the URA.

---

**Utilities Regulatory Authority**

**Vanuatu**

You can access the Luganville Water Tariff Review Final Decision Report May 2013 on our website [www.ura.gov.vu](http://www.ura.gov.vu), or by contacting us by telephone (+678) 23335, email: [mmalas@ura.gov.vu](mailto:mmalas@ura.gov.vu) or regular mail at Luganville Water Tariff Review, Utilities Regulatory Authority, PMB 9093, Port Vila, Vanuatu.