



Luganville Water Tariff Review

Tariff Application Report

WATER SECTOR

December 2012

**UTILITIES
REGULATORY
AUTHORITY**



Executive Summary

At the request of the Ministry of Infrastructure and Public Utilities, the Utilities Regulatory Authority is conducting a review of water prices in Luganville. Based on the agreed methodology, the Public Works Department have provided an initial application for a new tariff level. The table shows the initial proposal for a new tariff for water in Luganville.

Type of fee	Proposed tariff (VUV)
Fee per m ³ used (local customers)	65
Fee per m ³ used (ships)	81
Deposit fee	6261
Reconnection fee	3756

Key assumptions used to calculate this tariff level are listed in the table below:

Metric	Assumed value
Demand forecast	
Annual growth rate in number of “Local customers”	3.43% per year
Annual growth rate in number of “Ships”	7% per year
Annual growth in average consumption for “Local customers”	0.79% per year
Annual growth in average consumption for “Ships”	0% per year
Reconnection rate	0% per year (no data available)
Leakages	42% of water pumped
Billing losses for “Local customers”	6.82% of meter readings
Billing losses for “Ships”	0% of meter readings
Operating costs forecast	
Electricity consumed per m ³ pumped	0.468 kWh
Number of staff	10 (constant through forecast period)
Average salary per staff	VUV 220,690 per quarter, with 50% of staff receiving VUV 40,000 incremental annually
Overtime per staff	VUV 93,600 per quarter
Fuel cost	VUV 324,000 per quarter
Treatment chemical usage per m ³ pumped	0.011 litres per m ³ pumped
Treatment chemical cost	VUV 35,775 for 200 litres

Office equipment & supplies	VUV 48,279 per quarter
Water and safety boots	VUV 7,251 per quarter
Infrastructure	
Regulated Asset Base	VUV 0 (no data available)
Investment	VUV 2,640,000 per year
Depreciation	VUV 2,640,000 per year
Cost of Capital	
Weighted Average Cost of Capital	No data available
Required Revenue	
Provisions	VUV 0 (no data available)
Bad debt	5.68%

All stakeholders are invited to provide comments on this initial proposed tariff level and the assumptions used in its calculation. All comments provided will be taken into account in the formulation of the Authority's Draft Decision.

How to respond to this paper

All stakeholders including the Government, the Public Works Department, other utilities, existing customers and other members of the public are invited to comment on this paper. Responses and information received will be considered in the formalisation of the Authority's Draft Decision.

The Authority will be seeking responses as part of its public consultation process. Stakeholders are encouraged to contact the Authority to file submissions or ask any questions.

Submissions can be made until

21 January 2013

and they can be made in person at the
Office of the Utilities Regulatory Authority
in the VNPF Building in Port Vila
on the Ground Floor

mailed to
Luganville Water Tariff Review
Utilities Regulatory Authority
P.M.B 9093
Port Vila, Vanuatu

emailed to
Maureen Malas
Project Manager – Luganville Water Tariff Review
Utilities Regulatory Authority
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or called in by telephone to the
Utilities Regulatory Authority at
+678 23335

Submissions will be made available on the Authority's website in accordance with the Authority's submission policy. Any material that is confidential should be clearly marked as such.

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1. Introduction

1.1 Purpose of this paper

This report describes the initial application from the Public Works Department (PWD) for a revised tariff for water services in Luganville, with all assumptions used and all evidence provided to support the assumptions. This tariff application is calculated according to the methodology laid out in the Luganville Tariff Review Framework Paper. All interested parties are invited to submit comments on this tariff application, the assumptions, and the supporting evidence.

1.2 Structure of this paper

This paper is structured into the following sections:

- Chapter 2, ‘Application for a revised tariff,’ describes the proposed tariff level and compares with the existing tariff.
- Chapter 3, ‘Proposed tariff assumptions,’ describes the assumptions used in the calculation of the proposed tariff, and provides all supporting evidence.
- Chapter 4, ‘Consultation process,’ describes the consultation process that will be undertaken to facilitate stakeholder engagement with the tariff review.

1.3 Tariff review process

The process of the tariff review is designed to ensure that stakeholders are able to participate and contribute valuable comments at each stage of the review process. The different stages and timings of the tariff review process are:

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
Framework paper	Description of the tariff-setting methodology and process	Planned for 21 December 2012
Tariff application	Initial proposal of new tariff level from the utility with supporting evidence	This paper
Consultation Stage 2	Stakeholders are invited to comment on the Framework Paper and Tariff Application	Planned to close 21 January 2013
Draft decision	Draft tariff determination by the Authority	Planned for 1 February 2013

Consultation Stage 3	Stakeholders are invited to comment on the Authority's draft tariff decision	Planned to close 15 March 2013
Final decision	Stakeholders are informed of the Authority's final tariff decision	Planned for 1 April 2013

After the final decision has been published, the new tariff will take effect once it has been gazetted, following approval from the relevant minister.

1.4 About the Utilities Regulatory Authority

The Utilities Regulatory Authority was established on the 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 or 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, water and other current and former government business enterprises.

The Government perceived the establishment of an independent regulatory body as necessary to ensure that the benefits of the industry structuring and concession arrangements were passed on to household, 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 misuse 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

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:

- Utilities Regulatory Authority Luganville Water Tariff Review Framework Paper, December 2012
- Utilities Regulatory Authority Luganville Water Tariff Review Consultation Stage 1 Report, December 2012
- Utilities Regulatory Authority 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. Application for a revised tariff

The URA has received an initial application for a new tariff level for water services in Luganville from the Public Works Department (PWD). This application consists of a financial model containing a five-year forecast of demand, operating costs, and infrastructure investment for the water network in Luganville. In addition, evidence has been provided to support the assumptions used in the financial model.

2.1 Proposed tariff

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

Type of fee	Current tariff (VUV)	Proposed tariff (VUV)	Change
Fee per m3 used (local customers)	52	65	+25.2%
Fee per m3 used (ships)	65	81	+25.2%
Deposit fee	5000	6261	+25.2%
Reconnection fee	3000	3756	+25.2%

2.2 Proposed adjustment formula

In addition to the tariff level described above, an adjustment formula has been suggested that will change the tariff according to fluctuations in the cost of electricity. The proposed formula is:

$$P = P_0 \times \left[0.44 + \left(0.56 \cdot \frac{E}{E_0} \right) \right]$$

Where:

P = The base price for the quarter

P₀ = 65 vatu

E = The average base price of electricity for the three months prior to the quarter

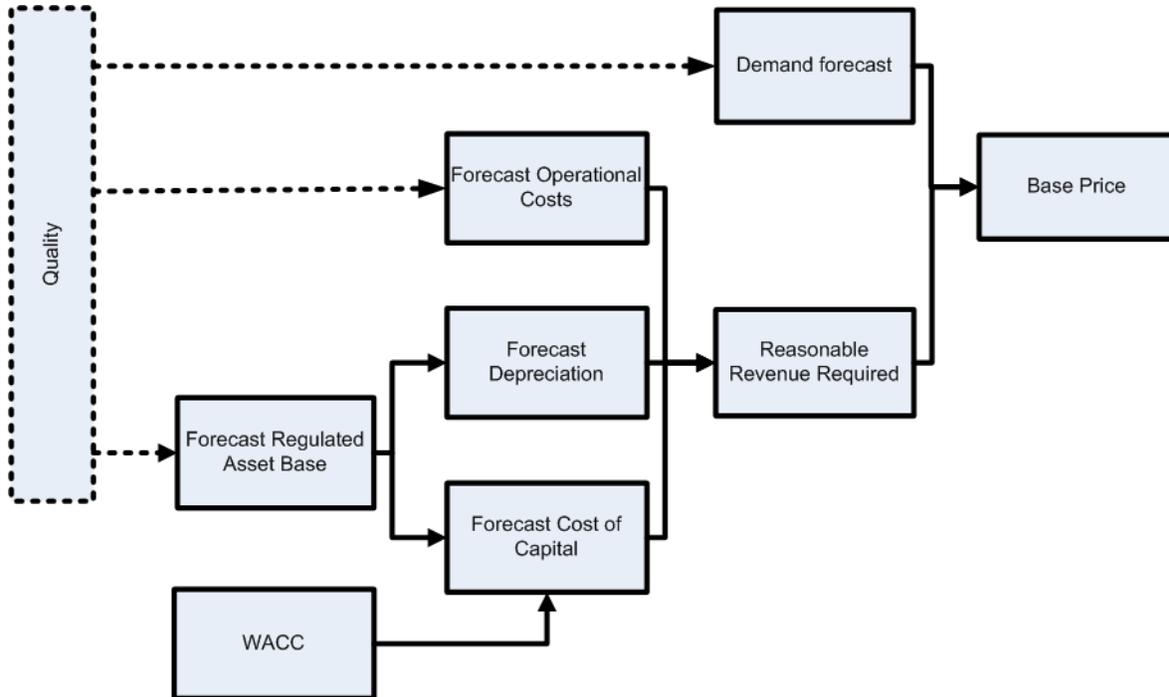
E₀ = 52.22 vatu

3. Proposed 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.

Figure 1: Tariff calculation methodology



The tariff calculation methodology is described in detail in the *Luganville Tariff Review Framework Paper*.

3.2 Quality

PWD have stated that the cost forecasts included in the tariff application are designed to deliver an improvement to the level of quality. The amount of the improvement has not yet been quantified.

3.3 Demand forecast

The basis of the tariff calculation is a forecast of the demand for water. To calculate total demand, each component of demand is described below with forecast assumptions from PWD.

3.3.1 Number of customers

The number of customers is broken down into two categories in the financial model: local customers and ships. “Local customers” is the number of water account holders with PWD. “Ships” is the number of foreign ships that have water supplied by PWD in Luganville.

Demand in the tariff application financial model from PWD assumed the following growth rates per year for each of the categories.

Customer group	Assumed annual growth rate
Local customers	3.43%
Ships	7%

Local customers are assumed to grow annually at a rate of 3.43%. This assumption is based on the average population growth rate of Vanuatu as a whole from 2009 to 2012. This assumes that Luganville will grow at the same rate as the rest of the country, that average household sizes remains constant and that the subscription rate for water customers remains the same. The calculation of the forecast growth rate is shown in the table below:

Year	Population
2009	234,023
2012	258,925
CAGR 2009-2012	3.43%

Source: 2011 Annual Development Report, 2011, p.48

PWD has assumed the number of ships to grow at a rate of 7% per year. The 7% per year is the forecast annual increase in cruise ship visits to Vanuatu from the Vanuatu Tourism Office.

3.3.2 Average consumption per customer

The average consumption per local customer is assumed to increase at a 0.79% rate per annum and 0% average annual consumption growth rate for ships.

Customer group	Assumed annual growth rate
Local customers	0.79%
Ships	0%

Consumption by local customers is assumed to increase in line with overall forecast GDP growth in Vanuatu.

The average consumption growth rate is calculated by stripping out the impact of 3.43% population growth from the GDP forecast.

Year	GDP growth forecast
2012	4.5%
2013	4%

Source: Government of Vanuatu, Annual Development Report 2011

The forecast average consumption for ships is assumed to be constant through the forecast period.

3.3.3 Reconnections

Reconnection fees are charged to customers who have been previously disconnected. These fees constitute a revenue stream, and the value of the fee is assumed to move in proportion to the tariff charged per m³ of water. No information on reconnection rates have been provided by PWD, so 0% has been assumed in the model.

3.3.4 Losses

Two kinds of water losses are forecast: the difference between the amount of water pumped and the amount of water delivered to customers (leakages); and the difference between the amount of water shown on customer meter readings and the amount billed for (billing losses).

Leakages:

Leakage accounts for the difference in the amount of water pumped and water delivered to customers. The assumed leakage rate is 42% of the total amount of water pumped. This is based on a bottom-up water balance.

Item	Amount
Volume pumped per day	4,128.13 kilolitres
Daily water losses	2,969.84 kilolitres
Losses	42%

Source: Water Loss Management, Sectorisation, Metering and Logging Program – Stage 1 Report – Luganville.

Billing losses:

Billing losses is the difference between the amount recorded on water meters and the amount billed to customers. The forecast assumption is equal to the average billing losses recorded by PWD from January 2008 to September 2012.

	2008	2009	2010	2011	2012	Avg.
Average % billing losses	8.43%	7.63%	6.76%	6.92%	3.16%	6.82%

Source: PWD

Billing losses for local customers are forecast to be equal to the average billing losses recorded by PWD from January 2008 to September 2012. Billing losses for ships is assumed to be 0%.

3.4 Operating Costs Forecast

The operational 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.

PWD have provided forecasts on their operational costs. Below is the overall operational costs forecast for the next five years starting in 2013 based on the PWD forecasts.

2013	2014	2015	2016	2017
42,022,707	43,908,421	45,840,381	47,820,562	49,851,022

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 amount of the water needed to be pumped and the electrical efficiency of the system.

The amount of water pumped is calculated using the forecast consumption and assumed leakage rate.

PWD have supplied historical electricity bills for the period January to June 2012, which can be used to calculate the kWh consumed for those months.

Month	Electricity bill	kWh consumed
January 2012	2,234,871	55,225
February 2012	2,102,828	51,255
March 2012	2,211,724	53,984
April 2012	2,157,144	52,004
May 2012	2,265,823	55,232
June 2012	2,219,002	54,177

Source: PWD

Using records of historical water consumption and the leakage assumption of 42%, is then possible to calculate the historical rate of kWh used per m³ of water pumped.

	Q1 2012	Q2 2012
Electricity used , kWh	160,464	161,413
Water consumed, m ³	179,291	224,989
Losses rate, %	42%	42%
Water pumped, m ³	309,122	387,912
kWh per m ³	0.52	0.42

Source: PWD

The forecast for kWh per m³ of water is based on the average of Q1 and Q2 2012, which is 0.468.

The price of electricity used in the financial model is the latest available price from December 2012. There is also an assumption that the subscribed power of 135kVA will not change in the forecast period.

The forecasted electricity cost over the tariff period is:

2013	2014	2015	2016	2017
24,980,077	25,952,919	26,967,200	28,024,688	29,127,228

3.4.2 Staff costs

Staff costs are the wage and overtime costs of staff directly involved in the provision of water.

PWD forecast an increase in the number of designated staff from 6 to 10. It is assumed that the increase will occur at the beginning of the forecast period in 2013 and will remain at that increased amount to the end of the forecast period.

The estimated average salary per staff is VUV 220,690 per quarter. It is also assumed that 50% of staff will receive an incremental VUV 40,000 per month increase every year.

Overtime allowance per staff is estimated to remain the same at VUV 93,600 per quarter through the forecast period.

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

2013	2014	2015	2016	2017
12,871,632	13,671,632	14,471,632	15,271,632	16,071,632

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.

PWD estimates that the fuel cost will remain at VUV 324,000 per quarter assuming that the current price of fuel will remain on average at 150vt/L over the course of the tariff period.

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

Item	Value
Amount of chemicals used per day	40 litres
Forecast m3 water pumped Q1 2013 per day	3,604.8
Amount of chemical used per m ³ of water pumped	0.011 litres
Price of chemicals	VUV 35,775 for 200 litres

Source: PWD

The forecast cost of chemicals for water treatment is shown in the table below:

2013	2014	2015	2016	2017
2,652,880	2,765,752	2,883,432	3,006,124	3,134,044

The office equipment cost is estimated to be VUV 48,279 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 VUV 7,251 per quarter.

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

2013	2014	2015	2016	2017
4,170,998	4,283,870	4,401,550	4,524,242	4,652,162

3.5 Infrastructure

The tariff application contains no value assigned to any installed water network assets. This is subject to continued investigation.

PWD have assumed a value of VUV 2,640,000 per year for capital expenditure on the water network on items such as meters, valves, pipes, etc. It has been assumed that this value is equal to the depreciation value of all installed assets.

3.6 Cost of Capital

As there is no asset value provided in the tariff application, there are no assumptions provided with regards to the cost of capital.

The Authority will continue to work with PWD and consult with other stakeholders to establish what a reasonable assumption for cost of capital should be with regards to water services in Luganville.

3.7 Required Revenue

The estimated revenue required to finance water services in Luganville is calculated according to the following table:

	2013	2014	2015	2016	2017
Operating costs	42,022,707	43,908,421	45,840,381	47,820,562	49,851,022
Depreciation	2,640,000	2,640,000	2,640,000	2,640,000	2,640,000
Cost of Capital	0	0	0	0	0
Provisions	0	0	0	0	0
Bad debt	5.68%	5.68%	5.68%	5.68%	5.68%
Total required revenue	47,199,549	49,192,371	51,234,067	53,326,722	55,472,512

3.7.1 Provisions

The current PWD budgeting cycle makes no allowances for any kind of provisions, so a zero value has been assumed in the model. The Authority will continue to work with PWD and other stakeholders to establish a reasonable level of provisions for water services in Luganville.

3.7.2 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.

The bad debt calculation is based on the following data from PWD:

Total amount invoiced from 01/01/2008 to 23/11/2012	Total payments received from 01/01/2008 to 23/11/2012	Difference, %
VUV 200,015,981	VUV 188,650,548	5.68%

Source: PWD database

3.8 Tariff Structure

The tariff structure proposed by PWD is unchanged from the current structure.

Type of fee	Tariff rate
Fee per m ³ used (local customers)	1.25 x P per m ³
Fee per m ³ used (ships)	1 x P per m ³
Deposit fee	96 x P
Reconnection fee	58 x P

3.9 Adjustment formula components

The proposed adjustment formula is designed to adjust the tariff according to fluctuations in the price of electricity. The coefficients in the formula are based on the following values

	Total cost over 5 years	Coefficient
Non-adjusted costs	107,590,982	0.42
Electricity costs	135,052,112	0.58

4. Proposed tariff implementation

PWD have proposed the following conditions to implement the new tariff:

- No changes will be made to the tariff in 2013;
- PWD will request a specific budget line for water services in Luganville for 2014;
- PWD will use the assumptions in the financial model in their submission for their 2014 budget from the public fund;
- This budget submission will be equal to the amount defined in the model for 2014;
- The tariff level will be adjusted according to any difference between the budget requested and the budget assigned from the public fund;
- The new tariff will be come into effect on 1st January 2014; and
- In subsequent years, the tariff will be adjusted according to any differences between the budget approved for water services in Luganville and the forecasts in the financial model.

5. Consultation Process

In order to actively gather the views of stakeholders, the Authority will conduct an extensive consultation process. This is in line with the Authority's Charter of Consultation and Regulatory Practice, and will include the following activities:

- Published papers will be made available in the Authority's office and on the website: www.ura.gov.vu;
- A press release explaining all published papers and inviting responses from the public will be sent to media organisations;
- Papers will be emailed to all stakeholders that have provided an email address;
- Text message alerts will be sent to all stakeholders who have provided mobile phone contact details; and
- Meetings will be requested with senior government stakeholders including the ministers, Director-Generals and Directors of relevant government departments.

All stakeholders will be requested to provide any comment and ask any questions through a range of communication channels. Based on the response from stakeholders, the Authority may arrange further briefing sessions to facilitate the gathering of feedback from interested stakeholders.

Utilities Regulatory Authority

Vanuatu

You can access the Luganville Water Tariff Review Tariff Application Report December 2012 on our website www.ura.gov.vu, or by contacting us by telephone (+678) 23335, email: mmalas@ura.gov.vu or regular mail at Luganville Water Tariff Review, Utilities Regulatory Authority, PMB 9093, Port Vila, Vanuatu.