SEQ Interim Price Monitoring

UNITYWATER

CAPEX OPEX REVIEW

- Rev 2
- Final
- 30 January 2012

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Document history and status

Revision	Date issued	Reviewed by	Approved by	Date approved	Revision type
Rev 0	21/10/11	S. Hinchliffe	P. Nixon	21/10/11	Draft
Rev 1	18/11/11	S Hinchliffe	T Saxby	18/11/11	Final
Rev 2	14/12/11	S Hinchliffe	T Saxby	14/12/11	Final v2

Distribution of copies

Revision	Copy no	Quantity	Issued to
Rev 0	Electronic	N/A	Client
Rev 1	Electronic	N/A	Client
Rev 2	Electronic	N/A	Client

Printed:	30 January 2012
Last saved:	27 January 2012 05:32 PM
File name:	I:\QENV2\Projects\QE09969\Reports\QE09969 SEQ Interim Price Monitoring Report Unitywater Final Rev 1.docx
Author:	Pat Nixon, Aaron Feast, Maddy Swatman, Stephen Hinchliffe
Project manager:	Stephen Hinchliffe
Name of organisation:	Queensland Competition Authority(QCA)
Name of project:	Interim price monitoring CAPEX OPEX Review
Name of document:	SEQ Interim Price Monitoring Unitywater Final
Document version:	Final Rev2
Project number:	QE09969

Limitation Statement

The sole purpose of this report and the associated services performed by Sinclair Knight Merz Pty Ltd (SKM) is to assist the Queensland Competition Authority (the Authority) in its price monitoring of the three SEQ water and wastewater distribution and retail entities in accordance with the scope of services set out in the contract between SKM and the Authority. That scope of services, as described in this report, was developed with the Authority.

In preparing this report, SKM has relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Authority, the water distribution and retail entities and/ or from other sources. Except as otherwise stated in the report, SKM has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

SKM derived the data in this report from information sourced from the Authority, the water distribution and retail entities and/ or available in the public domain at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination of the project and subsequent data analysis, and re-evaluation of the data, findings, observations and conclusions expressed in this report. SKM has prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by SKM for use of any part of this report in any other context.

This report has been prepared within the time restraints imposed by the project program. These time restraints have imposed constraints on SKM's ability to obtain and review information from the entities.

This report has been prepared on behalf of, and for the exclusive use of, the Authority, and is subject to, and issued in accordance with, the provisions of the agreement between SKM and the Authority. SKM accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party.

1. Executive Summary

The Queensland Competition Authority (the Authority) commissioned Sinclair Knight Merz Pty Ltd (SKM) to review the prudency and efficiency of capital expenditure and operating expenditure of the three SEQ water and wastewater distribution and retail entities – Allconnex Water, Queensland Urban Utilities, and Unitywater. This review forms part of the Authority's process to undertake interim price monitoring for these monopoly utilities.

We have produced a report for each of the entities. This report pertains to the prudency and efficiency of capital and operating expenditure forecasts of Unitywater servicing the Sunshine Coast, and Moreton Bay (northern areas).

In addition, the Authority commissioned us to undertake a review of the water supply and wastewater treatment demand forecasts of the three entities. Our review of the demand forecasts is documented in a separate report to the capital and operating expenditure reports[1].

1.1. Introduction and background

On 1 July 2010, as a part of water reforms in South East Queensland (SEQ), three new water and wastewater distribution and retail businesses commenced operation. These businesses were formed by amalgamating various council-based-and-owned water utilities into three larger water utilities. These entities own the water and sewerage distribution infrastructure and sell water and wastewater disposal services to customers in their respective areas.

This is the second year of price monitoring of the SEQ water distribution entities undertaken by the Authority. The aim of the price monitoring process is to assess the prudency and efficiency of capital and operating costs, and ultimately the charges to customers within the monopoly distribution and retail businesses, to encourage sustainable water practices within the SEQ water industry.

To aid this process, the Authority appointed SKM to review the capital and operating expenditure forecasts and associated information for regulated services over the regulatory period from the 1st July 2011 to 30th June 2014. In addition to reviewing capital and operating expenditure forecasts, the Authority has asked us to review the policies and procedures implemented by the entities to develop operating and capital expenditure budgets and to implement capital projects. Finally the Authority has asked us to review the entities' progress in implementing the Authority supported initiatives identified in its 2010/11 price monitoring report[2].

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[1] *Review of Demand Projections for South East Queensland*, SKM MMA, October 2011
[2] *Final Report – SEQ Interim price Monitoring for 2010/11 Part A and Part B*, QCA March 2011

This interim price monitoring is being carried out against a backdrop of:

- Entities in the second year of an establishment phase
- Much of historic data drawn from information provided by previous service providers (councils)
- Entities implementing newly developed processes and systems for:
  - Capital works evaluation, approval and budgeting
  - Operational expenditure budgeting

In undertaking our assessment of capital and operating expenditure, we have taken cognisance of the demand forecasts produced by the entities and our assessment and recasting of those forecasts undertaken on behalf of the Authority.

1.2. Overview of information adequacy

Unitywater has supplied comprehensive supporting information to enable us to complete an assessment of the prudency and efficiency for a sample of operating costs and capital expenditure of selected projects.

As the review of sample projects focused on projects that are to be commissioned in 2011/12, many of the projects have been initiated by the participating councils prior to the formation of Unitywater. Unitywater has therefore had to rely on documentation produced by the participating councils at the time of project initiation. Consequently the documentation is variable and does not represent current Unitywater procedures. We accept that retrospective development of documentation has limited value other than informing decision making regarding inclusion into the regulatory asset base (RAB).

1.3. Policies and procedures

1.3.1. Issues identified in the Authority's 2010/11 report

The Authority's final report on SEQ Price Monitoring for 2010/11 noted a number of issues to be assessed in future reviews in addition to prudency and efficiency of budgeted expenditure. These include: a whole of entity perspective to capital project prudency and efficiency considerations; only commissioned capital expenditure to be included in the RAB; a standardised approach to cost estimating; a summary document prepared for major capital projects; an implementation strategy and gateway review process for capital projects; and a consistent approach to indexation across SEQ.

There is clear evidence that Unitywater is adopting a region wide (whole of entity) perspective to capital expenditure where appropriate as demonstrated by the decision to transfer raw sewerage

into adjacent sewerage treatment plant catchments. The policy for applying capital expenditure to the RAB is consistent with that of the Authority and consistent across all the entities. The approach to capital project cost estimating used for the sample capital projects reviewed varies with the type of projects. However Unitywater is implementing procedures to ensure consistency in capital project estimating and has developed a Capital Works Justification Process that takes into account the requirements of the Authority. Similarly, Unitywater has developed a standardised summary document for major capital projects that will aid regulatory reporting. Unitywater has also developed a gateway review process for capital projects.

The indexation factor applied by Unitywater is consistent with that recommended by the Authority but is not consistent with that used by Queensland Urban Utilities and Allconnex Water.

1.3.2. Good industry practice in budget development

Most utilities use two basic forecasting approaches to develop capital expenditure and operating costs budget forecasts for their regulated businesses. The first approach – "base year" forecast – involves extrapolating historical expenditure for a particular expenditure category. It generally requires justification that the base year expenditure is prudent and efficient. The second approach – "bottom-up" forecast – is developed by forecasting work units or quantities and standard unit rates.

Unitywater has used a mixture of zero based budgeting and extrapolation of historic cost budgeting for operational expenditure, taking into account cost indexation and change in demand. As such Unitywater's processes for operating expenditure budgeting generally adhere to good industry practice.

Unitywater's capital project budgeting process, which is based on a 'zero based' bottom up approach does represent good industry practice.

1.3.3. Standards of service

In accordance with the 2011 Customer Water and Waste Water Code, Unitywater has produced a single consolidated set of customer service standards applicable for all customers within its service area. The service standards developed are largely comparable to those developed by the two other water distributers in SEQ.

1.3.4. Asset management and condition assessment

Unitywater is in the process of implementing a single asset management system that will better inform capital expenditure planning and just in time maintenance. A geographic information system asset base consolidation project will overcome the current issues arising from two separate asset databases being managed by the participating councils. Unitywater is progressing to a risk, condition and performance based asset replacement method for capital asset renewals and

documentation is being developed to assist asset condition assessment in a systematic and consistent manner. Such an approach is consistent with good industry practice.

1.3.5. Procurement

It is clear from the documentation reviewed that Unitywater is in the process of documenting its policies and procedures for procurement. There are a number of standalone documents which are more in the way of guidance notes than procedural documents. There would be merit in Unitywater drawing these documents together to produce a comprehensive procurement procedures document having a consistent style. There is no reference in the documentation to Unitywater adopting a gateway process for capital project approvals and there are no obvious procedures to ensure consistency of outcome of tender review evaluations. That said, the procedures that are documented, such as approvals thresholds are consistent with good industry practice.

1.3.6. Cost allocation

Unitywater allocates costs for capital expenditure based on its assessment of the relevant driver. For a project where two or more drivers are relevant, Unitywater does not allocate a percentage to each driver only 100 percent to one driver. We consider that the level of sophistication in assessing cost allocation percentages should be increased with a percentage of costs allocated to each driver proportionate to the relevancy of the driver.

Our review of the information provided, in particular the sample selection, indicates that there are occasional varied and inaccurate determination of the drivers and consequently the cost allocation. As the allocation of cost is a sequential action after the determination of the applicable drivers, an erroneous identification of a driver results in inappropriate allocation of cost. Consequently the determination of the correct driver(s) is important. A number of projects have identified compliance as a driver where in fact non-compliance is a symptom not a cause of the capital expenditure requirement and timely action would have determined growth as the appropriate driver.

The allocation method used for operating expenditure, however, is thorough and takes consideration of the cost driver for each of the cost elements which is largely consistent with the Authority's requirements for causal cost allocation. However, we do not consider the allocation of costs between the wastewater via sewer and trade waste using the RAB to be suitable. Unitywater's cost allocation model should be modified to reflect the actual cost drivers for trade waste transport and treatment to include estimated flows, and consideration of the trade waste contents that drive cost in both treatment and maintenance of the sewerage network. We understand from our interviews with Unitywater that a program of works has been established to improve the cost allocation and tariff structures for wastewater services.

1.3.7. Asset Lives

Whilst the assumed asset lives for passive assets such as reservoirs and pipelines are relatively consistent between all entities, there are a number of significant differences between the asset lives for the active assets (e.g. pump stations and treatment plants). This is because these assets comprise of a range of civil, mechanical and electrical assets, all with significantly different asset lives. For example, within the life of a wastewater pump station, the civil assets (building, pump well) are likely to remain relatively unchanged, whilst the pumps and control systems are likely to be replaced several times. The calculation of a combined asset life depends on the relative weighting of the civil, mechanical and electrical assets.

1.4. Operating expenditure

Our review of operating expenditure was undertaken in line with the Authority's requirement to assess the prudency and efficiency of operating costs.

For the purposes of reviewing prudency and efficiency of operating costs we have adopted the following definitions:

Operating expenditure is prudent if it addresses one or more of the following drivers:

- Legal obligations
- New growth
- Operation and maintenance of existing infrastructure
- Achievement of an increase in the standard of service that is explicitly endorsed by customers, external agencies or participating councils

Operating expenditure is efficient if the level of expenditure meets one or more of the following assessment criteria:

- In line with conditions prevailing in relevant markets
- Consistent with historical trends in operating expenditure
- Incorporates efficiency gains or economies of scale
- In line with relevant interstate and international benchmarks

The following sample operational expenditure costs and cost forecasts have been reviewed:

- Corporate costs
- Employee expenses
- Electricity costs

- Chemical costs
- Sludge handling costs

Table 1 presents an overview of the prudency and efficiency reviews of Unitywater's operating expenditure which take into account changes arising from both our assessment of prudency and efficiency and from our recommended changes in water and wastewater volume growth projections.

- **Table 1 Summary of prudency and efficiency of operating costs ($000s)**

Category	Cost 2011/12	Prudent	Efficient	Revised cost 2011/12
Corporate costs	31,683	Prudent	Efficient	31,974
Employee expenses	57,804	Prudent	Efficient	57,804
Electricity costs	6,856	Prudent	Efficient	7,427
Chemical costs	4,860	Prudent	Efficient	5,265
Sludge handling	4,285	Prudent	Efficient	4,641

From our analysis we have determined that all of the items within the operating costs sample are prudent and efficient.

In addition to reviewing the sample operating costs, we benchmarked Unitywater's aggregate operating costs against other SEQ water distribution and retail entities and peers from around Australia. We conclude from this that Unitywater's operating costs for water services are higher than comparable water distributors and retailers in Australia and consistent with the two other water distribution and retail entities in SEQ. We consider that this is driven largely by costs for bulk water which are higher than those of similar sized Australian water suppliers outside SEQ. Finally, our benchmarking of operating costs associated with wastewater services shows that Unitywater's operating costs for wastewater services are lower than those of national peer organisations.

1.5. Capital expenditure

Our review of capital expenditure was undertaken in line with the Authority's requirement to assess the prudency and efficiency of capital costs.

Prudency was evaluated against the following drivers:

- Growth – capital expenditure associated with increasing the capacity of assets or construction of new assets, to meet growth in demand or provide additional security of supply, should be included in growth
- Renewal of infrastructure – capital expenditure associated with replacing assets and generally maintaining service levels should be included in renewal of infrastructure

- Improvements – capital expenditure associated with improving service levels and reliability to meet customer and other stakeholder preferences should be included in improvements
- Compliance – capital expenditure associated with meeting price monitoring or legislative obligations should be included in compliance

Efficiency was evaluated by assessing:

- The scope of work, which involved the consideration and inclusion of options identification, investigation and assessment
- The standards of work, which involved the consideration and inclusion of technical, design and construction requirements, industry and other relevant standards
- The market conditions, which involved comparing projected costs with industry benchmarks and with our in-house knowledge of the cost of constructing water and wastewater projects

Our review was undertaken on a project/ capital works programme sample basis. The sample selection was discussed and agreed with the Authority to include:

- The single largest project on an expenditure basis
- The eight largest commissioned expenditures in 2011/12
- A small project to be commissioned in 2011/12

The principal objective being to review projects that would be commissioned and enter the RAB in 2011/12.

Table 2 presents an overview of prudency and efficiency reviews of Unitywater's capital expenditure.

- **Table 2 Summary of prudency and efficiency of capital expenditure projects ($000s)**

Project	Cost 2011/12 ($000s)	Prudent	Efficient
Burpengary Wastewater Treatment Plant Stage 2 Augmentation	59,029	Prudent	Efficient
South Caboolture STP Upgrade and Augmentation (Stage 2)	51,014	Prudent	Efficient
Customer Services and Billing Solution Project	8,571	Prudent	Efficient
Fleet-Light	5,883	Prudent	Efficient
Upgrade Wastewater Pump Station MF01	5,701	Prudent	Efficient
Kedron Brook Sewerage Catchment - New Sewerage Rising Main RMN260	5,083	Prudent	Efficient
Sewer Rising Main, Burpengary Creek to Burpengary East STP (525mm x 2880m)	4,855	Prudent	Efficient
Sewer Rising Main RMN-BI01 (375mm x 2900m)	4,152	Prudent	Efficient

Project	Cost 2011/12 ($000s)	Prudent	Efficient
Ngungun St, Landsborough - Water Pump Station	719	Prudent	Efficient
Coolum STP Augmentation	374	Prudent	Efficient

1.6. Interaction between capital expenditure, operating expenditure and demand forecasting

Many operating costs, such as electricity, chemicals are volume related and hence budget forecasts take into account demand projections for water and wastewater. Similarly, capital project expenditure can be triggered by growth in demand, although this tends to be based on local demand growth (eg in the catchment area of a sewerage treatment plant). Where appropriate, we have taken demand forecasts into account in our review.

1.7. Summary and Conclusions

We have reviewed the prudency and efficiency of a sample of Unitywater's operating and capital expenditure costs for 2011/12 to 2013/14 based on the information provided by Unitywater. In addition we have reviewed the policies and procedures adopted by Unitywater for operating and capital expenditure budget planning. We have also reviewed the progress made by Unitywater in implementing the initiatives identified by the Authority from their 2010/11 interim price monitoring report.

Unitywater has supplied comprehensive supporting information to enable us to complete an assessment of the prudency and efficiency for a sample of operating costs and capital expenditure of selected projects. Supply of adequate information has been impacted by the availability of information from its participating councils under which many of the capital projects reviewed were initiated.

We have assessed all operating expenditure items within our sample to be prudent and efficient. All of the capital expenditure projects within our sample have been assessed as prudent and efficient.

We conclude from our review of policies and procedures that Unitywater has made significant progress in implementing policies and procedures to address the initiatives outlined by the Authority with the exception of a consistent approach to project cost estimation and implementing a major project implementation strategy. However, both of these are currently being developed. We have examined the procedures and processes used by Unitywater to formulate the operating budget for 2011/12. In our assessment these are generally representative of good industry practice, in particular the use and proposed extension in the use of zero-base forecasts.

Unitywater has developed a single aligned set of customer service standards applicable for all customers within the service area. There is also clear evidence of Unitywater's progress towards implementing a standard approach to asset management across its regions including its approach to capital renewals evaluation, programming and implementation. Finally, from our review we consider that Unitywater's asset management processes are in keeping with good industry practices but note that they are yet to be fully implemented.

2. Introduction

The Queensland Competition Authority (the Authority) is continuing the process of monitoring the prices for water and wastewater services provided by the three water distribution and retail entities within SEQ:

- Queensland Urban Utilities
- Allconnex Water
- Unitywater

The three entities own, operate and maintain the local water and sewerage distribution infrastructure and are responsible for the retail sale of water supply and sewerage services to customers. The purpose of the monitoring is to review the costs and revenues associated with the provision of water and wastewater services by the three entities. The three entities are monopoly providers in neighbouring areas. The aim of the price monitoring process is to ensure efficiency of costs within the monopoly distribution and retail businesses and to ensure sustainable water practices within the SEQ water industry.

To assist this process, the Authority appointed SKM to review the capital and operating expenditure forecasts and expected demand for regulated services over the period from July 2011 – June 2014.

The consultancy consists of three components:

- Component 1 – Assessment of capital expenditure
- Component 2 – Assessment of operating costs
- Component 3 – Assessment of projected demand

Under the terms of our appointment, we are also required to assess:

a) Whether the entities' policies and procedures for capital expenditure represent good industry practice. In particular, the policies and procedures must reflect strategic development plans, integrate risk and asset management planning, support corporate directives, be consistent with external drivers, and incorporate robust procurement practices

b) The deliverability and timing of the capital expenditure program, with regard to the policies and procedures for capital expenditure approvals

c) Whether the capital expenditure forecasts encompass any efficiency gains or economies of scale, and identify a prudent and efficient level of these gains with reference to appropriate benchmarks

d) Whether corporate or overhead costs have been appropriately assigned to capital expenditure projects

In addition, the Authority has asked us to review the entities' progress in implementing the Authority supported initiatives identified in its 2010/11 final interim price monitoring report of:

- A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is a uniformity of cost estimating across all proposed major projects
- A summary document to be prepared for identified major projects so as to facilitate standardised reporting
- An implementation strategy to be developed for each major project that includes recommendation on delivery method, programme and risk review process
- A consistent approach to indexation on capital expenditure across SEQ

We have prepared Component 1 and 2 reports for each of the three water distribution and retail entities (Queensland Urban Utilities, Allconnex Water and Unitywater). This report addresses our review of the prudency and efficiency of the operating costs and capital expenditure for Unitywater. The final component assessment of project demand is addressed in a separate report.[3]

2.1. Terms of reference

We have undertaken the assessment of the prudency and efficiency of operating and capital expenditure based on the terms of reference issued by the Authority. The full terms of reference are included in **Appendix A**. We have set out the key activities contained in the terms of reference in **Table 3** and **Table 4** below, with each activity cross referenced to the appropriate sections in the report addressing that activity.

[3] *Review of Demand Projections for South East Queensland*, SKM MMA, October 2011

Table 3 Terms of Reference - Assessment of Operating Costs

Terms of Reference	Relevant report section
Component 1 – Sample Selection	
Sample Selection	Section 6.5 Sample selection
Component 2 – Reasonableness of Operating Costs from 1 July 2011	
a) assess whether the entities' policies and procedures for operational expenditure represent good industry practice;	Section 5 Policies and Procedures
b) assess the scale and cause of variances between forecasts provided in the entity's 2010/11 and 2011/12 returns;	Section 6.2 Historical costs and variances
c) assess the operating costs in aggregate, and for the sample of major operating expenditures that comprise a significant portion of retail and distribution operating costs identified in component 1	Section 6.4 Costs in aggregate
d) accept the operational constraints imposed by the SEQ Urban Water Arrangements Reform Workforce Framework 2010, and identify the related costs in doing so compared to more competitive arrangements;	Section 6.7 Employee expenses
e) liaise with the Authority's consultants appointed for the review of demand and capital expenditure to ensure that consistent advice is provided to the Authority.	Section 8 Synergies between capital expenditure, operating expenditure and demand forecasting
f) identify the value of an expenditure considered not to be reasonable;	Section 9 Proposed revised templates
g) provide a revised set of information templates to the Authority that contain only reasonable operating costs with all adjustments to the entities' submissions clearly indicated (focussing on Schedule 5.11.1 (operating costs)).	Section 9 Proposed revised templates
Component 3 – Cost Allocation	
a) assess the methods adopted by the entities to allocate operating costs between services, against relevant benchmarks. This will involve as assessment of cost drivers, the approaches adopted by each entity, and approaches approved by economic regulators in other jurisdictions;	Section 5.6 Cost allocation
b) report on the entities' progress in achieving the systems and information needed for informed pricing and reporting; and whether the information systems being put in place by the entities allow for a highly disaggregated and appropriately allocated system of cost recording.	Section 4 Overview of Information Adequacy

Table 4 Terms of Reference - Assessment of Capital Expenditure

Terms of Reference	Relevant report section
Component 1 – Sample Selection	
Sample Selection	Section 7.5 Sample selection
Component 2 – Prudency and Efficiency of Capital Expenditure for 1 July 2011	
a) assess whether the entities' policies and procedures for capital expenditure represent good industry practice. In particular, the policies and procedures must reflect strategic development plans, integrate risk and asset management planning, corporate directives, be consistent with external drivers, and incorporate robust procurement practices;	Section 5 Policies and Procedures
b) assess entities' progress in addressing the issues identified in the Authority's 2010/11 report	Section 5.1 Issues identified in the Authority's 2010/11 report
c) assess whether the representative sample of capital expenditure projects is prudent and efficient.	Section 7 Prudency and Efficiency for each project assessed
d) assess the deliverability and timing of capital expenditure program, and chart the capex historically delivered by participating councils from 1 July 2008 to 30 June 2010; the entities' forecasts made in 2010/11 of the period 1 July 2010 to 30 June 2013; and entities'' current forecasts to 30 June 2014. Assess the scale and cause of variances between forecasts provided in the entities' 2010/11 and 201/12 returns;	Section 7.3 Historical Delivery Section 7 Timing and Deliverability for each project assessed
e) liaise with the Authority's consultants appointed for the review of demand and operating expenditure to ensure that consistent advice is provided to the Authority.	Section 8 Synergies between capital expenditure, operating expenditure and demand forecasting
f) take into account any previous reviews of relevant assets provided by the entities, such as Priority Infrastructure Plans;	Section 7 Capital Expenditure
g) identify whether the capital expenditure forecasts encompass any efficiency gains or economies of scale, and identify a prudent and efficient level of these gains with reference to appropriate benchmarks;	Section 7 Efficiency Gains for each project assessed
h) identify the value of any expenditure considered not to be prudent or efficient;	Section 9 Proposed revised templates
i) assess the regulatory asset lives for capital expenditure in 5.8.1.1, and the tax asset lives for capital expenditure in 5.8.1.2, against relevant benchmarks;	Section 6.7 Asset Lives
j) provide a revised set of information templates to the Authority that contain only the prudent and efficient capital expenditure and useful asset lives, with all adjustments to the entities' submission clearly indicated in the relevant worksheets and also separately logged (focusing on Schedules 5.6.1 & 5.6.2 (Capital Expenditure) and 5.8.1.1 (Asset Lives (RAB)).	Section 9 Proposed revised templates
Component 3 – Cost Allocation	
a) assess the methods adopted by the entities to allocate existing and future capital costs between services, against relevant benchmarks. This will involve as assessment of cost drivers, the approaches adopted by each entity, and approaches approved by economic regulators in other jurisdictions;	Section 5.6 Cost allocation
b) report on the entities' progress in achieving the systems and information needed for informed pricing and reporting; and whether the information systems being put in place by the entities allow for a highly disaggregated system of cost recording.	Section 4 Overview of Information Adequacy

2.2. Prudency and efficiency

For the purposes of this consultancy, we have adopted the following definitions prudency and efficiency for operating expenditure as discussed and agreed with the Authority:

- ***Operating expenditure*** is ***prudent*** if it is required as a result of a legal obligation, new growth, operation and maintenance of existing infrastructure, or it achieves an increase in the reliability or quality of supply that is explicitly endorsed or required by customers, external agencies or participating councils
- ***Operating expenditure*** is ***efficient*** if it is undertaken in a least-cost manner over the life of the relevant assets and is consistent with relevant benchmarks, having regard to the conditions prevailing in relevant markets, historical trends in operating expenditure and the potential for efficiency gains or economies of scale

We have adopted the following definitions of prudency and efficiency of capital expenditure generally as set out by the Authority in its terms of reference:

- ***Capital expenditure*** is ***prudent*** if it is required as a result of a legal obligation, growth in demand, renewal of existing infrastructure that is currently used and useful, or it achieves an increase in the reliability or the quality of supply that is explicitly endorsed or desired by customers, external agencies or participating councils
- ***Capital expenditure*** is ***efficient*** if:
  i. The scope of the works (which reflects the general characteristics of the capital item) is the best means of achieving the desired outcomes after having regard to the options available, including more cost effective regional solutions having regard to a regional (whole of entity) perspective, the substitution possibilities between capital expenditure and operating expenditure and non-network alternatives, such as demand management
  ii. The standard of the works conforms to technical, design and construction requirements in legislation, industry and other standards, codes and manuals. Compatibility with existing and adjacent infrastructure is relevant as is consideration of modern engineering equivalents and technologies
  iii. The cost of the defined scope and standard of works is consistent with conditions prevailing in the markets for engineering, equipment supply and construction

2.3. Scope exclusions

The following items are outside of the scope of our review:

- Discussion of the allowable operation costs (including the Queensland Water Commission and the Authority's charges, finance charges, treatment of depreciation, working capital, asset valuation methodology)
- Discussion of the application of the standard building block method for calculating Maximum Allowable Revenue
- Review of capital costs before 2011/12 and after 2013/14 associated with projects that have been reviewed
- Review of other parts of a project for which a specific part is being undertaken as part of the commission, eg the review of a supply contract when we are reviewing the installation contracts of supplied goods
- Development of detailed budget cost estimates for the capital projects under review

2.4. Report overview

This report is structured as follows:

- Background
- Overview of information adequacy
- Policy and procedure review
- Prudency and efficiency of operating expenditure
- Prudency and efficiency of capital expenditure
- Interactions between capital expenditure, operating expenditure and demand forecasting
- Proposed revised information templates
- Conclusions and recommendations

2.5. Application of assessment

Our assessment of prudency and efficiency of capital expenditure applies to Allconnex Water's proposed expenditure from 1 July 2011 to 30 June 2014 and our assessment of prudency and efficiency of proposed operational costs forecasts from 1 July 2011. The underlying information used to make this determination may only be relevant to the particular circumstances and activities that will be undertaken in 2011/12. Hence, the acceptance of expenditure as being prudent and efficient in this assessment should not be used a precedent for regulatory assessments in the future. This applies to both recurring operating expenditure and capital projects where capital expenditure will be spread over a number of years.

3. Background

3.1. Entities

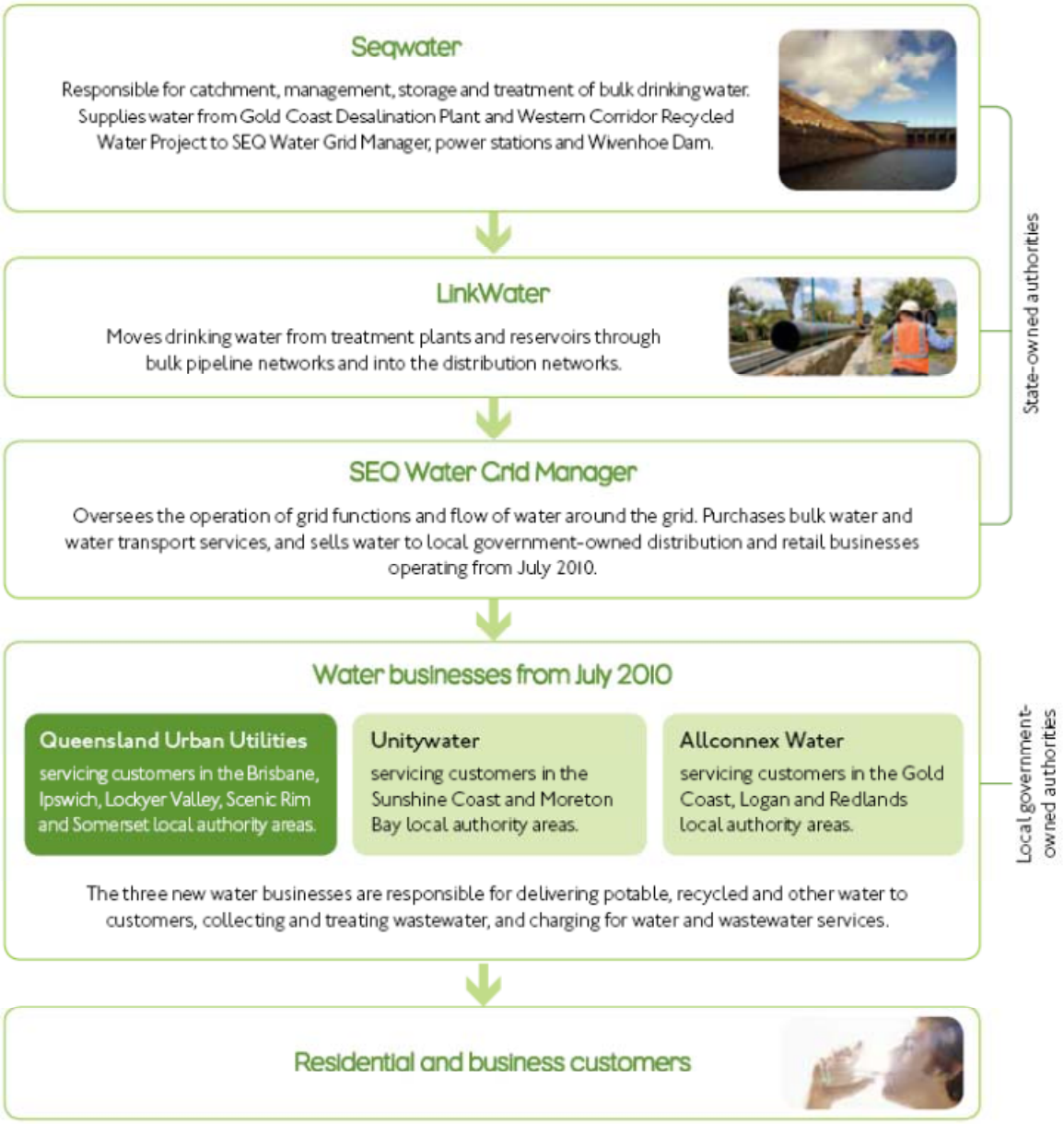
On 1 July 2010, the Queensland Government implemented a series of reforms in the SEQ water industry. One result of this was the formation of three new water distribution and retail entities. These entities were formed by amalgamating various council based and owned water utilities into three larger water entities. The entities now own the water and sewerage distribution infrastructure and sell water and sewage disposal services to customers in their respective areas. The three distribution and retail entities are:

- Queensland Urban Utilities – servicing the Brisbane, Scenic Rim, Ipswich, Somerset and Lockyer Valley areas
- Unitywater – servicing the Sunshine Coast and Moreton Bay areas
- Allconnex Water – servicing the Gold Coast, Logan and Redland areas

In addition to the retail distribution entities, four new bulk water entities that own and operate the SEQ Water Grid were established.

This interim price monitoring is being carried out against a backdrop of:

- Entities in the second year of an establishment phase
- Much of historic data drawn from information provided by previous service providers (councils)
- Entities implementing newly developed processes and systems for:
  - Capital works evaluation, approval and budgeting
  - Operational expenditure budgeting



Source: *Queensland Urban Utilities Information Return 2011/12* (Queensland Urban Utilities, 2011)

- **Figure 1 Contractual and Operational Characteristics of the Water Grid**

3.2. The role of the Authority

The Authority is an independent Statutory Authority established by the Queensland Competition Authority Act 1997 and is given the task of regulating prices, access and other matters relating to regulated industries in Queensland.

Under the Queensland Competition Authority Act, the Authority's roles in relation to the water industry are to:

- Investigate and report on the pricing practices of certain declared monopoly or near monopoly business activities of State and local governments
- Receive, investigate and report on competitive neutrality complaints
- Mediate and/ or arbitrate access disputes and water supply disputes
- Investigate and report on matters relevant to the implementation of competition policy

In July 2010 the Premier and the Treasurer referred the monopoly distribution and retail water and wastewater activities of Queensland Urban Utilities, Allconnex Water, and Unitywater to the Authority for a price monitoring investigation. The Authority's price monitoring role has been set out in the Authority's *Final Report, SEQ Interim Price Monitoring Framework,* dated April 2010. The role requires the Authority to monitor and report on prices and revenues. This is the second year of price monitoring of the entities.

From 1 July 2010 until the recent enactment of the Fairer Water Prices for SEQ Amendment Act 2011 (FWP Act) the Authority's role was to shift from one of price monitoring to one of price determination from 1 July 2013. The FWP Act removed the price determination role of the Authority that was to apply from 1 July 2013 by amending the QCA Act. This removal of the price determination role gives participating councils responsibility and accountability for the water and sewerage services within their individual boundaries.

In addition to this amendment the FWP Act amended the *South East Queensland Water (Distribution and Retail Restructuring) Act 2009* (DRR Act) to provide for:

- annual increases in tariffs for water and wastewater for the next two years being capped at inflation, as measured by the consumer price index for Brisbane
- the requirement that Participating Councils prepare and adopt a price mitigation plan

In conjunction with these legislative changes the State Government gazetted a change to the required date for submission of the Authority's SEQ Interim Revenue Monitoring - Information Requirement Template and information submission from 1 July 2011 to 31 August 2011.

3.3. Role of the SEQ Water Grid Manager

The SEQ Water Grid Manager is responsible for directing the physical operation of the SEQ Water Grid to ensure regional water supply security and efficiency objectives are met. By acting as the single buyer of bulk water services and the single seller of bulk water for urban purposes, the SEQ Water Grid Manager provides a mechanism to share the costs of the SEQ Water Grid. It sells a

wholesale "pool" product, which reflects the portfolio cost of supplying retailers with a defined security and quality of supply at a defined bulk supply node.

The SEQ Water Grid Manager sells potable water to the three water distribution and retail entities of Allconnex Water, Queensland Urban Utilities and Unitywater and various industrial and rural customers at a price determined under the SEQ Bulk Water Price Path. A 10-year price path has been projected for bulk water prices. The Bulk Water Price Path is intended to reach full cost recovery by 2017/18. The bulk water costs make up a significant proportion of the water distribution and retail entities' operating costs.

4. Overview of Information Adequacy

4.1. Summary of information received

Unitywater has provided information on its capital expenditure program and operating expenditure budget forecast within its submission to the Authority in response to the Authority's Information Request, including:

- A completed Information Requirement Template (2011/12 Information Template)
- Supporting documentation, including a written submission, *Interim Price Monitoring Submission - 2011/12* (Unitywater, 2011) and other documents (2011/12 Submission) (collectively: 2011/12 Information Return)

A full list of information presented for each operating cost category assessed is presented in **Section 6** and for each capital expenditure project assessed is presented in **Section 7**.

4.2. Operational expenditure

The information requirements are set out in the Authority's information requirement documentation[4]. This has been reproduced below:

The entity must provide details, allocated between the deemed categories (activity, geographic area, core service) of:

a) Actual operating costs for the year ending 30 June 2009 and for the year ending 30 June 2010

b) Forecast operating expenditure from July 2010 to 30 June 2014

According to:

- *Bulk water costs*
- *Employee expenses*
- *Contractor expenses*
- *GSL payments*
- *Electricity charges*
- *Sludge handling costs*
- *Chemical costs*
- *Other material and services*
- *License and regulatory fees*

[4] SEQ Interim Price Monitoring Information Requirements for 2011/12 (QCA, July 2011)

- *Non-recurrent costs*
- *Corporate costs*
- *Indirect taxes*

Entities are also required to provide details of third party transactions and related party transactions (name of party, description of services, value of payment, description how the value of payment was determined) together with a description of how the payment is reflected in the information returns.

We note the following points with adequacy of data provided:

- Costs have been disaggregated as required by the information requirements
- Details of third party transactions are included in the information return
- Details of related party transactions are included in the information return

No issues were identified with the adequacy of operating cost information provided by Unitywater.

4.3. Capital expenditure

Overall the provision of information is acceptable. The Unitywater's submission did not utilise the information requirements template produced by the Authority for reporting capital expenditure by project. Instead Unitywater provided a detailed commissioning model.

The review of the sample projects focused on projects that were to be commissioned in 2011/12, and therefore to be entered into the Regulatory Asset Base (RAB) in 2011/12. Many infrastructure projects, particularly those of significant capital expenditure and therefore likely to be reviewed, have a multiyear period from initiation to commissioning. Given the recent restructuring of Sunshine Coast Water and the water and wastewater sections of Moreton Bay Regional Council into Unitywater, many of the projects reviewed were initiated by their participating entities. Consequently the procedures used and documentation produced were variable and do not represent current Unitywater procedures or documentation practices.

The retrospective development of documentation for projects which utilise inadequate procedure, as assessed against current requirements, will be of limited value other than to provide an acceptable paper trail for the discussion regarding inclusion into the RAB.

Notwithstanding this a minimum acceptable level of documentation is required for regulatory purposes.

The structure of the 2011/12 Submission document was appropriate and the interviews with Unitywater staff were conducive to progressing the review.

4.4. Information systems and process

The Information and Communication Technology (ICT) services at present are delivered by Sunshine Coast Regional Council (SCRC) and Moreton Bay Regional Council (MBRC) through service level agreements (SLAs).

From the projects that we have reviewed it is apparent that the information is not stored within a single information system that is centrally located and there have been some inefficiencies in retrieving relevant information. This can be ascribed to the fact that two information systems are used to record and store information. Combining the information contained in the two systems within a single system as planned by Unitywater will greatly assist in the retrieval of information.

We did not have the opportunity to review the Unitywater ICT strategy however we understand that the ICT strategy is to implement a hosted/ outsourced model, making use of a third party service provider hosting the core applications, data and network services. From the capital projects planned, we have identified components that could be ascribed to that of an enterprise resource plan (ERP). We consider the development and implementation of the ERP components to have the potential functionality to accurately record the cost associated in relation to each capital project and the operational expenses of each asset. The architecture of the ERP components will determine the level of cost breakdown for each capital project and operational cost associated with an asset.

Unitywater has made a decision to follow a phased approach of implementing components of an ERP. The components dealing with asset management, project management and contract management have not been installed and implemented as yet. The use of an ICT strategy and an ERP development and implementation represents good industry practice to ensure accurate information is available to assist in managing capital expenditure and operation expenditure by project and asset respectively.

The current processes being implemented by Unitywater are considered appropriate and will support prudent decision making and reporting. As expected these processes are being refined as Unitywater establishes itself as a mature business given its recent creation.

4.5. Obstacles to reporting

Unitywater identified several limitations in its 2011/12 Submission that prevent it from processing information to an acceptable regulatory standard. These limitations primarily arise from immature organisational systems and inadequate records of inherited assets. Key limitations identified include:

- Lack of established management systems and information systems
- Pricing development issues due to early stage of development

- Information constraints and data limitations for forecasting
- Lack of aligning operational maintenance approaches, methodologies and programmes across service area

Within its 2011/12 Submission Unitywater states the following in relation to the information constraints:

- Within Unitywater, many systems and processes that would be typical of an established business are under development, being implemented or have been introduced but require time and data before their benefits can be realised
- Unitywater's relatively early stage of development has implications for pricing and this information return. For example, it is difficult to establish a maximum allowable revenue (MAR) with the precision that would normally occur for a mature regulated business as the inherited operating methods in the business are being challenged and new processes introduced
- Several factors that influence the opening RAB were only finalised by the Queensland Water Commission and the Minister in June 2011. There remain some residual asset issues such as asset lives that require an approach to be implemented during 2011/12. Following finalisation of the asset lives, Unitywater will be in a position to finalise its RAB value and the under (over) recovery eligible to be credited to the MAR Adjustment Transition scheme for the 2010/11 year
- The price monitoring framework is information intensive and relies on information obtained from Unitywater's 2011/12 budget process undertaken with less than a full year of operations on which to develop forecasts. Unitywater considers that there remain future opportunities to reduce expenditure through innovative practices, new technology and network optimisation.
- Unitywater's forecasts in its submission are based on best estimates; however they are likely to change as Unitywater gathers more operational information and becomes more familiar with the performance and condition of its assets in service. Unitywater considers the details of the information constraints and data limitations in general to be:
    - An absence of some statutory account information, particularly for balance sheet or cash flow statements as these were not prepared discretely for councils' water and sewerage businesses
    - The disparate accounting treatment and level of cost disaggregation for amalgamating councils, particularly for 2008/09. This is partly attributable to different classifications within the councils' water and sewerage businesses under full cost pricing principles. Generally for those councils where the business met the threshold criteria for a type 2 business (Local Government Act requirement), separate accounts existed for revenue, operating costs and capital projects. For those councils which did not need to report water and sewerage as a business activity, minimal separate information was collated

- Historic water demand data, particularly for 2008/09
- Details for the 2010/11 year which are generally based on estimates (using Unitywater's third quarter review forecasts) as final year-end data was not available within the time constraints to submit this interim price monitoring submission to the Authority by 31 August 2011. The forecast year-end position could differ from the actual position, once finalised and audited by the Queensland Audit Office. Unitywater will update this material when it is finalised and available, expected to be late October 2011

4.6. Conclusions

Overall Unitywater has supplied comprehensive supporting information to enable us to complete an assessment of the prudency and efficiency of a sample of operating cost categories and a sample of capital projects.

As the review of sample projects focused on projects that are to be commissioned in 2011/12, many of the projects have been initiated by the participating councils prior to the formation of Unitywater. Hence Unitywater has had to rely on documentation produced by the participating councils at the time of project initiation. Consequently the documentation is variable and does not represent current Unitywater procedures. We accept that retrospective development of documentation has limited value other than informing decision making regarding inclusion into the RAB.

As time progresses and as Unitywater establishes its own ICT services and implements its own procedures for capital project evaluation and initiation, we expect this limitation of participating council information and information systems to have less impact on Unitywater's future ability to provide necessary information for regulatory purposes.

5. Policies and Procedures

5.1. Issues identified in the Authority's 2010/11 report

The Authority's final report on SEQ price monitoring for 2010/11[5] noted a number of issues to be assessed in future reviews. These were:

a) Consideration of prudency and efficiency of capital expenditure from a regional (whole of entity) perspective
b) Only commissioned capital expenditure to be included in the RAB and therefore prices
c) A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is uniformity of cost estimating across all proposed major projects
d) A summary document to be prepared for identified major projects so as to facilitate standardised reporting
e) An implementation strategy to be developed for each major project that includes recommendation on delivery methodology, program and a risk review process
f) A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects
g) Pricing to be demonstrably based on costs and other relevant factors
h) A consistent approach to indexation of capital expenditure across SEQ

The assessment of how Unitywater has addressed the issues a) to f) and h) identified by the Authority are discussed in brief in this section. Detailed comments on the issues identified are also given on a project by project basis in subsequent sections.

5.1.1. Whole of entity perspective to capital expenditure

Unitywater uses an iterative process based on risk management and prioritisation to determine an annual capital expenditure program that can be afforded and sustained by the entity.

Overall there is a significant component associated with growth, as a consequence of Unitywater servicing growth areas, particularly in the Northern Moreton Bay and Southern Sunshine Coast regions.

The development phase from the creation of Unitywater is requiring the expenditure of some establishment costs. These are regarded as appropriate and reasonable.

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[5] *Final Report – SEQ Interim price Monitoring for 2010/11 Part A and Part B*, QCA March 2011

There is clear evidence from our review that Unitywater is taking a whole of entity perspective to its identification, option evaluation and selection of capital projects. This is particularly evidenced by the consideration of transferring raw sewage into adjacent sewage treatment plant catchments. In addition Unitywater is exploring and implementing beyond entity opportunities, such as the temporary utilisation of existing treatment capacity in Queensland Urban Utilities Luggage Point Water Reclamation Plant to allow the financially effective delay in the augmentation of the Brendale Wastewater Treatment Plant.

Further, Unitywater is considering, with the awareness of the Department of Environment and Resource Management, a whole of catchment benefit assessment from investment in diffuse source nutrient pollution compared to point source.

5.1.2. Commissioned capital expenditure

In relation to capital expenditure to be included in the RAB, within its 2011/12 Information Return Unitywater states:

> *"Additions (capital expenditure) are made up of both ongoing capital projects and renewals projects. These two project categories are added to the RAB using the following methods:*
>
> - *Ongoing capital projects are added to the RAB on an as-commissioned basis. The capital expenditure source file contains commissioning dates for each project. Once an ongoing capital project reaches its commissioning date, it is capitalised and added to the RAB in that year. Any expenditure that occurs after the commissioning date is capitalised in the same year it is spent; and*
> - *Renewal projects are capitalised each year regardless of commissioning date."*

Additionally Unitywater states:

> *"Forecast depreciation on capitalised and donated assets is applied using a 'mid-year' commissioning assumption. This implies that all forecast capitalised and donated assets are assumed to be commissioned at the 'mid-point' of their respective commissioning year, resulting in each asset receiving half a year's depreciation in the commissioning year. This assumption is consistent with the QCA's guidelines.*
>
> *Straight line depreciation has been applied in all cases."*

Unitywater states in its return that this is the process followed for including capital expenditure. We conclude that this approach is consistent with the requirement set out by the Authority.

A standardised approach has been adopted by all of the entities; that is an asset is only added to the RAB when it begins contributing to the regulated service delivery for which it is constructed and commissioned.

5.1.3. Consistent approach to cost estimation

The approaches to cost estimation used by Unitywater vary with the type of project.

Recurrent projects utilise tendered unit rates that have been submitted for recent previous projects.

For capital projects associated with specific infrastructure, Unitywater utilise a bottom up approach to quantity estimation and applies unit rates to these quantities. The detail of the quantity estimation varies with the stage of the design, increasing as the design and investigation become more detailed as is consistent with good industry practice.

The unit rates are determined using recently received unit rates from other similar projects. Dependant on the type and scale of the project, at the more advanced project stages, sometimes consultants are commissioned to investigate, analyse and assess the project. This generally results in the development of a detailed bottom up cost estimate, which is able to be compared to the previously determined internal high level estimate.

From the documentation reviewed, there is evidence that Unitywater is establishing processes and procedures with a view to ensuring a consistent approach to capital project cost estimating across the business. However, our review of the effectiveness of these processes has been limited as a result of the sample of capital projects selected. This is due to many of the projects being initiated by participating councils prior to the creation of Unitywater and that most of the projects had already been to tender. Consequently the improvement in accuracy of costing arising from Unitywater's procedures was not assessable from the sample project information provided.

An overview of the elements of cost estimating process used for the capital project sample selected is provided in **Table 5** to **Table 9** below.

- **Table 5 Cost estimating – capital items costs**

Project	Pricing
Burpengary Wastewater Treatment Plant Stage 2 Augmentation	The contract pricing was determined through the tendering process
South Caboolture STP Upgrade and Augmentation (Stage 2)	The contract pricing was determined through the tendering process
Customer Services and Billing Solution Project	No information provided
Fleet-Light	Pricing based on estimates of the suppliers rates
Upgrade Wastewater Pump Station MF01	The contract pricing was determined through the tendering process
Kedron Brook Sewerage Catchment - New Sewerage Rising Main RMN260	The contract pricing was determined through the tendering process
Sewer Rising Main, Burpengary Creek to Burpengary East STP (525mm x 2880m)	The contract pricing was determined through the tendering process
Sewer Rising Main RMN-BI01 (375mm x 2900m)	The contract pricing was determined through the tendering process
Ngungun St, Landsborough - Water Pump Station	Pricing has been based on a cost per kW of the proposed pumps
Coolum STP Augmentation	Market rates and comparison with previous project experience

- **Table 6 Cost estimating – preliminary and general items**

Project	Preliminary and general items
Burpengary Wastewater Treatment Plant Stage 2 Augmentation	No information provided
South Caboolture STP Upgrade and Augmentation (Stage 2)	No information provided
Customer Services and Billing Solution Project	Not applicable
Fleet-Light	Not applicable
Upgrade Wastewater Pump Station MF01	No information provided
Kedron Brook Sewerage Catchment - New Sewerage Rising Main RMN260	No information provided
Sewer Rising Main, Burpengary Creek to Burpengary East STP (525mm x 2880m)	Approximately 1.6% of contract value
Sewer Rising Main RMN-BI01 (375mm x 2900m)	No information provided
Ngungun St, Landsborough - Water Pump Station	20%
Coolum STP Augmentation	No information provided

The information provided for the sample projects is insufficient to make an assessment regarding of cost estimation for preliminary and general items.

- **Table 7 Cost estimating – contractor margins**

Project	Contractor Margins
Burpengary Wastewater Treatment Plant Stage 2 Augmentation	No information provided
South Caboolture STP Upgrade and Augmentation (Stage 2)	No information provided
Customer Services and Billing Solution Project	Not applicable

Project	Contractor Margins
Fleet-Light	Not applicable
Upgrade Wastewater Pump Station MF01	No information provided
Kedron Brook Sewerage Catchment - New Sewerage Rising Main RMN260	No information provided
Sewer Rising Main, Burpengary Creek to Burpengary East STP (525mm x 2880m)	No information provided
Sewer Rising Main RMN-BI01 (375mm x 2900m)	No information provided
Ngungun St, Landsborough - Water Pump Station	No information provided
Coolum STP Augmentation	No information provided

Insufficient information was provided to allow an assessment.

- **Table 8 Cost estimating – design fees**

Project	Design Fees
Burpengary Wastewater Treatment Plant Stage 2 Augmentation	Approximately 5%
South Caboolture STP Upgrade and Augmentation (Stage 2)	No information provided
Customer Services and Billing Solution Project	Not applicable
Fleet-Light	Not applicable
Upgrade Wastewater Pump Station MF01	Approximately 6.6%
Kedron Brook Sewerage Catchment - New Sewerage Rising Main RMN260	No information provided
Sewer Rising Main, Burpengary Creek to Burpengary East STP (525mm x 2880m)	Approximately 6.6%
Sewer Rising Main RMN-BI01 (375mm x 2900m)	No information provided
Ngungun St, Landsborough - Water Pump Station	No information provided
Coolum STP Augmentation	Approximately 6%

From the projects assessed, it is apparent that a reasonable consistent percentage fee has been achieved. However, no standardised approach to the estimation of design fees is identifiable from the supporting documentation.

- **Table 9 Cost estimating - contingency**

Project	Contingency
Burpengary Wastewater Treatment Plant Stage 2 Augmentation	Approximately 5%
South Caboolture STP Upgrade and Augmentation (Stage 2)	No information provided
Customer Services and Billing Solution Project	Not applicable
Fleet-Light	Not applicable
Upgrade Wastewater Pump Station MF01	7.5%
Kedron Brook Sewerage Catchment - New Sewerage Rising Main RMN260	Approximately 6%
Sewer Rising Main, Burpengary Creek to Burpengary East STP (525mm x 2880m)	Approximately 8%
Sewer Rising Main RMN-BI01 (375mm x 2900m)	Approximately 8%
Ngungun St, Landsborough - Water Pump Station	30%
Coolum STP Augmentation	Approximately 20.5%

In the projects assessed, there is no consistent level of contingency applied.

From discussions at the interview it is understood that Unitywater is developing a coordinated and entity wide approach to capital project cost estimation reflecting a whole of business risk profile.

5.1.4. Major projects summary document

Major projects are defined as those having expenditure for the entire project of > $5 M. Unitywater has developed a standardised summary document for these projects. This document has an appropriate structure and relevant 'fields' to communicate the necessary information to facilitate prudent decision making.

The completion of this document for the sample projects reviewed is listed in **Table 10** below.

- **Table 10 Review of documentation completed for projects reviewed**

Project	Value in review period ($M)	Major project	Standard report
Burpengary Wastewater Treatment Plant Stage 2 Augmentation	59.0	Yes	No
South Caboolture STP Upgrade and Augmentation (Stage 2)	51.0	Yes	No
Customer Services and Billing Solution Project	8.6	Yes	Yes
Fleet-Light	5.9	Yes	Yes
Upgrade Wastewater Pump Station MF01	5.7	Yes	Yes
Kedron Brook Sewerage Catchment - New Sewerage Rising Main RMN260	5.1	Yes	Yes
Sewer Rising Main, Burpengary Creek to Burpengary East STP (525mm x 2880m)	4.9	No	Yes
Sewer Rising Main RMN-BI01 (375mm x 2900m)	4.2	No	Yes
Ngungun St, Landsborough - Water Pump Station	0.7	No	Yes
Coolum STP Augmentation	0.4	No	No

The above information illustrates that the procedure for implementing a standardised summary document has not been consistently implemented for major projects sampled. Notwithstanding this, these projects were initiated prior to the formation of Unitywater.

It is expected that the implementation of a summary document will be mandatory for all major project, regardless of initiating entity from now on. All legacy major projects should either be completed, or reviewed since the establishment of Unitywater and therefore adhering to current Unitywater procedures or be of such significance due to the time period since restructuring (ie wastewater treatment plant augmentations) that a summary document is required as a part of good risk management and governance procedures.

5.1.5. Major project implementation strategy

From our review of information provided in the Unitywater information return 2011/12 and supporting documentation for the review of sample projects, it is evident that Unitywater does not have a consistent implementation strategy that is applied to all major projects.

The majority of projects do not have documentation recommending delivery method, program or a risk review process.

We recognise that our review of the effectiveness of the implementation strategy has been limited as a result of the sample of capital projects selected. This is due to many of the projects being initiated by participating councils prior to the creation of Unitywater, with these project utilising the process and procedures of these participating councils.

The completion of a major project implementation strategy document for the sample projects reviewed is listed in **Table 11** below.

Table 11 Review of documentation completed for projects reviewed

Project	Value in review period ($M)	Implementation strategy
Burpengary Wastewater Treatment Plant Stage 2 Augmentation	59.0	No
South Caboolture STP Upgrade and Augmentation (Stage 2)	51.0	No
Customer Services and Billing Solution Project	8.6	Yes
Fleet-Light	5.9	Yes
Upgrade Wastewater Pump Station MF01	5.7	No
Kedron Brook Sewerage Catchment - New Sewerage Rising Main RMN260	5.1	No
Sewer Rising Main, Burpengary Creek to Burpengary East STP (525mm x 2880m)	4.9	No
Sewer Rising Main RMN-BI01 (375mm x 2900m)	4.2	Partial
Ngungun St, Landsborough - Water Pump Station	0.7	No
Coolum STP Augmentation	0.4	Partial

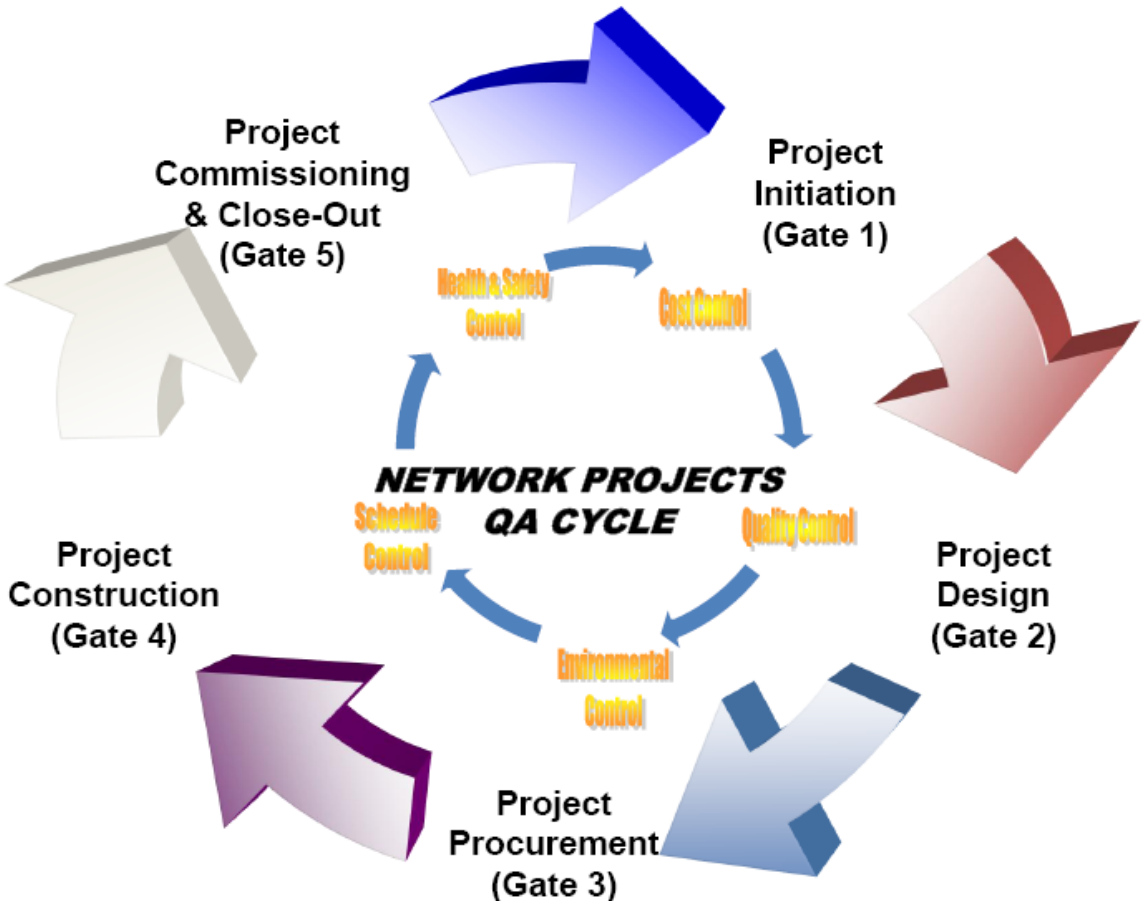
Notwithstanding the above, from the documentation reviewed and interviews completed, there is evidence that Unitywater is establishing processes and procedures with a view to ensuring a consistent approach to implementation strategy and its documentation.

5.1.6. Gateway reviews

Unitywater has a gateway review process in place. Within its 2011/12 Submission Unitywater states:

"Unitywater, through its gateway expenditure approval processes, will continue to challenge and assess the prudency, efficiency and delivery method of expenditure required to maintain the existing network or to meet new network demands required due to customer growth, service standards or environmental requirements. However, a significant level of capital expenditure is still required due to the inherited network not being sufficient to meet current or future demands."

The implementation and use of a gateway process is consistent with the requirements set out by the Authority.



Source: *QA Overview*, Unitywater, 2011

- **Figure 2 Unitywater's gateway review process**

5.1.7. Indexation

Unitywater has adopted 3.07 percent as the indexation rate for the price monitoring period. Unitywater advises that this was calculated using the difference between the Reserve Bank of Australia return on the market rate for five year bonds and five year indexed bonds.

Within its 2011/12 Submission Unitywater states:

> *"Unitywater has populated the RAB roll-forward in accordance with the QCA preference for deriving inflation. However, Unitywater considers that there are some fundamental issues raised by using a different averaging period to derive an inflation estimate to the averaging period used to derive the WACC, for the same set of regulatory decisions and submissions."*

We agree that Unitywater has used the recommended process for calculating indexation as outlined in Section 5.9 of the SEQ Interim Price Monitoring Information Requirements for 2011/12 (QCA, July 2011). We however note that the approach and indexation value applied is not consistent with that used by the other water distribution entities.

A comparison of indexation factors applied by the entities for capital expenditure is outlined below in **Table 12** and those applied for operational expenditure in **Table 13**.

Table 12 Comparison of indexation (%) for capital expenditure

Entity	Cost index		
	2011/12	2012/13	2013/14
Queensland Urban Utilities [a]	2.5	2.5	2.5
Allconnex Water [a]	2.7	2.5	2.5
Unitywater [b]	3.07	3.07	3.07

Note: [a] Mid-point of Reserve Bank of Australia target inflation band; [b] determined by the difference between the RBA return on the market rate for five year bonds and five-year capital indexed bonds

Table 13 Comparison of indexation (%) for operational expenditure

Cost index		Expense group					
Entity	Year	Labour (direct & indirect)	Electricity	Chemicals	Sludge handling	Other costs	Non-revenue water
Queensland Urban Utilities	2011/12[a]	4.5	5.8	4.0	4.0	2.5	As per bulk water price path
	2012/13	4.25	6.2	2.75	2.75	3.0	
	2013/14	3.7	6.2	3.0	3.0	2.5	
Allconnex Water	2011/12	4.0[b]	6.6[c]	2.7[e]	NA	2.7[e]	NA
	2012/13	4.0[b]	10.4[d]	2.5[e]	NA	2.5[e]	NA
	2013/14	4.0[b]	10.4[d]	2.5[e]	NA	2.5[e]	NA
Unitywater	2011/12	NA	NA	NA	NA	NA	NA

Cost index		Expense group					
Entity	Year	Labour (direct & indirect)	Electricity	Chemicals	Sludge handling	Other costs	Non-revenue water
	2012/13	4.0[f]	6.54[g]	3.0[h]	3.0[h]	3.0[h]	3.0[h]
	2013/14	4.0[f]	6.54[g]	3.07[h]	3.07[h]	3.07[h]	3.07[h]

Note: [a] budget year; [b] based on Allconnex Water's 2010-11 staff costs, small changes in the business' operational headcount; [c] QCA, Final Decision Benchmark Retail Cost Index for Electricity: 2011-12 May 2011; [d] QCA Benchmark Retail Cost Index for Electricity – various papers 2007-08 to 2010-11; [e] Commonwealth Government, Economic Statement, July 2010; [f] Current budget assumption reflects 0.5% salary progression above EBA; [g] Cost index: BRCI for 2011/12 published by QCA; [h] 2012/13 - CPI target from RBA, 2013/14 – CPI consistent with asset indexation.

We conclude from the above that there is not a consistent approach to cost indexation across the entities.

CPI as a proxy for infrastructure cost escalation

As the name suggests the Consumer Price Index was developed to map the cost of living for typical consumers in the public domain.

We believe this index does not adequately reflect changes in either the market forces of demand and supply, or the input costs (materials and labour) of capital projects and operating costs within the water industry.

We consider there is more work that Unitywater can do to fully understand the components of the costs that are sensitive to indexation and improve cost escalation forecasting, including:

- Tracking actual cost escalations against CPI to determine the suitability of CPI as an escalating index
- Identification of the cost drivers for each cost category and their sensitivities (eg external labour costs, fuel and transport, exchange rate volatility, raw materials)

In our assessment CPI should only be used where an alternative, more specific, index is not available. This is of particular importance where Unitywater is budgeting expenditure using the previous year's expenditure, and then simply applying a growth and cost escalation index.

5.1.8. SKM's Assessment

Unitywater has made significant progress in implementing policies and procedures to address the initiatives outlined by the Authority with the exception of a consistent approach to project cost estimation and implementing a major project implementation strategy. However, we understand that both of these are currently being developed.

5.2. Budget Formation

This section identifies our understanding of good industry practice for budget formation for capital expenditure and operating costs and compares the processes used by Unitywater to this practice.

5.2.1. Unitywater's capital project budgeting process

Based on Unitywater's submission, we understand that Unitywater's budget for the 2011/12 to 2013/14 financial years is developed on a zero-based approach. The capital budget was originally based on planning databases from the respective council water businesses with the addition of zero based expenditure estimates for ICT equipment, plant and fleet and a retail billing system. We understand that Unitywater has since fully planned its system capital expenditure for 2011/12 and continues to work on longer-term forecasts.

We consider the application of zero-based budgeting to reflect good industry practice for the formation of a capital expenditure budget.

We understand that the capital budget for the period 2012/13 to 2013/14 is less well developed. However, Unitywater is continuing to develop a fully justified three year capital forecast as part of its Water NetServ Plan and continuing development of a capital expenditure gateway approval process. We consider this to be good practice and recommend that Unitywater continues to refine its capital budgeting process, including developing close links between capital planning and asset management and the capital expenditure budget.

The approval and review process is outlined in Unitywater's submission. This process includes ongoing scrutiny of expenditure by a committee of the Board, the Capital Works Committee. This committee was established to monitor and review the capital expenditure program and its delivery, and to ensure that the program is consistent with Unitywater's strategic objectives. This committee meets monthly to consider progress against timelines and budget and makes decisions as required on variations or budget changes; it also approves expenditure above the CEO's delegation. In addition, Unitywater has established an Asset Steering Committee to review and endorse investment decisions for Capital and Operations projects. This committee reports to the Executive Management Team.

We consider that the establishment of a suitably qualified team to monitor and review at least the major projects within the capital expenditure program to be in line with good industry practice. The value of the projects considered by the Capital Works Committee is unknown.

Further, Unitywater has developed a Capital Works Justification Process, which takes into consideration Unitywater's strategic and corporate objectives, and the requirements of the Authority. In addition, we understand that Unitywater is currently establishing further governance

structures to underpin the process of developing, assessing and approving capital expenditure forecasts.

5.2.2. Unitywater's operational expenditure budgeting process

We have reviewed the guidelines for the preparation of 2011/12 Unitywater budgets. The document provides a comprehensive guide to the development and approval process for the operating budgets including:

- Outline of the budget process
- Who has approved the process
- Responsibilities
- Budget approval and development
- Parameters to be applied (eg CPI)
- Review and approval programme/ timetable
- Schedules to be produced

5.2.3. Good industry practice for CAPEX and OPEX budgeting

The following outlines what we consider to be good industry practice in capital expenditure and operating costs budgeting for regulated utilities. Most utilities use two basic forecasting approaches to develop capital expenditure and operating costs budget forecasts for their regulated businesses.

The first approach – "base year" forecast – involves extrapolating historical expenditure for a particular expenditure category. It generally requires justification that the base year expenditure is prudent and efficient and that any one-off costs that would not be expected to apply in future years are identified and excluded from forecasts.

The second approach –"bottom-up" forecast – is developed by forecasting work units or quantities and standard unit rates. This type of forecast should be supported by explanation and justification of the work units forecast and that the unit rates proposed are reasonable and efficient.

It is not uncommon for a utility to use both of these approaches, with operating cost forecasts primarily driven by a base year extrapolation and capital expenditure forecasts by a bottom up approach, on a project-by-project basis.

Capital project budgeting

Capital project spend in a regulated business is required to be assessed against standard criteria of prudency and efficiency. That is, the following questions have to be answerable in the affirmative for any given project:

- Is the project needed for the regulated industry to deliver the level of service required in the future and is the timing of the project aligned to the timing of that need?
- Is the cost reasonable (within industry norms for an efficient operator) for such a project?

An underpinning tenet of an organisation's ability to demonstrate that its capital project expenditure programme is prudent and efficient is a good governance process for capital expenditure approvals.

We believe that good industry practice for the development of capital project budgets includes the following:

- The identification of projects which meet the requirements of prudency and efficiency
- Project prioritisation, including prioritisation across programs of work
- Consideration of the timing of projects and the ability to deliver the capital program
- A defined review and approvals process, including documentation of this process

In respect of supporting documentation required to gain approval for capital expenditure for a given capital project, we believe good industry practice should include:

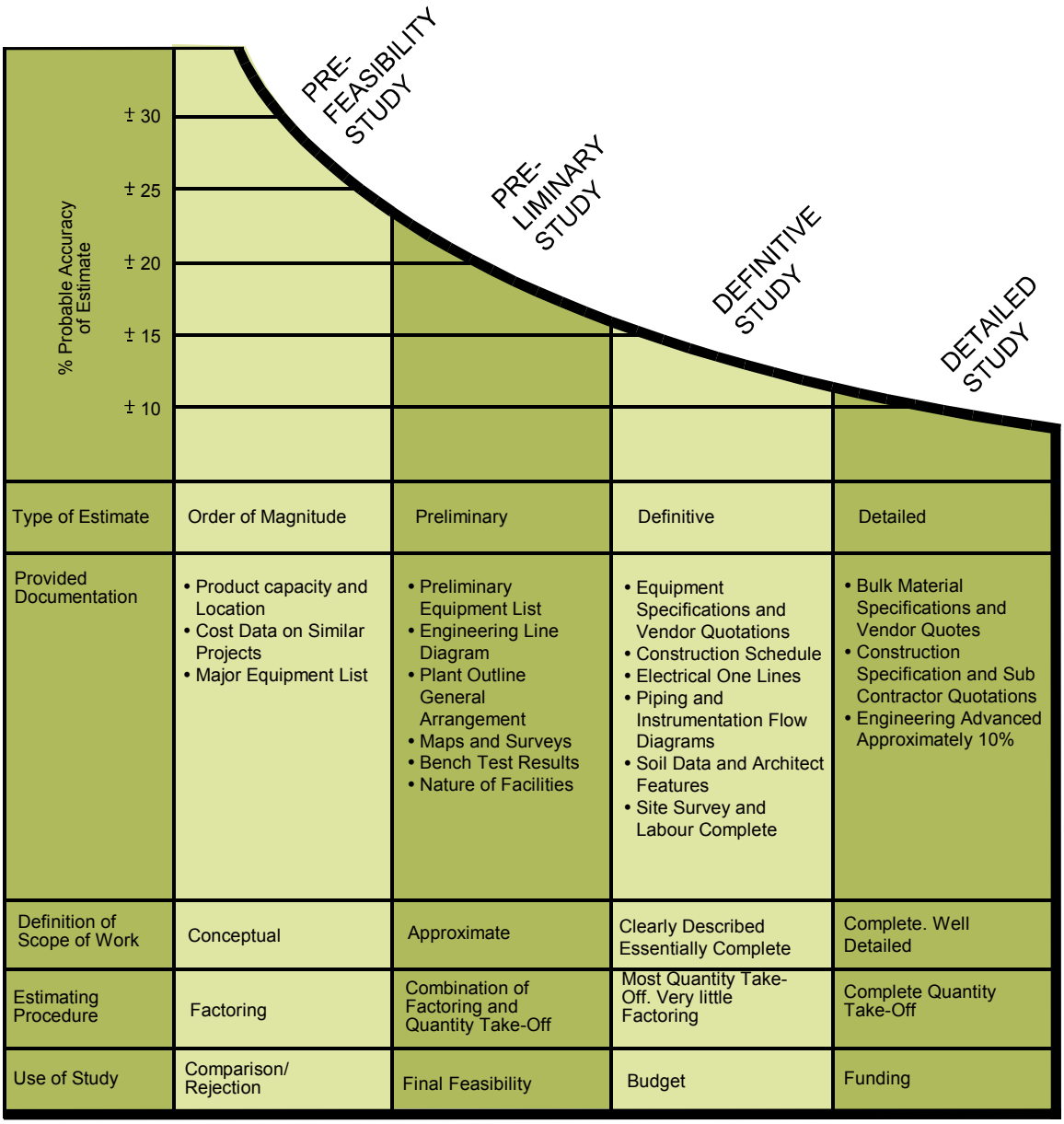
- A phased process, starting with a project outline, through to defined requirements for business cases and final approvals
- A tiered structure, with differentiated requirements and degrees of documentation and review for projects depending on their cost
- Fully supported capital expenditure approval documentation incorporating:
  - The project background/ rationale
  - The project drivers, including reference to the Authority's drivers
  - The options reviewed to address the drivers, including the method of selecting the preferred option
  - Fully costed and financially evaluated option studies, including a "do nothing" option, preferably on a present value (cost), or, if appropriate, a net present value basis
  - Where capital is constrained, explanation of why a project is proposed over others that may adhere to the above requirements
  - A defined scope of works for the preferred option
  - The identification of project risks and how they will be managed
  - A breakdown of the approved project cost and the basis of this cost estimate, including defined cost estimating procedures, including the treatment of contingencies
  - The critical success factors of the project

- An implementation plan

For historic projects, the process should address:

- How the project was implemented
- How the project performed – successes and lessons learned
- How the project addressed the original need
- How the project addressed the critical success factors
- How the as-built cost compared with the original estimate
- If the as-built cost of the project changed the order of merit of the options considered at the options analysis stage

The level of supporting documentation will be dictated by the project size, project cost and the respective sign-off authority level within an organisation. The chart below illustrates the kind of detail we believe should be presented, and notes that the estimates used for many projects can be expected to have uncertainty of 30 percent or more.



Type of Estimate	Order of Magnitude	Preliminary	Definitive	Detailed
Provided Documentation	• Product capacity and Location • Cost Data on Similar Projects • Major Equipment List	• Preliminary Equipment List • Engineering Line Diagram • Plant Outline General Arrangement • Maps and Surveys • Bench Test Results • Nature of Facilities	• Equipment Specifications and Vendor Quotations • Construction Schedule • Electrical One Lines • Piping and Instrumentation Flow Diagrams • Soil Data and Architect Features • Site Survey and Labour Complete	• Bulk Material Specifications and Vendor Quotes • Construction Specification and Sub Contractor Quotations • Engineering Advanced Approximately 10%
Definition of Scope of Work	Conceptual	Approximate	Clearly Described Essentially Complete	Complete. Well Detailed
Estimating Procedure	Factoring	Combination of Factoring and Quantity Take-Off	Most Quantity Take-Off. Very little Factoring	Complete Quantity Take-Off
Use of Study	Comparison/ Rejection	Final Feasibility	Budget	Funding

- **Figure 3 Typical estimation accuracies and expected documentation**

In addition, the overall capital expenditure programme should be weighted equally through the respective regulatory periods. This strategy maintains a steady and reliable stream of work for construction contractors and reduces the price impacts of substantial capital works programmes during earlier years of the regulatory period.

Operational expenditure budgeting

In a regulated business it is necessary to demonstrate that a forecast operating cost budget is efficient and that the spend is necessary to maintain the required level of regulated service delivery, to meet or exceed regulated service delivery standards. Equally as important is the necessity to ensure efficient operation of assets delivering regulated services to enable them to continue to contribute to the regulated services efficiently over their remaining economic or specified life.

A further objective of operating costs budgeting is to achieve ongoing efficiency improvements of operational assets. Therefore, good industry practice for appropriate operating costs budgeting is generally based on the development of sound asset management and maintenance strategies that can improve the reliability and remaining operating life of assets. These strategies are, in turn, based on detailed and accurate asset registers that contain detailed asset information, not least:

- Asset age
- Installation/ commissioning dates
- Date and nature of major modifications/ upgrades
- Asset condition
- Remaining asset life
- Assessment of the consequence of failure

The starting point for measuring the efficiency of operating costs budgeting should be the *actual* expenditure in a base year. This should be assessed for efficiency and adjusted, if necessary, to a level considered to be reasonably efficient. Future-year operating costs forecasts are then based on extrapolating these base year costs against appropriate indices, taking into account planned and expected material changes to the asset base in future years and material changes in operation and maintenance practices.

A regulated utility's forecast operating costs over the upcoming regulatory period is an important input to the revenue forecasting process.

Typically, a regulator must review the extent to which the forecast operating costs is consistent with the provision of an annual revenue requirement consistent with the general regulatory principles of the regulated industry in question. These principles are that the allowed annual revenue requirement or maximum allowable return must fairly compensate the regulated utility for the economically efficient costs and risks it incurs in providing regulated services, to encourage:

- A stable and transparent commercial environment which does not discriminate between users
- The same market outcomes as would be achieved if the market for its regulated services was contestable

- Competition in the provision of its regulated services wherever practicable
- The commercial viability of the regulated utility, through the recovery of efficient costs associated with the regulated services, and a reasonable return on the utilities approved capital invested in its regulated assets and business systems
- Recovery of only those costs related to the provision of the regulated services
- Fairness in the charges made for the regulated services, including the progressive removal of cross-subsidies
- Maintenance of service delivery levels subsisting at the beginning of a regulatory period and an improvement of service delivery levels during the period contemplated by a regulator's final decision
- Maintenance of the regulated assets such that, at the end of the regulatory period, the regulated assets are able to continue to provide regulated service delivery without above-average expenditure on upgrades or critical maintenance and continue the service delivery levels previously achieved

The nature of operating costs means there are elements that are controllable, such as deferring or bringing forward maintenance, or the amount of overtime worked. Moving to outsourcing or contracting some services can lead to apparent changes in operating costs within affected categories, particularly if the contracted services appear against a different operating costs category (for example, moving maintenance to "admin and general" if this is how the contracted services are categorised).

To understand the efficient level of operating costs requires an understanding of these underlying drivers, and the extent to which operational and accounting decisions will affect operating costs in individual years and over a regulatory period being reviewed.

Where operating costs varies from one year to another, a regulator will, by necessity, seek information that explains the underlying causes of these variations to determine the representative level of operating costs for an efficient base year.

This reasonably efficient level of expenditure should then be escalated forward through each year of the regulatory period under review, on the basis of its sensitivity to changes in the key drivers of an expenditure category and recognising material changes in the asset base in future years. For example, the key driver of meter-reading costs is likely to be customer numbers, since meter reading costs will increase as the number of customer accounts increase[6].

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[6] The number of customer accounts is considered a more relevant driver than the number of active meters since most of a meter reader's time is spent moving from one customer to the next.

In undertaking this analysis, due account should be taken of the sensitivity of expenditure in a particular cost category to its key cost driver. Meter-reading costs, for example, have a high variable cost component and will therefore be very sensitive to customer numbers, whereas customer account supervision costs are largely fixed and will be much less sensitive to customer numbers. Historical expenditure trends in a particular cost category may be analysed to help assess the appropriate sensitivity of expenditure to a key cost driver. Similarly, plant operating costs will be split between fixed and volume-related costs.

Equally, customer densities, terrain over which the regulated assets are built, climate and economic conditions (such as strength of an economy and resultant impact on contractor costs), can impact on a regulated industry's operational expenditure.

5.2.4. Comparison of Unitywater's budgeting process with good industry practice

Similarly, our assessment of the procedures and processes used by Unitywater to formulate the operating budget for 2011/12 is that they are representative of good industry practice.

During our interviews, Unitywater has stated there has been significant refinement to the budget from previous years, largely due to an improvement in information that was available. For last year's budget, Unitywater was wholly reliant on information provided by participating councils. For the 2011/12 budget, however, Unitywater was able to validate council information, and collect further information where gaps previously existed, leading to a more informed budget process.

Within its submission, Unitywater has made the following comment on the base year for operating expenditure:

> *"Base year assumed to be 2011/12. Unitywater has not used a historical base year due to the absence of trading history given that Unitywater commenced operations on 1 July 2011. Unitywater also does not consider the 2010/11 year as indicative of a normal operating year for the following reasons:*
>
> - *First year of operations*
> - *Emerging capabilities and consolidation of former council businesses into a single entity*
> - *Evolving and uncertain regulatory environment*
> - *Developing and implementing systems, processes and people*
> - *New entity that is not yet reflective of a mature infrastructure business*
> - *Impact of significant adverse weather conditions arising from the SEQ floods in early 2011*
> - *Impact on demand of 'one in a generation' levels of rainfall*

- *Developing customer awareness of the importance and cost of water efficiency and sewage treatment expenditure*
- *Emerging environmental awareness partly associated with the carbon debate and global warming that should increase interest in and awareness of the natural environment and the importance of healthy waterways"*

We accept that the maturity of the business and weather conditions experienced in 2011 are valid reasons why 2010/11 cannot be considered as a suitable base year. However, we do not consider the final two statements in the above list are exclusive to the 2010/11 financial year.

In the budget guidelines, Unitywater promotes the use of zero-base forecasts where possible. We note from Table 5 of Unitywater's 2011/12 Submission that historical/ extrapolated data has been used for the 2011/12 budgets for the following expenditure items:

- Electricity costs
- Chemical costs
- Contractor costs
- Maintenance and services
- Indirect taxes

Given that Unitywater has identified to us some inconsistencies with the data supplied by participating councils, and the fact that councils were not subject to regulatory examination of operating expenditure, we cannot conclude that the 2011/12 budget represents an efficient base year from which to forecast expenditure.

In this sense, we would support Unitywater's proposal for the development of zero base budgets for operating expenditure and linkages between maintenance expenditure and asset management procedures prior to the end of the interim price monitoring period.

Unitywater utilise a zero based budgeting process for capital projects which is consistent with good industry practice.

5.3. Standards of service review

Unitywater has provided details of its service standards in Section 5 of its 2011/12 Information Return. This addresses customer service standards including complaints and dispute resolution, customer consultation, accounting, metering or billing.

Unitywater's operating obligations are contained in the following legislative instruments:

- *Water Act 2000*

- *Water Supply (Safety and Reliability) Act 2008*
- *Sustainable Planning Act 2009*
- *Environmental Protection Act 1994*
- *Environmental Protection (Water) Policy 2009*
- *South-East Queensland Water (Distribution and Retail Restructuring) Act 2009*
- *Customer Water and Wastewater Code*, Queensland Water Commission 2011

5.3.1. Customer service standards

On 1 January 2011, a Customer Water and Wastewater Code was released by the (then) Minister for Natural Resources, Mines and Energy and Minister for Trade. This document sets out the rights and obligations of water distributor-retailers and their customers relating to the availability of water and sewerage services. The Customer Water and Wastewater Code covers customer service obligations, as well as the rights of all residential customers and those small business customers who are using less than 100 kilolitres of water per year. The code requires water distributor-retailers to have a customer service charter and customer service standards. The charter is to set out the rights and obligations of both service provider and customer, while the service standards present the minimum and guaranteed service standards.

To meet the requirements of the Water Supply (Safety and Reliability) Act 2008, Unitywater has a responsibility to align and establish Customer Service Standards across the regions by 1 July 2011. Unitywater satisfied this requirement and published the aligned service standards (Customer Charter) on its website and provided it to customers.

Unitywater aligned customer service standards between both of its geographic regions and with the legislated Customer Code introduced by the Queensland Water Commission. Unitywater advises that to better understand the service performance of comparable entities, a comparative analysis of customer service standards was undertaken reviewing publications by Queensland Urban Utilities, City West Water (Melbourne) and the Water Services Association 2009-10 Urban National Performance Report. Based on this benchmarking and in response to the Customer Code issued by the Queensland Water Commission, a set of customer service standards for Unitywater were developed.

The legislation for the water reform transitioned the strategic asset management plans (SAMPs) and related service standards and customer service standards from councils to Unitywater as at 1 July 2010. Accordingly, these service standards applied from 1 July 2010 until changed in 1 July 2011.

These aligned service standards will be included within Unitywater's Water Netserv Plan, which will replace the strategic asset management plan and other plans. The plan must provide an

overview of Unitywater's infrastructure planning and development over the next 20 years and support and reflect the SEQ Regional Plan, and the land use planning and assumptions of Unitywater's participating councils. The Water Netserv Plan will be a key tool for future streamlined asset management and economic regulation, bringing together a number of asset and planning related activities, such as SAMPs and priority infrastructure plans (PIPs) undertaken in accordance with the *Sustainable Planning Act 2009*. Unitywater is required to have its Netserv Plan in place by 1 July 2013.

Unitywater states that the development of its Water Netserv Plan is currently underway.

We believe that the development of a Water NetServ Plan provides a good opportunity for Unitywater to develop a consistent and structured approach to planning for both of its regions.

5.3.2. Design standards

Unitywater advises that there are opportunities to harmonise design standards. Within its *Interim Price Monitoring Submission - 2011/12* (Unitywater, 2011) Unitywater states:

> *"There are also design standards which aim to generate asset performance outcomes, some of which relate to service aspects such as supply continuity. These standards were set through codes or policies under council planning schemes, and include the water and sewerage design manual for each former council. Subsequent amendments to the SEQ Water Supply (Distribution & Retail Restructuring) Act 2009 require Unitywater and the other distributor-retailer businesses to collaborate on the preparation and implementation of a single SEQ Design and Construction Manual to be adopted before 1 July 2013. However, these are not considered service standards for the purpose of this information requirement."*

No supporting documentation was provided outlining specific design standards to be adopted by Unitywater.

5.3.3. SKM's assessment

As outlined above, Unitywater has developed a single aligned set of customer service standards applicable for all customers within the service area.

A high-level comparison of the customer standards currently used by the entities is shown in **Table 14**. Where information is provided, the service standards are comparable for each of the entities, with the exceptions of non-urgent response times.

As the design standards of service from the participating councils were generally appropriate, the single aligned set of harmonised design standards are expected to be appropriate.

- **Table 14 Comparison of standards of service**

	Queensland Urban Utilities	Allconnex Water	Unitywater	Comment
Water				
Health, physical and chemical	100% Tests meeting NHMRC Australian Drinking Water Guidelines	98% Tests meeting NHMRC Australian Drinking Water Guidelines	>98% of tests that comply with Australian Drinking Water Guidelines	The service standards are comparable
Complaints	Water quality complaints ≤8 complaints per 1000 properties per year	Water quality complaints <5 per 1000 properties connected per year	Drinking water quality complaints <10 per 1000 properties connected per year	The service standards are comparable
Incidents	Water quality incidents ≤10 per 1000 properties per year	No information provided	Water quality incidents <5 per 1000 properties connected per year	Of the information available the supply volumes are comparable
Water supply	90% restoration of services within 5 hours	95% restoration of services within 5 hours	>90% restoration of services within 5 hours following a “priority 1” event	The service standards are comparable
Incident response – high priority	100% response time for “urgent” events within 1 hour for urban areas 100% response time for “urgent” events within 2 hours for rural areas	80% response time for “priority 1” events within 1 hour	>90% response time to “priority 1” events within 1 hour	The service standards are comparable
Incident response – non-urgent	100% response time for “non-urgent” events within 24 hours for urban areas 100% response time for “non-urgent” events within 72 hours for rural areas	80%response time within 36 hours for “non urgent” fault, but significant in the belief of the customer (“priority 3”)	>95% response time to “non-urgent” events within 48 hours	The service standards are comparable
Planned interruptions	Minimum of 48 hours notification of planned interruptions	No information provided	Minimum of 48 hours notification of planned interruptions	Of the information available the supply volumes are comparable

	Queensland Urban Utilities	Allconnex Water	Unitywater	Comment
Unplanned interruptions to supply	Unplanned less than or equal to 100 per 1000 connections per year	Unplanned less than 150 per 1000 properties connected per year	Unplanned less than 15 per 1000 properties connected per year Unplanned interruptions to supply <30 per 100 km of main per year	Unitywater has a tighter service standard, while the others are comparable
Interruptions	No information provided	No information provided	No information provided	Information was not available
Pressure	Water pressure for urban areas >210kPa min (*21m head*) Water pressure for trickle feed and private booster areas >100kPa min (*10m head*)	>22 metres static head in the main adjoining the property boundary (220*kPa*)	Water pressure at property boundary >210kPa (*21m head*)	The service standards are comparable
Volume	Minimum 25 litres per minute at the meter for urban areas Minimum 3.2 litres per minute at the meter for rural, trickle feed areas	No information provided	Minimum 23 litres per minute at the meter	Of the information available the supply volumes are comparable
Wastewater				
Incident response - Priority	100% response time for “urgent” events within 1 hour for urban areas 100% response time for “urgent” events within 2 hours for rural areas	80% response time for “priority 1” events within 1 hour	>90% response time to “priority 1” events within 1 hour	The service standards are comparable
Incident response – non-urgent	100% response time for “non-urgent” events within 24 hour for urban areas 100% response time for “non-urgent” events within 72 hour for rural areas	80%response time within 36 hours for “non urgent” fault, but significant in the belief of the customer (“priority 3”)	>95% response time to “non-urgent” events within 48 hours	The service standards are comparable
Sewerage overflows	No information provided	Dry weather wastewater overflows less than 20 per 100kms of mains per year	Dry weather wastewater overflows less than 5 per 100kms of mains per year	Unitywater has a tighter service standard

	Queensland Urban Utilities	Allconnex Water	Unitywater	Comment
	No information provided	Dry weather overflows affecting customers less than 5 per 1000 properties per year	Dry weather overflows affecting customers less than 5 per 1000 properties per year	Of the information available the supply volumes are comparable
Odour complaints	No information provided	Less than 3 per 1000 properties connected	Less than 3 per 1000 properties connected	Of the information available the supply volumes are comparable
Sewer main breaks	No information provided	Sewer main breaks and chokes less than 50 per 100kms of mains per year	Sewer main breaks and chokes less than 25 per 100kms of mains per year	Of the information available the supply volumes are comparable
Sewer infiltration	No information provided	No information provided		Information was not available

5.4. Asset management and condition assessment

Unitywater is in the process of implementing a single asset management system that will better inform capital expenditure planning and just in time maintenance. Unitywater identifies that one of the benefits of this undertaking is the reduction of unplanned asset outages, resulting from the ability to better analyse condition and performance data. Another benefit will be improved planning to carry out preventative asset maintenance and identification of asset renewals.

Unitywater has forecast a capital expenditure program intended to:

- Meet customer demand and network connections
- Meet obligations to provide reliable, secure, safe and high quality drinking water reticulation, and trade waste and sewerage treatment services
- Provide services in a manner that balances commercial, environmental, sustainability and customer outcomes
- Replace poorly performing assets or assets in a poor condition
- Deliver reliable sewage and trade waste treatment so that discharges into the environment are in accordance with STP licence conditions

Both the Moreton Bay and Sunshine Coast Regional Councils maintain geographical information system (GIS) asset databases for all water and sewerage assets. However, there is considerable work still to be done to consolidate both regions' databases. This is proposed to be achieved with a GIS consolidation project scheduled for 2011/12. An integrated data base will be available for the asset management area staff to enter information which will be useful in monitoring ongoing improvements

The databases that exist include physical attributes, as well as age and estimates of serviceable life. Although estimates of remaining serviceable life are generally based on desktop assumptions, rather than field condition assessments, the current system does allow a financial assessment to be made in relation to renewal expenditure projections. Unitywater is in the process of improving its asset condition and performance assessments, this includes the implementation of a new asset management system.

During 2010/11 Unitywater committed significant funding to an integrated asset management system and common supervisory control and data acquisition (SCADA) platforms to provide the tools to allow more effective planning. The asset management system will be an integral tool to aid Unitywater in the planning of maintenance and renewal expenditure and provide information regarding operating commitments on a condition and performance based assessment of assets.

The SCADA project will bring together information into a single reliable database to facilitate forward planning on the basis of common performance criteria and provide the necessary information for Unitywater to leverage efficiencies through load optimisation.

Some condition assessment is performed on assets, although this varies depending on the asset and location. A common process is being developed for use across the extended region. Some brief comments on the current approach are set out below:

- For smaller passive non-critical water and sewer pipe work, assets are essentially run-to failure with pipe replacements implemented as and when required, but prior to breaching any customer service standards. These replacements are typically identified by field and planning staff
- For larger critical water pipe assets, scheduled condition assessments are performed to establish the assets' remaining life. In some locations, these condition assessments are being undertaken as part of a broader systematic network-wide approach. However, in most instances, the assessments are generally reactive and occur as a result of operational concerns or in response to recent failure history
- In relation to larger critical sewer pipe assets, condition assessments via closed circuit television (CCTV) inspections are performed frequently. Work is being done to put in place a process that allows condition assessments to be conducted in a systematic manner. This will allow asset lives to be adjusted within the current asset register

Unitywater is developing a proactive approach to maintenance and is in the process of progressing to a condition and performance based replacement method for renewals. In association with the commissioning of a single asset management system, this will provide Unitywater with greater ability to identify potential defects prior to an unplanned network incident. Planned maintenance is a direct operating expense and vital in ensuring the network meets the needs of Unitywater's customers being the safe, reliable, secure supply of water reticulation and sewage treatment services.

Unitywater conducts an inspection program to detect potential defects requiring remedial, programmed or priority response as part of the planned maintenance program. Typically the most difficult parts of the network to inspect are the pipe networks for both water reticulation, but more importantly the sewer network. Routine inspection periods for the same type of asset may change due to the presence of acid sulphate soils, stormwater inundation, leakage, vegetation type or illegal connections.

The *Capital Works Justification Manual* (Unitywater, 2011) identifies asset condition assessment as one of the processes required to justify a capital works project. The document states that the

process is under development with the purpose of the process to assess the condition of various assets using a documented and systematic approach.

Unitywater engaged Cardno in March 2011 to undertake a condition assessment of a range of assets and to develop 5, 30 and 100 year renewal forecasts. The purpose of the project was to:

- Develop a logical and consistent condition rating system for water supply, sewerage and recycled water assets that is technically useful and which can be effectively communicated to the Unitywater Board
- Establish a strategy for renewal of water supply, sewerage and recycled water assets including:
  - Establishment of a method for calculation of an asset renewals profile (100 year)
  - Establishment of a method for condition assessment and projection of a renewals program based upon the risk of failure
  - Development and establishment of suitable tools for implementation of the methodologies mentioned above in the initial instance by the project team and by Unitywater staff as an ongoing business as usual activity
- Progressively undertake condition assessments of assets, concluding with a report that provides an overall assessment of the water supply and sewerage asset base
- Produce a 30 year renewals forecast with specific projects for the first five years identified and justified. The resulting schedule of works will be utilised to update Unitywater's three year capital works forecast
- Produce a renewals profile (cash-flow) to the year 2110

As part of the project Unitywater requested that a method was developed that was simple and cost-effective; able to be reliable and readily repeated for various asset categories; and able to be applied consistently by Unitywater staff across the water supply, sewerage and recycled water networks.

Within the *Condition Assessment and Renewal Forecast for Water Supply, Sewerage and Recycled Water Assets Project Report* (Cardno, 2011) Cardno states:

> *"The following documents were prepared:*
>
> - *Condition Assessment – Active Assets;*
> - *Condition Assessment – Passive Assets;*
> - *Asset Risk Rating; and*
> - *Renewal Forecasting.*
>
> *These documents are being compiled into one document for future reference by Unitywater. The following sections summarise the methodologies included in the*

documents. More detailed explanation can be found in the relevant documents. Draft documents were prepared and were refined following Unitywater feedback."

As this report has only recently been finalised the process developed by Cardno's has not been adopted by Unitywater.

5.4.1. SKM's assessment

From our review of Unitywater's asset management and condition assessment processes we consider that Unitywater's practices are appropriate for a water and wastewater distribution and retail utility of Unitywater's standing and are in keeping with good industry practice.

There is clear evidence of Unitywater's progress towards implementing a standard approach to asset management across its regions including a standard approach to capital renewals evaluation, programming and implementation.

The work undertaken and being undertaken in capturing information on the asset base and recording this in the works management system together with the development of a GIS/ works management interface program will assist Unitywater in prioritising asset replacements and preventative maintenance activities.

5.5. Procurement

The following procurement process documents were provided to us for review:

- *Procurement and Disposals Policy Rev 1*, 01 September 2011
- *Procurement and Disposals Policy Revision 1*, 01 September 2011
- *Unitywater 2011/12 Corporate Procurement Plan Revision 1.0*, 01 July 2011
- *Procurement Principals* 10 July 2011
- *Selection Criteria* (undated)
- *Unitywater Procurement Probity Plan*, July 2010
- *Unitywater Selection Criteria* (undated)
- *Significant Procurement Plan Approval Report*, August 2010 v 1

5.5.1. Procurement policies and procedures

From our review it is clear that the documentation of the policies and procedures of Unitywater is still work in progress. The Procurement and Disposals Policy sent for review had revision mark ups and the documentation of the procurement procedures consisted of several different documents covering specific areas (such as procurement principals and selection criteria) which were not cross

referenced. The Procurements and Disposals Policy makes reference to a Procurement and Disposals Manual, however this was not provided for our review.

Unitywater's Procurement Policy states that:

> *"Unitywater will procure goods and services in a prudent and efficient manner that maximises commercial outcomes and meets the mandatory requirements of the State Procurement Policy".*

The policy requires that an annual Corporate Procurement Plan be produced and used to review the Company's procurement performance and to drive procurement for the relevant year. In addition to the Corporate Procurement Plan the Policy requires that a Significant or Category Procurement Plan be prepared for the Chief Executive Officer's approval when goods, services or capital projects are being purchased that have been assessed as high cost and high risk procurements and/ or approval is being sought to deviate from the standard procedures detailed in the Procurement and Disposals Manual. In addition to the above procurement planning documents, the policy states that forward procurement schedules are to be published and maintained on the Queensland Government Chief Procurement Office website.

The policy makes mention of an *Instrument of Delegation* with which all procurement activity must be undertaken in accordance with. However, this was not provided to us for review and as such we are unable to comment on the levels of delegation established by Unitywater.

Through its Procurement and Disposals Policy, Unitywater commits to comply with the State Procurement Policy including in respect of giving consideration to suitable local suppliers and seeking to progressively increase the proportion of expenditure that reflects improved environmental sustainability.

Procurement thresholds

The following are Unitywater's minimum requirements for calling or obtaining quotations and tenders. The thresholds are noted as being GST inclusive:

- **Less than $7,500:** At least one quotation is to be obtained
- **Between $7,500 and $14999.99:** At least two written quotations are to be invited and the most advantageous selected. Requirements must be adequately scoped, and copies of all quotations must be attached to the requisition – electronically where possible
- **Between $15,000 and $149,999.99:** Unless otherwise exempted, at least three written quotations are to be invited in and the most advantageous selected. Requirements must be adequately scoped, and copies of all quotations must be attached to the requisition – electronically where possible

- **More than $150,000:** There are a number of methods of procuring goods and services with a value exceeding $150,000, including:
  - By inviting formal public tenders by public advertisement
  - By inviting select tenders from suppliers/ contractors included on a panel
  - By preparing a Significant Procurement Plan for Chief Executive Officer approval

Probity

The policy states that Unitywater and its employees will adhere to the following principles in matters of procurement:

- Fairness and impartiality
- Transparency of process
- Confidentiality and security of information
- Effective management of conflicts of interest

A probity advisor/ auditor is required to be engaged for tenders greater than $5,000,000 and or for those tenders that are considered potentially controversial in nature. No explanation is provided as to what is considered 'controversial in nature'.

Procurement plan

The 2011/12 Corporate Procurement Plan provided is a comprehensive document which provides a thorough review of 2010/11 expenditure by categories and by transaction type together with an analysis of spend with supplier. The plan notes areas for continued improvement, such as data extraction and analysis including strengths and weaknesses, opportunities and threats analysis in respect of its procurement activities and requirements.

The plan also maps expenditure on a business risk/ expenditure four quadrant matrix to enable the targeting of high risk/ high expenditure procurement activities. These include the existing service level agreements with the councils, capital projects, chemicals and gas, SCADA, ICT equipment and services, electricity and wastewater treatment plant augmentation and maintenance. This analysis will be used to prioritise the development of significant procurement plans, one objective of which will be to endeavour to migrate high expenditure/ high risk procurement towards lower risk and or lower expenditure quadrants.

Corporate purchasing cards

One area identified by the Procurement Plan as an opportunity to reduce costs for low value transactions is to encourage the use of corporate purchasing cards for purchases below $5,000. Unitywater has provided us with a copy of its processes for logging and approving transactions using corporate purchasing cards. Whilst this process provides for a degree of scrutiny over

corporate purchasing card transactions we have some concerns that large scale use of corporate purchasing cards could be open to abuse.

Procurement principles

Unitywater's procurement principles document sets out at a high level the principles and preferences of Unitywater in respect of procurement practices such as:

- Open and effective competition
- Value for money, including analysis of whole of life costs
- Quality and service attributes in addition to price
- Encouraging the development of competitive local business and industry
- Environmental protection
- Ethical behaviour and fair dealing
- Workplace health and safety

The document provides some guidance on how these principles may be achieved but doesn't document a structured approach to ensuring that these principles are adopted.

5.5.2. SKM's assessment

It is clear from the documentation reviewed that Unitywater is in the process of documenting its policies and procedures for procurement. There are a number of standalone documents – such as the Procurement Principles document and the Selection Criteria document which are more in the way of guidance notes than procedural documents. There would be merit in Unitywater drawing these documents together to produce a comprehensive procurement procedures document having a consistent style.

There is no reference in the documentation to Unitywater adopting a gateway process for capital project approvals and there are no obvious procedures to ensure consistency of outcome of tender review evaluations (the selection criteria document sets out a range of assessment criteria, some 22, but leaves weighting of each criteria undefined – other than that weighting should generally be at least 5 percent which would imply that it is assumed that not all assessment criteria are employed for each assessment).

That said, the procedures that are documented are considered to be consistent with good industry practice.

5.6. Cost allocation

Section 3.4 of the Authority's SEQ Interim Price Monitoring Information Requirements for 2011/12 outlines the principles for allocation of costs. In summary, operating costs are required to be disaggregated according to the following categories:

- Each activity (ie water, wastewater and non-regulated services)
- Each geographic area (ie Sunshine Coast and Moreton Bay)
- Each core service (ie drinking water, other non-core water services, wastewater via sewer, trade waste, other non-core wastewater services)
- Each asset class and cost driver (ie growth, renewals, improvement and compliance)
- For subsequent years (ie beyond the interim price monitoring period) for each customer group

Allocations are required for revenue, RAB, capital expenditure and operating costs. Allocations must be made on the principle that:

a) Amounts are directly attributable to that category
b) Amounts that are not directly attributable must be allocated on a causal basis, except where a causal relationship cannot be established. Here, causal allocation means that the allocation base is the most significant trigger of consumption or utilisation of the resources or services represented by the costs

Amounts may be allocated on a non-causal basis provided that:

a) There is likely to be a strong correlation between the non-causal basis and the actual cause of resource or service consumption
b) The cost to derive the causal allocation outweighs the benefits of allocating items on that basis
c) The aggregate of the amounts to be allocated is not material

5.6.1. Cost allocation for operating expenditure

Unitywater has developed detailed revenue and cost allocation models that identify individual expenditures to the lowest disaggregated level in the general ledger by natural account. Expenditure is then mapped to regions, activities, services and expenditure categories as required by the Authority.

The allocation model details all drivers for expenditure which are not directly attributable to a specific service and shows how they are allocated to categories by individual account. The allocation model provides a transparent audit trail, demonstrates the link between budgeted

revenues and expenditure at a natural account level and attribution of revenues and expenditures to the Authority's required categories, services, activities and regions.

An account-based approach to disaggregating operating expenses has been adopted. This means that the underlying principle for allocation of operating expenditures by Unitywater to specified reporting categories is on an individual account basis as follows:

- Expenditures directly attributable to a geographic areas, activity and service were identified
- Indirect expenditures were identified and allocated to reporting categories on the basis of identified drivers

Direct operating expenses are attributed to the service within a particular region and no allocation drivers are required. Indirect operating expenses, depending on whether they are regional or region-specific, are allocated by council region and service or by service only.

In **Table 15** we summarise Unitywater's allocation method for operating costs across the two geographic areas.

- **Table 15 Allocation of indirect expenditure across geographic areas**

Element	Description	Allocation methodology	Allocation	
			Moreton Bay	Sunshine Coast
Corporate support costs	Corporate costs, QCA fees, electricity, employee expenses, non-recurrent costs, other materials and services	Equal allocation	50%	50%
Laboratory service expenditure	Chemicals, contractor expenses, employee expenses, licenses and regulatory fees, other materials and services	2011/12 RAB	57.33%	42.67%
Network support costs	Chemicals, contractor expenses, employee expenses, license and regulatory fees, other materials and services	2011/12 RAB	57.33%	42.67%
Retail support costs	Contactor expenses, employee expenses, license and regulatory fees, other materials and services	2011/12 RAB	57.33%	42.67%

Source: Unitywater Interim Price Monitoring Submission 2011/12

In **Table 16** and **Table 17** we summarise Unitywater's allocation method for operating costs across the service type for the Moreton Bay and Sunshine Coast geographic areas respectively.

- **Table 16 Allocation of indirect expenditure across services for Moreton Bay**

Element	Allocation methodology	Allocation				
		Drinking water	Trade waste	W/water via sewer	Other core water	Non-regulated
Corporate support costs	Revenue	45.29%	0.60%	49.83%	2.91%	1.37%
Laboratory service expenditure	Number of tests	58.84%	0.53%	24.39%	4.50%	11.75%
Network support costs	RAB	37.60%	1.51%	57.13%	3.76%	-
Retail support costs	Number of connections	49.56%	-	50.44%	-	-

Source: Unitywater Interim Price Monitoring Submission 2011/12

- **Table 17 Allocation of expenditure across services for Sunshine Coast**

Element	Allocation methodology	Allocation				
		Drinking water	Trade waste	W/water via sewer	Other core water	Non-regulated
Corporate support costs	Revenue	49.22%	-	0.95%	49.38%	0.45%
Laboratory service expenditure	Number of tests	58.84%	4.50%	0.53%	24.39%	11.75%
Network support costs	RAB	40.51%	0.88%	1.69%	56.91%	0.01%
Retail support costs	Number of connections	51.28%	-	-	48.72%	

Source: Unitywater Interim Price Monitoring Submission 2011/12

5.6.2. SKM's assessment

We have reviewed the allocation method used by Unitywater and note the following:

- The allocation method is thorough and takes consideration of the cost driver for each of the cost elements, and is largely consistent with the Authority's requirement for causal cost allocations
- Corporate cost allocation across geographies (equal allocation) is acceptable in this case, due to the similar sizes of the Moreton Bay and Sunshine Coast water businesses. We consider allocation of corporate costs by revenue or by employee costs as a suitable alterative allocation method
- Using the RAB to allocate costs has been adopted by all of the SEQ retail and distribution entities, and has been accepted by IPART in New South Wales and Essential Services Commission in Victoria

- However, we do not consider the allocation of costs between the wastewater via sewer and trade waste using the RAB to be suitable. Wastewater from residential households and trade waste are both conveyed in the same sewer network and treated at the same treatment plants – hence the same infrastructure in the RAB is being used. In our consideration, Unitywater's cost allocation model should be modified to reflect the actual cost drivers for wastewater and trade waste transport and treatment. This would include estimated flows, and consideration of the sewage contents (ie BOD/ COD, suspended solids, nitrogen , phosphorus, and other contaminants that are required to be removed to meet license standards, or drive costs in the sewer network (eg corrosion/ odour control)). We understand from our interviews with Unitywater that a program of works has been established to improve the cost allocation and tariff structures for wastewater and trade waste services

5.6.3. Cost allocation for capital expenditure

Unitywater allocates costs for capital expenditure based on its assessment of the relevant driver. For a project where two or more drivers are relevant, Unitywater does not allocate a percentage to each driver only 100 percent to one driver.

As the allocation of cost is a sequential action after the determination of the applicable drivers, an erroneous identification of a driver results in inappropriate allocation of cost. Consequently the determination of the correct driver(s) is important.

5.6.4. SKM's assessment

Our review of the information provided, in particular the sample selection, indicates that there are occasional varied and inaccurate determination of the drivers and consequently the cost allocation.

Projects responding to instances of sewage overflow appear to be assigned the compliance driver, without considering the cause as opposed to the effect. Many overflow incidents are caused by the connection of too many households to a sewerage system with a current fixed capacity. This is due to inappropriate delay in augmentation responding to growth. This inappropriate action of not providing adequate capacity should not result in the continuation of inappropriate actions by nominating compliance as the driver, when timely action would have determined growth as the appropriate driver.

In addition the level of sophistication in assessing cost allocation percentages should be increased. Where a project involves multiple drivers, specific allocations should be determined and the cost allocation should be updated when more accurate cost estimation is available. The continued use of a simplistic allocation, which is potentially reasonable at the initiation stage, after more detailed cost estimation and/ or receipt of a tender is not appropriate. As a project progresses the more detailed costs available should inform the update of the cost allocation.

5.7. Asset Lives

Unitywater has provided an information return outlining nominal asset lives for use in economic regulation to depreciate at the asset class level.

The Authority's SEQ Interim Price Monitoring Information Requirement Template allows information to be provided on the following two sheets.

- 5.8.1.1 Asset Lives Details for RAB
- 5.8.1.2 Asset Lives Details for RAB - Tax Purposes

These categories are considered below.

Within its 2011/12 Submission Unitywater states:

> *"The opening asset register as at 1 July 2010 contained assets from two councils who themselves had recently been formed by amalgamating six former councils. This led to some inconsistencies in asset lives for the same type of assets. Unitywater engaged Cardno to establish consistent asset lives. The opening asset register has been updated for these new lives and they have also been used for any additions in the roll-forward from 2010 to 2014.*
>
> *In limited circumstances an asset category did not map to the Cardno categories. As an interim assumption Unitywater has applied a two year remaining life assumption for these assets (approximately $15M)."*

5.7.1. Useful lives for new assets

Information on asset lives for all asset types, including reservoirs, treatment and pump stations have been provided in Unitywater's submission to the Authority.

Table 18 shows the asset lives for new assets.

- **Table 18 Asset lives for new assets**

Asset Class	Description	Nominal Life
Water		
Distribution infrastructure	mains	55
Distribution infrastructure	not included in another category	45
Reservoirs		54
Pump stations		34
Telemetry/ SCADA		22
Meters		35
Treatment plants		47
Sundry property, plant and equipment		11
Building other than infrastructure housing		20
Wastewater		
Distribution infrastructure	mains	55
Distribution infrastructure	not included in another category	51
Pump stations		46
Telemetry/ SCADA		32
Treatment plants		49
Sundry property, plant and equipment		10
Building other than infrastructure housing		60
Other core water services	all classes	
Distribution infrastructure	mains	18
Distribution infrastructure	not included in another category	66
Treatment plants		25
Telemetry/ SCADA		10
Meters		15
Support		
Billing Systems		58
Corporate Systems		13
Support services		5
Establishment Costs		8

Source: Source: *Data template* (Unitywater, 2011)

Supporting documentation has been provided documenting the lives of assets, as listed below:

- *SC Combined RAB 1 July 2008_rework.xlsx*
- *Tbl - AssetValuationData-June 2008 MB_rework.xlsx*

These supporting documents, in general, align with the information provided within the 2011/12 Information Templates.

We understand that the asset lives by category have been calculated as the weighted average of each individual asset within the specified asset class, as per the following formulas:

New Assets useful life per asset class = Σ (RAB * useful life) / RAB

Existing Assets RUL per asset class = Σ ((RAB – Residual value) * RUL) / (RAB – Residual value)

Where RUL is the remaining useful life. We consider this approach to be reasonable.

Table 19 presents benchmarks of selected asset lives and a comparison with those used by Unitywater.

- **Table 19 Benchmarking of asset lives**

Asset	Benchmark	Comment
Distribution infrastructure - mains (Water and Wastewater Distribution infrastructure)	The WSA 07-2007 Pressure Sewerage Code of Australia V1.1 suggests a nominal asset design life of 100 years for pressure sewers and laterals and property discharge lines, 20 -30 years valves. The WSA 03-2002 Water Supply Code of Australia suggests a typical asset design life of 100 years for water mains, 30 years for valves.	The assumption of a 55 year asset life is reasonable.
Reservoirs	The WSA 03-2002 Water Supply Code of Australia suggests a typical asset design life of 50 years for reservoirs.	The assumption of a 54 and 80 year asset life asset life, for water and wastewater reservoirs respectively, is reasonable.
Treatment	No combined treatment asset life is provided.	Treatment consists of a number of civil, mechanical and electrical assets. The assumption of a 47 and 49 year asset life, for water and wastewater treatment plants respectively is reasonable but is slightly higher than other entities.
Pump stations	The WSA 03-2002 Water Supply Code of Australia suggests a typical asset design life of 20 years for pumps, 15 years for SCADA.	Pump stations consist of a number of civil, mechanical and electrical assets. The assumption of a 34 and 46 year asset life, for water and wastewater pump stations respectively, is longer than industry norms.
Telemetry & SCADA	The WSA 03-2002 Water Supply Code of Australia suggests a typical asset design life of 15 years for SCADA.	A 22 and 32 year asset life, for water and wastewater telemetry & SCADA respectively, longer than industry norms.

5.7.2. Useful lives for new assets for tax purposes

Information on asset lives for all asset types, including reservoirs, treatment and pump stations have been provided in Unitywater's submission to the Authority.

Within its 2011/12 Submission Unitywater states:

> *"In all cases the tax useful life has been assumed to be the same as the regulatory useful life. This assumption may be revised at a later point by Unitywater pending advice from consultants".*

The TR 2011/2 Taxation Ruling Income tax: effective life of depreciating assets (applicable from 1 July 2011) discusses the methodology used by the Commissioner of Taxation in making determinations of the effective life of depreciating assets under section 40-100 of the Income Tax Assessment Act 1997 (ITAA 1997). The effective life of a depreciating asset is used to work out the asset's decline in value. (ATO, 2011).

The Commissioner makes a determination of the effective life of a depreciating asset by estimating the period (in years, including fractions of years) it can be used by any entity for a taxable purpose. In the Commissioners' determination, a number of factors are considered including:

- The physical life of the asset
- Engineering information
- The manufacturer's specifications
- The way in which the asset is used by an industry
- The past experience of users of the asset
- The level of repairs and maintenance adopted by users of the asset
- Industry standards
- The use of the asset by different industries
- Retention periods
- Obsolescence
- Scrapping or abandonment practices
- If the asset is leased, the period of the lease
- Economic or financial analysis indicating the period over which that asset is intended for use
- Where the asset is actively traded in a secondary market, conditions in that market

It is important to note that the Commissioner does not consider that the physical life of an asset is necessarily its effective life because all the factors must be considered before an estimate of effective life is made. A consideration of these factors may often indicate that an asset's effective life is a period shorter than its physical life. (ATO, 2011).

We cross referenced the effective tax lives provided by Unitywater with the 'Effective lives (Industry Categories)' Table A as at 1 July 2011 provided in the TR 2011/2 Taxation Ruling (ATO, 2011).

- **Table 20 Review of effective life**

Asset Class	Description	Effective Life (Tax)*	Revised Effective Life (Tax)+
Water			
Distribution infrastructure	mains	55	80
Distribution infrastructure	not included in another category	45	No direct correlation with asset type
Reservoirs		54	80
Pump stations		34	25
Telemetry/ SCADA		22	10
Meters		35	20
Treatment plants		47	NA
Sundry property, plant and equipment		11	Require further clarification of assets to determine life
Building other than infrastructure housing		20	No direct correlation with asset type
Wastewater			
Distribution infrastructure	mains	55	80
Distribution infrastructure	not included in another category	51	No direct correlation with asset type
Reservoirs		80	NA
Pump stations		46	25
Telemetry/ SCADA		32	10
Meters		0	20
Treatment plants		49	Comprised of a number of individual assets
Sundry property, plant and equipment		10	Require further clarification of assets to determine life
Building other than infrastructure housing		60	No direct correlation with asset type
Other core water services	all classes		
Distribution infrastructure	mains	18	80
Distribution infrastructure	not included in another category	66	No direct correlation with asset type
Telemetry/ SCADA		10	10
Meters		15	20
Treatment plants		25	NA
Support			

Asset Class	Description	Effective Life (Tax)*	Revised Effective Life (Tax)+
Billing Systems		58	Not covered
Corporate Systems		13	Not covered
Support services		5	Not covered
Establishment Costs		8	Require further clarification of assets to determine life

*Information provided by the entity; +Determined through review of Australian Government TR2011/2 Taxation Ruling: Income Tax, effective life of depreciating assets (applicable from 1 July 2011)

The Authority's information requirement template refers to an asset class as opposed to individual assets, ie for distribution infrastructure not included in another category, treatment plants, sundry plant and equipment and establishment costs, which cannot be cross referenced with TR 2011/2 Taxation Ruling. Without a breakdown of individual asset types within the groups a revised effective tax life cannot be determined.

For the treatment plants asset group the components of an 'average' wastewater treatment plant were determined and assessed to determine the average effective life of the group of assets. The 'average' treatment plant assessed included pre-treatment comprising of sewer mains, pump station, screening and grit removal; secondary treatment comprising of biological nutrient removal assets (aerators and blowers, BNR tanks and mixers) and secondary clarifiers; and tertiary treatment comprising of UV disinfection, aerobic digesters, sludge thickening tanks, belt presses and sludge aerators and blowers. Additional assets incorporated for the overall operation of the plant included valves, chemical dosing pumps, flow meters, telemetry, variable speed drives, chlorine residual analysers, pH meters, dissolved oxygen probes, level sensors, etc. Based on a simplistic calculation, including one of each asset type, the median effective life is 25 years. This is not comparable to the 49 years suggested by Allconnex Water. It should be noted that this calculation was performed to determine a relative figure. For a more accurate determination the Authority's information requirement template would need to be modified to include all asset types, and the quantities, at each plant.

Effective lives for systems such as billing and corporate are not covered by the taxation ruling and therefore cannot be assessed, however as a billing system would largely comprise of computer equipment we believe that a life of three to four years would be reasonable. Buildings do not have any direct correlation with any asset and life included in the TR 2011/2 Taxation Ruling, therefore a revised effective tax life cannot be determined.

The asset lives for mains, for water, wastewater and other core water services, water reservoirs, water and wastewater pump stations, telemetry/ SCADA for water and wastewater and water and wastewater meters do not correlate to TR 2011/2 Taxation Ruling guidance. Although there is no information in relation to the effective life for system lives stated by Unitywater asset lives for billing systems and corporate systems greatly exceed those stated by the other entities. It is suggested that these be reviewed by Unitywater when next assessing their effective lives.

It should be noted that whilst we can offer advice based on publicly available information and our interpretation based on experience, we are not professional accountants and therefore cannot provide tax advice to clients. Therefore, although we can advise that effective lives do not correlate to TR 2011/2 Taxation Ruling guidance; it is envisaged that estimates of effective asset lives for tax purposes would be provided by the entity's accountants/ auditors.

5.7.3. Summary

Whilst the assumed asset lives for passive assets such as reservoirs and pipelines is relatively consistent between all entities, there are a number of significant differences between the asset lives for active assets (eg pump stations and treatment plants). This is because these assets comprise of a range of civil, mechanical and electrical assets, all with significantly different asset lives. For example, within the life of a wastewater pump station, the civil assets (building, pump well) are likely to remain relatively unchanged, whilst the pumps and control systems are likely to be replaced several times during the overall life of the asset. The calculation of a combined asset life depends on the relative weighting of the civil, mechanical and electrical assets.

6. Operating Expenditure

6.1. Overview of operating expenditure

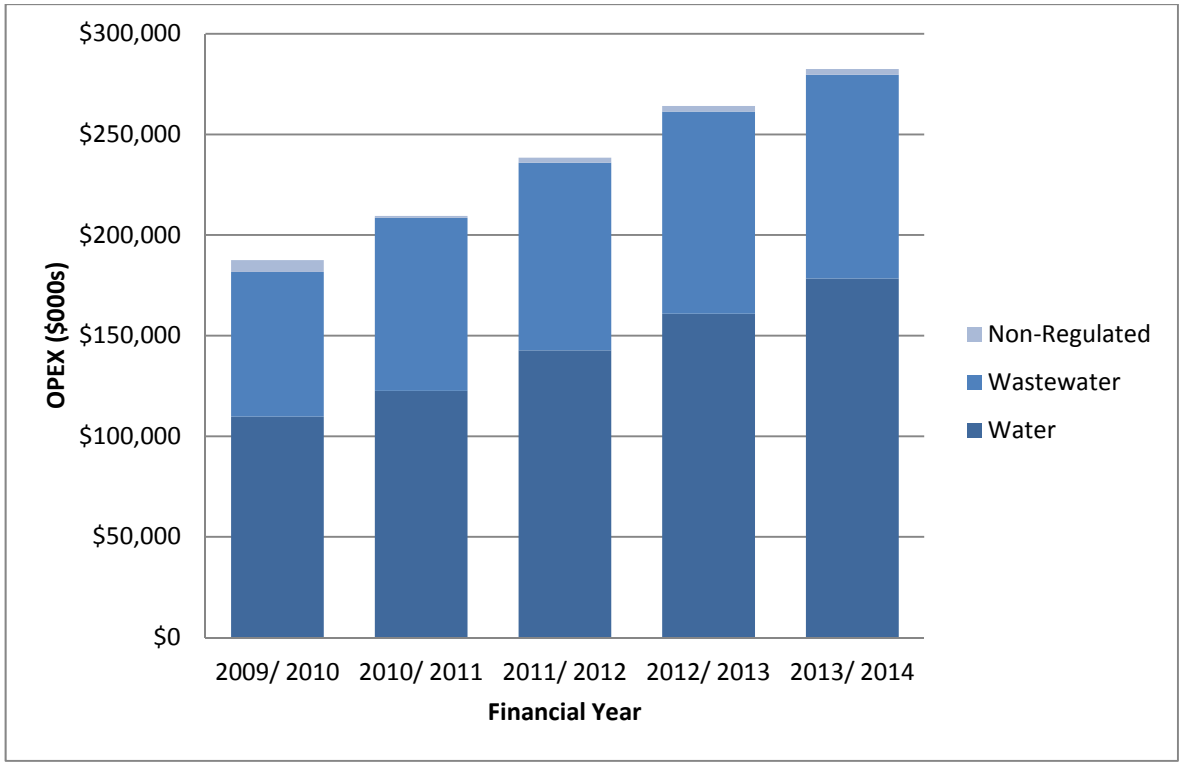
A breakdown of Unitywater's operating expenditure for the price monitoring period (financial years 2011/12, 2012/13, 2013/14) is provided in **Table 21**. Over this period Unitywater predicts an increase in the operating expenditure of approximately $44 million as can be determined from the table of operating expenditure below.

Table 21 Unitywater – operating expenditure

Service	2011/12 Financial Year ($000s)	2012/13 Financial Year ($000s)	2013/14 Financial Year ($000s)
Water[i]	142,689	160,892	178,416
Wastewater	93,181	100,498	101,239
Non-regulated	2,614	2,731	2,823
Total	**238,484**	**264,121**	**282,478**

i Unitywater has included expenditure for recycled water as a non-core water activity under the Water Service.
Source: 2011/12 Information Template

The following graph indicates the operating expenditure as detailed by Unitywater in its submission to the Authority. The main points to be drawn from the graph of annual operating expenditure from the 2010/11 financial year to the 2013/14 financial year are that the water services operating expenditure increases by 46%and the wastewater services operating expenditure increases by 18%. Over the same period, Unitywater predicts that expenditure on bulk water (driven by both demand and unit price increases from the bulk water supplier) will increase by 71%. Employee expenses are shown to increase by 23%. These figures are consistent with other water distribution and retail entities in this region of Queensland.

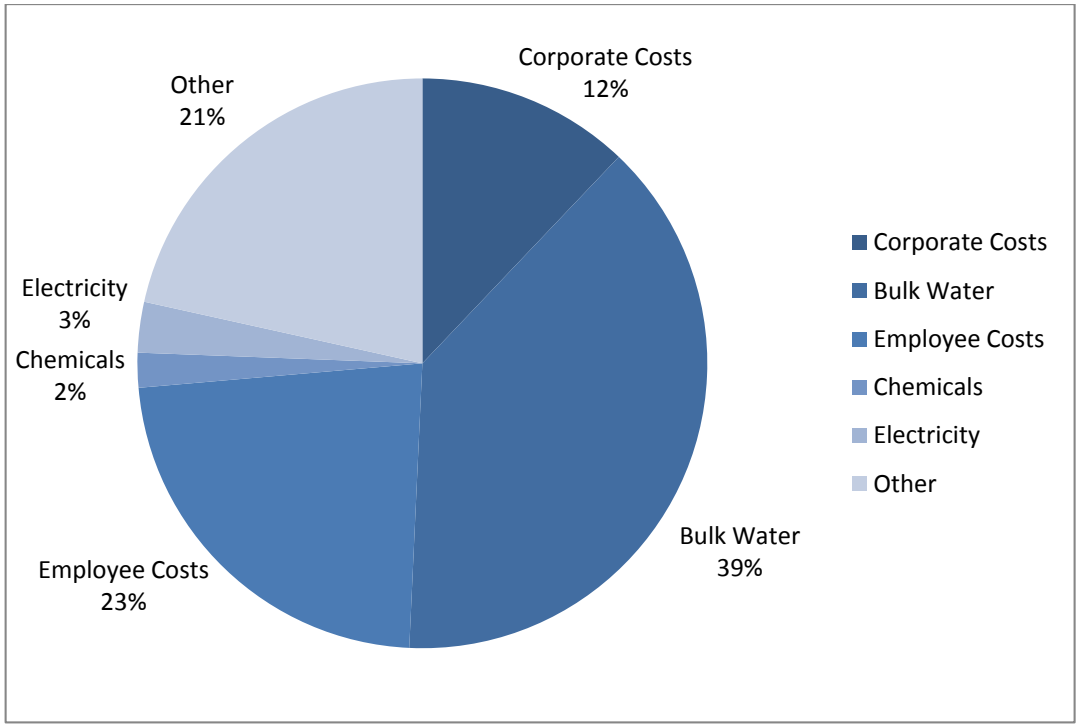


Source: 2011/12 Information Template

- **Figure 4 Unitywater – operating expenditure**

Unitywater has a total operating expenditure budget of $785 million for the price monitoring period (financial years 2011/12, 2012/13, 2013/14).

The following figure indicates the breakdown of the operating expenditure budget in terms of the main cost categories. As can be seen from the chart, the cost of purchasing bulk water is the main operating expenditure item.



Source: 2011/12 Information Template

- **Figure 5 Unitywater – combined main cost categories for financial years 2011/12, 2012/13, 2013/14**

The following tables contain the cost breakdown of the different services, namely water, wastewater and non-regulatory services.

- **Table 22 Unitywater – operating expenditure for water (FY12-14)**

Item	2011/12 Financial Year ($000s)	2012/13 Financial Year ($000s)	2013/14 Financial Year ($000s)
Bulk water	83,727	100,744	119,124
Employee expenses	23,193	23,664	23,822
Contractor expenses	7,046	8,403	8,738
GSL payments	-	-	-
Electricity charges	1,151	1,257	1,373
Sludge handling	1	1	1
Chemical costs	798	843	892
Other materials and services	6,931	6,932	6,693
Licence or regulatory fees	131	135	139
Corporate costs	15,575	15,556	15,210
Non recurrent costs	4,135	3,357	2,426
Indirect taxes	-	-	-
Total	**142,689**	**160,892**	**178,416**

Source: 2011/12 Information Template

- **Table 23 Unitywater – operating expenditure for wastewater (FY12-14)**

Item	2011/12 Financial Year ($000s)	2012/13 Financial Year ($000s)	2013/14 Financial Year ($000s)
Bulk water	-	-	-
Employee expenses	34,610	35,406	35,794
Contractor expenses	11,608	18,127	18,927
GSL payments	-	-	-
Electricity charges	5,704	6,228	6,801
Sludge handling costs	4,284	4,526	4,785
Chemical costs	4,061	4,291	4,537
Other materials and services	11,379	11,483	11,251
Licence or regulatory fees	282	291	300
Corporate costs	16,108	16,087	15,730
Non recurrent costs	5,145	4,060	3,115
Indirect taxes	-	-	-
Total	**93,181**	**100,498**	**101,239**

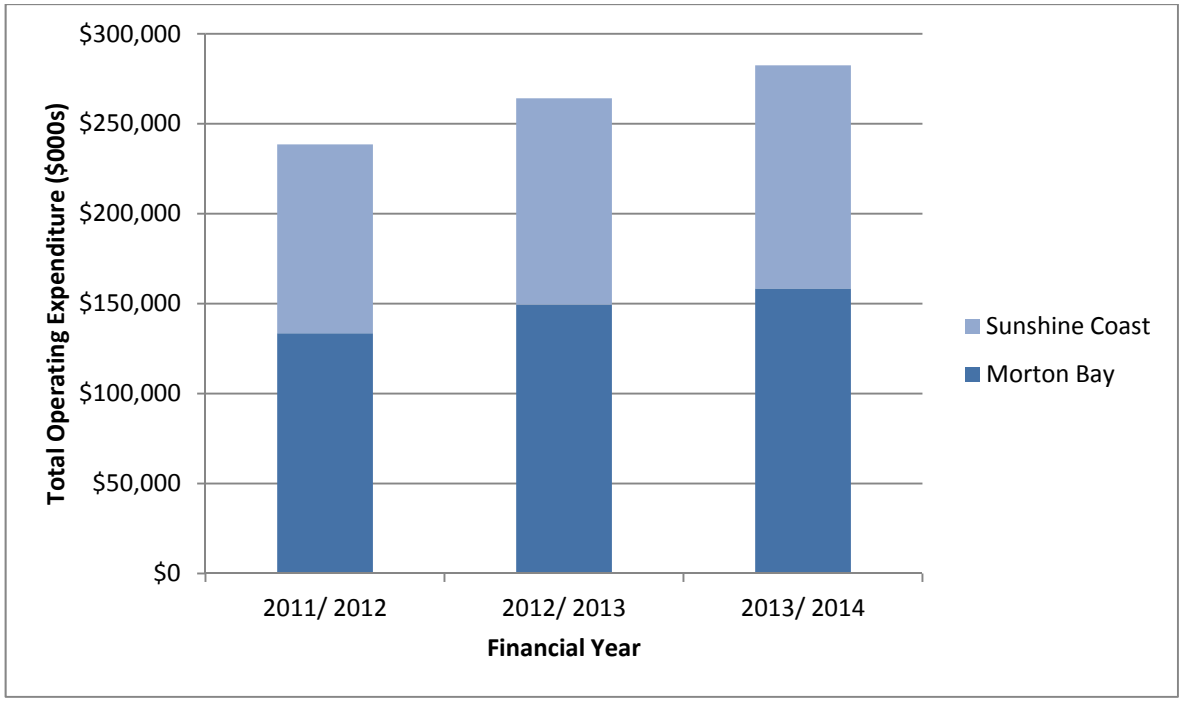
Source: 2011/12 Information Template

- **Table 24 Unitywater – operating expenditure for non-regulated (FY12-14)**

Item	2011/12 Financial Year ($000s)	2012/13 Financial Year ($000s)	2013/14 Financial Year ($000s)
Bulk water	-	-	-
Employee expenses	1,117	1,162	1,208
Contractor expenses	38	40	42
GSL payments	-	-	-
Electricity charges	-	-	-
Sludge handling costs	-	-	-
Chemical costs	11	11	12
Other materials and services	1,141	1,205	1,274
Licence or regulatory fees	2	2	2
Corporate costs	291	290	284
Non recurrent costs	14	20	1
Indirect taxes	-	-	-
Total	**2,614**	**2,731**	**2,823**

Source: 2011/12 Information Template

The following chart indicates the makeup of operating expenditure for each region in Unitywater for the price monitoring period (financial years 2011/12, 2012/13, 2013/14). As the graph indicates both regions are similarly sized with the Moreton Bay being marginally larger with about 56 percent of the total expenditure operating expenditure over the period.

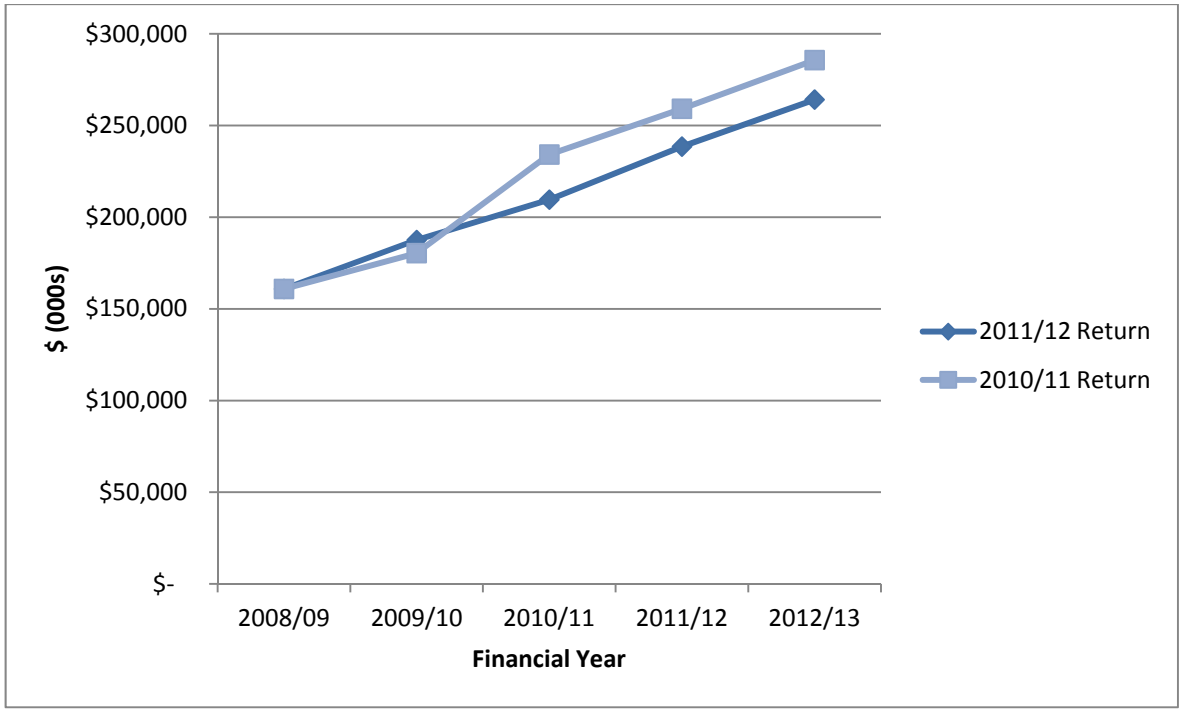


Source: 2011/12 Information Template

- **Figure 6 Unitywater – operating expenditure for FY12-14 per region**

6.2. Historical costs and variances

A comparison is made between the forecast operating costs submitted by Unitywater in the 2010/11 information return and the 2011/12 information return in the figure below. A moderate reduction in forecast operating expenditure as compared to the 2010/11 information return is noted.



Source: 2010/11 Information Template, 2011/12 Information Template

- **Figure 7 Comparison of forecasts – 2010/11 submission and 2011/12 submission ($000s)**

The variation between the 2010/11 and 2011/12 forecast operating expenditures are outlined below, **Table 25**.

- **Table 25 Comparison of forecasts – 2010/11 and 2011/12 Submissions ($000s)**

Source	2008-09	2009-10	2010-11	2011-12	2012-13
Total Operating expenditure					
2010/11 Information Template	160,869	180,379	234,164	259,125	285,647
2011/12 Information Template	160,869	187,554	209,527	238,484	264,121
Variance	0	7,175	-24,637	-20,641	-21,526
Percentage variation	-	4.0%	-10.5%	-8.0%	-7.5%
Operating expenditure excluding bulk water costs					
2010/11 Information Template	113,378	118,341	158,830	166,088	171,472
2011/12 Information Template	113,378	124,870	140,139	154,757	163,377
Variance	0	6,529	-18,691	-11,331	-8,095
Percentage variation	-	5.5%	-11.8%	-6.8%	-4.7%

Source: 2010/11 Information Template, 2011/12 Information Template

The **Table 25** and **Figure 7** above show a decrease of $24.6 million in total operating costs for the 2010/11 financial year, and a forecast reduction from last year's estimates of $20.6 million and $21.5 million in 2011/12 and 2012/13 respectively, as compared to the 2010/11 information return.

The Authority's information requirement specifies that information should be allocated to relevant service types. We have compared the forecast operating expenditure by service type with the 2010/11 Information Template. This analysis is summarised in **Table 26**.

Table 26 Comparison of forecasts by service type – 2010/11 and 2011/12 submissions ($000s)

Service	2011/12 FY		2012/13 FY		2013/14 FY	
	2010-11 return	2011-12 return	2010-11 return	2011-12 return	2010-11 return	2011-12 return
Drinking water	149,041	138,598	171,682	156,643	NA	174,097
Other core water services	4,741	4,091	4,960	4,249	NA	4,319
Aggregate non-core water services	250	0	260	0	NA	0
Wastewater via sewer	95,996	91,145	99,335	98,412	NA	99,144
Trade waste	1,726	2,035	1,789	2,086	NA	2,096
Non-Regulated	7,370	2,614	7,620	2,731	NA	2,823
Total	**259,125**	**238,484**	**285,647**	**264,121**	**NA**	**282,478**

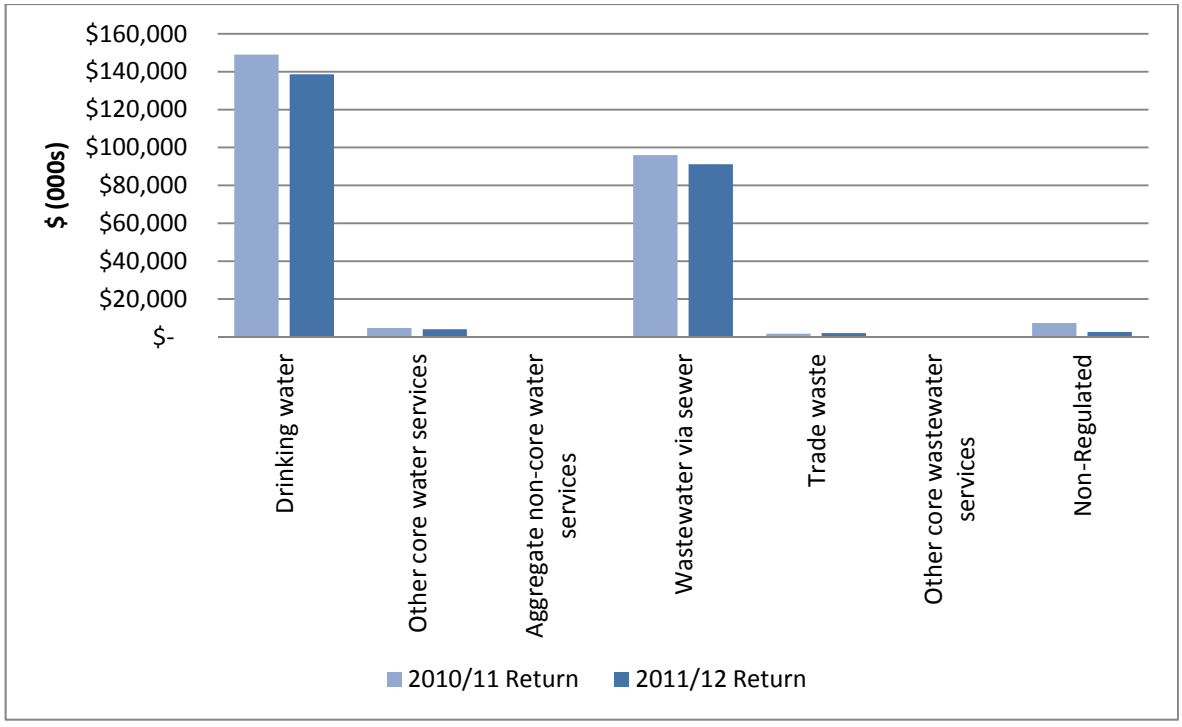
Operating expenditure was not required to be forecast for 2013/14 in the 2010 Information Return.

Source: 2010/11 Information Template, 2011/12 Information template

The above table illustrates that the major variance in operating costs between the information reported in 2010/11 Information Template and the 2011/12 Information Template is within the drinking water service where forecast expenditure has reduced by 7.0% and 8.8% for the 2011/12 financial year and 2012/13 financial year respectively. A reduction in forecast expenditure of $4,756,000 and $4,889 for the 2011/12 financial year and 2012/13 financial year respectively, is also shown for non-regulated services.

These variances should be placed into context by considering the maturity of the organisation. Many of the variances reflect Unitywater's increased ability to disaggregate costs to a level required by the Authority. Unitywater has also advised of increased knowledge of assets over the pat 12 months and the completion of onsite verification to confirm assumptions, which have both resulted in an improved forecasting ability.

We compare the forecast operating costs for the 2011/12 financial year as indicated in the 2010/11 and 2011/12 information returns in **Figure 8.**



Source: 2010/11 Information Template, 2011/12 Information Template

Figure 8 Comparison of forecasts – 2010/11 submission and 2011/12 submission ($000s)

We have further investigated the operating cost categories that show the greatest variance: drinking water; wastewater via sewer; and trade waste services.

The main causes of variations identified by Unitywater for the 2011/12 forecast over the 2010/11 forecast include a reduction in bulk water costs and greater overall understanding of assets and hence, their operations and maintenance requirements. As the unit costs for bulk water have a fixed price path, we conclude that the reduction in operating costs associated with the provision of drinking water is due to a reduced forecast in demand.

Historical delivery

In **Table 27** we compare Unitywater's approved operating expenditure from the 2010/11 Interim Price Monitoring assessment, with the forecast costs reporting in the 2011/12 Information Template.

- **Table 27 Budget and Forecast expenditure for 2011/12 operating costs**

Service	Budget[1] ($'000)	Forecast[2] ($'000)
Water	133,806	122,581
Wastewater	93,169	85,925
Non-regulated	7,189	1,022
Total	**234,164**	**209,527**

1 As reporting in the 2010/11 Approved Information Template
2 As reported in the 2011/12 Information Template

The comparison shows a forecast under spend of $24,636,700, or 10.5 percent of the budget.

6.3. Costs in aggregate

Unitywater's submission to the Authority shows an increase in operating expenditure for each financial year of the forecast as is shown in the following table.

- **Table 28 Unitywater annual operating expenditure**

Financial Year	Operating Expenditure[1] ($000s)	Annual Increase	Annual Increase in Bulk Water Charge – Moreton Bay[2]	Annual Increase in Bulk Water Charge – Sunshine Coast[2]
2009/ 10	187,554	-	-	-
2010/ 11	209,527	11.7%	-	-
2011/ 12	238,484	13.8%	13.5%	22.1%
2012/ 13	264,121	10.7%	11.3%	17.2%
2013/ 14	282,478	7.0%	9.6%	14.0%

1 2011/12 Information Template
2 Calculated from figures in the Queensland Water Commission table 'Bulk Water Prices 06-12-10'

The increases are well above annual inflation rates, which for the five years preceding 2011 was in the range of 1.8 percent to 4.4 percent. However we note that Unitywater's annual increases in operating expenditure broadly follow the annual increase in bulk water charge.

The influence of bulk water cost escalation on forecast operating cost increases is demonstrated in Unitywater's 2011/12 Information Template. The bulk water charges are predicted to be 35.1 percent of the total operating expenditure in the 2011/12 financial year and to increasing to 42.2 percent of the total operating expenditure in the 2013/14 financial year.

A number of metrics are available to assess the aggregate operating costs for Unitywater. In **Table 29** the forecast 2011/12 aggregate operating costs for Unitywater is benchmarked against the other SEQ retail and distribution entities and peers from around Australia.

- **Table 29 Unitywater aggregate cost metrics**

Metric	Description	Unitywater	Other SEQ average	Sydney Water Corporation	Yarra Valley Water
Customers	Total OPEX per connection	838	932	577	579
	Water OPEX per connection	528	595	332	318
	Wastewater OPEX per connection	310	337	245	261
Network size	Total OPEX per km of pipeline	41,207	53,163	45,566	41,611
	Water OPEX per km of pipeline	25,439	34,131	27,983	23,084
	Wastewater OPEX per km of pipeline	15,768	19,032	17,583	18,527
Volume	Total OPEX per ML of drinking water	4,406	3,751	1,949	2,872
	Water OPEX per ML of drinking water	2,689	2,480	1,090	1,531
	Wastewater OPEX per ML of drinking water	1,717	1,271	859	1,341

Source: Data template , 2011/12 Unitywater Information Template, 2011/12 Allconnex Water Information Template, 2011/12 Queensland Urban Utilities Information Template, NWC National Performance Report 2010/11 (CPI applied)

The table show that for all of the metrics used, Unitywater's operating expenditure is comparable with the other South East Queensland water retail/ distribution entities. That is, operating expenditure for the two peer organisations fall within ± 20 percent of Unitywater's expenditure.

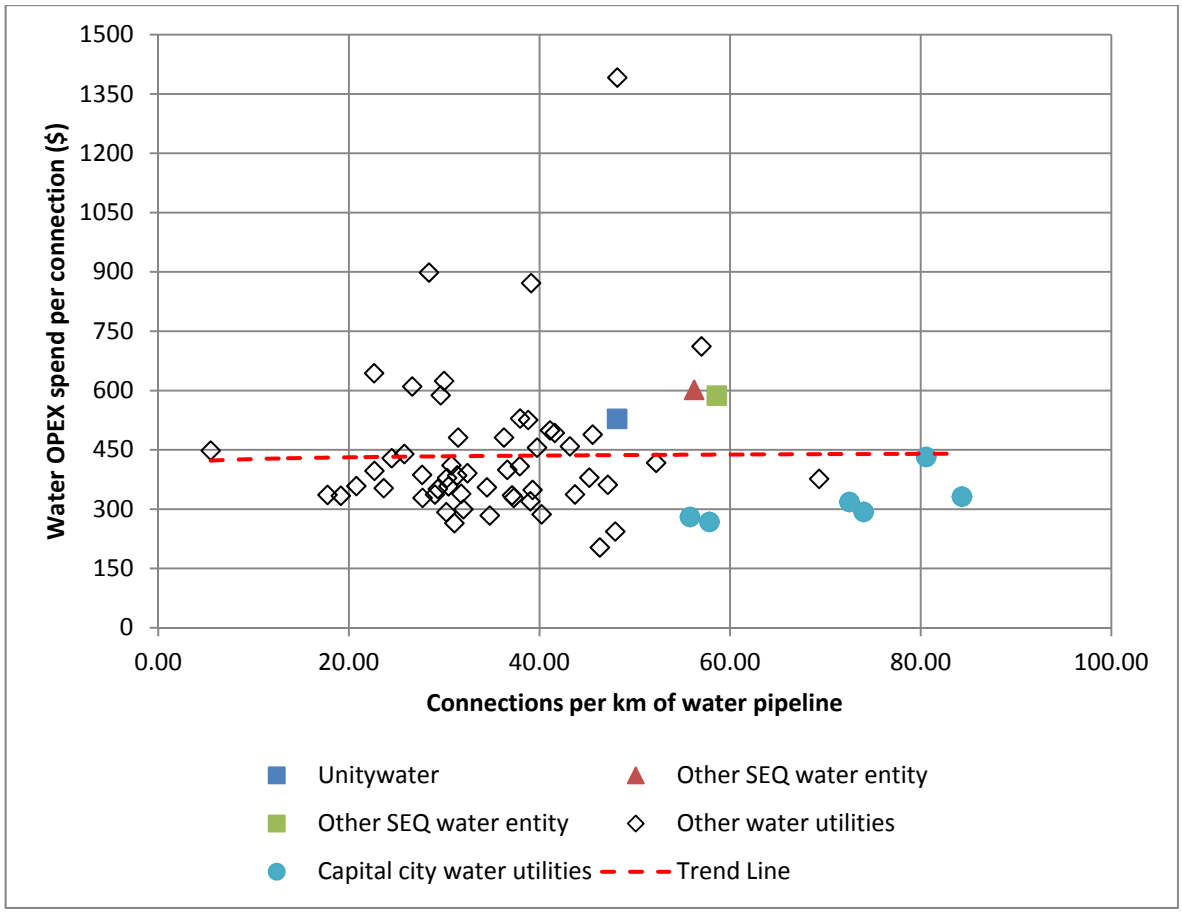
However, when compared with interstate water authorities, Unitywater's operating expenditure (and those of the other SEQ water retail/ distribution entities) are higher. That is, operating expenditure for the interstate peer organisations are less than 80 percent of Unitywater's expenditure.

When assessing the aggregate operating costs of water utilities around Australia, comparing expenditure per connection will tend to favour the larger utilities that have a large customer base or some density. Likewise, comparing expenditure with respect to network size will favour utilities with smaller networks. In order to better compare the relative performance of Unitywater's operating expenditure with its peers a two dimensional normalisation was used to develop a cost curve for water and wastewater services.

In **Figure 9** the operating expenditure on water services for a range of Australian water utilities is compared, using data sourced from the National Water Commission National Performance Report 2010/11. A cost escalation index equal to CPI (weighted average for eight capital cities) was applied to the National Water Commission data to adjust costs to 2010/11 dollars. Water utilities

from other Australian capital cities – which we consider to be industry peers of Unitywater – are highlighted.

Data in the National Water Commission National Performance Report 2009/10 for several water utilities around Australia was used in the comparison. A CPI obtained from the Australian Bureau of Statistics website was used to re-calculate the prices in the National Water Commission National Performance Report 2009/ 2010 to 2011/12 prices. Water utilities from other Australian capital cities have also been highlighted.



Source: Data template Unitywater 2011/12 Information Template, Allconnex Water 2011/12 Information Template, Queensland Urban Utilities 2011/12 Information Template

Figure 9 Comparison of Unitywater's operating expenditure on water services with other Australian water utilities

The chart shows that Unitywater's water operating costs are higher than similar sized water service providers. The chart also shows that Unitywater's water operating costs are lower than the other water distributors and retailers in this region of Queensland.

As was demonstrated in last year's review, bulk water charges in SEQ are higher than in other parts of Australia and contribute to the relatively high cost of water supply by Unitywater as is demonstrated in the **Table 30.**

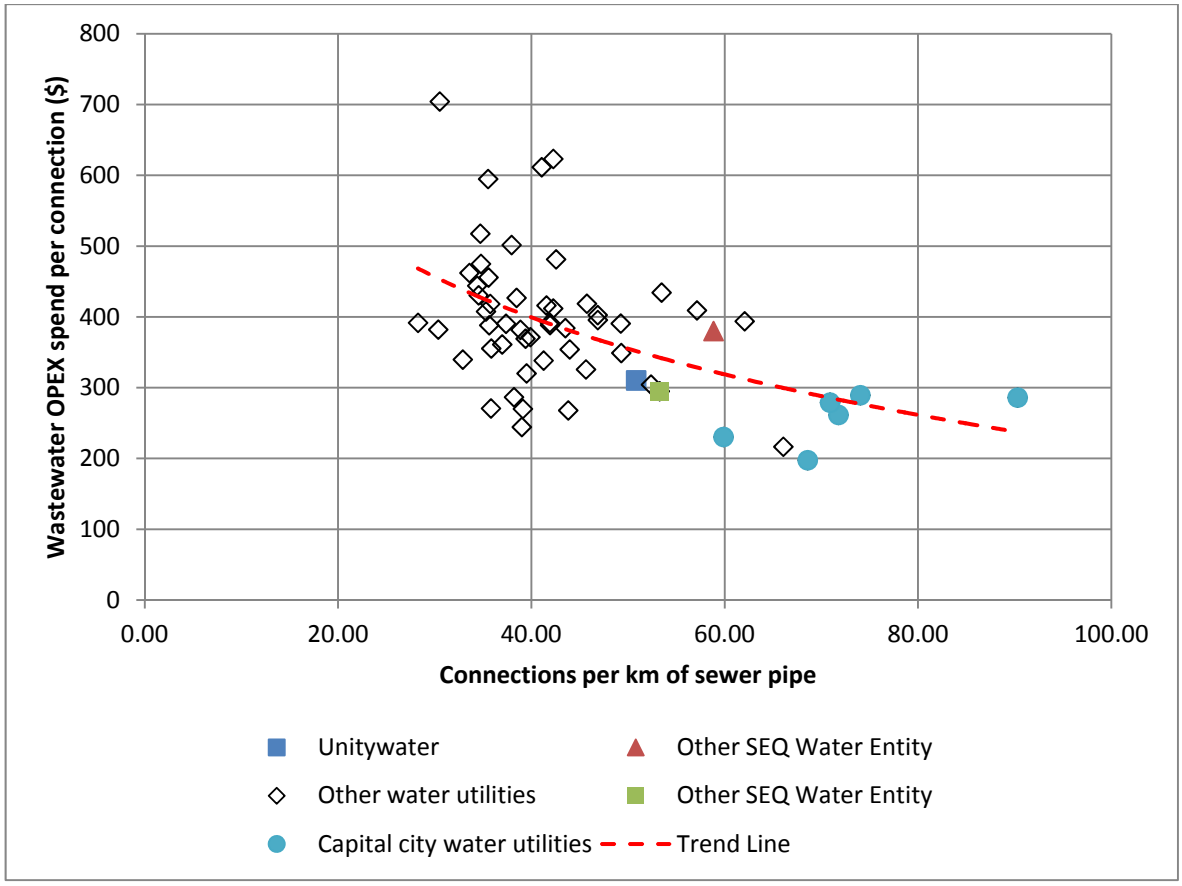
There is insufficient information publicly available for full benchmarking of water operating expenditure excluding bulk water costs.

- **Table 30 Comparison of bulk water costs**

Water Utility/ area	Bulk water cost ($/kL)	Controllable water operating expenditure (FY2011/12) ($/connection)
Unitywater	-	528[3]
Moreton Bay	1.94[1]	-
Sunshine Coast	1.35[1]	-
Sydney Water Corporation	0.48[2]	322[4]
City West Water	1.32[5]	420[4]
South East Water	1.33[5]	285[4]
Yarra Valley Water	1.07[5]	309[4]

1 Source: Queensland Water Commission table 'Bulk Water Prices 06-12-10', CPI applied.
2 Source: IPART, Review of prices for Sydney Catchment Authority, 2009, Schedule 1, CPI applied. Price is for the supply of raw (untreated) water
3 Source: Unitywater 2011/12 Information Template
4Source: National Water Commission's National Performance Report Part C
5 Source: Essential Services Commission (Vic), Metropolitan Melbourne Water Price Review 2009, Schedule 2, CPI applied

Unitywater's wastewater operating expenditure is benchmarked in **Figure 10**. Similar to the operating costs for water, the National Water Commission National Performance Report 2010/11 has been used as a data source for peer organisations; with a cost escalation applied to adjust costs to 2011/12 dollars.



Source: Data template Unitywater 2011/12 Information Template, Allconnex Water 2011/12 Information Template, Queensland Urban Utilities 2011/12 Information Template

Figure 10 Comparison of Unitywater's operating expenditure on wastewater services with other Australian water utilities

The chart shows that Unitywater's wastewater operating costs are below the trend line indicating that Unitywater's costs for wastewater services are lower than other similar sized entities.

We conclude that Unitywater's water operating costs are generally higher than similar sized water service providers. We also conclude that Unitywater's wastewater operating costs are generally lower than those of similar sized water service providers.

6.4. Sample selection

In undertaking a review of prudency and efficiency of operating expenditure we have selected a sample of costs for detailed investigation. The sample is shown in **Table 31** below.

The selection of our sample is based on the categories that attract the largest portion of operating expenditure and includes both fixed and variable costs. We have, however, excluded bulk water costs from our sample. Bulk water costs are determined by other agencies and are not within the

control of Unitywater. Our sample includes 69.3 percent, 67.1 percent and 67.9 percent of the total forecast operating expenditure (less bulk water and non regulated services) for 2011/12, 2012/13 and 2013/14 respectively.

- **Table 31 Operating expenditure sample selection for Unitywater**

Category	Service	Operating Expenditure ($000s)		
		2011/12	2012/13	2013/14
Corporate costs	Drinking water	15,111	15,092	14,757
	Other core water	464	464	453
	Wastewater via sewer	15,860	15,840	15,488
	Trade waste	248	248	242
	Total	**31,683**	**31,644**	**30,940**
Employee costs	Drinking water	22,424	22,876	23,041
	Other core water	770	789	781
	Wastewater via sewer	33,320	34,078	34,435
	Trade waste	1,290	1,328	1,360
	Total	**57,804**	**59,071**	**59,617**
Electricity costs	Drinking water	670	731	798
	Other core water	482	526	575
	Wastewater via sewer	5,701	6,225	6,797
	Trade waste	3	4	4
	Total	**6,856**	**7,486**	**8,174**
Chemical costs	Drinking water	299	316	334
	Other core water	499	527	557
	Wastewater via sewer	4,061	4,290	4,536
	Trade waste	1	1	1
	Total	**4,860**	**5,134**	**5,428**
Sludge handling	Drinking water	1	1	1
	Wastewater via sewer	4,284	4,526	4,785
	Total	**4,285**	**4,527**	**4,785**
Total Sample		**105,488**	**107,862**	**108,944**
Total operating expenditure, less bulk water and non-regulated services		**152,143**	**160,646**	**160,532**
Percentage		**69.3%**	**67.1%**	**67.9%**

Source: 2011/12 Information Template

In the 2010/11 Information Template costs were not fully disaggregated for electricity, chemicals and sludge handling. However, in **Table 32** we compare the operating expenditure for Corporate Costs and Employee Costs between the 2010/11 and 2011/12 Information Templates.

- **Table 32 Comparison or Corporate and Employee expenditure between the 2010/11 and 2011/12 Information Templates**

Category	Source	Operating Expenditure ($'000)	
		2011/12	2012/13
Corporate Costs	2010/11 Information Template	45,430	46,076
	2011/12 Information Template	31,683	31,644
	Variance	-13,747	-14,432
	Percentage variation	-30.2%	-31.3%
Employee Costs	2010/11 Information Template	44,221	45,965
	2011/12 Information Template	57,804	59,071
	Variance	13,583	13,106
	Percentage variation	+30.7%	+28.5%

Source: 2010/11 Information Template, 2011/12 Information Template

6.5. Corporate costs

6.5.1. Overview of operating expenditure

In the SEQ Interim Price Monitoring Information Requirements for 2011/12 the Authority defined corporate costs as general corporate expenditure that cannot be reasonably allocated to costs associated with:

d) *"personnel in the corporate group/division;*
e) *general management;*
f) *board members;*
g) *legal counsel;*
h) *company secretary;*
i) *quality/business improvement;*
j) *corporate relations;*
k) *strategy and planning;*
l) *human resource management;*
m) *risk management;*
n) *insurance management;*
o) *environment management;*
p) *property management;*
q) *financial management;*
r) *support staff for the corporate office;*
s) *costs incurred by the corporate office, including:*

i. property rental, repair and maintenance, utilities, and taxes for the corporate office;

ii. printing and stationery;

iii. telephone and fax;

iv. travel expenses;

v. legal fees;

vi. consultants;

vii. auditing;

viii. board fees;

ix. brand advertising and corporate image making;

x. corporate/community sponsorships and donations;

xi. internal communication;

xii. membership fees for industry or trade organisations;

xiii. freight, courier and postage;

t) membership fees for industry or trade organisations;

u) T systems other than costs associated with the SCADA (Supervisory Control and Data Acquisition control system);

v) telemetry and other 'operational' IT costs should be allocated to the relevant activity area; and

w) price monitoring staff, providing information requested by the Authority, preparing submissions in response to consultations conducted by the Authority, non-financial audits and the preparation of price monitoring accounts."

Unitywater's forecast corporate costs for 2011/12 to 2013/14 from its 2011/12 Information Template submitted to the Authority are shown in **Table 33** below together with the forecast for 2011/12 and 2012/13 provided by Unitywater it its 2010/11 Information Template submission.

Table 33 Comparison of corporate costs between the 2010/11 and 2011/12 submissions

	Corporate Costs ($000's)		
Source	**2011/12**	**2012/13**	**2013/14**
2010/11 Information Template	46,350	47,000	-
2011/12 Information Template	30,870	31,974	31,933

The corporate costs provided in Unitywater's 2011/12 Information Template to the Authority are approximately 31 percent and 32 percent lower than those reported in the 2010/11 Information Template for 2011/12 and 2012/13 respectively.

The *Cost Allocation Model* identifies the reason for the difference as the removal of non-recurrent costs from corporate costs in the 2011/12 submission. It is not clear where the non-recurrent costs have been included or whether these non-recurrent costs have been avoided.

Further, the 2011/12 submission does state that:

> *"Unitywater's submission to the QCA for 2010/11 relied heavily on council forecasts for operating and capital expenditure. Unitywater is continuing to introduce more rigorous capital and operating expenditure assessment processes and the implementation of those processes is resulting in improved project requirements, designs, sequencing and delivery'. Unitywater's submission further states that 'The effect on operating expenses as a result of these updated estimates is difficult to determine."*

We consider it likely that Unitywater is in the process of refining corporate costs as the amalgamation of previously council owned assets and systems are completed.

In its 2011/12 Submission Unitywater states that a top down efficiency factor has been applied that identified $10,000,000 in cost reductions in 2011/12. The final approved Board budget incorporates those expenditure reductions in addition to increasing capitalisation of corporate expenditures attributable to the capital works program. No information on how much of the $10,000,000 cost reduction is applicable to corporate costs has been provided.

6.5.2. Provided documentation

The key reference documents used for this review are:

- *2011/12 Information Template*, Unitywater
- *Cost Allocation Model,* Unitywater
- *Interim Price Monitoring Submission Version 1.7,* Unitywater, 31/08/2011

6.5.3. Prudency

Unitywater has not identified a cost driver for corporate costs. We have assessed cost drivers to be legal obligations, new growth, operations and maintenance of existing infrastructure and increase in the standard of service.

The operational expenditure has been assessed as prudent as it is required in order to meet the legal obligations, meet new growth, facilitate the operation and maintenance of existing infrastructure and to facilitate any increases in the standard of service of Unitywater.

6.5.4. Efficiency

Calculation of costs

The 'Unitywater Budget' tab of the *Cost Allocation Model* spreadsheet provides corporate cost details, however these have not been provided in a format similar to the Authority's definition. Where the operating expenditure has easily been identified as corporate costs according to the Authority's definition they have been included in **Table 34**. As can be seen from the total we were unable to identify approximately 58 percent of the corporate costs for the 2011/12 budget. No information was available to allow a similar comparison for 2012/13 and 2013/14.

- **Table 34 Corporate costs sourced from the Cost Allocation Model**

Item	2011/2012 Budget ($)
Directors Fees	335,000
Professional Memberships	36,680
Recruitment Expenses	125,000
Legal Expenses	675,000
Subscription and memberships	198,805
Postage Freight and Courier	829,214
Telecommunications – Landline	360,000
Telecommunications – mobile	500,000
Dataline / Internet	807,840
Promotional material	592,048
Advertising	228,454
Entertainment and Hospitality - Non-FBT	19,560
Entertainment and Hospitality - FBT	41,400
Sponsorships and Donations	24,000
Fees and charges expense	99,000
Corporate Contributions	340,000
Catering	52,990
Employee Health Expenses	36,000
Lease Expense	1,830,772
Period/Service Contracted Works	1,173,000
Building/Facility Maintenance Works	227,500
Council Rates	98,000
Licences and permits	2,164,800
Audit Fees	636,150
Insurance	2,016,069
Sum	13,447,282
Budget in the Submission to the Authority	31,974,000
Difference	18,526,718 or 58%

The Expenses Naturals spreadsheet provides a breakdown of Unitywater's corporate costs. However, the breakdown totals to $15,861,998 for the 2011/12 year and hence isn't comprehensive.

We generally found the information provided to be contradictory. We do not have enough information to assess the overall robustness of Unitywater's calculation of corporate costs.

Delivery of service

Unitywater's corporate expenditure is for both internal and external costs. No specific breakdown on the delivery of services associated with costs has been provided, therefore we do not have enough information to comment on delivery of services from which these costs arise.

Market conditions

In the Telephone and Consultant Costs spreadsheet the costs of external expenses including telecommunication costs and external consultancy fees are detailed. However, no information has been provided as to how the telecommunications and consultancy services were procured. We have no other information to assess the market conditions for other corporate costs.

Efficiencies and economies of scale

The 2011/12 Submission identifies reductions in materials and services of $2,500,000 from 2010/11 to 2011/12 as reflective of the Board's determined efficiency scope reductions and the removal of deterministic regulation from 2013.

Benchmarking

In its 2011/12 Submission, Unitywater states that the largest contribution to corporate expenditure is salary and wages, which contribute 50 percent of corporate expenses.

In its 2011/12 Submission, Unitywater states that corporate costs are escalated at the Reserve Bank of Australia CPI target for 2012/13 of 3 percent and for 2013/14 the target is 3.07 percent. Escalating the 2011/12 budget by the CPI rates results in budgets of approximately $32,933,000 in 2012/13 and $34,152,000 in 2013/14. These budgets are higher than those detailed in the 2011/12 Information Template submitted to the Authority.

In its 2010/11 Submission, Unitywater states that:

> *"Advice on corporate overheads was sourced from the Council on the Cost and Quality of Government (CCQG), now known as the Performance Improvement Branch, Department of the Premier and Cabinet, New South Wales government. For agencies of greater than 350 full time equivalent employees CCQC have benchmarked corporate overheads at between 10 and 12% of overall operating costs."*

The CCQC benchmarks have been applied for a comparison of corporate costs as shown in **Table 35** below.

A comparison of the budgets from the submission to the Authority and calculations using CPI and CCQC's benchmark are included in **Table 35** which shows that the submitted budget costs are slightly higher than the benchmark range for 2011/12 and 2012/13 and within the benchmark range for 2013/14.

- **Table 35 Benchmarking of corporate operating expenses using different calculation methods**

	2011/12 ($)	2012/13 ($)	2013/14 ($)
2011/12 Information Template	31,974,000	31,933,000	31,223,000
CPI adjusted	31,974,000	32,933,000	34,152,000
CCQC benchmark	23,873,400 to 28,648,080 (Total operating expenses of 238,734,000)	26,437,100 to 31,724,520 (Total operating expenses of 264,371,000)	28,272,800 to 33,927,360 (Total operating expenses of 282,728,000)

In **Table 36** we benchmark total 2011/12 corporate costs for Unitywater with the other SEQ water retail/ distribution entities, and a selection of urban water authorities in Victoria and New South Wales. We have benchmarked against total number of full time equivalents (FTEs) within the organisation, customer base (we have used number of water connections as a proxy) and maximum allowable revenue (MAR).

- **Table 36 Benchmarking of corporate costs**

Water Authority	Corporate cost benchmarking		
	$/FTE	$/customer connection	$/revenue
Unitywater	**34.3**	**107.3**	**72.2**
Other SEQ retail/distribution entity	41.9	100.4	64.8
Other SEQ retail/distribution entity	37.5	80.9	37.9
Victorian water retail/distributor	106.9	78.5	75.1
Victorian water retail/distributor	87.3	61.0	76.6
Victorian water retail/distributor	63.1	34.1	42.1
NSW water retail/distributor	67.7	114.6	94.9
NSW water retail/distributor	65.6	132.0	135.6
Mean	63.0	88.6	74.9
25th percentile	40.8	74.1	59.1
75th percentile	72.6	109.1	81.2

The results of the benchmarking show Unitywater's corporate cost per FTE are significantly lower than peer organisations nationally. We note that the other SEQ retail/ distribution entities are also

lower than national peers and conclude that this may be in part due to the Workforce Framework creating a labour constraint.

When benchmarked against the customer base, Unitywater's forecast corporate costs are seen to be higher than the mean of other water utilities used in the comparison, but still within a range that can be considered reasonable.

When benchmarked against revenue, Queensland Urban Utilities forecast corporate costs are similar to other water utilities used in this comparison.

We conclude that the Unitywater's overall operating costs are comparable with other water authorities in Australia.

6.5.5. Summary

Unitywater's corporate costs have been assessed as prudent as corporate costs are required for Unitywater's operation.

Unitywater's corporate costs have been assessed as efficient. We have benchmarked Unitywater's corporate costs to the corporate costs of other government owned water entities and found Unitywater's corporate costs to be comparable.

6.6. Employee expenses

6.6.1. Overview of operating expenditure

The labour cost budget for this item includes all staff Unitywater employs in the operation of their water supply, waste water treatment assets and corporate offices.

In its 2011/12 Information Template submitted to the Authority, Unitywater has budgeted $55.74 M in the 2011/12 financial year increasing to $57.47 M in the 2013/14 financial year.

Table 37 shows the proposed cost of the Unitywater's employee expenses within the entity's budget for the next three financial years commencing 2011/12.

- **Table 37 Entity – proposed operating expenditure profile**

	Costs ($000s)		
Source	**2011-12**	**2012-13**	**2013-14**
2011/12 Information Template	55,744	56,953	57,476

6.6.2. Provided documentation

The key reference documents used for this review are:

- Unitywater's 2011/12 Information Template
- Responses to SKM's Requests for Information
  - *RFI-0001 – Operating expenditure review – sample review list*
  - *RFI-0007 –Operating expenditure – employee costs*

6.6.3. Prudency

The expenditure on employees is used to address the following driver categories:

- Legal obligations
- Operations and maintenance of existing infrastructure

Unitywater is required to supply drinking water and treat wastewater to meet license conditions for public health and environmental discharge limitations. The engagement of labour to operate and maintain the infrastructure under the responsibility of Unitywater and to manage the regulated businesses of Unitywater is required to fulfil its obligations and hence, is prudent.

6.6.4. Efficiency

Calculation of costs

Labour expenses are developed bottom up on an employee by employee basis. A base salary is calculated for each employee, statutory on-costs are then applied and an allowance is made for overtime based on historical trends. Labour expenses are escalated consistent with Unitywater's inherited Enterprise Bargaining Agreement from councils, which specifies an escalation of four percent per annum.

There are a total of 634 full time equivalents attributable to the provision of water and wastewater services. The total labour costs for water and wastewater services is $55.74 M, corresponding to an average of $87,920 per full time equivalent, noting that the overall cost estimate includes an allowance for overtime. The base salary is 65-70 percent of total labour costs with superannuation, leave allowances and payroll tax in addition.

Delivery of service

The operation of water and wastewater services is conducted in house by a total of 634 full time equivalent personnel. There is insufficient detail provided in Unitywater's 2011/12 Information Template submitted to the Authority and response to requests for information to split the workforce between water and wastewater operations

Market conditions

The labour market for the water industry in Australia has experienced an average growth in prices of slightly over four percent[7] per annum over the last four years. This has influenced the negotiation processes surrounding new enterprise bargaining agreements with annual wage increases being locked into increases of between 3.9 percent and 4.25 percent through the SEQ water industry.

The budget forecast by Unitywater has set labour prices to increase at 1.5 percent per annum. This does not allow for wage increases of four percent as per the new enterprise bargaining agreement or for further wage increases for movement between award bands.

Efficiencies and economies of scale

Unitywater has identified the following efficiencies for their employee expenditure:

- Extending current working hours so that the workforce starts and finish times are staggered, thereby more closely matching workforce availability with work volumes and minimising overtime costs
- Introducing afternoon shift work for field-based roles
- On-site start/ finish work arrangements for field service crews
- Employees' pay parity across Unitywater's workforce (ie same work/ same pay)

Benchmarking

Unitywater has not under taken any internal benchmarking of operating expenditure in the development of the 2011/12 budget forecasts.

Compared to the other two entities, Queensland Urban Utilities and Allconnex Water, Unitywater has a similar percentage breakdown of employee expenses versus total operating expenses with it averaging approximately 21 percent of annual expenditure.

6.6.5. Summary

The engagement of labour to operate and maintain the infrastructure under the responsibility of Unitywater is required to fulfil its obligations and hence, is prudent.

The expenditure for labour in operating and maintaining the infrastructure under the responsibility of Unitywater is efficient.

[7] Australian Bureau of Statistics – ABS 6345.0

6.7. Electricity costs

6.7.1. Overview of operating expenditure

Unitywater uses electricity for their water and wastewater pumping, wastewater treatment and corporate offices.

In the 2011/12 Information Template submitted to the Authority, Unitywater has budgeted $6.86 M in 2011/12 financial year increasing to $8.17 M in 2013/14 financial year. Electricity is supplied to Unitywater for use at its sites by the following two retailers following an amalgamation of suppliers from previous council contracts:

- ERM Power supply electricity to the large contestable sites (>100MWh consumption per annum)
- TRUenergy supply electricity to the small contestable sites (<100MWh consumption per annum)

Unitywater has engaged ERM Power in an 18 month contract with the term expiring on 30 June 2012 and TRUenergy on a 36 month contract with the term expiring on 30 June 2013.

Table 38 shows the proposed cost of the Unitywater electricity consumption within the entity's budget for the next three financial years commencing 2011/12. Comparison is made between the electricity costs reported in the 2010/11 and 2011/12 Information Submissions.

- **Table 38 Unitywater – proposed operating expenditure profile**

	Costs ($000s)		
Source	**2011-12**	**2012-13**	**2013-14**
2010/11 Information Template	8,300	9,200	-
2011/12 Information Template	6,856	7,486	8,174

6.7.2. Provided documentation

The key reference documents used for this review are:

- Unitywater's 2011/12 Information Template
- Responses to SKM's Requests for Information
  - *RFI-0001 – Operating expenditure review – sample review list*
  - *RFI-0006 – Operating expenditure – electricity costs*

6.7.3. Prudency

The expenditure on electricity is used to meet the following driver categories:

- Legal obligations
- New growth
- Operations and maintenance of existing infrastructure

Unitywater is required to supply drinking water and treat wastewater to meet license conditions for public health and environmental discharge limitations. Electricity provides motive and process energy for the operation of these services.

As the population of SEQ grows, additional water and wastewater services are required to be supplied. Electricity consumption is proportional to the quantity of water supply and wastewater processing and will therefore increase with population growth in the service area.

Electricity is an integral part of the operation and maintenance of the existing infrastructure under the responsibility of Unitywater. All pump stations, process plants and office facilities require electricity to function and operate safely.

The purchase of electricity for the operation of water supply, wastewater treatment plants and office facilities is required to fulfil Unitywater's obligations and hence, is prudent.

6.7.4. Efficiency

Calculation of costs

Unitywater has provided limited information on how forecast costs are calculated. In response to our request for information, Unitywater provided some insight to the process. The electricity cost calculation used the following inputs:

- Six months of consumption and expenditure data from the first half of 2009/10 financial year and extrapolated to a full year
- Flow increase forecasts from growth
- Cost escalation has been calculated using BRCI and not by using contract rates for electricity supply from ERM Power and TRUenergy

- **Table 39 Unitywater – electricity cost increase**

2011-12	2012-13	2013-14
11.48 %	9.19 %	9.2 %

Delivery of service

Electricity is provided to Unitywater by two external parties selected via a competitive tender process. Unitywater released a tender to the retail electricity market in an effort to amalgamate electricity supply providers for their sites inherited from the various councils. The tender consisted of the following requirements:

- Supply of electricity to all large contestable sites
- Supply of electricity to all small contestable sites

The tender submissions for the two parts were:

- Large contestable sites – four retailers provided tenders for the supply of electricity
- Small contestable sites – four retailers provided tenders for the supply of electricity

Tender evaluations were undertaken using internal Unitywater processes. The recommendation from the review was for Unitywater to select the following:

- ERM Power for the large contestable sites for a period of 18 months
- TRUenergy for the small contestable sites for a period of 30 months

Market conditions

For the tender process Unitywater received offers from four retailers for the large contestable sites and from four retailers for the small contestable sites. This gives evidence to the competitive nature of the electricity retail market. Unitywater's ability to lock in an 18 month supply contract for its large contestable sites and a 36 month contract for its small contestable sites has enabled it to sterilise the impact of external forces on electricity prices.

The forward market for electricity supply is influenced by a number of variables that impact the price a retailer is willing to offer for future supply. An example of some of these variables is listed below:

- Recent (to retail offer) spot electricity market volatility
- Policy announcements and decisions – both State and Commonwealth
- Availability of market supply
- Consistency and predictability of load profile

A review of retailer supply price offers before and after the Commonwealth Government's announcement of a carbon tax in February 2011 showed an average 25 percent increase in prices following the announcement. Retailers have priced future carbon tax impacts into their offers based on the level of industry compensation and average market carbon intensity.

Comparing the tenders received by Unitywater for the supply of electricity, the spread of peak and off peak prices for the large contestable sites was within ± 2.5 percent of the average price for the 18 month period. This close grouping of prices demonstrates the limited opportunities of achieving significant future savings in the electricity supply market.

Efficiencies and economies of scale

Unitywater has combined its sites into two categories, large and small contestable sites. The large contestable sites provide real time electricity consumption data to the retailer whilst the small contestable sites are either unmetered or have in-situ meters that require physical reading for each billing period to record consumption.

By combining the site supplies to two retailers, Unitywater has sought to benefit from economies of scale in seeking electricity supply contracts. Forecast savings for Unitywater over the two financial years 2011/12 financial year and 2012/13 financial year are $2.5 M for all sites when comparing the 2011/12 Information Template data to that provided in the 2010/11 Information Template.

Unitywater has provided information relating to potential cost savings from energy efficiency improvements with respect to electricity consumption in addition to the savings achieved by the amalgamation of electricity suppliers. Unitywater has commenced a feasibility study into rationalising the number of pump stations located on Bribie Island. The deliverable for this study is due in early 2012, and will assess the benefits of reduced energy consumption against the resultant capital expenditure required.

Benchmarking

It is difficult to provide a direct comparison of electricity between entities as electricity consumption is a function of:

- Population demand habits
- Local topography and water and wastewater piping hydraulic characteristics
- Number of pumping stations

A possible alternative method for benchmarking entities in terms of assessing energy efficiency could be by reviewing energy consumption in wastewater treatment operations. However the data provided is not disaggregated in sufficient detail to undertake such an assessment and, further, the results could be distorted by inclement weather influencing regional wastewater flows.

6.7.5. Summary

The purchase of electricity for operation of water supply and wastewater treatment plant is required to fulfil Unitywater's obligations and hence, is prudent.

Purchasing electricity via long term supply contracts for the large and small contestable sites is efficient as the process has sought to secure electricity supply for the lowest cost through a tendering process in the competitive electricity retail market.

6.8. Chemical costs

6.8.1. Overview of chemical operating expenditure

Chemicals are required for the operation of Unitywater's sewage treatment plants, odour management in the sewer network and re-chlorination of the water supply network. The chemicals identified in Unitywater's submission to the Authority and subsequent responses to requests for information include:

- Ammonium sulphate
- Alum sulphate
- Anhydrous ammonia
- Aqua ammonia 25%
- Buffer solution
- Calcium hypochlorite
- Calcium nitrate 40%
- Calibration solution
- Caustic soda 32% or sodium hydroxide
- Citric acid
- Chlorine gas
- Cleaning solution
- Hydrated lime
- Hypersperse
- Iso-cyanuric acid
- Liquid alum
- Liquid caustic soda
- Magnesium hydroxide
- Methanol
- Molybdate solution
- Oxidising reagent
- Polyelectrolyte
- Reducing solution

- Saturated brine 5000L=6000KG
- Sodium hypochlorite 10%
- Sodium bisulphite solution 25%
- Sulphuric acid
- Triton BX 40% liquid
- UF cleaner

In the 2010/11 Information Submission, the Unitywater chemical budget is listed as $5,300,000, $5,600,000 and $5,800,000 for the 2010/11, 2011/12 and 2012/13 years respectively. **Table 40** shows the proposed cost of Unitywater's chemical costs within the entity's budget for the next three financial years. The chemical costs provided in Unitywater's 2011/12 Information Template to the Authority are 28 percent and 26 percent lower than those provided previously in Unitywater's 2010/11 Information Template for 2011/12 and 2012/13 respectively. No explanation of the specific drivers of the chemical budget reductions is provided by Unitywater.

- **Table 40 Unitywater chemical costs – proposed operating expenditure profile**

	Costs ($000s)		
Source	**2011-12**	**2012-13**	**2013-14**
2011/12 Information Template	$4,360	$4,606	$4,870
2011/12 Submission	$4,900	$5,100	$5,400

The chemical costs extracted from the 2011/12 Information Template submitted to the Authority are for chemical costs identified for 'drinking water' and 'wastewater via sewer' only. The chemical costs identified in the 2011/12 Submission are those associated with 'drinking water' and 'wastewater via sewer' in addition to 'other core water services' and 'trade waste'. Only the chemical costs identified in the 2011/12 Submission to the Authority are included in this review.

Table 41 provides a breakdown of chemical costs by geographic region and service.

- **Table 41 Unitywater Chemical Costs by geographic region and service**

		Costs ($000s)		
Geographical Area	**Service**	**2011/12**	**2012/13**	**2013/14**
Sunshine Coast	Water	$16	$17	$18
	Wastewater	$1,915	$2,023	$2,139
Moreton Bay	Water	$283	$299	$316
	Wastewater	$2,145	$2,267	$2,396

6.8.2. Provided documentation

The key reference documents used for this review are:

- *Interim Price Monitoring Submission Version 1.7*, Unitywater, 31/08/2011
- *Contract Recommendation & Approval Report*, Unitywater, 18/11/2010
- *Response to Request for Information 0001*, Unitywater, 19/09/2011
- *Response to Request for Information 0014*, Unitywater, 07/10/2011
- *Tender Evaluation Workbook*, Unitywater, no date provided

6.8.3. Prudency

Chemicals are required for dosing and use in treatment processes to ensure that Unitywater is compliant with service standards such as the Australian Drinking Water Guidelines and Department of Environment and Resource Management licence requirements. Unitywater has identified chemical cost as having cost drivers of legal obligations, new growth, operations and maintenance of existing infrastructure and increase in the standard of service. We consider that legal obligation is the appropriate cost driver.

In its 2011/12 Submission Unitywater states that the chemical operating expenditure forecast considers factors including:

- Expected demand for water reticulation and sewerage services
- Expenditure required to maintain the quality, reliability and security of supply of water and sewerage services to Moreton Bay and Sunshine Coast customers
- Expenditure to comply with sewage treatment plant wastewater discharge licence conditions issued by the Department of Environment and Resource Management
- Contribution towards improving the health of our waterways, estuaries, fisheries, and the Moreton Bay Marine Park in order to support positive environmental outcomes, regional industry and tourism.

Given this information we agree with the nominated cost drivers of legal obligations, new growth, operations and maintenance of existing infrastructure and increase in the standard of service and consider the expenditure to be prudent.

6.8.4. Efficiency

Calculation of costs

In its response to our requests for information Unitywater states that the budget for chemical costs was developed by utilising actual chemical expenditure with allowances made for catchment growth. However, the 2011/12 Submission identifies the cost escalation as being a combination of

growth and cost indices. Unitywater's growth index for chemical costs is consistent with the dwelling growth rate calculated using Planning Information and Forecasting Unit (PIFU) data. The cost index is based on Reserve Bank of Australia (RBA) CPI and represents the escalation of the cost of chemicals each year. We have examined the escalation factor as listed in the 2011/12 Submission in this review and found them appropriate and reasonable.

The cost and growth indices applied by Unitywater in developing its budgets for the 2012/13 and 2013/14 years are provided in **Table 42**. Considering the escalation index is developed from PIFU and RBA indices we consider the Unitywater chemical cost indices to be appropriate. Further, in comparison Queensland Urban Utilities chemical costs increased by approximately 4.47 percent in the 2012/13 budget and 4.69 percent in 2013/14. Unitywater suggests the differences in chemical costs between entities in SEQ can be attributed to differences in transport, logistics, storage, volume, technology, customer density and contracting strategy between entities.

Table 42 Growth and cost indices applied in determining chemical costs

Year	Growth Index	Cost Index	Total Escalation
2012/13	2.65%	3.00%	5.65%
2013/14	2.66%	3.07%	5.73%

For some chemicals such as alum (for phosphorus removal) and methanol (nitrogen reduction) Unitywater maintains an allowance for supply regardless of actual expenditure to ensure that sufficient chemicals are available to meet environmental licence requirements during all conditions. Changing conditions including varying trade waste discharge, variations in sewage quality, maintenance, water temperature and plant microbiological health influence the biological performance of treatment plants and therefore can result in unplanned chemical dosing. Maintaining an allowance for chemicals that are used in unplanned dosing is considered reasonable.

In describing its cost allocation method, Unitywater states that it has developed detailed revenue and cost allocation models that identify individual expenditures to the lowest disaggregated level. This will allow for the development of budgets using a bottom up approach.

In its 2011/12 Submission Unitywater also states that it is investigating innovative ways to reduce chemical expenditure such as alternative supplies of chemicals and possible local manufacturing. No information detailing this investigation has been provided.

Although detailed supporting information is not available for the calculation of chemical costs, we understand that chemical costs are calculated either by escalating historical expenditure or by using a zero based budget developed without regard to historical data, depending on the type of chemical.

Delivery of service

Two approaches to procurement of chemical supply have been adopted in Unitywater. The northern region (comprising former Sunshine Coast Region Council assets) approach is to seek long term supply contracts which are aimed at achieving lower rates. The southern region (comprising former Moreton Bay Regional Council assets) approach is to procure chemicals through a purchase order arrangement as chemicals are required. Chemicals are supplied to Unitywater under a number of companies as detailed in **Table 43**.

- **Table 43 Chemical suppliers and unit rates**

Product	[redacted]	Unit of Measure	[redacted]	Region
Alum Sulphate Bags 25KGS	[redacted]	MT	[redacted]	Both Regions
Ammonium Sulphate		L		
Anhydrous Ammonia		KG		
Aqua Ammonia 25%		KG		Northern Region
Buffer Solution		5L		
Calcium Hypochlorite		drum		
Calcium Nitrate 40%				Southern Region
Calibration Solution		5L		Southern Region
Caustic Soda 32% or Sodium Hydroxide		L		Northern Region
Caustic Soda 32% or Sodium Hydroxide		L		
Chlorine Gas 70KG		Cylinder		
Chlorine Gas 920KG		Cylinder		Both Regions
Citric Acid				Southern Region
Cleaning Solution		5L		Northern Region
Hydrated Lime				
Hypersperse		L		
iso-Cyanuric Acid		KG		
Lime Hydrate Bulk 95%		Tonne		
Liquid Alum - (1.31 sp)		M Tonne		
Liquid Alum - (1.31 sp)				Both Regions
Liquid Caustic Soda		MT		Both Regions
Liquid Caustic Soda 32%		L		
Magnesium Hydroxide		MT		
Methanol		L		
Methanol				
Molybdate Solution		5L		
Oxidising Reagent		5L		Northern Region

Product	[redacted]	Unit of Measure	[redacted]	Region
Reducing Solution	[redacted]	5L	[redacted]	Southern Region
Saturated Brine 5000L=6000KG		KG		Southern Region
Sodium Bisulphite Solution 25% Bulk		MT		Both Regions
Sodium Hypochlorite 10%		L		
Sodium Hypochlorite 10%		L		
Sodium Hypochlorite 10%		1000 L		Northern Region
Sulphuric Acid		5L		
Sulphuric Acid 98%		MT		
Triton BX 40% Liquid		KG		Southern Region
UF Cleaner				Southern Region
Various polyelectrolytes				Northern Region
Zetag 8160 (Polyelectrolyte)		KG		
Zetag 8180 (Polyelectrolyte)		KG		

Unitywater supplied a Tender Evaluation Workbook that demonstrates the process by which the tenders for supply of alum were evaluated. The tenders were evaluated on the supplier's track record and experience, project delivery methodology, environmental sustainability and contribution to local economy. The tender evaluation process resulted in the selection of two separate contracts based on the northern and southern regions as this approach resulted in the best value. The Sunshine Coast region contract was awarded to Omega Chemicals and the Moreton Bay region contact was awarded to Orica Chemicals Australia. Unitywater has demonstrated that its approach to securing chemicals by tender is robust.

Market conditions

In a meeting on the 6th October 2011 Unitywater stated that the chemical supply market in the region is small, with generally only two or three suppliers available for each chemical.

Unitywater has supplied documents that show that in the most recent tender for aluminium sulphate in 2010 only two tenders were received for the supply of aluminium sulphate. The same two tenders, Orica Australia and Omega Chemicals responded to the Queensland Urban Utilities request for tender the same year. Further, we are aware that for the other 17 chemicals listed on the Queensland Urban Utilities tender documents, one (calcium hypochlorite) received five tenders, six received three tenders, six received two tenders and four received one tender. This supports Unitywater's assertion that there are a limited number of suppliers for certain chemicals in SEQ.

We therefore agree with Unitywater's assessment of market conditions in their region.

Efficiencies and economies of scale

In the meeting on the 6th October 2011, Unitywater stated that process engineers provide input in to the development of chemical usage estimates. We would expect the input of the process engineers would ensure that any process efficiency gains will be reflected in appropriate changes to the chemical budget.

Efficiencies and economies of scale have been sought by Unitywater through the contracting of supply for chemicals. The tender process for the supply of alum demonstrates that Unitywater's approach to tendering ensures the best value for money for Unitywater. Alum is the only chemical for which evidence of the tendering process was supplied.

Unitywater has supplied evidence that efficiencies and economies of scale have been gained through publically requesting tenders for the supply of alum. We expect that further competition in chemical prices may be achieved through Unitywater applying the same tendering process across the board for all other chemicals. For example, Queensland Urban Utilities obtained more than one tender for chemicals used by Unitywater including sodium hypochlorite, calcium hypochlorite, sodium hydroxide, aqueous ammonia, sulphuric acid and aluminium sulphate. Of these chemicals, Unitywater has identified sodium hypochlorite, calcium hypochlorite and aqueous ammonia as being commonly used.

We suggest that Unitywater could maintain higher competitiveness in the chemical market through publically requesting tenders for the supply of chemicals. This process has been adapted by Queensland Urban Utilities, and despite the small chemical market in SEQ has resulted in efficiency gains through grouping of supply contracts.

Benchmarking

To further examine Unitywater's chemical costs we benchmarked Unitywater's chemical costs per ML of water and wastewater against the unit costs of Queensland Urban Utilities and Allconnex Water as shown in **Table 44**.

Table 44 Comparison in chemical rates by volume water and wastewater

Entity	Quantity / Rate	2011/12	2012/13	2013/14
Queensland Urban Utilities	Water volume (ML)	122,298.10	124,737.90	127,233.70
	Water chemical cost ($)	$161,848.00	$169,477.00	$177,900.00
	Water chemical cost ($/ML)	$1.32	$1.36	$1.40
	Wastewater volume (ML)	493,383.80	502,281.50	511,363.40
	Wastewater chemical cost ($)	$3,642,159.74	$3,812,426.03	$4,000,347.38
	Chemical Cost ($/ML)	$7.38	$7.59	$7.82
Allconnex Water	Water volume (ML)	88,870.30	90,754.50	92,879.90

Entity	Quantity / Rate	2011/12	2012/13	2013/14
	Water chemical cost ($)	$1,202,824.43	$1,232,895.04	$1,189,031.71
	Water chemical cost ($/ML)	$13.53	$13.58	$12.80
	Wastewater volume (ML)	75,474.30	77,064.20	78,859.00
	Wastewater chemical cost ($)	$3,069,680.56	$3,146,422.55	$3,034,480.70
	Chemical Cost ($/ML)	$40.67	$40.83	$38.48
Unitywater	Water volume (ML)	46,000.00	46,939.00	48,028.00
	Water chemical cost ($)	$299,370.09	$316,284.82	$334,415.89
	Water chemical cost ($/ML)	$6.51	$6.74	$6.96
	Wastewater volume (ML)	293,493.00	301,352.00	309,443.00
	Wastewater chemical cost ($)	$4,060,506.97	$4,290,005.02	$4,535,896.99
	Chemical Cost ($/ML)	$13.84	$14.24	$14.66

For both water and wastewater across all years Queensland Urban Utilities chemical costs are lower and Allconnex Water costs are higher than Unitywater's. We conclude that, taking into consideration the lesser purchasing power of Unitywater to that of Queensland Urban Utilities, Unitywater's chemical costs are efficient.

6.8.5. Summary

Chemicals are required for the operation of Unitywater's sewage treatment plants, for odour management in the sewer network and re-chlorination of water in the water supply network to meet standards such as the Australian Drinking Water Guidelines and DERM licence criteria. As the chemicals are required to meet these standards we conclude that the chemical costs for the 2011/12 to 2013/14 period are prudent.

There are opportunities for Unitywater to improve the efficiency of procurement of chemicals as alum is currently the only chemical for which tenders are sought. However, Unitywater chemical costs per ML of water and wastewater are the median costs among the three retail entities in SEQ. Therefore we consider the Unitywater chemical costs to be efficient.

6.9. Sludge handling

6.9.1. Overview of operating expenditure

The operating expenditure item reviewed in this section is 'sludge handling' that includes the disposal of bio-solids, grit and screenings from wastewater treatment plants.

Table 45 shows the proposed cost of the Unitywater sludge handling costs within the entity's budget for the next three financial years and for the previous financial year.

- **Table 45 Unitywater – Sludge Handling costs – proposed operating expenditure profile**

	Costs ($000s)			
Source	**2010-11**	**2011-12**	**2012-13**	**2013-14**
2011/12 Information Template	3,743	4,284	4,526	4,785
2011/12 Submission	3,700	4,300	4,500	4,800
Cost Allocation Model	3,743	4,285	4,527	4,786

6.9.2. Provided documentation

The key reference documents used for this review are:

- *Interim Price Monitoring Submission v1.7*, Unitywater
- *QCA Information Requirements*, Unitywater
- *Cost Allocation Model*, Unitywater
- *Response to RFI QE09969-3000-OEC-RI-M3-0001*, Unitywater
- *Arkwood Rates for Biosolids*, Arkwood Pty Ltd, 31 July 2011
- *Biosolids Management Strategy*, Unitywater, 7 September 2011
- *Contract for Transporting Grit and Screenings From Murrumba Downs and Brendale Wastewater Treatment Plants – Multiple Divisions*, Moreton Bay Water, 13 October 2009 hereafter referred to as the *Moreton Bay Water Tender Assessment*
- *Removal of Grit and Screenings from Sewage Treatment Plants – Tender Acceptance Letter*, Moreton Bay Water, 26 November 2009 hereafter referred to as the *Moreton Bay Water Tender Acceptance Letter*
- *RE: Transpacific contact details please?* (email), Moreton Bay Regional Council, 20 May 2010
- *QCA Info_Biosolids_Budget* (spreadsheet), Unitywater
- *Re: Price Increase Effective 1st August 2011* (letter), Transpacific Industries Group Ltd, 28 June 2011

6.9.3. Prudency

In its response to our request for information, Unitywater specifies the following drivers for sludge handling:

- Legal obligations
- New growth
- Operations and maintenance of existing infrastructure

The disposal of sewage sludge falls under the following legislation:

- *The Water Act (2000)* requires water and sewerage service providers to prepare a Total Management Plant (TMP) and a Strategic Asset Management Plan (SAMP). The Bio-solids Management Sub-Plan is a component of the combined TMP and SAMP.
- *The Environmental Protection Act (1994)* classifies sludge, grit and screenings as 'regulated waste.'
- *The Environmental Protection (Waste Management Plant) Regulation (2000)* details requirements management of bio-solids
- *The Public Health Act (2005)* must be complied with

The expenditure is due to the ongoing operation of wastewater treatment plants and the sludge is produced as part of these treatment processes. Additionally growth in the catchment can increase the volume of sludge produced.

The expenditure is assessed as prudent. The primary drivers of legal obligations, new growth and operation of existing infrastructure have been demonstrated.

6.9.4. Efficiency

Calculation of costs

Information has been provided for some of the Unitywater wastewater treatment plants however, the lack of detail prevents even a high level assessment of the costs.

The spreadsheet *QCA Info_Biosolids_Budget* details the annual 2011/12 budget for each Unitywater wastewater treatment plant. As a breakdown of the costs has not been provided nor an explanation of what is included in the cost then detailed analysis of this budget cannot be undertaken.

The *Arkwood Rates for Biosolids* document is an invoice for services rendered and details rates for the receipt and management of bio-solids plus the rates for disposal to Swanbank landfill for different wastewater treatment plants. Both rates for each wastewater treatment plants are the same value. For both services the range of rates are from $50.50 per tonne to $60.40 per tonne, which is concurrent with other rates for these services in this region of Queensland.

The *Moreton Bay Water Tender Assessment* compares the relative merits of the two tenders that have been received for the transportation of grit and screenings to landfill. *Moreton Bay Water Tender Acceptance Letter* details that Transpacific was awarded the contract for the transportation of grit and screenings to landfill for Moreton Bay Regional Council. Contracts rates have been provided in the form of example invoices paid to the contractor.

Unitywater confirmed that the rates of sludge production are based upon the historical data that are confirmed with their process engineers. We consider this a reasonable approach to take.

Delivery of service

As discussed with Unitywater the services are provided externally. The contracts were awarded following an open tender process.

Of the five councils that previously provided water and wastewater services in Unitywater's regions, four councils combined to award two contracts, one for the transportation and disposal of bio-solids and the other for the transportation and disposal of grit and screenings. The fifth council initially awarded its own contract for these services, which has now expired and the services are now provided by the contractors that were awarded the contract of the four other councils.

The *Biosolids Management Strategy* states that two bio-solids haulage contractors are engaged in the provision of these services and that "*their contracts expire in November and December 2011, although the contracts have a further 12 month extension option, which would take them through to the end of 2012.*" Unitywater has stated in discussions its intention is to extend the contracts until the end of 2012 and then seek to retender the services.

Market conditions

Unitywater has stated in discussions that the bio-solids disposal can only be undertaken by a licensed contractor of which there are only two of sufficiently large size for Unitywater to use effectively in the region. These contractors are Arkwood and Transpacific. The grit and screenings are disposed to landfill by the contractor. Furthermore Unitywater has stated that it is not feasible to dispose of bio-solids to landfill, some of which are not licensed to accept regulated waste.

As stated previously, the original contracts awarded by the four councils were awarded following an open tender process and so the rates are considered efficient. This has now been extended to include the fifth council region. Unitywater has stated in discussions its intention is to extend the contract awarded by the five councils till the end of 2012 and then seek to retender the services.

This is a reasonable approach to take.

It should be noted that grit and screenings handling is a fairly competitive market however, there are currently only two sizeable companies that provide sludge handling services in SEQ, meaning that the market is not as competitive as for grit and screenings handling. This is because a company requires a licence to provide sludge handling services which constitutes a barrier to entry into the market.

The *Biosolids Management Strategy* recommends that Wastewater Treatment Plants be designed to be operated as factories to produce two market-driven products. The two products are the outputs

of the liquid stream process and solids stream process. The sludge handling services relate to the latter process. The *Biosolids Management Strategy* has "*confirmed that the current practice of agricultural re-use is the lowest cost bio-solids disposal pathway, and is also reliable and sustainable in the foreseeable future."* This statement is in accord with current market practice in this region of Queensland.

Efficiencies and economies of scale

Unitywater has stated in discussions that four of the five councils combined their sludge handling services in order to benefit from economies of scale. Unitywater has now incorporated the fifth council region into this grouping. The services are to be put out to tender in 2012 for all five regions as a group which will lead to increased benefits of scale.

The *Biosolids Management Strategy* demonstrates that Unitywater has investigated how to maximise the benefits from effluent and bio-solids from Wastewater Treatment Plants.

Benchmarking

As stated previously the rates provided in the *Arkwood Rates for Biosolids* document are comparable with other rates for these services in this region of Queensland..

We consider the cost of sludge handling to be dependent on the following factors:

- Amount of sludge produced, largely dependent on the equivalent population being serviced
- Degree of dewatering that is undertaken (reducing the volume of water carried reduces transportation costs)
- Method of disposal, largely determined by legislative requirements
- Distance to disposal site

The factors vary greatly across water authorities, and even within the three water retail/ distribution entities in SEQ. Hence we do not consider that benchmarking will provide any reliable conclusions.

In this instance, we consider that the sludge handling costs budgeted by Unitywater has been market tested, and can be considered to be representative of an efficient market operator.

6.9.5. Summary

The operating costs are prudent as the cost drivers have been shown to be appropriate.

The sludge disposal rates have been obtained through an open tender for the services and can be considered to be reflective of current market conditions.

We conclude that the expenditure for sludge handling is both prudent and efficient.

6.10. Overall operating expenditure review summary

Unitywater has provided details of forecast operating expenditure in its 2011/12 Information Template. Total expenditure is $238.5 M, $264.1 M and $282.5 M in the 2011/12, 2012/13 and 2013/14 financial years respectively.

For the 2011/12 budget, 60 percent of total operating expenditure is attributable to water services, 39 percent to wastewater services and one percent to non-regulated services. Due to the relative population within each of the geographic areas, Moreton Bay attracts 56 percent and Sunshine Coast 44 percent of total operating expenditure.

We have compared the forecast operating expenditure with that detailed in the 2010/11 Information Template approved by the Authority in 2010. It was observed that:

- The forecast expenditure for the 2010/11 financial year is $24.6 M (or 11%) less than the budget approved in the 2010 information return.
- The current information return forecasts operating expenditure in 2011/12 and 2012/13 will be respectively $20.6 M and $21.5 M less than approved in the 2010 information return.
- The primary reason for the reduction in forecast cost for 2011/12 and 2012/13 is a reduction in bulk water costs. As the price path for bulk water costs is fixed, we conclude that the reduction in bulk water costs is due to forecast demand being less than previous forecast.

We have reviewed Unitywater's forecast aggregate operating expenditure for 2011/12, 2012/13 and 2013/14. We note the following:

- Total operating expenditure has been compared with the other retail/ distribution entities in SEQ using customer base, network size and volume metrics. Our analysis shows the following:
  - Customer base: total operating costs are higher than those of national peer organisation, but similar to the other retail/ distribution entities in SEQ
  - Network size: total operating costs are higher than those of national peer organisations but less than those for the other retail/ distribution entities in SEQ
  - Volume: total operating costs are higher than those of national peer organisations and higher than those for the other retail/ distribution entities in SEQ
- We have benchmarked the operating expenditure for water services with Australian industry peers. Our analysis indicates that Unitywater, and the other SEQ retail/ distribution entities, costs are higher than those of other capital city water authorities when benchmarked against customer numbers, network size and volume of water delivered. A large portion of water operating costs is for bulk water delivery – the cost of which is not controllable by Unitywater. Our analysis shows that the cost of bulk water in SEQ is higher than the other Australian

capital cities we have used in our comparison which, in large, explains the benchmarking results

- We have benchmarked the operating expenditure for wastewater services with Australian industry peers. Our analysis shows that Unitywater's operating costs are comparable when benchmarked against customer numbers, marginally lower when benchmarked against network size, and higher than peers when benchmarked against volumes

We conclude that when considered in aggregate, Unitywater's operating expenditure is higher than other Australian capital city water authorities, but still within a range that we consider to be reasonable.

We have reviewed forward expenditure in detail for a sample of operating categories and applied a prudency and efficiency test. The sample included both water and wastewater service and covered 69 percent of total operating expenditure (excluding bulk water expenses and non-regulated services). A summary of our findings is shown in **Table 46.**

- **Table 46 Summary of prudency and efficiency of operating expenditure sample**

Category	Cost 2011/12	Prudent	Efficient	Revised cost 2011/12
Corporate costs	31,683	Prudent	Efficient	31,974
Employee expenses	57,804	Prudent	Efficient	57,804
Electricity costs	6,856	Prudent	Efficient	6,856
Chemical costs	4,860	Prudent	Efficient	4,360
Sludge handling	4,285	Prudent	Efficient	4,285

1. Our assessment of efficiency takes into account the maturity of the business and legislative constraints that are imposed on the business (eg Workforce Framework Agreement)

All of the operating expenditure items in our sample are considered to be both prudent and efficient.

7. Capital Expenditure

This section contains a review of prudency and efficiency of Unitywater's proposed capital expenditure for the 2011/12 financial year. The section includes the following sub-sections:

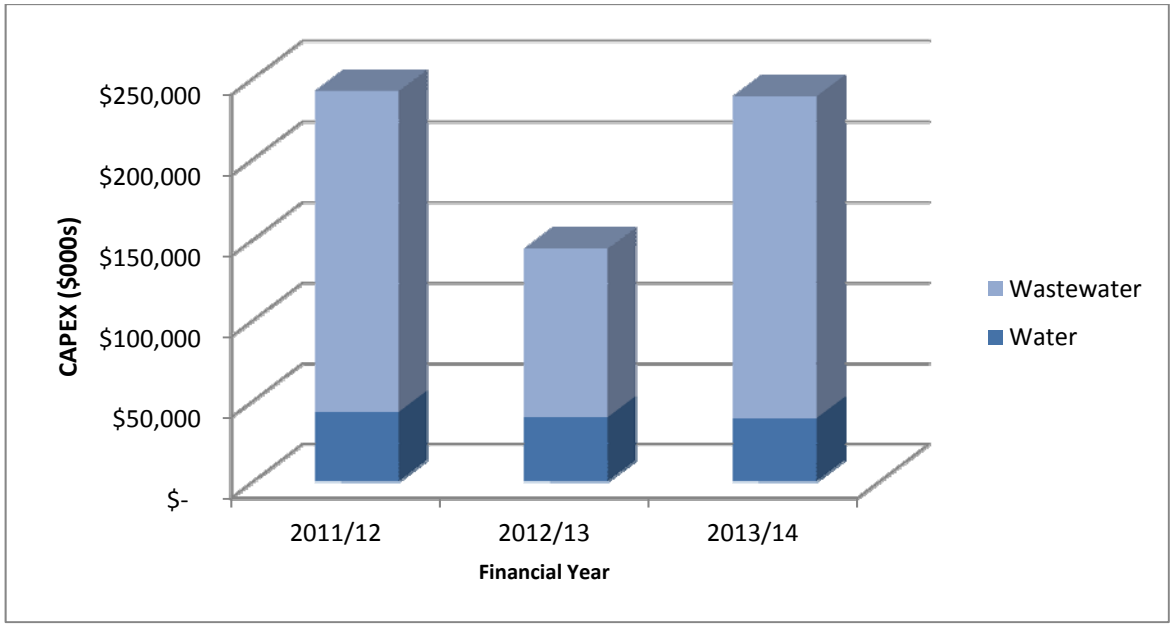
- Overview of Unitywater's capital expenditure for 2011/12
- SKM's sample selection
- Overview of prudency and efficiency of Unitywater's capital expenditure
- Detailed prudency and efficiency reviews of the each selected sample
- Summary and recommendations

7.1. Overview of capital expenditure

The Authority required that to assess the prudency of capital expenditure, Queensland Urban Utilities must attribute one or more of the following drivers to the capital expenditure projects submitted:

- *Growth* - capital expenditure designed to provide an increase in the capacity or capability of an asset in response to increased demand, growth or variations required by a customer
- *Improvement* - capital expenditure associated with an increase in reliability or quality of service that is endorsed by customers, external agencies or participating councils
- *Compliance* - capital expenditure associated with the replacement and or enhancement of an asset to prevent a non-compliance with legislative requirements such as the Water Act, Water Market Rules, Grid Services Contract, Water Quality Guidelines and occupational health and safety
- *Renewal* - capital expenditure associated with the replacement and or enhancement of an asset that is currently compliant with service performance standards and legislative requirements but faces an unacceptable risk of future non compliance

Unitywater plans to commission $630 million in the three years to the end of the financial year 2013/14. The breakdown of costs on an as commissioned basis for the 2011/12 to 2013/14 financial years budgets can be seen below in **Figure 11** below.



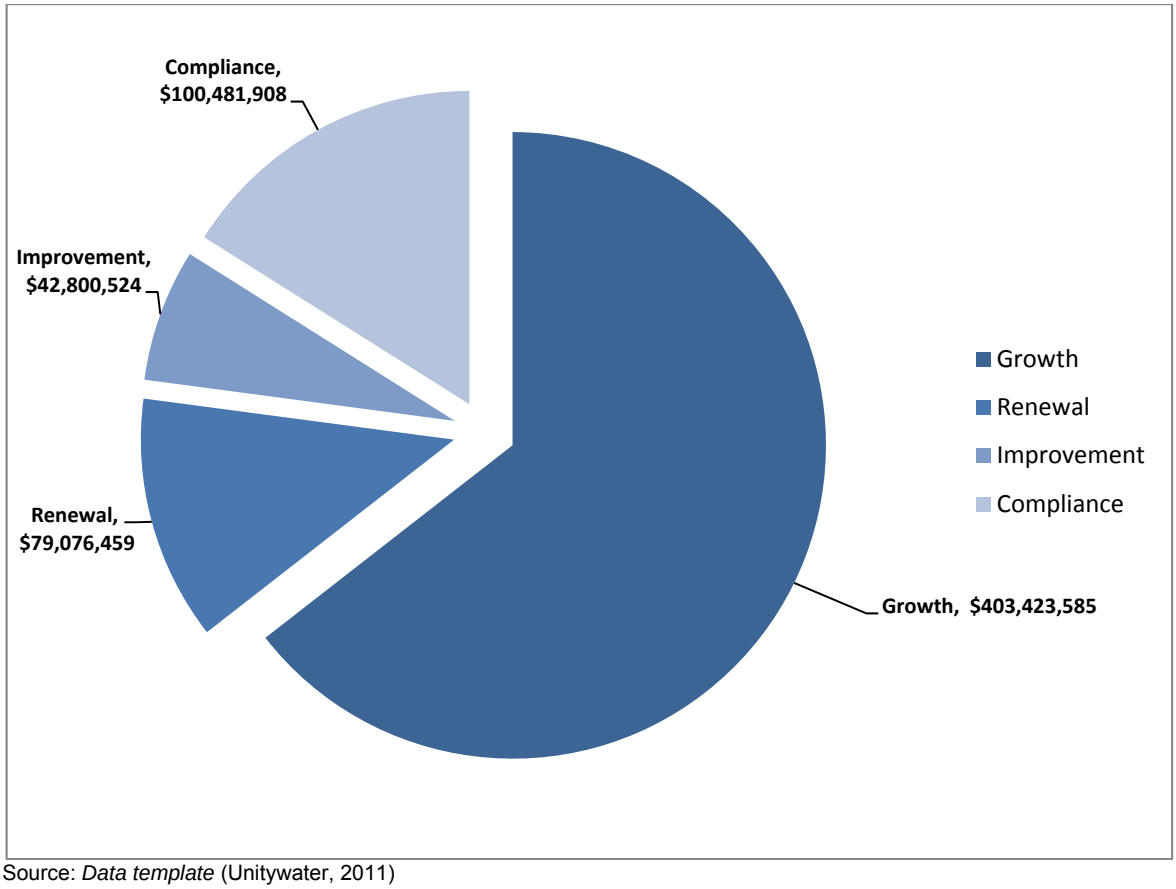
Source Unitywater (2011) data template

- **Figure 11 Forecast capital expenditure for 2011/12 to 2013/14 by category**

Table 47 and **Figure 11** detail and illustrate the staging of this expenditure on an as commissioned basis. Review of this information indicates that the proposed expenditure associated with commissioned works in 2011/ 2012 and 2012/ 2013 are generally within $50 million of $200 million per year. The annual variance is not unusual due to the inclusion of large and relatively expensive discrete projects such as wastewater treatment plants.

- **Table 47 Capital Expenditure ($M) (as commissioned)**

	2011/12	2012/13	2013/14	Total
Capital expenditure	242.37	144.45	238.96	625.78
Capital expenditure (including contributed assets and establishment costs)	268.92	174.76	275.95	719.63
Difference	26.55	30.31	36.99	93.85



Source: *Data template* (Unitywater, 2011)

- **Figure 12 Forecast capital expenditure for 2011/12 to 2013/14 by cost driver**

Figure 12 illustrates the expenditure by driver. **Table 48** documents the expenditure by driver and the service.

- **Table 48 Forecast capital expenditure by cost driver and water and wastewater ($M)**

	2011/12	2012/13	2013/14	Total
Growth	170.99	57.85	174.58	403.42
Renewal	36.31	21.72	21.05	79.08
Improvement	8.58	21.43	12.79	42.80
Compliance	26.49	43.45	30.54	100.48
Total	242.37	144.45	238.96	625.78
Comprising				
Water	43.12	39.76	39.40	122.28
Wastewater	199.26	104.69	199.56	503.50

Source Unitywater (2011) data template

Review of **Table 48** indicates that there is reasonable variance in all driver categories for the wastewater service, conversely the capital expenditure in water service is relatively comparable and steady.

The steady increase in expenditure in water services is reasonable as Unitywater is responsible for the distribution of water only, not the supply, treatment or conveyance of bulk water to key grid nodes. Conversely for wastewater Unitywater is responsible for the entire suite of municipal service, including treatment and release. As such there is expected to be periodic step increases and subsequent decreases in capital expenditure as a result of the augmentation of wastewater treatment plants.

Table 49, **Table 50** and **Figure 13** detail the capital expenditure by regions.

- **Table 49 Capital expenditure for water by geographic area ($M)**

	2011/12	2012/13	2013/14	Total
Moreton Bay	20.39	11.38	15.33	47.09
Sunshine Coast	22.73	28.39	24.07	75.18
Total	43.12	39.76	39.40	122.28

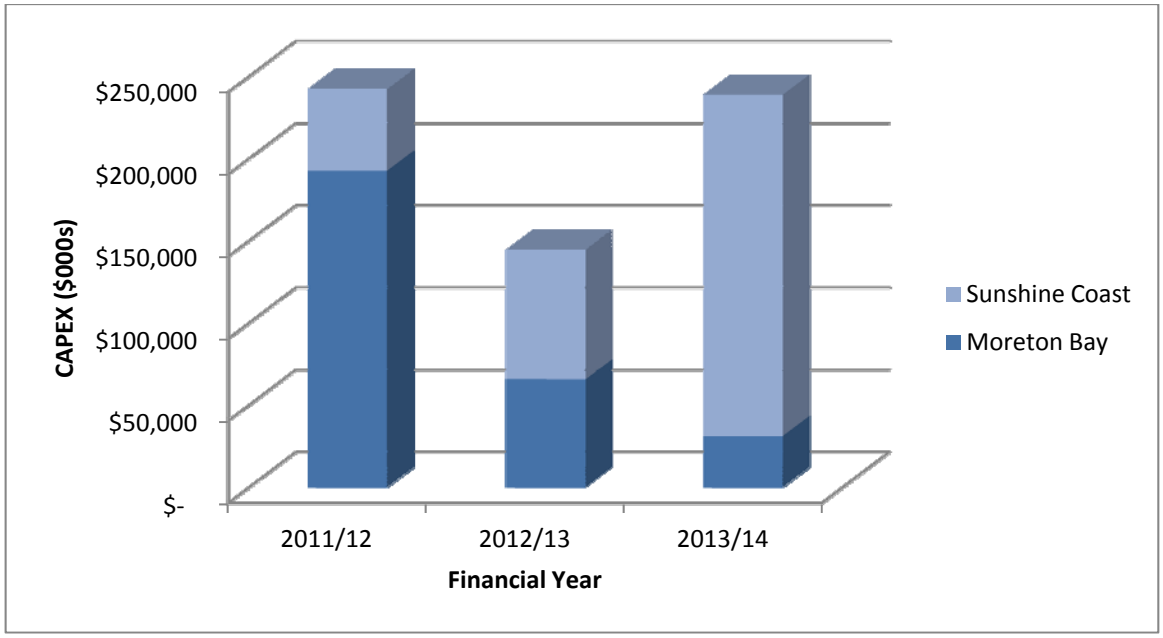
Source Unitywater (2011) data template

- **Table 50 Capital expenditure for wastewater by geographic area ($M)**

	2011/12	2012/13	2013/14	Total
Moreton Bay	172.12	54.41	15.99	242.52
Sunshine Coast	27.14	50.28	183.57	260.98
Total	199.26	104.69	199.56	503.50

Source Unitywater (2011) data template

Review of **Table 50** further illustrates the impact of augmenting wastewater treatment plants, as the need for these augmentations moves from Moreton Bay Region to the Sunshine Coast Region. This is primarily due to response of the participating councils to augmentation or renewal requirements prior to the restructure whereby Moreton Bay Region Council continued investment whilst Sunshine Coast Region Council did not.

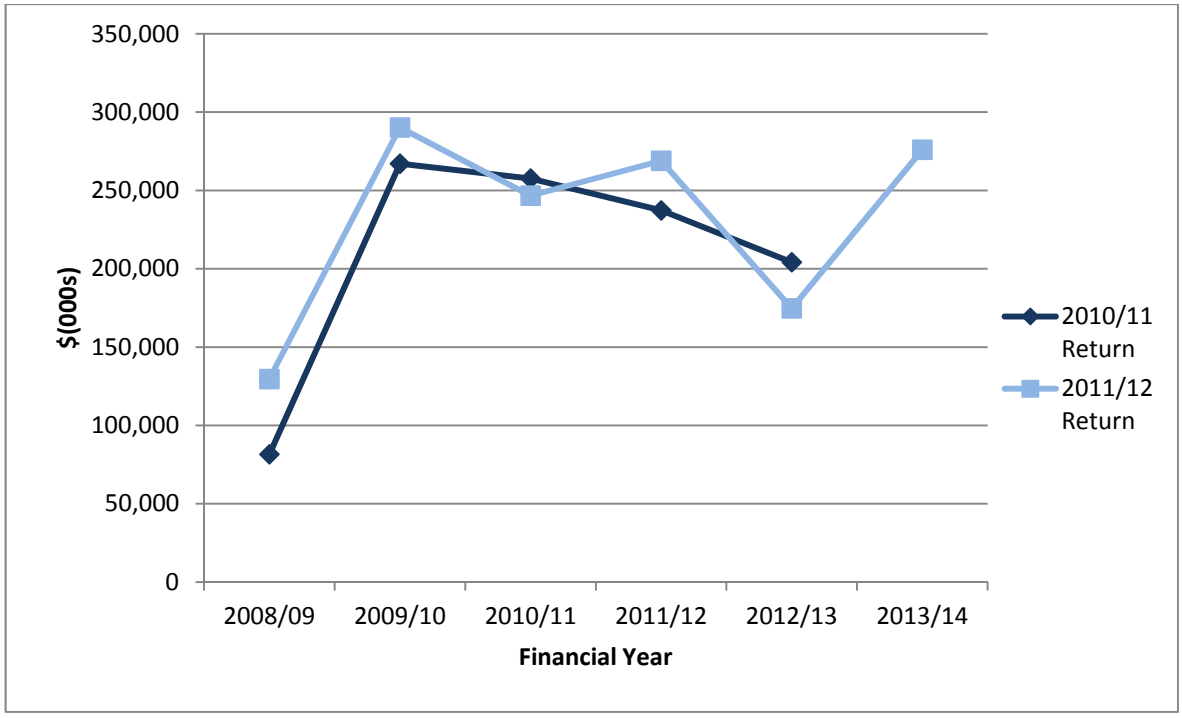


Source Unitywater (2011) data template

- **Figure 13 Forecast capital expenditure for 2011/12 to 2013/14 by geographic area**

7.2. Historical Delivery

No significant variations exist between the forecasts submitted by Unitywater for the 2010/11 Information Template and the 2011/12 Information Template.



- **Figure 14 Comparison of forecasts – 2010-11 Submission and 2011-12 Submission ($000s)**

The variation between the 2010/11 and 2011/12 forecast capital expenditures are outlined below, **Table 51**.

- **Table 51 Comparison of forecasts – 2010-11 Submission and 2011-12 Submission ($000s)**

Forecasts	Source	2010-11	2011-12	2012-13
2010-11 Submission	2010/11 Information Template	257,591	237,225	204,144
2011-12 Submission	2011/12 Information Template	246,665	268,920	174,762
Variance	QCA Template	-10,926	31,695	-29,382

Note: Extract from *Unitywater 's SEQ interim Revenue Monitoring - Information Requirement Template* (5.6.1 Capital Expenditure) 2011 and 2012 reporting years.

In its regulatory submission Unitywater included the following as high level explanations of variances in previously advised capital expenditure forecasts.

Table 52 Explanations of variance to previously advised capital expenditure forecasts

Item	Impact	Time/Value
Cancelled or postponed projects	Numerous capital projects previously included in Unitywater's budget have been subsequently cancelled or postponed due to revised hydraulic modelling based on a change in growth projections.	$15.0 M in cancelled projects. $9.5 M in postponed projects.
Refinement of accounting policies and budget processes	Unitywater continues to progress toward more refined and applicable capital planning and accounting policies and budgeting practices.	$10.0 M operating cost reduction.
Previous estimates based on council forecasts	Unitywater's submission to the QCA for 2010/11 relied heavily on council forecasts for operating and capital expenditure. Unitywater is continuing to introduce more rigorous capital and operating expenditure assessment processes and the implementation of those processes is resulting in improved project requirements, designs, sequencing and delivery.	Decrease in forecast capital expenditure of approximately $13M.
January 2011 Floods	Unitywater's experience was that several of its contractors redirected some of their crews to flood recovery work in Brisbane to support QUU. This contributed to delays to its program and in returning to normal operations. An exact level of capital expenditure that was deferred is difficult to determine with the degree of certainty that the QCA would require of such an estimate. It should be stated that none of Unitywater's STPs ceased operating during the floods, although some operated in bypass mode and in some instances they were augmented temporarily until flood levels reseeded.	The direct dollar impact on Unitywater was not material in terms of labour, materials or damaged infrastructure. However the conditions did delay the return to normal operations and capital work programs by 6 to 8 weeks, as a conservative estimate. Work on some low lying projects was delayed for up to 12 to 16 weeks due to consistent rain throughout the summer. Unitywater submitted a $1.3 M insurance claim in relation to the floods which is currently being assessed.

Note: Extract from Unitywater's *Interim Price Monitoring Submission - 2011/12,* Table 24 (Unitywater, 2011)

7.3. Key Issues

7.3.1. Cost drivers

The Authority identified four cost drivers for the assessment of prudency for capital expenditure projects. Projects are considered prudent if they are required to meet:

- Growth – ie volume-related growth, due to increase in demand/ customers
- Improvements – ie driven by imposed standards of service, or reduce future operating expenditure
- Renewals – ie replacement of aged/ time expired assets
- Compliance – ie more demanding environmental legislation (eg nutrient emissions, pump station overflows, odour, etc.)
- A combination of the above

7.3.1.1. Growth driver

Growth is the most significant cost driver. It is dependent on several factors, including:

- **Accurate forecasts of increased usage per customer.** Trends in water usage have been impacted by the recent drought and water conservation measures introduced. Future forecasts have to take into consideration the "bounce back" effect after the drought. Whilst increases are expected once water conservation measures are reduced, some factors, such as the implementation of water-efficient fittings and fixtures and rain water tanks, will have a long term effect
- **There is limited historic demand data available.** Where it was available it was drawn from multiple sources (councils) and the data collection methods varied
- **There are changes in usage patterns.** Alternative sources of water have been introduced to reduce the reliance on potable water, such as rainwater and recycled water. The introduction of these alternative water sources will impact the demand for potable water. As a number of these systems have only recently been introduced on a large scale, there is limited data available on the quantum of this impact
- **Accurate forecasts in the increase in the number of customer connections.** SEQ is experiencing rapid growth and there are also lifestyle changes which can be linked to economic growth
- **Reliable long-term forecasting for long term assets.** Water and wastewater assets can have asset lives in excess of 50 years. Therefore, it is necessary to adequately size these assets for future years. Design of these assets has to incorporate population growth, as well as peaking

factors. The impact of demand forecasting and water conservation measures also has to be taken into account

7.3.1.2. Renewals

This category relates to those capital projects triggered by the need to replace aged assets. Ideally, the assessment should be based on not only age of the asset, but the condition of the asset risk and the consequence of failure of the asset and its ability to meet future service delivery requirements without experiencing excessive maintenance costs. As such, the ability to draw accurate and current information from a robust asset database is key to justifying capital project expenditure against these criteria. The level of data collected by each of the previous councils on asset age and maintenance history will impact the level of justification available for renewal of assets.

There is generally a trend towards proactive asset management, where entities are moving towards a system based on condition assessments and risk assessment to select and prioritise asset renewals. Queensland Urban Utilities is embarking on processes of updating council asset information, which should facilitate the future justification of renewals projects.

7.3.1.3. Improvements

This driver underpins capital projects driven by a requirement to meet improvements in services standards.

For the initial price monitoring, assessment against this category was complicated by the fact that, historically, there had not been a common set of service standards adopted across the councils previously providing the services. As such, Unitywater is still in a process of harmonising the standards of service applied across its geographic area. Common standards of service have been developed by Unitywater and are now available, as discussed in **Section 5.3**.

7.3.1.4. Compliance

Compliance includes capital expenditure associated with meeting price monitoring or legislative obligations. This category is predominantly driven by changes in environmental legislation eg reduction in nutrient discharge levels, wastewater overflows, odour and operational health and safety requirements. This is perhaps the most definitive driver against which to assess prudency.

Of particular note for entities is the augmentation of wastewater treatment plants. In general, where a wastewater treatment plant is augmented (for any reason), resulting in capacity increases over a predetermined level (usually 10 percent), it triggers a requirement for the entire plant (not just the expansion project), to meet modern-day licence conditions. This is a unique feature of the water industry and is a significant contributor to capital expenditure in wastewater.

7.4. Sample selection

As part of this analysis, a sample of the capital expenditure projects for the 2011/12 budget have been analysed in detail in terms of their prudency and efficiency. The capital expenditures sample selection chosen by SKM in consultation with the Authority for detailed analysis is shown below in **Table 53**. These projects are assessed in detail in the following sections with an overview of our final assessment found in **Table 54**.

- **Table 53 Capital expenditure programs reviewed ($000s)**

Project	Driver	2011/12	2011/12 - 2013/14
Burpengary Wastewater Treatment Plant Stage 2 Augmentation	Growth	59,029	-
South Caboolture STP Upgrade and Augmentation (Stage 2)	Growth	51,013	-
Customer Services and Billing Solution Project	Compliance	8,571	-
Fleet-Light	Renewal	5,883	5,353
Upgrade Wastewater Pump Station MF01	Growth	5,702	-
Kedron Brook Sewerage Catchment - New Sewerage Rising Main RMN260	Compliance	5,083	-
Sewer Rising Main, Burpengary Creek to Burpengary East STP (525mm x 2880m)	Growth	4,855	-
Sewer Rising Main RMN-BI01 (375mm x 2900m)	Growth	4,152	-
Ngungun St, Landsborough - Water Pump Station	Growth	719	-
Coolum STP Augmentation	Growth & Compliance	374	48,441
Total Sample (10 projects)		**145,380**	**53,794**

The sample has been selected based on the overall value of costs within the 2011/12 budget and to be representative of the various categories of costs. The review has focused on projects that are forecast to be commissioned in 2011/12, as subsequent to commissioning they would be added to the RAB.

The focus, combined with the short timeframe since the creation of Unitywater and that large capital expenditure projects are generally multi-year projects by their nature and extent, means that some of the projects where initiated by participating councils and utilised the procedures applicable at the time.

7.5. Overview of prudency and efficiency

Table 54 shows an overview of the final assessment made for each project of the project sample chosen for assessment of prudency and efficiency. A full discussion with recommendations for each project can be found in the following sections of this report.

- **Table 54 Overview of prudency and efficiency of capital expenditure sample selection**

Project	Cost 2011/12 ($000s)	Prudent	Efficient
Burpengary Wastewater Treatment Plant Stage 2 Augmentation	59,029	Prudent	Efficient
South Caboolture STP Upgrade and Augmentation (Stage 2)	51,013	Prudent	Efficient
Customer Services and Billing Solution Project	8,571	Prudent	Efficient
Fleet-Light	5,883	Prudent	Efficient
Upgrade Wastewater Pump Station MF01	5,702	Prudent	Efficient
Kedron Brook Sewerage Catchment - New Sewerage Rising Main RMN260	5,083	Prudent	Efficient
Sewer Rising Main, Burpengary Creek to Burpengary East STP (525mm x 2880m)	4,855	Prudent	Efficient
Sewer Rising Main RMN-BI01 (375mm x 2900m)	4,152	Prudent	Efficient
Ngungun St, Landsborough - Water Pump Station	719	Prudent	Efficient
Coolum STP Augmentation	374	Prudent	Efficient

7.6. Burpengary Wastewater Treatment Plant Stage 2 Augmentation

7.6.1. Proposed capital expenditure

Table 55Error! Reference source not found. shows the proposed cost of the Burpengary East Sewage Treatment Plant Stage 2 Augmentation within the 2011/12 to 2013/14 budgets.

Table 55 Burpengary Wastewater Treatment Plant Stage 2 Augmentation – Proposed capital expenditure profile

	Costs ($000s)			
Source	2011-12	2012-13	2013-14	Total
2011/12 Information Template	59,029	-	-	59,029
10 - 11 Treatment Works Cost Report Aug10.xls	-	-	-	58,217

The costs presented in the supporting documentation do not agree with the costs in Unitywater's submission to the Authority. Unitywater advised that the value submitted to the Authority reflects the most current information (from the third quarter review conducted in April 2011) from the capital program budget, which includes an allowance for working capital which was not previously included. The figures in the excel spreadsheet have been superseded as they are from the first quarter review conducted in September 2010. Based on this information we are satisfied with the

variation in the figures presented in Unitywater's 2011/12 Information Template**Error! Reference source not found.**.

7.6.2. Project description

Unitywater, created in July 2010, is responsible for water supply and sewage transport and treatment services and their associated assets from the Caboolture, Moreton Bay and Sunshine Coast Regional Councils.

Burpengary East Sewage Treatment Plant is one of four sewage treatment plants within the Caboolture region for which Unitywater is responsible.

The Burpengary East Sewage Treatment Plant receives sewage pumped from Beachmere, Deception Bay, Narangba and Burpengary. The sewage received is predominantly domestic in nature with some industrial waste contributions from the Narangba Industrial Estate. The plant has a current average flow of 7.7 ML/d. The Burpengary East Sewage Treatment Plant is currently being upgraded to its licence limit of 49,900 equivalent person (EP).

We understand that this project was initially started within Caboolture Shire Council and has spanned 11 years and three separate designs. We also acknowledge that Unitywater has inherited the capital works delivery program that had already been started by Caboolture Shire Council. It is known that construction commenced in January 2009 and according to Unitywater the works have recently been completed, commissioning has occurred and the upgraded plant is operational.

7.6.3. Provided documentation

The key reference documents used for this review are:

- *Wastewater Network Master Plan - Caboolture District*, Draft, Unitywater, October 2010
- *Trunk Infrastructure Planning – Sewerage*, GHD, June 2008
- *Burpengary East Sewage Treatment Plant Review of Effluent Reuse Options, Final,* JWP and CH2MHILL, July 2005
- *Burpengary East Sewage Treatment Plant, Planning Report, Final*, JWP and CH2MHILL, September 2004
- *Burpengary East Sewage Treatment Plant: Upgrade Planning Study, Final*, MWH, June 2002
- *Burpengary East STP, Site Master Planning Report*, Worley Parsons Services Pty Ltd, April 2009
- *Burpengary East Sewerage_Council Minutes2.pdf*
- *Council Report* (Electrical Power and Control System)
- *Final Council Report – 20081209 BESTP Main_Civil Contract*
- *Recommendation Report Abergeldie rev 1* (Aerobic Digester and Thickener)

- *Recommendation Report MBW10547.17* (Chlorine Disinfection System for the Burpengary East Sewage Treatment Plant)
- *Recommendation Report No 2 MBW10547.17* (Chlorine Disinfection System for the Burpengary East Sewage Treatment Plant, Supplementary Report for Portion A)
- *Recommendation_Report.doc MBW10547.23b* (Aerobic Digester- Aeration Diffusers)
- *Recommendation_Report.doc* (Thickener Bridge/Scraper)

7.6.4. Prudency

Cost driver

The cost driver nominated for this project by Unitywater is growth.

The *Burpengary East Sewage Treatment Plant Upgrade Planning Study* (MWH, 2002) states:

> *"the current plant loading of 33,435 EP is in excess of the current plant capacity of 26,085 EP."*

The information provided in the *Burpengary East Sewage Treatment Plant Upgrade Planning Study* (MWH, 2002) is supported by the *Trunk Infrastructure Planning – Sewerage* (GHD 2008), which outlines population and flow projections for the Burpengary East Sewerage Treatment Plant as included in **Table 56Error! Reference source not found.**.

- **Table 56 Burpengary East Sewerage Treatment Plant projections**

	2001	2005	206	2011	2016	2021
Project Equivalent Population (EP)[1]	30,453	-	35,403	40,926	47,445	-
Project Equivalent Population (EP)[2]	-	40,348	-	41,713	47,740	53,622
Projected ADWF (ML/day)[2]	-	9.7	-	10.0	11.5	12.9
Projected PWWF (ML/day)[2]	-	48.4	-	50.1	57.3	64.3

Note: 1 *Burpengary East Sewage Treatment Plant Upgrade Planning Study* (MWH, 2002); 2 *Trunk Infrastructure Planning – Sewerage* (GHD, 2008)

The 2008 GHD report identifies that the capacity of the Burpengary East Sewerage Treatment Plant, at that time, as indicated in **Table 57**, and suggests that the treatment plant would be required to be upgraded to a treatment capacity of 50,000 EP prior to 2008.

- **Table 57 Current capacity of Burpengary East Sewerage Treatment Plant**

	Treatment Capacity (ML/day)	Treatment Capacity (EP)
Burpengary East STP	10.0	36,000

Note: From *Trunk Infrastructure Planning – Sewerage* (GHD, 2008)

In addition to previous population projections, Master Planning for the Caboolture district was undertaken by Unitywater in 2010 which resulted in the development of the *Wastewater Network*

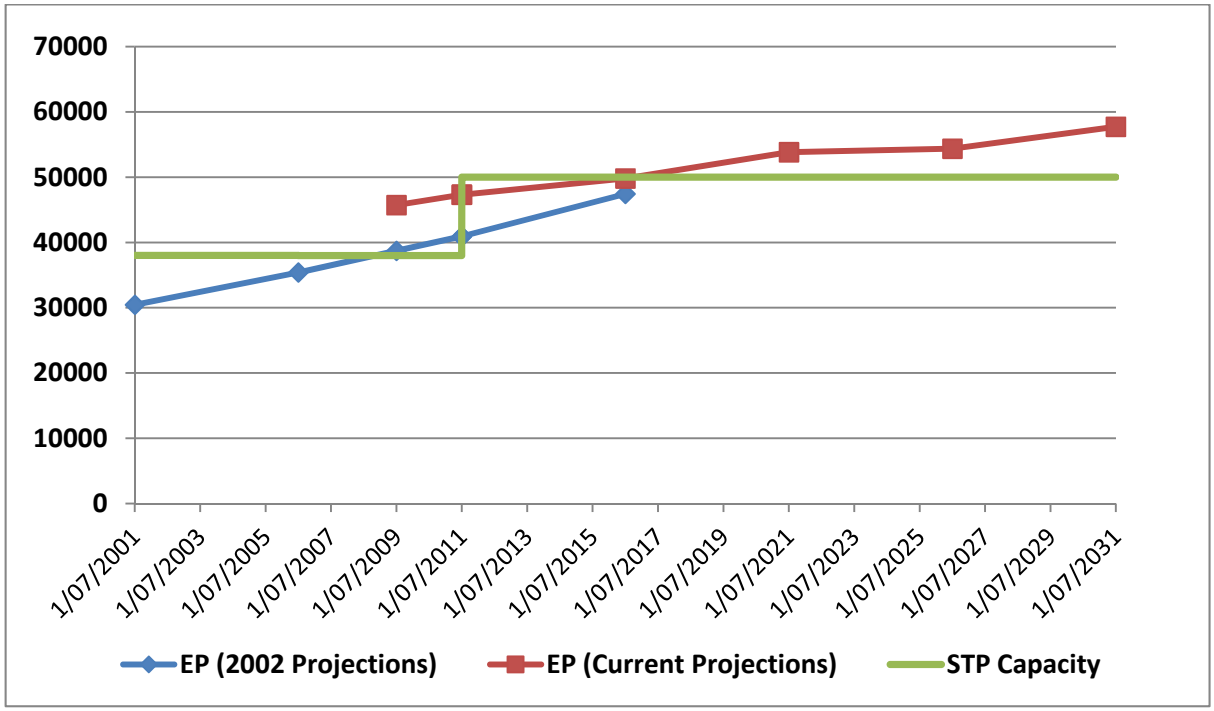
Master Plan - Caboolture District (Unitywater, 2010). This document outlines the projected growth based upon population forecasts and land use planning for the area provided by Moreton Bay Regional Council, outlined below in **Table 58** for the Burpengary East catchment.

- **Table 58 Equivalent population growth**

	2009	2011	2016	2021	2026	2031
Burpengary East Catchment	45,726 EP	47,317 EP	49,813 EP	53,838 EP	54,370 EP	57,731 EP

Note: From *Wastewater Network Master Plan - Caboolture District* (Unitywater, 2010)

Unitywater provided **Figure 15** in response to a request for information. It presents graphically the original population projections included in the *Burpengary East Sewage Treatment Plant Upgrade Planning Study* (MWH, 2002), the current population projections, from the *Wastewater Network Master Plan - Caboolture District* (Unitywater, 2010), and the capacity of the Burpengary East Sewage Treatment Plant in terms of equivalent population.



- **Figure 15 Comparison population projections and treatment plant capacity**

Unitywater advises that of significance from the figure is:

- *"The current load is higher than that anticipated in the 2002 projections.*
- *Both the 2002 projection and the current projection anticipate a load of about 50,000 EP in 2016 or shortly thereafter.*

- *This next augmentation date is very dependent on actual growth and the final performance of the augmented plant. Small changes in either could impact markedly on this date.*
- *Regardless of the capacity of the augmented STP, a new Licence will be required once the 'connected' load exceeds 50,000 EP, as the plant will then be operating under a different ERA"*

The primary driver of growth has been demonstrated.

Decision making process

The decision to upgrade the Burpengary East Sewage Treatment Plant to 50,000 EP was the conclusion of the *Caboolture Shire Council, Burpengary East Sewage Treatment Plant, Planning Report, Final*, (MWH, 2002) which states:

> *"Through analysis of the existing plant, this planning study identifies the optimum strategy and works required to increase the capacity of the treatment plant to the ultimate plant loading of 50,000EP, and develop improvements in effluent quality."*

This report suggested that the upgrade would occur through staged augmentations commencing in 2002/03 with completion in 2007/08 and that the proposed capacity, of 50,000 EP, would be sufficient for a 15-year design horizon.

Unitywater advises that the project was delayed by three years due to resource issues at the former CabWater and that the impact of works directed under Water Act Amendment Regulation No. 6 to design construct and commission a water treatment plant at Banksia Beach was significant. Additionally Unitywater states that *"the Environmental Regulator and CabWater (and later Moreton Bay Water) were concerned about overflows inside the plant during wet weather events and the capacity of the treatment plant to meet nitrogen concentration limits in accordance with the plant's environmental licence. In addition, the issue of discharge of effluent to the Caboolture River estuary, on the ebbing tide, was yet to be resolved with the Environmental Regulator and it was evident that this would take more than a year. This issue combined with the time to process a material change of use application of 9 to 12 months would result in a delay in resolving existing environmental issues of approximately 2 years. Further delay in augmenting the plant would have resulted in breach of the environmental licence and loss of all work completed at the time. As a result, the decision was made to work within the original licence."*

The subsequent JWP/CH2MHill report modified this target to 49,900 EP in recognition of the additional regulatory oversight that would be triggered. The report states that the upgrade will be up to a capacity of 49,900 EP, using the basis of 230 L/EP/d, the capacity of the Burpengary East Sewage Treatment Plant can be upgraded to approximately 11.47 ML/d. The choice of 49,900

(equivalent persons) is based on the current license stating *"operating a standard sewage treatment works having a peak design capacity to treat sewage of 10,000 or more equivalent persons but less than 50,000 equivalent persons"*. Unitywater advises that the former Moreton Bay Water decided in 2008 to continue with the planned staging. Hence contracts were awarded and procurement commenced prior to 01 July 2010.

The concept design upgrade aspires for the effluent release quality to be total nitrogen of 2.5 mg/L and a total phosphorous of 0.3 mg/L. These targets were not based on the current environmental license condition, total nitrogen of 5 mg/L and total phosphorous of 1 mg/L, but were, according to the JWP/CH2MHILL report *"developed in consultation with the EPA with the objective of reducing impacts on the northern part of Deception Bay and enhancing reuse opportunities for the reclaimed water generated."* Further Unitywater advise that a *"briefing was provided to all government agencies on 01 April 2009 by the former Moreton Bay Water and it was clear that all agencies considered that this was a prudent course of action."*

In addition to the sensitive environment that the treatment plant discharges to, the timeframes for approvals to increase the plant capacity beyond current limits and the advice received from the regulator in relation to the effluent release quality, the augmented plant capacity and discharge targets are assessed as reasonable.

The project has been assessed as prudent.

7.6.5. Efficiency

The scope of works

It is our understanding that the scope of works has been designed for a capacity of 49,900 EP and there is also a provision for Class A+ recycled water production. Based on the information provided in *Burpengary East STP, Site Master Planning Report*, the following works are mentioned:

- Preliminary Treatment including band screen and grit removal – this is a modification of the existing preliminary treatment process
- Modification of Bioreactor Number 2 and Number 3 to be conventional biological nutrient removal activated sludge systems. Bioreactor Numbers 2 and 3 have nominal design capacities of 12,500 EP and 25,000 EP, respectively
- Modification of Bioreactor Number 1 to be a membrane bioreactor system with a capacity of 3 ML/d to produce Class A+ recycled water
- Chlorine disinfection including chlorine contact tank
- Sludge handling; there is an addition of an aerobic digester and thickener

The works listed below have been identified as being incorporated in the scope of works following a review of the civil contracts:

- Conversion of existing primary clarifier into balance tank
- New balance tank and balance tank pump station
- New membrane bioreactor effluent storage and effluent chlorine contact tank
- Modification of three existing final clarifiers
- New return activated sludge and waste activated sludge pump station
- New blower building
- New chemical storage facility
- Conversion of a sludge fermenter into scum storage
- New motor control centre buildings and conversion of existing blower room into a motor control centre room
- Installation of pumps, pipework and other associated mechanical and electrical equipment and instrumentation
- Removal of redundant pipe work and equipment

The above scope of works is considered appropriate for the project.

Standards of service

As mentioned earlier, the standards of service with regard to effluent quality are high and beyond the quantitative licence compliance requirements but respond to the degraded environmental state of the Caboolture River estuary and the northern part of Deception Bay. In addition, the wastewater generation is at the lower end of a reasonable range.

Project cost

Unitywater has provided a detailed capital cost expenditure breakdown (*10-11 Treatment Works Cost Report Aug10.xls*) and a summary is provided below in **Table 59Error! Reference source not found.**.

- **Table 59 Summary of costs (Financial Year 2010/2011)**

Works Stage	Capital Expenditure
Project Management	$2,000,000
Land/Authority/Approvals	$200,000
Design	$3,000,000
Constructions	$50,017,884
Commissioning	$0

Works Stage	Capital Expenditure
Contingencies	$3,000,000
Total Project	$58,217,884

After reviewing the Ordinary Council Meeting notes submitted by Unitywater and comparing the costs to the above mentioned spreadsheet, it would seem that often, expenditure was less than that stated by the tender. A majority of the scope of works was sent to tender and a summary of the costs quoted and the number of tenders are summarised in **Table 60Error! Reference source not found.**.

- **Table 60 Tender Evaluation and Costs**

Equipment/Item	Capital Costs	Tenderers
Sludge Drying Facility	685,189	1 of 4 tenders
Membrane Bioreactor System	2,362,400	1 of 5 tenders
Mechanical & Electrical Tenders		
Centrifugal Pumps	101,420	1 of 4 tenders
Rotary Lobe Pumps	608,955	1 of 5 tenders
Pre-Treatment Area Equipment	1,053,030	1 of 2 tenders
Bioreactor Diffused Aeration System	934,263	1 of 3 tenders
Bio-Reactor Blowers	237,409	1 of 5 tenders
A-Recycle Pumps	274,654	1 of 3 tenders
Scum Harvesters	929,647	1 of 2 tenders
Sludge Dewatering Facility	1,232,744	1 of 5 tenders
Alum and Magnesium Hydroxide Storage and Dosing Systems	287,958	1 of 5 tenders
Methanol Storage and Dosing System	257,538	1 of 2 tenders
Electrical Power & Control System	5,690,532	1 of 5 tenders
Main Civil Contract	30,791,130	1 of 4 tenders
Aerobic Digester and Sludge Thickener	3,365,210	1 of 4 tenders
Fine bubble diffuse aeration system	498,100	1 of 3 tenders
Thickener Bridge/Scraper	212,087	1 of 2 tenders
Chlorine Disinfection System		
Main Civil works	1,183,716	1 of 10 tenders
Mechanical, Electrical & Ancillary	798,100	1 of 7 tenders
Total	**51,504,082**	

The tenders and equipment in **Table 60 Error! Reference source not found.**would comprise the category of 'Constructions' in **Table 59Error! Reference source not found.**. Based on the difference between the tender contractual amount and the amount spent on 'Constructions', $1,486,198 was not spent. It should also be noted, that the total project cost in **Table 59Error! Reference source not found.** of $58,217,884 compares to the sample submitted to the Authority (in **Table 55Error! Reference source not found.**) of $59,029,875 this difference of $811,991 is approximately 1.4 percent of the capital cost expended.

As the figures in the previous table show, four out of the nineteen items in the scope of works received two tender submissions, which is less than the three tenders that are required by standard procurement policies. This equates to about 21 percent of the tender requests that received less than three tenders and about five percent of the total expenditure, which is $2.5 million of the total value. Reviewing the documentation provided for those four tenders (*Recommendation_Report.doc (Thickener Bridge/Scraper* and *Burpengary East Sewerage_Council Minutes2.pdf*), no explanation was given regarding the process involved and why only two tenders were received.

As the total sum of these items is relatively low (approximately five percent) and as the items are specialised items of plant that are likely to have a small number of suppliers, receipt of only two tenders is accepted as sufficient for this project.

We understand that costs expended before 30th June 2010 (prior to the formation of Unitywater) have been agreed as valid for entry into the regulatory asset base.

The project has been assessed as efficient based on costs arising from a competitive tender process. An appropriate scope of works, acceptable standards of service and reasonable project costs have been demonstrated.

7.6.6. Timing and Deliverability

As mentioned previously, construction commenced in January 2009 and according to Unitywater the works have recently been completed, commissioning has occurred and the upgraded plant is operational.

7.6.7. Efficiency Gains

The replacement and refurbishment of Burpengary East Sewage Treatment Plant with new works associated will achieve an extension of asset life.

7.6.8. Allocation of overhead costs

No allowance has been made for the allocation of overhead costs to this project.

7.6.9. Policies and procedures

An assessment of the project's compliance with the initiatives identified by the Authority is provided in **Error! Reference source not found.** below:

- **Table 61 Burpengary Wastewater Treatment Plant Stage 2 Augmentation - compliance with the Authority's initiatives**

Initiative	Achievement Yes/No/Partial	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole of entity) perspective	No	No evidence of consideration of the project in a regional perspective was provided.
A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is uniformity of cost estimating across all proposed major projects	Partial	The construction tender costs were based on adequate (at least 1 of 3 tenders) tender evaluations, however no contingencies were acknowledged in the documentation received. There is a high level breakdown of the costs including a contingency of 10% of the combined construction fee and project management to date. We cannot assess if this is uniform across all proposed major projects as this project was started before the Unitywater transition.
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	No	No summary document was provided.
An implementation strategy to be developed for each major project that includes recommendation on delivery methodology, program and a risk review process	No	No implementation strategy was provided. The project has finished construction and commissioning recently.
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	No	This information was not provided

7.6.10. Summary

The Burpengary East Sewage Treatment Plant predominantly treats domestic sewage with some industrial waste contributions from the Narangba Industrial Estate and has a current average flow of 7.7 ML/d Burpengary East Sewage Treatment Plant is currently being upgraded to its licence discharge capacity of 11.64 ML/d.

The residual treated effluent, after recycled water use, is released to the Caboolture River and subsequently the Caboolture River estuary and the northern part of Deception Bay. These areas are known to be under significant environmental stress from the effects of urbanisation.

The project has been assessed as prudent. The primary driver of growth has been demonstrated.

The project has been assessed as efficient. An appropriate scope of works, acceptable standards of service and reasonable project costs have been demonstrated. The project has been commissioned.

Value of expenditure not considered to be prudent or efficient – NIL.

7.7. South Caboolture STP Upgrade and Augmentation (Stage 2)

7.7.1. Proposed capital expenditure

Table 62**Error! Reference source not found.** shows the proposed cost of the South Caboolture Sewage Treatment Plant Upgrade and Augmentation (Stage 2) within the 2011/12 to the 2013/14 budgets.

- **Table 62 South Caboolture Sewage Treatment Plant Upgrade and Augmentation (Stage 2) – Proposed capital expenditure profile**

	Costs ($000s)			
Source	**2011-12**	**2012-13**	**2013-14**	**Total**
2011/12 Information Template	51,013	-	-	51,013
Estimate from GHD 7-5-09.xls	-	-	-	45,862

The costs presented in the supporting documentation do not agree with the costs in Unitywater's 2011/12 Information Template submitted to the Authority. The figures presented in the *Estimate from GHD 7-5-09.xls* are based on estimates and as such variations would be expected.

7.7.2. Project description

Unitywater is responsible for water supply and sewage transport and treatment services and their associated assets for the Caboolture, Moreton Bay and Sunshine Coast Regional Councils. South Caboolture Sewage Treatment Plant is one of four sewage treatment plants within the Caboolture area for which Unitywater is responsible.

South Caboolture Sewage Treatment Plant originally serviced the southern part of the catchment but following completion of its augmentation in 1998, the former North Caboolture Sewage Treatment Plant was closed and the flows from North Caboolture diverted to South Caboolture. In 2007, the plant had capacity of 40,000 EP with a design average dry weather flow of 9.6 ML/d. The plant uses two sequencing batch reactors and at the time was complying with its existing discharge licence. It was predicted that by 2021, the South Caboolture Sewage Treatment Plant would have a catchment of approximately 74,000 EP.

The plant currently consists of the following infrastructure:

- Inlet works (4 × screens and 2 × grit chamber)
- Sequencing Batch Reactors (2 × basins and 1 × equalisation tank)
- Aerobic digester (former aeration tank)
- Sludge dewatering (1 × belt filter press and polymer dosing equipment)
- Disinfection (1 × chlorine contact basin and equipment)
- Flow balancing tanks (2 × former primary digesters)

The predicted growth in load is the reason for the upgrade and augmentation of the South Caboolture Sewage Treatment Plant.

7.7.3. Provided documentation

The key reference documents used for this review are:

- *Tender Evaluation Report, Request for Tender No MBW10613, Construction of the South Caboolture Sewage Treatment Plant Augmentation*, Moreton Bay Regional Council, March 2010
- *Commercial Enterprises Committee Meeting Item 1: Detailed Design of South Caboolture and Woodford Sewage Treatment Plant Augmentations – Divisions 3 & 12*, Moreton Bay Regional Council, 17 September 2008
- *Report for South Caboolture STP, Planning Study*, GHD, December 2007
- *Report for South Caboolture STP, Amendments to Planning Study*, GHD, September 2008
- *Burpengary East Sewage Treatment Plant, Planning Report, Final*, JWP and CH2MHILL, September 2004
- *Capital Works Committee Meeting – 21 December 2010*, Unitywater, December 2010
- *Estimate from GHD 7-5-09.xls*
- *Expenditure Reconciliation.xls*

7.7.4. Prudency

Cost driver

The cost driver nominated for this project by Unitywater was growth.

The conclusion that this project is driven by growth is supported by the following:

- GHD states in the *Caboolture Shire Council: Report for South Caboolture STP, Planning Study* that they conducted a separate study for Caboolture Water in 2007 to examine the *Trunk Infrastructure Planning for Sewerage* which led to the population growth analysis identifying that by 2021, the catchment would be servicing approximately 74,000 EP

- Daily totalised flows are recorded at the inlet to South Caboolture Sewage Treatment Plant. This data was analysed for the three annual periods of 2004 to 2006 (inclusive) and reported in the GHD Study. However, we can now say that as these flows were during the Southeast Queensland millennium drought they are atypical and could not be considered typical long term flows
- Based on a conversation with Unitywater (23 September 2011), the South Caboolture Sewage Treatment Plant would be upgraded to the limit of the current licence so as to avoid the need to apply for a development application with Department of Environment Resource Management. The current license that South Caboolture Sewage Treatment Plant is currently operating under (Licence Number SR1750) states that the maximum daily dry weather release is 16,300 m^3/d (16.3 ML/d)
- Using the basis of 240 L/EP/day from the GHD Study, the capacity of the South Caboolture Sewage Treatment Plant can be upgraded to approximately 67,917 EP (16.3 ML/d) without having to apply for a new licence. The plant has been upgraded to a final capacity of 16.3 ML/d to comply with this limit
- Based on interpolation of growth data and generation rate of 240 L/EP/d the augmented capacity would be reached in 2018. This period between augmentations is the minimum utilised in industry

The primary driver of growth has been demonstrated.

Decision making process

A process options review was conducted by GHD as part of the *Caboolture Shire Council: Report for South Caboolture STP, Planning Study* however it did not include a 'do nothing' option. The design options considered included:

1) Sequencing batch reactors (existing and new) with advanced nutrient removal followed by filtration and disinfection
2) Conversion of existing sequencing batch reactors to continuous-flow compartmentalised Bardenpho-type biological nutrient removal process with new secondary clarifiers followed by filtration and disinfection
3) Conversion of existing sequencing batch reactors to continuous-flow oxidation ditch-membrane bioreactor process, followed by back-up disinfection and a new dedicated wet weather treatment reactor to provide basic treatment for excess wet weather flows
4) Retaining the existing sequencing batch reactors (treating 50 percent of the design dry weather flow as Stream 1) and augmenting with tertiary treatment for advanced nutrient removal plus a new oxidation ditch-type biological nutrient removal process with dedicated new secondary

clarifiers (to treat 50 percent of the design dry weather flow in Stream 2), followed by filtration-disinfection for the combined effluents from Streams 1 & 2

5) A new continuous-flow oxidation ditch-membrane bioreactor process treating 100% of the design dry weather flow, followed by back-up disinfection. The existing sequencing batch reactors will be used as wet weather treatment reactor to provide basic treatment for excess wet weather flows

Three options were selected and then analysed based on operating costs, capital costs and net present value analysis (with discount rates of 4 percent, 6 percent and 8 percent).

Finally a non-financial analysis was conducted that looked at the following criteria and weightings:

- Technical (51%)
  - Process
  - Operations
  - Construction
- Environmental (23%)
  - Sustainability
  - Environmental impact
- Social (26%)
  - Community and stakeholder impact

The rankings for the three options assessed are outlined below in **Table 63**.

Table 63 Overall ranking of options based on cost and non-cost criteria

Category	Units/ Maximum	Option 1	Option 4	Option 5
Overall Ranking	100%	80%	67%	30%
Non-Cost Ranking	50%	43%	33%	25%
Cost Ranking	50%	37%	34%	5%
Capital Cost plus Renewals	$M	$28.70	$31.90	$34.14
NPV	$M	$57.72	$59.44	$77.26

Option 1 has the lowest capital cost (including renewals) and additionally it was the lowest net present value in the capital expenditure analysis aspect of the financial assessment. Based on the multi criteria options analysis, Option 1 was selected. This option included the re-use of existing assets and connections to other equipment.

This decision making process is reasonable.

The project has been assessed as prudent.

7.7.5. Efficiency

The scope of works

The *Tender Evaluation Report, Request for Tender No MBW10613, Construction of the South Caboolture Sewage Treatment Plant Augmentation* states that the main elements of the augmentation works are:

- An inlet dry weather flow balancing tank to optimise performance of the downstream biological process units
- Modification of the existing inlet works to provide flow splitting to the new dry weather flow balancing tank
- Two additional sequencing batch reactor basins with ancillaries including additional blower capacity, recycle flows and screening etc
- Conversion of one of the disused existing secondary clarifier tanks to serve as a gravity thickener for waste activated sludge
- Two new belt filter presses, covered sludge hoppers and a new sludge dewatering building
- Tertiary treatment facilities for nitrogen removal comprising moving bed biofilm reactors with methanol dosing and surface filters
- Chemical dosing facilities for supplementary chemical phosphorus removal (alum) and alkalinity correction and corrosion control (sodium hydroxide)
- New divided chlorine contact tank, upgrading of the existing chlorination facilities and new chlorination building
- Provision of odorous gas collection, extraction and treatment facilities for the existing inlet works, the anaerobic selector reactors of the existing and additional sequencing batch reactors, the inlet flow balancing tank and the sludge dewatering facility
- Internal plant pipework and pump stations for waste activated sludge, thickened waste activated sludge, dewatering filtrate, washwater, chemical dosing dilution water, service water, and chemical dosing
- All associated civil, electrical and mechanical equipment and instrumentation

The scope of works to be delivered is considered reasonable.

Standards of service

The concept design upgrade was designed to meet an effluent release quality corresponding to a total nitrogen level of 2.5 mg/ L and a total phosphorous level of 0.3 mg/ L. This was not based on the Department of Environment Resource Management license. The license (Licence Number

SR1750) states that South Caboolture Sewage Treatment Plant's release quality standard is a total nitrogen level of 5 mg/ L and a total phosphorous level of 1 mg/ L.

In response to another project that has been reviewed as part of this consultancy, the Burpengary East Sewage Treatment Plant Stage 2 Augmentation, a report (*Burpengary East Sewage Treatment Plant, Planning Report, Final*, JWP and CH2MHILL, September 2004) was provided. It states *"The targets for the effluent nutrients have been revised to 2.5 mg/L Total Nitrogen and 0.3 mg/L Total Phosphorus. The revised targets have been developed in consultation with the EPA (DERM) with the objective of reducing impacts on the northern part of Deception Bay and enhancing reuse opportunities for the reclaimed water generated*". As both the Burpengary East and South Caboolture Sewage Treatment Plants discharge into the Caboolture River, the design criteria would be expected to be the same. This supports the concept design effluent quality. Further Unitywater advise that a *"briefing was provided to all government agencies on 01 April 2009 by the former Moreton Bay Water and it was clear that all agencies considered that this was a prudent course of action."*

As the development of the revised target was completed in consultation with the regulator, and as these targets are comparable to those used for other environmentally stressed receiving waters in Queensland, the standards of service are assessed as reasonable.

Project cost

A breakdown of the original capital cost expenditure budget is provided below in **Table 64**.

Table 64 Summary of costs

Work Stage	Budget
Design	$2.0M
Land/ Authority/ Approval Costs	$0.4M
Early Works (sludge removal)	$1.5M
Construction (Main Contract)	$36.7M
Construction (Outfall)	$2.0M
Commissioning Costs	$0.2M
Project/ Contract Management	$1.2M
Contingency	$4.0M
Total	**$48.0M**

Source: *Capital Works Committee Meeting – 21 December 2010* (Unitywater 2010)

In the *Tender Evaluation Report, Request for Tender No MBW10613, Construction of the South Caboolture Sewage Treatment Plant Augmentation* the budget estimate was revisited in June 2009 upon the completion of the detailed design and stated as being $41,600,000. However, no documentation has been provided detailing these costs.

Requests for expressions of interest were advertised on the 1 August 2009 for tender for the design and construction contract. The tender price from the eventual shortlist of tenderers is summarised in **Table 65Error! Reference source not found.**.

- **Table 65 Tenderer Project Cost Estimates**

Tenderer	Capital Cost (exclusive of GST)	Percentage of Highest Capital Cost

Tenderer	Capital Cost (exclusive of GST)	Percentage of Highest Capital Cost
[redacted]	[redacted]	[redacted]

Tenderer	Capital Cost (exclusive of GST)	Percentage of Highest Capital Cost
[redacted]	[redacted]	[redacted]

Tenderer	Capital Cost (exclusive of GST)	Percentage of Highest Capital Cost
[redacted]	[redacted]	[redacted]
John Holland Pty Ltd	$36,408,622.79	111%

The tenders were evaluated against the following criteria:

- Project team (including subcontractors) [redacted]
- Management systems [redacted]
- Project methodology [redacted]
- Quality of equipment [redacted]
- Cost [redacted]

The results from the multi criteria analysis are presented below in **Table 66**.

- **Table 66 Multi criteria analysis results**

Ranking	Tenderer	Total Score
1	John Holland Pty Ltd	95
2	[redacted]	[redacted]
3	[redacted]	[redacted]
4	[redacted]	[redacted]

Although the John Holland Pty Ltd tender was the highest cost (+11 percent greater than the lowest tender), it was selected based on the results of the multi criteria. The detailed cost breakdown of the John Holland tender was provided by Unitywater.

Upon request, Unitywater submitted the *Expenditure Reconciliation.xls*. A summary of the costs is shown in **Error! Reference source not found.**.

- **Table 67 Unitywater Authority submission comparison**

Description	Last Year's Submission to the Authority (Project 10613)	This Year's Submission to the Authority (Project C9069)
WIP Balance B/Fwd 1/07/09	*2,075,241*	-
Capital Expenditure 09/10	*277,473*	-
Subtotal 1 (WIP Balance 1/07/10)	2,352,714	5,898,342
Capital Expenditure 10/11	*38,115,105*	*32,180,839*
Capital Expenditure 11/12	*3,956,663*	*11,154,133*
Capital Expenditure 12/13	*432,866*	-

Description	Last Year's Submission to the Authority (Project 10613)	This Year's Submission to the Authority (Project C9069)
Subtotal 2 (Unitywater Capital : 10/11 to 12/13)	42,504,634	43,334,972
Capitalised Interest	-	*1,780,201*
Total to be capitalised (Subtotal 1 + Subtotal 2 + Interest)	44,857,349	51,013,515

This spreadsheet states its sources as:

- UnitywaterCapexFinal v10 – worksheet *3 Yr CapEx Forecast Q3*
- UnitywaterCapexFinal v10 – worksheet *WIP Cap Yearly*

These documents have been provided by Unitywater. The key cost differences, and explanations for the differences, between this year's and last year's submissions are outlined below in **Table 68**.

- **Table 68 Unitywater explanation of difference between 2010/11 and 2011/12 submissions**

Difference	Unitywater's Explanation for Difference
The revision in the WIP balance at the 1 July 2010, which increased from $2.4 million to $5.9 million.	Unitywater's submission to the Authority last year contained understatements of the work-in-progress (WIP) transferred to Unitywater from Moreton Bay Regional Council. The errors were corrected as part of the Regulatory Asset Base (RAB) roll forward and were externally audited by PriceWaterhouseCoopers in a report to the Queensland Water Commission. We understand that this report was accepted.
A $0.8 million increase in the project capital expenditure to project completion	An error in the formula that Unitywater used to prepare this year's submission to the Authority. Unitywater uses the Quarter 3 forecast for the expenditure in 2010/11, however the process did not adjust the subsequent years capital forecast.
Capitalised interest of $1.8 million	Working capital costs are not reflected in the underlying project documentation as this is a new regulatory practice introduced in this year's submission to the Authority for their determination. Unitywater understands capitalising interest is the Authority's preference to providing an operating cost line item for working capital or as an upward adjustment to the weighted average cost of capital (WACC).

The project costs are greater than the maximum GHD estimate and the accepted tender price as illustrated in **Table 69Error! Reference source not found.**.

- **Table 69 Estimate comparison**

Description	Maximum GHD Estimate	Unitywater Capital Estimate	John Holland Tender Offer	QCA Capital Expenditure Sample
Estimate	$45,861,950	$41,600,000	$36,408,623	$51,013,515
Percentage difference	- 10%	- 18%	- 29%	0%

Unitywater advise that the John Holland contract is for construction only and as such does not include additional aspects of the project such as the design; land, development authority and approval costs; early works (sludge removal); the new outfall pipeline; commissioning; project and contract management; and contingencies. In addition a number of variations to John Holland contract have occurred. These include:

- Approved variations to 27 October 2011 $2,969,555
- Variations requested but not yet approved as at August 2011 $530,296
- Estimates of future variations and work to complete $1,447,229

These variations account for the difference between the cost estimates provided in **Table 69Error! Reference source not found.**.

The amount of variations approved is 6.4 percent of the total. The amount of variation yet to be approval and estimate of the future variations ($530,296 + $1,447,229 = $1,977,525) is 4.3 percent of the total. Whilst the allowance for all potential variations (10.7 percent) is at the upper end of the typical range, it is not unreasonable for this stage of the project. Notwithstanding this, the estimates of future variations should be reviewed in subsequent reviews.

We understand that costs expended before 30th June 2010 (prior to the formation of Unitywater) have been agreed as valid for entry into the regulatory asset base.

Based on the information provided, we conclude that the project has been competitively tendered, with an acceptable amount of competition and that the costs for the work are consistent with conditions prevailing in the markets. We conclude that these costs are efficient.

7.7.6. Timing and Deliverability

The *Tender Evaluation Report, Request for Tender No MBW10613, construction of the South Caboolture Sewage Treatment Plant Augmentation* details the programme as shown in **Table 70Error! Reference source not found.**.

Table 70 Unitywater's Deliverables and Date Submitted

Deliverable	Dates
Planning Study Completed	December 2007
Public Advertisement of Request for Tender (RFT) for Detailed Design	1 August 2008
RFT for Design Closed	28 August 2008
Evaluation of Tenders for Detailed Design	September 2008
Council Approval to Award Contract for Detailed Design	23 September 2008
Detailed Design Period	October - June 2009
Council Approval to Invite Expressions of Interest	28 July 2009
Public Advertisement of Expression of Interest (EOI) for Construction	1 August 2009

Deliverable	Dates
EOI for Construction Closed	25 August 2009
Evaluation of EOI Responses	September 2009
Notification of Shortlisted EOI Respondents	30 September 2009
Release of RFT for Construction to Shortlisted EOI Respondents	2 November 2009
Mandatory Site Inspection/ Tender Briefing Session	9 November 2009
RFT for Construction Closed	22 December 2009
Evaluation of Tenders for Construction	January – March 2010
Proposed Award of Contract for Construction	March 2010
Proposed Construction Period	April 2010 – April 2011

Based on Unitywater's website (http://unitywater.com/South-Caboolture-Sewage-Treatment-Plant-Upgrade.aspx), 'construction works commenced in June 2010 and is expected to be completed by November 2011' therefore there is an extension to the contract documentation of six months that has occurred.

Unitywater advises that the reasons for delay in commissioning are:

- *"Tender negotiations delayed contract award until the end of May 2010 with works on site commencing June 2010;*
- *The contract was awarded later than planned at the end of May 2010. In addition, contract extensions of time amounting to 15 weeks have been granted for inclement weather (44 days); and*
- *Latent conditions encountered (45.5 days), accounting for the November 2011 finish date. The latent conditions also resulted in variations."*

The completion of the works in the revised programme is assessed as achievable.

7.7.7. Efficiency Gains

No efficiency gains have been identified for this project.

7.7.8. Allocation of overhead costs

Not applicable as no overheads are allocated to this project.

7.7.9. Policies and procedures

An assessment of the project's compliance with the initiatives identified by the Authority is provided in **Error! Reference source not found.** below:

- **Table 71 South Caboolture Sewage Treatment Plant Upgrade and Augmentation compliance with the Authority's initiatives**

Initiative	Achievement Yes/No/Partial	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole of entity) perspective	No	No evidence of consideration of the project in a regional perspective was provided.
A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is uniformity of cost estimating across all proposed major projects	Partial	The scope of works went out to tender, and the final selected tender was based on a number of criteria. However, no detailed cost breakdown was provided, as such no information on contingency, preliminary and general items, design fees or contractor margins were provided.
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	No	No summary document was provided.
An implementation strategy to be developed for each major project that includes recommendation on delivery methodology, program and a risk review process	No	There was no documentation provided recommending the delivery methodology, program and a risk review process.
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	No	This information was not provided

7.7.10. Summary

South Caboolture Sewage Treatment Plant, by 2007, had capacity of 40,000 EP with a design average dry weather flow of 9.6 ML/d. The plant uses two sequencing batch reactors and at the time was complying with its existing discharge licence. It was predicted that by 2021, the South Caboolture Sewage Treatment Plant would have a catchment of approximately 74,000 equivalent persons and by interpolation in 2018 a catchment of 67900 EP producing 16.3 ML/d average dry weather flow.

The project has been assessed as prudent. The primary driver of growth has been demonstrated.

The project has been assessed as efficient. An appropriate scope of works, acceptable standards of service, reasonable project costs and achievable delivery have been demonstrated.

7.8. Customer Services and Billing Solutions Project

7.8.1. Proposed capital expenditure

Table 72 shows the proposed cost of the Customer Service and Billing Solution Project within the 2011/12 to 2013/14 budgets.

- **Table 72 Customer Service and Billing Solution Project – Proposed capital expenditure profile**

	Costs ($000s)				
Source	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**Total**
2011/12 Information Template	-	8,571	-	-	8,571
CSBS business case cost input					
Consultancy	698	4,620	-	-	5,318
Staff cost	65	716	-	-	781
Administrative cost	79	205	-	-	284
Training	2	8	-	-	10
Legal fees	24	-	-	-	24
ICT cost	97	1,639	-	-	1,736
Sub-total cost	**965**	**7,091**	**-**	**-**	**8,056**
Contingency (@ 20% as defined within the Project Management Plan)	193	1,418	-	-	1,611
Total	**1,158**	**8,509**	**-**	**-**	**9,667**[i]

[i] Total sum within review period (2011/ 2012 Financial Year to 2013/ 2014 Financial Years) is $8,509 million.

The total sum submitted to the Authority is consistent with the sum detailed in the *CSBS business case cost input* spreadsheet. The total sum in the spreadsheet for the 2011/12 financial year is $8.509 million, which equates to about 99 percent of the sum of $8.571 million submitted to the Authority. Additionally, the table above demonstrates that the predicted expenditure profiles correspond.

7.8.2. Project description

Unitywater was established under Program Fusion. This program combined the water and wastewater services provided by the Sunshine Coast Regional Council (SCRC) and the Moreton Bay Regional Council (MBRC) to form the new entity Unitywater. Unitywater inherited two separate billing systems, billing cycles, processes, data sets, meter reading, printing and banking arrangements.

The legacy systems are sub-optimal and this has prevented Unitywater from implementing efficiency gains through customer service and billing process rationalisation and improvement and

hence realising the full benefit of amalgamation. As well as preventing process rationalisation and improvement, the systems are property-based, which prevent Unitywater from establishing a customer-centric business with a single, consolidated view of its customers and how they are interacted with. Further the legacy systems are hosted on both the SCRC and MBRC network domains that create business and technology challenges in the areas of system and data access, updates, licensing and maintenance. All of the above factors have contributed to a sub-standard customer experience that Unitywater considers has led to brand and reputation damage.

In September 2010 the Unitywater Board issued a set of strategic initiatives after a Board Strategic Planning session. The key priorities identified by the Board were: billing systems, CRM and a call centre. The funding for the project initiation stage was approved by the members of the Unitywater Board and Executive Management Team on 3 November 2010.

7.8.3. Provided documentation

The key reference documents used for this review are:

- *Business Case – Customer Service and Billing Solution Project*, Unitywater, Version 1.1, 8 September 2011
- *Significant Procurement Plan Approval Report*, Unitywater, Version 1, August 2010
- *Customer Service and Billing Solution Project, Project Management Plan*, Unitywater. Version 1.9, 22 August 2011
- *CSBS Bus Case cost input_KG_110916.xlsx* spreadsheet.

7.8.4. Prudency

Cost driver

The nominated cost driver for this project is compliance.

As stated above, the Unitywater Board issued in September 2010 a set of strategic initiatives that indicated that Unitywater's key priorities were "*Billing System, CRM and Call Centre"*.

Present legislation, the *Fairer Water Price Bill*, requires Unitywater to process quarterly bills in all areas by 1 July 2011. Unitywater has received dispensation from the Minister to delay the implementation of quarterly billing until 1 January 2012. Furthermore, Unitywater is required to be able to undertake consumer-based billing by 1 July 2013 as required under the *South-East Queensland Water (Distribution and Retail Restructuring) Act (2009*). The two legacy systems do not have the functionality to conform to the above requirements.

Unitywater prepared the following list of consequences should this project not be undertaken:

- Remain non complaint with current and imminent legislative and other regulatory requirements
- Not have a single, consolidated view of its customers and ability to interaction with them, which will contribute to a high cost to serve and a sub-standard customer service
- Be unable to effectively and efficiently accommodate future growth scenarios and business requirements
- Continue to use legacy property based billing systems which:
  - Are not fit-for-purpose as-is
  - Constrain the organisation to inefficient business processes
  - Have higher day-to-day operating costs
  - Have passed their official end-of-life and require ad-hoc vendor support at high cost

The primary driver of compliance has been demonstrated.

Decision making process

As part of the Business Case prepared, Unitywater provided the following list of options available:

- Option 1 – Do nothing. Continue operating two separate billing systems
- Option 2 – Legacy system consolidation. Consolidate the billing (software) system to one of the existing legacy systems
- Option 3 – Complete in-sourcing of services. Move all customer services and billing processes in-house. Purchase a new customer services and billing system services software
- Option 4 – Complete out-sourcing of services. Out-source all business processes to a service bureau making use of their own customer service and billing software.
- Option 5 – Combination of in- sourcing and out- sourcing. The following two sub-options were explored:
  - Option 5a – Leverage an existing contract of another government or government owned entity to procure a customer service and billing software system
  - Option 5b – Engage in a new procurement process to procure a customer service and billing software system

For each of the above options Unitywater undertook a strength-weaknesses-opportunity-threats analysis. Additionally a financial analysis was presented within the business case stating for Option 1 that while it "*represents the lowest cost and highest net present value overall it is not a viable option due to legislative, regulatory and strategic non-compliance.*" Additionally it stated that Option 5a "*is therefore the preferred option of implementing a Customer Service and Billing*

Solution for Unitywater because Option 5a incurs the lowest cost and has the (lowest) net present value of all viable options" and recommended that Option 5a be implemented.

The option investigation is considered to be sufficient.

The project is assessed as prudent and the primary driver of compliance has been demonstrated.

7.8.5. Efficiency

The scope of works

The implementation of Option 5a, as detailed above contains the following components:

- Procure a new customer service and billing software system. Specifically leveraging the Allconnex Invitation to Offer (ITO) procurement process to procure a Gentrack customer service and billing system
- Own and operate a customer contact centre and associated business processes
- Continue with current outsourcing arrangements for revenue operations business processes, meter reading services and print/ mail services

The Business Case provides for the following stages and defines each stage's scope:

- What is to be included
- Scope to be considered as excluded
- Initiation Stage
- Planning Stage
- Delivery Stage
- Closure Stage

The Project Management Plan indicates that this project will be delivered making use of the following project streams:

- Operations and design
- Data migration
- Hosted IT service
- Quality assurance
- Operational readiness
- Gentrack delivery
- Change and communications

Making use of delivery streams is considered to be an effective way of executing a project of this nature.

Standards of service

Unlike the other projects in the sample that are concerned with construction of assets, the Customer Service and Billing Solution Project relates to project management and quality management systems. As such, the assessment of the standards of service considers the implementation method and strategies of the proposed systems.

Details of the strategies to be implemented are provided in the business case as follows:

- Organisational change management – Unitywater will engage a dedicated change manager to implement a change management strategy managed through the Alfresco content management system
- Procurement strategy – Ensure that the procurement is in accordance with the Unitywater Corporate Procurement Plan and the Procurement and Disposal Policy
- Customer service and billing software system. The customer service and billing software system should be operational by January 2012; this is a tight timeframe and is one of the reasons why Unitywater is leveraging on the existing procurement process that was undertaken by Allconnex Water

The project management plan provides a detailed implementation plan, including a detailed schedule, milestones and deliverables. The project management plan is managed through the Alfresco content management system.

Project cost

In reviewing the Customer Services and Billing Solution business case cost input spreadsheet it was possible to benchmark certain aspects of the cost make-up. Cost comparison between the capital expenditure put forward by Unitywater and the Billing Solution Project put forward by Allconnex Water were compared. The comparisons are summarised within **Table 73** below.

- **Table 73 Customer service and billing solution project - Cost comparison to Allconnex Water**

No	Description	Unitywater capital cost ($)	Allconnex Water capital cost ($)	% difference
1	Unitywater cost (excluding contingency of 20%)	8,056,220		
2	Allconnex Water Billing System Project – Implementation Stage Plan (Excluding contingency of 26%)	-		

The capital expenditure submitted is within the same range as that Allconnex Water has submitted for their billing system program. It is noted that Unitywater has leveraged the invitation to offer (ITO) of Allconnex Water in securing the billing system although this component only accounts for roughly $3 million or 40 percent of the total expected cost.

It is considered that Unitywater's approach of leveraging from the procurement process of Allconnex will provide a best value solution. The Unitywater business case states *that "(i)t has also been established that there is a very high degree of correlation between the requirements specified by both water utilities."* This confirms that this is a viable and cost effective option.

The project is costs have been assessed as reasonable.

7.8.6. Timing and Deliverability

The *Business Case – Customer Service and Billing Solution Project* states that a preliminary risk profile and (go-live date scenarios) risk profiles were developed during the initiation stage of the project. It additionally states that these have been reviewed and consolidated into the project management office risk register. The single risk register for the Customer Services and Billing Solution Project is updated in at least monthly intervals.

In adopting the approach of leveraging on an existing ITO, Unitywater has been able to:

- Facilitate the procurement procedure of a fit for purpose system
- Significantly reduce the procurement time
- Significantly reduce the procurement cost
- Demonstrate good corporate citizenship through efficient and effective use of resources

Furthermore, by leveraging from the ITO and procurement process of Allconnex Water for a billing system solution, Unitywater secured a favourable position in relation to be able to meet its deadline for implementation of January 2012. The fact that Allconnex Water has put on hold its billing project will free up supplier delivery staff, which will also assist with Unitywater meeting its deadline. Additionally Unitywater has engaged a third party, Serviceworks Management, to host the software and to project manage the software implementation.

It is considered that Unitywater has made use of current opportunity and best practice to enable the project to be delivered within the timeframe specified.

7.8.7. Efficiency Gains

The *Business Case – Customer Service and Billing Solution Project* states the following benefits that will be experienced due to the proposed customer service and billing solution:

- Reduction in billing disputes
- Reduction in billing complaints
- Reduction in cost to serve
- Improvement in data quality
- Will meet legislative requirements
- Reduce the dependency on owner Councils
- Improvement in customer satisfaction

The above benefits have all benefit measures to be able to quantify and measure the benefits experienced. The benefits stated above are assessed as feasible.

7.8.8. Allocation of overhead costs

As this is an enterprise wide customer service and billing solution system implementation project, then the whole of the project costs reviewed fall into the category of overhead costs.

7.8.9. Policies and procedures

The following table documents the compliance of the project to the initiates that the authority has set out in the 2011/12 report. Each initiative has been rated as to whether it complies completely, partially or not at all with the initiatives. Given the nature of the project, the procedures adopted for defining, costing and implementing the project largely complies with the initiatives set out by the Authority.

- **Table 74 Customer Service and Billing Solution Project - compliance with the Authority's initiatives**

Initiative	Achievement Yes/No/Partial	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole of entity) perspective	Yes	The project is prudent to fulfil legislative requirements. Unitywater has leveraged on the ITO from Allconnex to secure the software, thus providing best value.
A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is uniformity of cost estimating across all proposed major projects	No	This project is a one off project and therefore the cost estimating method is non standard within Unitywater as the project is unique in nature and dissimilar to water/wastewater infrastructure capital projects.

Initiative	Achievement Yes/No/Partial	Comment
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	Yes	The Project Management Plan states the required reporting to be done and by whom.
An implementation strategy to be developed for each major project that includes recommendation on delivery methodology, program and a risk review process	Yes	The Business Case lists the activities to be undertaken for each identified stage. The Project Management Plan contains a program and risk review process.
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	Yes	The Project Management Plan sets out milestones by delivery stream and details the responsibilities of each team member in regard to review/verification.

7.8.10. Summary

Present legislation, the *Fairer Water Price Bill*, requires Unitywater to process quarterly bills in all areas by 1 July 2011. Unitywater has received dispensation from the Minister to delay the implementation of quarterly billing until 1 January 2012. Furthermore, Unitywater is required to be able to undertake consumer-based billing by 1 July 2013 as required under the *South-East Queensland Water (Distribution and Retail Restructuring) Act (2009*). The two legacy systems do not have the functionality to conform to the above requirements and as such Unitywater intends to address this issue with the proposed systems.

By leveraging from the ITO and procurement process of Allconnex Water for a billing system solution, Unitywater secured a favourable position in relation to be able to meet its deadline for implementation of January 2012. The fact that Allconnex Water has put on hold its billing project will free up supplier delivery staff, which will also assist with Unitywater meeting its deadline. Additionally Unitywater has engaged a third party, Serviceworks Management, to host the software and to project manage the software implementation. It is considered that Unitywater has made use of a current opportunity and best practice to enable the project to be delivered within the timeframe specified.

The project is assessed as prudent given that it is required to meet current legislation. The primary driver of compliance has been demonstrated.

The project is assessed as efficient. An appropriate scope of works, acceptable standards of service, reasonable project costs, and achievable delivery have been demonstrated.

Value of capital expenditure assessed as not prudent or efficient – Nil.

7.9. Unitywater Fleet-light Asset Replacement Program

7.9.1. Proposed capital expenditure

Table 75 shows the proposed cost of the Unitywater Fleet-light Asset Replacement Program within the 2011/12 to 2013/14 budgets.

- **Table 75 Unitywater Fleet-light Asset Replacement Program – proposed capital expenditure profile**

	Costs ($000s)			
Source	**2011-12**	**2012-13**	**2013-14**	**Total**
2011/12 Information Template	5,883	1,955	3,398	11,236
Plant and Fleet Asset replacement Program (Table 6)	3,383	1,955	3,398	8,736
Plant and Fleet Asset replacement Program (Table 7, 8, 9)	3,383	1,955	3,398	8,736

Clarification was sought from Unitywater as to the difference between the 2011/12 costs reported in the different documentation. Unitywater stated that the difference was cause by the carryover of $2,500,000 from the 2010/11 budget, which was not incurred until the beginning of the 2011/12 financial year.

The *Unitywater Fleet and Asset Replacement Program* states that *"the Net Present Value for passenger and utility vehicles is $4,675,949 over from the 2011/12 to 2014/15 period."*.

7.9.2. Project description

Unitywater's plant and fleet asset base consists of assets identified by Moreton Bay Regional Council and Sunshine Coast Regional Council as being used by their respective water businesses. These assets were transferred to Unitywater as part of the establishment of Unitywater. The Plant and Fleet Asset Replacement Program will replace plant and fleet assets that have passed the end of their lease agreement or have passed their optimal replacement points. This review is for the fleet-light project, which includes passenger vehicles and utilities.

At the creation of Unitywater, Sunshine Coast Regional Council's policy was to lease assets under 15 ton gross vehicle mass (GMV). These lease contracts are with three lease companies:

- ORIX
- Custom Fleet Leasing
- Toyota Financial Services

The leases were transferred with the vehicles to Unitywater and as such Unitywater now manages the lease agreements for these assets.

In the 2009/10 financial year, fleet replacements did not occur for Sunshine Coast Regional Council fleet assets that were subsequently transferred to Unitywater. Moreton Bay Regional Council continued with replacements of vehicle and utility assets that were transferred to Unitywater.

7.9.3. Provided documentation

The key reference documents used for this review are:

- *Plant and Fleet Asset Replacement Program, Rev 1.0*, June 2011, Unitywater
- *Interim Price Monitoring Submission, Version 1.7*, 25 August 2011, Unitywater
- *Motor Vehicles Management Policy*, 01 February 2011, Unitywater
- *FleetLeaseExpiryAndReplacement_-_5_year_capital_replacement_from_2010-2015(2).xls*, Unitywater
- *Motor Vehicle Management Policy*, 01 April 2011, Unitywater

7.9.4. Prudency

Cost driver

The identified cost driver for this project is renewal.

The need for expenditure is justified in that if it does not occur:

- There is a risk that Unitywater will not be able to attend to faults, transport equipment and tools to work sites if leased assets are returned to lease companies and owned assets became unfit for purpose.
- Retention of existing assets will cause servicing and maintenance costs to increase, and efficiencies associated with new equipment will not be realised
- Asset hire will increase, increasing costs
- Fleet will degrade through use, and the age of assets will become apparent to customers creating a perception of lower quality
- Vehicles held past their optimal disposal point may realise a loss in value

The primary driver of renewal has been demonstrated.

Decision making process

Unitywater examined four options for the replacement of fleet including:

1) 'Do Nothing'
2) Programmed replacement

3) Operating lease
4) Service level agreements with local government

The four options are discussed below.

Do Nothing: This option would result in asset leases expiring and the assets being returned to the lease company. The asset could be retained under an extension agreement with the lease companies, however a price premium would be paid as a penalty as the asset will be passing the optimal replacement point for the asset. Unitywater's lease liability would likely increase to allow the lease company to recover this loss of capital to their business from the depreciation in the vehicles value. Unitywater states that experience indicates that the longevity of these arrangements is limited and the lease companies are demanding the assets be returned.

Unitywater owned fleet assets will pass their optimal replacement points as their use continues. This will result in servicing and maintenance costs in addition to fuel consumption increasing as the asset ages. Capital recovery will be reduced as the value of the assets depreciates. The depreciation of the fleet asset will increase as the mileage and age increases.

Programmed replacement: The replacement program detailed above is adopted, that is, fleet is replaced according the optimum replacement point calculation methodology – the point where the servicing and maintenance costs intersect with the depreciation curve is considered the optimal time to replace the asset.

The programmed three years or 80,000 km for passenger vehicles and four years or 100,000 km for utilities is similar to the Brisbane City Council Fleet Product Group guidelines of three years or 60,000 km for passenger vehicles and four years or 100,000 km for commercial vans. No Brisbane City Council Fleet Replacement Group guidelines for utilities were available.

Operating lease option for assets: Queensland Treasury publishes a specific guideline for leases called *Leasing in the Queensland Public Sector; Policy Guidelines*. The guidelines specify the criteria for purchase/ lease decisions based on prudent financial management. The key criteria identified by Unitywater are:

- Best return on the investment considering the total cost of ownership of the asset
- Total value of the lease option is not greater that 5% of the NPV of the total value of the purchase option

Considering the net present value of the passenger and utility replacement of $4,675,949 over the 2011/12 to 2014/15 period and the stated current cost of lease of approximately $1,500,000 per year it can be seen that this option does not meet Queensland Treasury guidelines.

Additionally, through the current leased fleet assets inherited from Sunshine Coast Region Council, Unitywater is incurring additional costs for excess kilometres and delays in the return of vehicles at the end of the lease contract.

Service level agreement with local government: This option has only been considered for heavy plant and as such is not applicable to the light fleet review.

Unitywater has stated that programmed replacement is the preferred option.

In determining the point at which vehicles are to be replaced, Unitywater has adopted two guidelines. The Institute of Public Works Engineering Australia (IPWEA) "Systems Plus" Plant and Vehicle Management system provides benchmarks that are used as trigger points for vehicle utilisation per year. In defining maximum life replacement triggers, Unitywater states it has adopted *"standard industry asset management life set points"*. The industry standard used is not defined.

Unitywater has slightly adapted the IPWEA benchmarks for annual utilisation into the following:

- Utility vehicles 25,000 km per year
- Passenger vehicles 25,000 km per year

The standard replacement triggers adopted are:

- Utilities vehicles four years or 100,000 km
- Passenger vehicles three years or 80,000 km

Renewals of vehicles are based on optimum replacement points. Optimum replacement points are calculated to estimate the optimal point in hours run or kilometres travelled to replace the asset to achieve the lowest average annual cost.

The optimum replacement points are calculated using the:

- Purchase price of the asset
- Resale values over the expected life of the asset (minimum of 10 years)
- Finance costs over the expected life of the asset (minimum of 10 years)
- Servicing and maintenance costs over the expected life of the asset (minimum of 10 years)
- Downtime costs for the asset (including operator displacement, opportunity costs, and standing cost of potentially held up works)

When graphed, the optimal replacement point is the point in time where the decreasing line of depreciation intersects with the increasing line of servicing and maintenance.

Based on the documentation provided we are satisfied that suitable options have been reviewed and the selected option is the most suitable option.

The project has been assessed as prudent.

The primary driver of renewal has been demonstrated.

7.9.5. Efficiency

The scope of works

Unitywater's Vehicle Management Policy states that plant and fleet assets are chosen on a needs basis which may not always be a like-for-like replacement. This is to achieve the best appropriate match for the business need specifications for the asset. Unitywater's fleet replacement project costs are shown in **Table 76** below.

- **Table 76 Unitywater fleet replacement costs**

Period	Number of vehicles	Unit cost	Total cost
2011/ 2012	109	$31,037	$3,383,015*
2012/ 2013	54	$36,207	$1,955,178
2013/ 2014	86	$39,509	$3,397,803
2014/ 2015	122	$34,669	$4,229,618

* Plus $2,500,000 carried over from the 2010/11 period

Details of vehicles proposed for replacement including the expected dates for reaching replacement triggers are provided in the Fleet Lease Expiry and Replacement five year capital replacement.

The scope of works is assessed as reasonable.

Standards of service

Unitywater Plant and Fleet Section will measure the benefits of the Fleet replacement against the Business Support Services Division's key strategies including:

- Strategy 2.3 Business Resilience Improvement: The benefit will be realised for this performance area in attributing to the reduction in operating expenditure through reductions in the lease liability and through savings in servicing and maintenance costs
- Strategy 2.5 Fleet Management Improvement: The benefit will be realised for this performance area through increases in the return from the disposal of assets at the optimal replacement point in the assets life
- Strategy 2.11 Risk and Compliance Systems Improvement. The benefit will be realised for this performance area as contract risk will be reduced as the asset leases expire

This is approach is assessed as appropriate.

Project cost

Recent approaches to market by Unitywater have proven of benefit with interest shown from major manufacturers. Procurement of fleet will be through a tender process where a standing arrangement for asset groups is established. The Unitywater Plant and Fleet Section will then place orders against the standing arrangements to stage the delivery of the assets to limit the impact on the operation of the business. This strategy affords Unitywater an economy of scale and will potentially afford Unitywater a savings premium as the tender is more likely to offer a lower price due to the volume purchase.

Vehicle replacement costs provided by Unitywater are provided in **Table 76** above. A selection of passenger and utilities vehicles drive away recommended retail costs are provided in **Table 77**.

- **Table 77 Comparison of vehicle costs**

Make	Model	Unitywater cost	Drive away purchase cost (from manufactures website)	Difference
Toyota	Camry	[redacted]	$34,021	[redacted]
Holden	Commodore		$39,990	
Ford	Ranger XL		$28,990	
Toyota	Hilux SR		$30,207	
Holden	Series II SV6 Ute		$32,990	

In each of the comparisons in Table 77 the Unitywater cost is lower that the drive away costs listed in the vehicle manufacturers websites except for the Holden Series II SV6 Ute. Overall there is a significant discount. Additionally, the average cost of all vehicles provided in Fleet Lease Expiry and Replacement five year capital replacement from 2010-2015 is $31,037, which is the same as the average provided in the Plant and Fleet Replacement Program.

The project cost is assessed as efficient.

7.9.6. Timing and Deliverability

The fleet asset replacement program manager will be responsible for the replacement program. Resourcing for the project will be completed within existing Unitywater Plant and Fleet Section members. A project program is provided in the Plant and Fleet Asset Replacement Program which indicates the schedule over the four quarters of the financial year, and a five year replacement plan was provided in Unitywater's response to our requests for information.

The Plant and Fleet Asset Replacement Program identifies the following risks to delivery of the program as outlined in **Table 78** below.

- **Table 78 Selected Plant and Fleet Asset Replacement Program risk assessment outcomes**

Risk	Risk Description	Risk Rating
Not completing the replacement program	Internal processes and standardisation project may delay the progress of the replacement program and capital will not be spent	Medium
Non Supply of equipment from manufacturers	There may be some issues with supply of replacement assets due to the 2011 earthquakes in Japan	Low

Given these risk ratings we consider that Unitywater can deliver the Fleet Asset Replacement Program as scheduled.

7.9.7. Efficiency Gains

Passenger vehicle average utilisation is 33,900 km per year, which is above the adopted IPWEA benchmark of 25,000 km. The over utilisation of passenger vehicles reflects the high number of personal-use entitlements and is likely to result in increased capital costs from increased passenger vehicle inventory turnover as vehicles reach the standard replacement triggers earlier. The Fleet and Fleet Asset Replacement Program identifies 49 percent of passenger vehicle travel is for private purposes. However, Unitywater's Motor Vehicles Management Policy is:

> *"Unitywater will manage its vehicle fleet in a cost effective manner that maximises vehicle utilisation to meet business needs including the remuneration of employees."*

Further, in employee contracts, the following clause is included:

> *"Unitywater provides for a marked, fully maintained, comprehensively insured and registered Unitywater vehicle for the specific use of the Responsible officer, subject to the contents of the Motor Vehicle Policy, to be used for work purposes only and to go between home and the worksite/workplace using the most direct route. This may be reviewed at any time by the Executive Manager."*

The over utilisation of passenger vehicles appears to be linked to employee remuneration/ benefits, and therefore may not be easily addressed.

Unitywater has identified a number of opportunities for improving the efficiency of their fleet including:

- Improving the consistency of assets
- Streamlining vehicle servicing
- Fuel consumption analysis

- Global positioning system tracking.

Unitywater is defining a set of standard body designs for utilities. These bodies will be readily transferrable from a vehicle tagged for disposal to the replacement vehicle, and will simplify the maintenance and servicing requirements.

Unitywater's Plant and Fleet Section has budgeted for the implementation of global positioning system tracking devices for selected Unitywater plant and fleet in 2011/20012. Unitywater expects this capability will reduce impact of current keying errors and improve fuel consumption analysis, asset location monitoring, incident and complaint resolution.

It is expected that the tendering process described in **Section 7.9.5** will allow for efficiencies through economies of scale.

Whilst no information on the likely reduction in expense resulting from these efficiency gains is provided, we agree that these activities may lead to efficiency gains.

7.9.8. Allocation of overhead costs

No allowance has been made for the allocation of overhead costs to this project.

7.9.9. Policies and procedures

An assessment of the project's compliance with the initiatives identified by the Authority is provided in **Table 79** below:

- **Table 79 Unitywater Fleet-light Asset Replacement Program - compliance with the Authority's initiatives**

Initiative	Achievement Yes/No/Partial	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole of entity) perspective	Yes	The fleet replacement is for the whole of Unitywater. Economies of scale are being realised, and improvements are being implemented which will likely result in efficiency gains.
A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is uniformity of cost estimating across all proposed major projects	Yes	▪ Plant and Fleet Asset replacement Program, Rev 1.0, Unitywater, June 2011 ▪ FleetLeaseExpiryAndReplacement_-_5_year_capital_replacement_from_2010-2015(2).xls

Initiative	Achievement Yes/No/Partial	Comment
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	Yes	▪ Plant and Fleet Asset replacement Program, Rev 1.0, Unitywater, June 2011
An implementation strategy to be developed for each major project that includes recommendation on delivery methodology, program and a risk review process	Yes	Information on Management and Procurement are provided in the Plant and Fleet Asset Replacement Program
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	Partial	A 'gate' is shown at the end of each phase in the project program in the Plant and Fleet Asset Replacement Program, however no description of it is provided.

7.9.10. Summary

The fleet-light program will replace passenger vehicles and utilities that have exceeded the benchmark triggers for replacement adopted by Unitywater, including utilisation of 25,000 km per year and standard replacement triggers of three years or 80,000 km for passenger vehicles and four years or 100,000 km for utilities.

The project has been assessed as prudent.

The primary driver of renewal has been demonstrated.

The project has been assessed as efficient.

An appropriate scope of works, acceptable standards of service, reasonable project costs, and achievable delivery have been demonstrated.

7.10. Upgrade Wastewater Pump Station MF01 Project

7.10.1. Proposed capital expenditure

Table 80Error! Reference source not found. shows the proposed cost of the Upgrade Wastewater Pump Station MF01 Project within the 2011/12 to 2013/14 budgets.

▪ **Table 80 Upgrade Wastewater Pump Station MF01 Project – Proposed capital expenditure profile**

							Costs ($000s)
Source	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Submission to the Authority	-	-	-	5,702	-	-	5,702

						Costs ($000s)	
Source	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**Total**
Project Description Statement							
Project Management	35[1]	98	-	-	-	-	134
Land/Authority/ Apps	12[1]	33	-	-	-	-	45
Design	101[1]	279	-	-	-	-	380
Construction	1,262[1]	3,475	-	-	-	-	4,737
Contingency	119[1]	328	-	-	-	-	447
Total	**1,530**	**4,213**	-	-	-	-	**5,743**

[1] Values interpreted from the data presented within the Moreton Bay Water *Project Description Statement* dated 19 September 2009.

The cost detailed in the Project Description Statement excluding the contingency are seven percent less than the cost submitted to the Authority, while the costs including the contingency are one percent greater (+ $41,000) than the cost submitted to the Authority. Unitywater advise that the project was delayed due significant amounts of wet weather including some major flooding of the site resulting in damage to the contractor's equipment and delays in commissioning the project due to revised design and delivery of the sewage treatment plant inlet works (as part of a separate project).

7.10.2. Project description

The MF01 sewage pump station is located within the Caboolture South Sewage Treatment Plant site at Weier Road Caboolture. The station receives sewage flows from the Morayfield sewerage network, which consists of 16 upstream pumping station catchments. The station receives flows not only from the catchment but additional flows are received from the treatment plant backwash and sludge dewatering processes from the Caboolture South Sewage Treatment Plant.

The Caboolture South Sewage Treatment Plant catchment is identified as a high growth catchment with demand forecasts predicting sewage flows in the catchment will increase by approximately 80 percent over the 20 year period from 2005 to 2025. The upgrading of MF01 is required to handle the increased flows.

7.10.3. Provided documentation

The key reference documents used for this review are:

- *Tender Report, Construction of MF01 Sewage Pumping Station*, Moreton Bay Water, 7 October 2008

- *Committee Session Report, Construction of MF01 Sewage Pumping Station – Division 3*, Moreton Bay Water, 7 October 2008
- *Construction of MF01 sewage pumping station, Letter to Queensland Concrete & General Construction Co. Pty Ltd*, Moreton Bay Regional Council, 22 October 2008
- *Project Description Statement, South Caboolture Sewerage Catchment – New Wastewater Pump Station MF01*, Moreton Bay Regional Council, 19 September 2009
- *Part 5, Evaluation Process & Selection Criteria, RFT Number MBW 08-108*, Moreton Bay Regional Council
- *Part 3, Specification, RFT Number MBW 08-108*, Moreton Bay Regional Council
- *Comparative Concept Design for Pump Station MF01*, Draft, JWP, May 2006
- *Report for Trunk Infrastructure Planning – Sewerage*, GHD, May 2007
- *Contract Variations List - Contract: MBW10432 - MBW 08-108 Construction of MF01 Sewage Pumping Station*, Unitywater, 27 October 2011
- *Variation Request & Approval Form, 2 – Plant Inlet Works Modifications,* Unitywater, 16 May 2011
- *Variation/EOT Certificate, 2 – Plant Inlet Works Modifications*, Moreton Bay Regional Council, 16 May 2011
- *MF 01 - REF 01 - Hydraulic Design Calculations.xls*
- Kiriella, A, email, 25 September 2003, provided as *MF 01 - REF 02 - existing pump capacity field measurements*

7.10.4. Prudency

Cost driver

The nominated cost driver for this project is growth. The project was initiated to meet future demand capacity required by the high growth in the Morayfield catchment. Unitywater provided the following peak wet weather sewage flow projections for the Caboolture South catchment. MF01 is located within the sewage treatment plant and it includes a recirculation flow from the sewage treatment plant.

- **Table 81 Peak wet weather sewage flow projections**

Year	2005	2010	2015	2020	2025
Catchment Flows (L/s)	290	349	407	466	524
STP Process Flow (L/s)	80	84	88	92	96
Total Flow (L/s)	370	433	495	558	620

Note: Average dry weather flow (ADWF) - 240 litres/capita/day and peak wet weather flow (PWWF) - 5 x ADWF
Source: MF 01 - REF 01 - Hydraulic Design Calculations.xls

Field performance testing on the MF01 sewage pump station was undertaken in 2003 to measure the pumping capacity. The results are provided in **Table 82** below.

- **Table 82 Field performance test results**

Pump Operation	Minimum flow rate L/s	Maximum flow rate L/s
Single Pump – Low speed	100	110
Single Pump – High speed	190	210
Dual Pump – High speed	390	450

Source: MF 01 - REF 02 - existing pump capacity field measurements, Kiriella, A, email, 25 September 2003

The results indicate that with the increasing sewage flows in the catchment, pump station MF01 will be unable handle the forecast peak wet weather flows prior to 2015. Unitywater advise that these results correlate closely with advice from field staff that both pumps at the station run continuously under wet weather conditions.

The results also show that the station fails to meet desired standards of service requirements whereby each pump (in a dual pump pumping station) should be capable of passing peak wet weather flows (ie 5 x average dry weather flow (ADWF)) in order to provide 100 percent redundancy. Unitywater advise that the Caboolture Shire Council design manual requires that the capacity of any augmented or new station should be capable of passing peak wet weather flow with adequate pump redundancy.

It should be noted that the South Caboolture Sewage Treatment Plant is currently being upgraded. It has been stated by Unitywater that the upgrade will enable the plant to treat the increasing volume of sewage being generated due to ongoing development in the region.

The primary driver of growth has been demonstrated.

Decision making process

Unitywater advises that there a number of inherent risks that have been identified with the existing pumping station and as such a 'do nothing' option was not considered. Risks identified include:

- The station is struggling to pass wet weather flows and has excessive run times during wet weather events
- Existing mechanical and electrical equipment is approaching the end of its useful life with an increased likelihood of failure

Two options were identified, investigated and assessed in the *Comparative Concept Design for Pump Station MF01* report by JWP in May 2006. These were:

- Option A – Construct a new pumping station and decommission the existing station
- Option B – Refurbish the existing station and augment with a new pumping station

The options were assessed using the following criteria:

- Cost
  - Capital
  - Operation and maintenance
  - NPV analysis
- Operational flexibility
- Constructability
- Effect on current sewage treatment plant operation
- Program

The comparison of the two options financial aspects are outlined below in **Table 83**.

- **Table 83 Cost comparison of options**

Criteria	Option A - New pumping station	Option B - Refurbish the existing station
Indicative Capital Costs	$2,980,000	$3,010,000
Cumulative Operating Cost @ 2026	$2,763,300	$2,807,500
Net Present Value	$4,300,000	$4,350,000

Source: *Comparative Concept Design for Pump Station MF01* (JWP 2006)

Option A was selected as it has lower capital cost, operating cost and net present value than Option B as well as the following reasons (as identified in *Comparative Concept Design for Pump Station MF01*, JWP 2006):

- *"The flexibility of Option A reduces the impact on the operation on the treatment and provides potential re-use of the existing well in future years*
- *The construction programme is unlikely to be significantly impacted as a result of constructing a larger well structure"*

Unitywater further advise that sufficient land is available adjacent to the existing MF01 station to construct the new facility, power and SCADA are available at the site and once the new pump station is constructed the existing station can be decommissioned and retained for potential reuse in future years (possible emergency storage).

The decision making process shows that sufficient options have been assessed, including their net present values, and that the decision making process is reasonable.

The project has been assessed as prudent.

7.10.5. Efficiency

The scope of works

The scope of works for this project is the construction and commissioning of a new raw sewage pumping station to replace the existing sewage pumping station (MF01) located at the South Caboolture Wastewater Treatment Plant, Weier Road Morayfield. The works include civil, building, mechanical and electrical works, specifically including manholes, interconnecting pipework, switchboard control building, electrical conduits, earthworks, miscellaneous works and the supply and installation of all mechanical and electrical equipment, as detailed on the drawings and in job specification and associated specifications.

The extent of works for this project, as outlined in 'Part 3 Specification' of the Request for Tender documents for the Construction of MF01 Sewage Pumping Station, includes:

- Construct a new sewage pump station at the location shown on drawings, including the supply installation of all mechanical and electrical equipment
- Construct and connect a new inlet manhole and inlet sewer
- Supply and install of approx 10 m of gravity sewer together with any modifications necessary to the existing sewerage system required in the course of the works
- Supply and install of approx 300 m of rising main
- Construct a new flow meter pit and supply and install an electromagnetic flow meter
- Construct new switchboard and control building
- Integration of the new pump station with existing infrastructure including, connections to the exiting rising main, services and electrical supply, Associated access road and civil works
- Decommissioning of the existing pump station and its disconnection from the existing sewer system
- Other relevant miscellaneous works necessary to bring the pump station into operation not outlined above

This is an adequate scope of the works for such a project.

Standards of service

The detailed design of the new pump station was completed by JWP. The works for this project are required to comply with standard specifications developed by JWP, as outlined in Appendix 3 of 'Part 3 Specification' of the Request for Tender documents for the Construction of MF01 Sewage Pumping Station.

In addition to the JWP specifications Australian Standards are required to be complied with for specific tasks, ie for backfilling AS 1289, Methods of Testing Soils for Engineering Purposes, as outlined in 'Part 3 Specification' of tender documents.

The standards of service for this project appear appropriate.

Project cost

The assessment of the six tender submissions was undertaken by a panel consisting of council officers from Moreton Bay Water Capital Works and Network Operations. The tenders were assessed on price and non-price attributes making use of the weighted attributes method. The weightings used are as follow:

- Price [redacted]
- Past performance [redacted]
- Capability [redacted]
- Methodology [redacted]
- Equipment offered [redacted]

The above weightings were identified and developed by the evaluation panel based on an assessment of risk involved with undertaking this project. The weightings also formed part of the tender documentation. The offer submitted by Queensland Concrete & General Construction Co. Pty Ltd had the lowest price and ranked significantly higher than the other five submissions, as outlined below in **Table 84**.

- **Table 84 Outcome of the panel's assessment**

Tenderer	Price	Score
Queensland Concrete & General Construction Co. Pty Ltd	4,949,120.00	917.5

Tenderer	Price	Score
[redacted]	[redacted]	[redacted]

Tenderer	Price	Score
[redacted]	[redacted]	[redacted]

Tenderer	Price	Score
[redacted]	[redacted]	[redacted]

Tenderer	Price	Score
[redacted]	[redacted]	[redacted]

Tenderer	Price	Score
[redacted]	[redacted]	[redacted]

The successful tenderer, Queensland Concrete & General Construction Co. Pty Ltd, was appointed for the lump sum amount of $4,949,120 (including GST) for the full scope. The original project budget, prepared in 2006, was set at $3.25 million. This budget did not allow for escalation in construction cost and the following changes in scope:

- Change in location of the pump station to make provision for the future upgrade of the sewage treatment plant
- Additional civil works required to provide all weather access above the Q100 flood levels
- Additional 600 mm diameter rising main
- Service relocation

Variations to Queensland Concrete & General Construction Co. Pty Ltd and John Holland Pty Ltd contracts have occurred. These include:

- Approved variations to 27 October 2011 (Queensland Concrete & General Construction Co. Pty Ltd contract) $222,309
- Approved variations for the modification of the discharge pipework and STP inlet works (John Holland Pty Ltd contract) $268,388

The total project cost submitted to Moreton Bay Regional Council Commercial Enterprises Committee was $5,574,120. The total project cost submitted allowed for design costs ($200,000), construction tender sum ($4,949,120), for a 7.5 percent contingency ($375,000) and for project management cost ($50,000).

We understand that costs expended before 30th June 2010 (prior to the formation of Unitywater) have been agreed as valid for entry into the regulatory asset base.

Based on the information provided, we conclude that the project has been competitively tendered, with an acceptable amount of competition for the construction of the new sewage pump station and associated infrastructure and that the costs for the work are consistent with conditions prevailing in the markets. We conclude that these costs are efficient.

7.10.6. Timing and Deliverability

The original expected timeframe to complete the construction contract was set at 52 weeks. The construction contract was awarded in October 2008. The recorded start date is 1st December 2008 and the estimated date of completion set as 30th November 2009.

Unitywater advised that construction commenced on-site in early 2009 and that construction works for the project were substantially complete prior to the formation of Unitywater in July 2010. A significant amount of wet weather initially delayed the project, including some major flooding of the site area resulting in damage to the contractor's equipment, with additional delays in commissioning due to the revised design and delivery of the treatment plant inlet works. Completion of the modifications works is required to be completed to permit connection of the new rising main from the new Pump Station MF01.

Unitywater advised that the project will be commissioned by December 2011. This is assessed as achievable.

7.10.7. Efficiency Gains

No efficiency gains have been identified for the project.

7.10.8. Allocation of overhead costs

No overheads have been assigned to this project.

7.10.9. Policies and procedures

An assessment of the project's compliance with the initiatives identified by the Authority is provided in **Error! Reference source not found.** below:

- **Table 85 Upgrade Wastewater Pump Station MF01 Project - compliance with the Authority's initiatives**

Initiative	Achievement Yes/No/Partial	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole of entity) perspective	N/A	Not applicable due to the localised nature of the scheme
A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is uniformity of cost estimating across all proposed major projects	Yes	The project costs were determined by tenders received
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	Yes	A Project Description Statement has been provided outlining basic information relating to the project, including the problem, objectives, success criteria, assumptions and budget

Initiative	Achievement Yes/No/Partial	Comment
An implementation strategy to be developed for each major project that includes recommendation on delivery methodology, program and a risk review process	No	An implementation strategy has not been provided for this project
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	Yes	Project Delivery Document is submitted for approval at the first 'gate' in this process.

7.10.10. Summary

The project proposes to replace the existing MF01 pump station with a new pump station situated across the road from the existing pump station and for the existing pump station to be decommissioned.

The project has been assessed as prudent. The primary driver of growth has been demonstrated.

The project has been assessed as efficient. An appropriate scope of works, acceptable standards of service, reasonable project costs and achievable delivery have been demonstrated.

Value of expenditure not considered to be prudent or efficient – NIL.

7.11. Kedron Brook Sewerage Catchment - New Sewage Rising Main RMN260 Project

7.11.1. Proposed capital expenditure

Table 86 shows the proposed cost of the Kedron Brook Sewerage Catchment - New Sewage Rising Main RMN260 Project within the 2011/12 to 2013/ 2014 budgets.

- **Table 86 Kedron Brook Sewerage Catchment - New Sewage Rising Main RMN260 Project – Proposed capital expenditure profile**

	Costs ($000s)			
Source	2011-12	2012-13	2013-14	Total
Submission to the Authority	5,083	-	-	5,083
Contract Recommendation and Approval Report	-	-	-	4,711

The information provided in the regulatory submission to the Authority for the 2011/12 to 2013/14 financial years does not agree with the information provided in other supporting documentation.

Documentation provided by Unitywater has not contained sufficient information to determine the cause of variation between the figures of approximately $372,000 (7.9 percent).

7.11.2. Project description

The Brendale Sewage Treatment Plant is reaching capacity. As advised by Unitywater, in order to continue to treat sewage and discharge effluent in accordance with current environmental licence it will be necessary to either augment the existing treatment plant or reduce the load on the plant within six to nine months (from November 2010). Should this not be possible then Unitywater may have to cap connections to the treatment plant to avoid breach of the environmental licence. Such action would cause development in the catchment to halt. Unitywater advises that this would have significant adverse consequences for the local community, the Caboolture Shire Plan and their reputation and is not consistent with the Moreton Bay Regional Council Planning Scheme.

The partial diversion of the Kedron Brook sewerage catchment, from PS260, to the Luggage Point sewerage catchment, within the Queensland Urban Utilities service area, will enable the upgrade and expansion of the Brendale treatment plant to be deferred for seven to eight years.

To facilitate this diversion a new sewage rising main and gravity main are required. Approximately 670 m of 400 mm diameter sewer rising main and approximately 1,030 m of 375 mm diameter gravity sewer main are to be constructed.

7.11.3. Provided documentation

The key reference documents used for this review are:

- *MWH Meeting Notes SRM260 – Diversion of flows to BCC*, MWH, March 2010
- *Moreton Bay Water Initial Investigation Report – RM 260 Diversion*, MWH & MBRC, April 2010
- *Meeting Notes - Sewer Rising Main 260 Diversion*, MWH, April 2010
- *MWH Project Completion Confirmation RM260 Diversion 0101 – Initial Investigation*, Unitywater & MWH, April 2010
- *Procurement Probity Plan – Rising Main 260 Diversion of PS260 catchment to BCC*, Unitywater, June 2010
- *Final Design Report RM260 Diversion*, MWH, July 2010
- *MWH Meeting Notes Sewer Rising Main 260 Diversion*, August 2010
- *RM260 Odour Investigation Report*, MWH August 2010
- *RM260 Septicity Study Summary Report*, MWH August 2010
- *Project Description Statement – RMN 260 (diversion of PS260catchment to BCC sewer network)*, Unitywater & MWH, September 2010

- *Project Description Statement – Upgrade to PS260 (diversion of PS260 catchment to BCC sewer network)*, Unitywater & MWH, September 2010
- *Contract Recommendation & Approval Report C9051 & C9050 Construction of Sewer Rising Main 260 Diversion and Upgrade of PS260*, Unitywater, October 2010
- *Final Design Report Addendum RM260 Diversion*, MWH, November 2010
- *Project Execution Plan RM260 Diversion*, Unitywater, November 2010
- *MWH Meeting Notes RM260 Diversion*, MHW, November 2010
- *Business Case – Upgrade of Brendale Sewage Treatment Plant*, Unitywater, November 2010
- *Procurement Strategy – RM260 Diversion*, Unitywater, November 2010
- *BDO RM260 Diversion Project Probity Advisor Report*, BDO, February 2011
- *UW001556-C9051 SRM260 Diversion Tender Recommendation*, MWH, February 2011

7.11.4. Prudency

Cost driver

The identified cost driver for this project is legal obligation (compliance).

The load on the Brendale Sewage Treatment Plant is approaching a point at which connecting new customers will cause the plant to exceed its effluent quality environmental licence limits. It is considered that there is a need to undertake works at the Brendale Sewage Treatment Plant and in the sewer network to provide compliant quality treatment services in the catchment of this treatment plant. The diversion of the PS260 catchment will enable the upgrade of the treatment plant to be deferred by seven to eight years.

The existing Brendale Sewage Treatment Plant was commissioned in 2000 with a design capacity of 30,000 EP. Through process optimisation and minor works it currently treats approximately 41,500 EP and is operating at or close to a point at which the plant will commence to breach conditions of the environmental licence with respect to water quality and odour emissions.

The diversion of the PS260 catchment to the Luggage Point catchment, operated by Queensland Urban Utilities, will enable the upgrade of the treatment plant to be deferred by seven to eight years. An initial period for the diversion was agreed at five years with extension possible at the discretion of Queensland Urban Utilities. During this period, investigative and planning work for the upgrade of the Brendale Sewage Treatment Plant can commence.

The provided information demonstrates that 'legal obligation (compliance)' is not the primary driver for this project. Consideration has been given as to which drivers could be identified for this project, as follows.

The definition of improvement is "*capital expenditure associated with upgrading service outcomes to...increase the anticipated life of an asset to prevent a...capacity shortfall."* As the project aims to extend the asset life of Brendale Wastewater Treatment Plant then the project driver for the main works is assessed as improvement.

The definition of renewal is "*capital expenditure associated with the...enhancement of an asset that is currently compliant with service performance standards and legislative requirements but faces an unacceptable risk of future non compliance."* The driver for the odour control works is assessed renewal.

It should be noted that growth has not been identified as a driver as, if the agreement with Queensland Urban Utilities is not extended, the works would be abandoned in the future. Should this occur, the capital expenditure would not address future growth in the catchment and so, growth cannot be identified as the driver.

Decision making process

The Brendale Sewage Treatment Plant *Augmentation Needs Analysis* report identified a number of options for the provision of sewage treatment services in the catchment of Brendale Sewage Treatment Plant. The three primary options identified in this report were developed over a number of months in 2009 by Moreton Bay Water staff and consultant Water Strategies. These options were:

Option A	Temporary (minimum five years) diversion of flow to Queensland Urban Utilities' Luggage Point Sewage Treatment Plant from the catchment of sewage pumping station PS260 (Francis Road, Arana Hills) and interim minor upgrade of Brendale Sewage Treatment Plant with a further upgrade to ultimate load (77,000 EP) in 2019 subject to council approving new development outside of the current service area
Option A1	As per option A except that no odour control measures are implemented until such time when Department of Environmental Management (DERM) formally requests that action be taken to reduce emissions
Option B	Major augmentation of Brendale Sewage Treatment Plant in two future stages; initially an increase to 57,000 EP to be commissioned in 2013 to a total of 77,000 EP in 2019 and augment the Jinker Track sewer rising main immediately to provide increased capacity for growth in the catchment of sewage PS260 (Francis Road, Arana Hills)
Option C	Interim Upgrade of Brendale Sewage Treatment Plant in 2011, permanent diversion of the catchment of sewage PS230 to Murrumba Downs Sewage Treatment Plant and immediate upgrade of the Jinker Track sewer rising main,

followed by major augmentations of Brendale Sewage Treatment Plant in two Future Stages - initially an increase to 57,000 EP to be commissioned in 2017 and to a total of 77,000 EP in 2019

Analysis of the advantages and disadvantages, financial implications and risks were conducted. The outcomes of the financial analysis are outlined in **Table 87** below.

- **Table 87 Outcomes of financial analysis**

Upgrade Option	Escalated Initial capital expenditure [$M]	NPV 20 yrs @9.88% [$M]	IRR (%)	Rank
Option A	15.451	10.413	4.43	2
Option A1	10.400	9.576	4.95	1
Option B	72.376	12.036	3.97	3
Option C	46.794	36.118	2.88	4

Note: Extracted from *Business Case – Upgrade of Brendale Sewage Treatment Plant* (Unitywater, November 2010)

The financial analysis identifies Option A1 as the lowest cost option. However, given that Option A1 exposes Unitywater to a significant regulatory and public relations risk due to the odour issues, Option A was selected as the preferred solution.

While Option A is assessed as good corporate behaviour in anticipating future regulatory requirements and consequently it may reduce risk this has not been monetised.

This monetised assessment could have included the cost to retrofit odour management. From industry experience it is agreed that retrofitting odour management is generally not efficient and that the cost of odour management can be significant. Similarly a cost for public interaction regarding odour complaints could have been estimated. Alternatively assessment of likely odour complaints based on comparable situations may have demonstrated that Option A1 did not meet the standards of service required and consequently option A1 would have been eliminated leaving Option A as the lowest net present value solution.

For the determination of the route for the new rising and gravity mains, a number of options were considered.

Moreton Bay Water proposed the initial route. The route proposed included a 300 mm diameter rising main from PS260 south along Francis Rd, South Pine Rd and Plucks Rd to a receiving manhole in Max Moreton Park; a 300 mm diameter gravity main through Max Moreton Park to Minto Cr and along Casual St; and a 450 mm diameter gravity main along Glenlee St and Dawson Pde, to link with the existing 450 mm diameter line upstream of the measuring flume.

Two alternative routes were proposed for the gravity section:

Option A	Route directly down South Pine Rd and Dawson Pde, connecting as per Moreton Bay Water route
Option B	Route following South Pine Rd, Bates Dr, Hobbs St, Oleria St West connecting at the measuring flume

From the analysis of the gravity route options it was determined that Option A would not provide significant benefit over the initially proposed route and was not considered further. It was found that Option B would present benefits over the initially proposed gravity route if there were constraints on capacity in an existing gravity main. Both the initial option and Option B were further analysed. The alignment for the gravity main proposed in Option B was subsequently adopted for the final design.

The evaluation criteria used for the assessment of the options has not been provided to us to allow us to determine if the most prudent options has been selected.

We have been advised by Unitywater that the commencement date for Kedron Brook Sewerage Transfer Agreement with Queensland Urban Utilities was the first of July 2010 and that the agreement would last for a period of five years from the date of commencement, with extension possible at the discretion of Queensland Urban Utilities.

In summary, the diversion of the Kedron Brook sewerage catchment is essential in avoiding environmental licence condition breaches at the Brendale treatment plant while allowing new connection to be made to the Kedron Brooke sewerage catchment. We are satisfied that Unitywater has undertaken an options analysis, with the consideration of risk and financial analysis. Whilst this could have been more extensive it is assessed as adequate for this project.

The project is assessed as prudent.

The project driver for the main works is assessed as improvement. The driver for the odour control works is assessed renewal.

7.11.5. Efficiency

The scope of works

A new sewage rising main, approximately 670 m of 400 mm diameter, and gravity main, approximately 1,030 m of 375 mm diameter, will be installed for this project.

Currently the Brendale Sewage Treatment Plant does not have sufficient capacity to continue to receive growing load from the Kedron Brook sewerage catchment. This option has been selected as the best means of managing flows and postponing the significant upgrade required for Brendale Sewage Treatment Plant.

Standards of service

The project was initiated to ensure compliance with licence conditions set by the Department of Environment and Resource Management and Unitywater's Service Standards. Licence conditions that were of concern at the Brendale Sewage Treatment Plant include treated water quality, wet weather bypass, disinfection, recycled water storage and air quality (odour). The Unitywater Customer Service Standard sets out the measure by which the performance of the sewerage network is assessed. Of relevance to this project are odour complaints, for which the standard is less than three odour complaints per 1000 connections per year.

According to Unitywater, the contractor will carry out work in accordance with the following design standards:

- AS3000-2007 and all relevant Standard Association of Australia codes
- The Supply Authority Regulations
- The requirements of all relevant statutes
- Particular specifications
- MWH Project Design drawings

Project cost

The costs for the project have been determined through a tendering process utilising companies on the Moreton Bay Regional Council Panel of Prequalified Contractors for water related infrastructure. A Lump Sum tender proposal was invited. This is in accordance with Unitywater's Procurement Policy and Corporate Procurement Plan.

An arithmetic check was conducted by MWH and revised tender amounts determined. The tenders were evaluated by individuals from Unitywater and MWH. The criteria used to assess the submissions are outlined in **Table 88** below. A score was assigned to the criteria and overall score allocated to the submission. The companies were ranked based on the scores. The top two ranking companies attended tender clarification interviews. The tender quote was awarded to the highest ranked company based on the evaluation criteria.

- **Table 88 Tender evaluation criteria**

Criteria	Weighting (%)
Track record / experience	20
Methodology incl. timing	20
Plant and equipment	10
Qualifications	10
Price	40

Note: Extracted from the *Procurement Probity Plan – Rising Main 260 Diversion of PS260 catchment to BCC* (Unitywater, June 2010)

The tendering process was review by BDO and a Probity Advisor Report was submitted to Unitywater. The review determined that the tender process used was fair and equitable and was in accordance with documentation and established criteria.

The costs indicated by Unitywater have been determined through competitive tender, and therefore as such are believed to accurately represent the current market value of the proposed project. Four contractors submitted costing for the proposed works. Based on the information provided, we understand that the price for the works ranged from $3.73 million to $5.11 million. The preferred tenderer selected by Unitywater was within the lower region of this range, with a price of $3.76 million. We have not reviewed the original tender documents.

Through the different phases of the project, the estimated cost has varied as is shown in **Table 89** below. The accepted tender cost is substantially higher than the initial cost estimate by about 63 percent. It is believed that the discrepancy in the cost estimate can be attributed to two factors. The 34 percent increase in cost between the *Initial Investigation Report* and the *Procurement Strategy* report is believed to be due to alterations to the scope of works. The 22 percent increase in cost between the *Procurement Strategy* report and the accepted tender is believed to be due to market conditions.

- **Table 89 Comparison of cost over phases of project**

Phase of project	Cost ($M)
Initial Investigation Report*	2.30
Procurement Strategy+	3.08
Accepted Tender	3.76

* Note: Extracted from the *Moreton Bay Water Initial Investigation Report – RM 260 Diversion* (MWH & MBRC, April 2010)
+ Note: Extracted from the *Procurement Strategy – RM260 Diversion* (Unitywater, November 2010)

Based on the information provided, in so far as we are able, we conclude that as the project has been competitively tendered, with four tenders received for the construction of the new sewage rising main and that the costs for the work are consistent with conditions prevailing in the markets. We conclude that the costs are efficient.

7.11.6. Timing and Deliverability

The selected contractor proposed a 21 week construction period from contract award. The Project Definition and Deliverables Program states the works should have been completed in August 2011. Unitywater has not provided documentation in evidence of the status of completion of this project.

7.11.7. Efficiency Gains

The completion of this project will allow an augmentation of the Brendale Sewage Treatment Plant to be deferred up to eight years by reducing inflow.

7.11.8. Allocation of overhead costs

Not applicable as no overheads have been allocated.

7.11.9. Policies and procedures

An assessment of the project's compliance with the initiatives identified by the Authority is provided in **Table 90** below:

- **Table 90 Kedron Brook Sewerage Catchment - New Sewage Rising Main RMN260 Project - compliance with the Authority's initiatives**

Initiative	Achievement Yes/No/Partial	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole of entity) perspective	Yes	Demonstrated by the decision to divert sewerage from one catchment to another.
A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is uniformity of cost estimating across all proposed major projects	No	
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	Yes	A Project Description Statement has been provided outlining basic information relating to the project, including the problem, objectives, success criteria, assumptions and budget.
An implementation strategy to be developed for each major project that includes recommendation on delivery methodology, program and a risk review process	No	An implementation strategy has not been provided for this project.
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	Yes	A 'gateway' review process has been implemented with documentation provided relating to Gates 1 to 4

7.11.10. Summary

The Kedron Brook Sewerage Catchment - New Sewage Rising Main RMN260 Project will divert the Kedron Brook sewerage catchment to the Luggage Point sewerage catchment and consequently will allow the Brendale Sewage Treatment Plant upgrade to be deferred for seven to eight years.

The project is assessed as prudent.

The project driver for the main works is assessed as 'improvement' and the driver for the odour control works is assessed renewal.

The project is assessed as efficient. An appropriate scope of works, acceptable standards of service, reasonable project costs, and achievable delivery have been demonstrated.

Value of capital expenditure assessed as not prudent or efficient – Nil.

7.12. Burpengary Sewer Rising Main Duplication Project

7.12.1. Proposed capital expenditure

Table 91Error! Reference source not found. shows the proposed cost of the Burpengary Sewer Rising Main Duplication Project within the 2011/12 to 2013/14 budgets.

- **Table 91 Burpengary sewer rising main duplication project – Proposed capital expenditure profile**

	Costs ($000s)			
Source	**2011-12**	**2012-13**	**2013-14**	**Total**
2011/12 Information Template	4,855	-	-	4,855
Project Description Statement – Duplication of RM Old Bay Rd to BESTP (525mm x 3000m)	5,915	-	-	5,915

The information provided in the 2011/12 Information Template submitted to the Authority for the 2011/12 to 2013/14 financial years is less than the information provided in other supporting documentation. Unitywater advised that the costs outlined in the *Project Description Statement* were prepared in 2009 prior to tendering.

7.12.2. Project description

The Burpengary Sewer Rising Main Duplication Project involves the construction of a new 525 mm diameter sewer rising main, approximately 3,000 m long. The project will duplicate the existing sewer rising main from the intersection of Old Bay Road and Moore Road to Burpengary East Sewage Treatment Plant. The new rising main will run parallel to the existing rising main.

From discussions with Unitywater an incident occurred whereby there was a significant overflow of raw sewage when Caboolture Shire Council was responsible for wastewater services. In 2008 Caboolture Shire Council, Pine Rivers Shire Council and the City of Redcliffe Council amalgamated to form Moreton Bay Regional Council. The water services of Moreton Bay Regional Council and Sunshine Coast Regional Council were subsequently amalgamated in 2010 to form Unitywater.

7.12.3. Provided documentation

The key reference documents used for this review are:

- *Moreton Bay Water Initial Investigation Report – Sewer Rising Main to the Burpengary STP*, MWH & Moreton Bay Regional Council, March 2009
- *Project Description Statement – Duplication of RM Old Bay Road to BESTP*, Unitywater & MWH, September 2009
- *Preliminary Design Report – BESTP Sewer Rising Main Augmentation*, Unitywater & MWH, December 2009
- *Meeting Notes - Sewer Rising Main to the Burpengary East STP-BESTP Preliminary Design*, MWH, December 2009
- *Final Design Report – BESTP Sewer Rising Main Augmentation*, Unitywater & MWH, April 2010
- *Meeting Notes - Sewer Rising Main to the Burpengary East STP-BESTP Final Design*, MWH, April 2010
- *Procurement Probity Plan – New BESTP Main Sewer Rising Stage 2*, Unitywater, June 2010
- *Contract Recommendation & Approval Report C9079 Construction of New BESTP Main Sewer Rising Main*, Unitywater, October 2010
- *UW001578-C9079 BESTP SRM Duplication Package 2 Tender Recommendation*, MWH, January 2011
- *Report for Trunk Infrastructure Planning – Sewerage*, GHD, June 2008
- *Wastewater Network Master Plan - Caboolture District*, Draft, Unitywater, October 2010
- *BERM-REF 11 - F1 Cost Reports.xlsx*¸ Unitywater

7.12.4. Prudency

Cost driver

The nominated cost driver for this project by Unitywater is growth. Population projections from the *Wastewater Network Master Plan - Caboolture District* (Unitywater, 2010) and from the *Report for Trunk Infrastructure Planning – Sewerage* (GHD, 2008) for the Burpengary East Sewerage Treatment Plant are outlined below in **Table 92Error! Reference source not found.**.

- **Table 92 Burpengary East Sewerage Treatment Plant projections**

	2005	2009	2011	2016	2021	2026	2031
Projected Equivalent Population (EP)[1]	-	45,726	**47,317**	49,813	53,838	54,370	57,731
Projected Equivalent Population (EP)[2]	40,348	-	41,713	**47,740**	53,622	-	-
Projected ADWF (ML/day)[2]	9.7	-	10.0	11.5	12.9	-	-
Projected PWWF (ML/day)[2]	48.4	-	50.1	57.3	64.3	-	-

Note: 1 From *Wastewater Network Master Plan - Caboolture District* (Unitywater, 2010), 2 Extracted from the *Report for Trunk Infrastructure Planning – Sewerage* (GHD, 2008)

The *Report for Trunk Infrastructure Planning – Sewerage* (GHD, 2008) identifies the need for a new 525 mm diameter sewer rising main to Burpengary East Sewerage Treatment Plant in 2016 indicates that the infrastructure is not required for approximately five years.

The more recent network plan (2010) indicates that the connected population is larger than projected in the GHD report, with the current 2011 population being comparable to GHD's projected 2016 population.

The existing rising main has design flows of approximately 500 L/s.

The *Project Description Statement – Duplication of RM Old Bay Road to BESTP* (Unitywater & MWH, 2009) states, in relation to the reason for the project:

> *"Currently the existing OD600 rising main serves Burpengary, Narangba and Deception Bay. The new augmentation will provide additional security ensuring continued service to these area(s) in the event of a pipe failure downstream of Old Bay Road."*

We have been advised that a significant failure of the existing rising main occurred under Caboolture Shire Council/ Caboolture Water control, prior to 2008, which resulted in significant quantities of raw sewage discharging to an environmentally sensitive area. Subsequent investigation by the Department of Environment and Resource Management resulted in Caboolture Water being required to implement measures to ensure redundancy in environmentally sensitive areas to ensure that a similar incident does not occur again. It is believed that this project is part of the strategy to address the Department of Environment and Resource Management's requirements. It is understood that the Department of Environment and Resource Management did not specify the duplication of the rising main as the required solution.

Based on the definition of the improvement driver, which is "*capital expenditure associated with upgrading service outcomes to improve asset efficiency; reliability or increase the anticipated life of an asset to prevent a service non-compliance or capacity shortfall.",* the project would satisfy the requirement of improving the reliability of the asset.

Decision making process

Alternative options to the duplication of the existing rising main were not considered as this option was considered the most appropriate solution to improving the redundancy of the system and could not be satisfactorily achieved via an alternative solution.

To achieve an improvement in redundancy the following options are generally available:

1) Emergency storage at the sewerage pump station
2) Storage within the gravity system upstream of the sewerage pump station
3) Duplicate the rising main system

Typically, it is expensive to create large access controlled storages for raw sewage. Similarly it is expensive to oversize the trunk system to allow for storage. In addition to this cost, the use of storage is generally infrequent, resulting in an inefficient investment. Attempts to improve this efficiency by increased use through more frequent use for typical operating conditions are achievable but they are specific to the situation and usually result in additional expense for odour management.

Consequently the choice of duplication of the main to increase the redundancy of the system is typically an adequate solution.

Four route options were considered, these were:

Option 1 Route via Moore Rd/ Margaret St/ Lot 2 RP51144/ Common

Option 2 Route via Moore Rd/ Lot 182 SL8912/ Common

Option 3 Route via Private Access Rd/ Lot 2 RP51144/ Common

Option 4 Route via Moore Rd/ Margaret St/ O'Leary Ave/ Lot 182 SL8912/ Common

In the initial investigation, the route options were considered on the basis of environmental impact, cost and hydraulics. No ground information details have been provided and so it is therefore inferred that no ground investigation was included in the initial investigation of the options. Cost estimates for the details associated with the initial investigations were provided but no information was provided in relation to the evaluation of the options on the basis of the other criteria. The least cost option, Option 4, at $6.32 million was selected.

From discussions with Unitywater it is our understanding that they are unclear as to the root cause of the failure of the existing rising main. Without understanding the potential contributing factors or conditions associated with the failure adopting an adjacent route to the existing main has resulted in the acceptance of some latent risks.

In summary, the Burpengary Sewer Rising Main Duplication Project will improve the reliability and redundancy of an essential component within the sewer system and provides capacity for growth. Consequently the project is assessed as prudent.

7.12.5. Efficiency

The scope of works

The scope of works for this project comprises of the construction of a new 525 mm diameter sewer rising, approximately 3,000 m long, from the intersection of Old Bay Road and Moore Road to Burpengary East Sewage Treatment Plant. This option was selected as the least cost option to deliver the required infrastructure.

Standards of service

According to the Unitywater 2011/12 Submission to the QCA this project comes under the *Network Master Plan: Caboolture District Wastewater Network Master Plan, Drawing S 007 (Ref CPIPWW0139).* The *Network Master Plan* was prepared and reviewed by an experienced Registered Professional Engineer of Queensland in accordance with Queensland Government Guidelines and Council's Design Manual. Unitywater advised that the infrastructure will be designed, constructed and commissioned in accordance with council's Design Manual and relevant Australian and New Zealand Standards. The *Wastewater Network Master Plan - Caboolture District, Draft* (Unitywater, 2010) has been provided for review. The planning and design criteria outlined are in keeping with good industry practice and are acceptable for this project.

Project cost

The project was divided into two stages to separate out the areas that will have a more complex approvals consenting process. Stage 1 involves work within the road reserve from the connection point at Old Bay Rd to five metres before the end of O'Leary Av. Minimal approvals are required for this section and works could proceed relatively quickly. Stage 2 involves all other works. Approvals from both the Department of Environment and Resource Management and the Department of Transport and Main Roads were required before work for Stage 2 could commence as the proposed route passed through environmental sensitive areas and state controlled roads.

The overall project costs estimate for Stages 1 and 2 is broken down in **Table 93Error! Reference source not found.**, below.

- **Table 93 Budget cost breakdown**

	Amount ($)	Percentage (%)
A Project Management	240,561	5
B Land/ Authority/ Apps	62,563	1
C Design	275,400	6
D Construction	4,177,190	85
E Commissioning	-	0
F Contingency	182	0
Sub Project	**4,755,897**	
Estimate cost to complete	169,233	3

	Amount ($)	Percentage (%)
Total project cost estimate	**4,925,130**	**100**

Note: Extracted from the *BERM-REF 11 - F1 Cost Reports.xlsx*

By simplistic calculation, the total construction cost of $4,177,190 minus the Stage 2 contract costs of $2,466,804 results in the construction costs of Stage 1 being $1,710,386.

Unitywater advised that Stage 1 was completed by Day Labour as a result of a tendering process run by Moreton Bay Regional Council. We have not received tender cost estimates or reviewed the tender documents. The unit cost for Stage 1 of the project is $1316/m, assuming a cost of $1,710,386 for 1300 m rising main. This is lower than the unit cost calculated using industry standard unit rates from comparable water authorities that includes the use of site condition specific multipliers such as depth, soil type, existence of acid sulphate soils and different construction techniques, which identified a unit cost of $1964/m.

In addition the unit cost from day labour is comparable to Stage 2 unit costs which were competitively tendered.

The costs for Stage 2 of the project have been determined through a tendering process with companies selected from a panel of providers. This tender process involved the issue of the works to eight contractors from a panel of providers. Each contractor submitted costs for the proposed works. The tenders were evaluated by individuals from Unitywater and Montgomery Watson Harza (MWH). An arithmetic check was conducted by MWH and revised tender amounts determined. The criteria used to assess the submissions are outlined in **Error! Reference source not found.** below. A score was assigned to the criteria and overall score allocated to the submission. The tenderers were ranked based on the scores. The top three ranking companies attended tender clarification interviews. The tender was awarded to the highest ranked company, after re-evaluation, based on the evaluation criteria.

- **Table 94 Tender evaluation criteria**

Criteria	Weighting (%)
Environmental considerations	20
Methodology for project delivery	20
Time	10
Price	50

Note: Extracted from the *Procurement Probity Plan – New BESTP Main Sewer Rising Stage 2* (Unitywater, June 2010)

Based on the information provided, we understand that the price for the works ranged from $1.58 million to $3.26 million. The preferred tenderer selected by Unitywater was within the lower region of this range, with a price of $1.62 million. The total cost of the contract, including contingencies, is $2.47 million. We have not reviewed the original tender documents.

The costs indicated by Unitywater for Stage 2 of the project have been arrived at through a competitive tender process, and therefore as such are believed to accurately represent the current market value of the proposed project. The unit cost for Stage 2 of the project is $1451/m, assuming total cost of $2,466,804 for 1700 m of rising main. Unit cost calculated using industry standard unit rates for Stage 2 are approximately $1900/m.

As the unit costs are below the industry standard and the Stage 2 costs competitively tendered we conclude that these costs are efficient.

7.12.6. Timing and Deliverability

Unitywater advised that Stage 1 of the project was completed in October 2010. For Stage 2, the selected contractor proposed a 23 week construction period from contract award. Unitywater advised that construction is due to be completed in November 2011, dependant on weather conditions. We consider that this project can be delivered within the project timelines.

7.12.7. Efficiency Gains

No efficiency gains have been identified for this project.

7.12.8. Allocation of overhead costs

Not applicable as no overheads have been allocated to this project.

7.12.9. Policies and procedures

An assessment of the project's compliance with the initiatives identified by the Authority is provided in **Error! Reference source not found.** below:

- **Table 95 Burpengary sewer rising main duplication project - compliance with the Authority's initiatives**

Initiative	Achievement Yes/No/Partial	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole of entity) perspective	N/A	This is not applicable to this project due the localised nature of the scheme.

Initiative	Achievement Yes/No/Partial	Comment
A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is uniformity of cost estimating across all proposed major projects	No	
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	Yes	A Project Description Statement has been provided outlining basic information relating to the project, including the problem, objectives, success criteria, assumptions and budget
An implementation strategy to be developed for each major project that includes recommendation on delivery methodology, program and a risk review process	No	An implementation strategy has not been provided for this project.
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	Yes	A 'gateway' review process has been implemented with documentation provided relating to Gates 1 to 4.

7.12.10. Summary

The Burpengary Sewer Rising Main Duplication Project will duplicate the existing sewer rising main from the intersection of the Old Bay Road and Moore Road to Burpengary East Sewage Treatment Plant. The duplication is a response to DERM requiring redundancy in this area.

The project is assessed as prudent. The primary driver has been assessed as improvement. An outcome of the project is increased capacity which will accommodate growth.

Both Stages 1 and 2 of the project has been assessed as efficient. An appropriate scope of works, acceptable standards of service, reasonable project costs, and achievable delivery have been demonstrated.

Value of expenditure not considered to be prudent or efficient – NIL.

7.13. BI-01 Sewer Rising Main Duplication

7.13.1. Proposed capital expenditure

Table 96 shows the proposed cost of the BI-01 Sewer Rising Main Duplication project within the 2011/12 to 2013/14 budgets. Costs prior to 2011/12 have been included for completeness.

- **Table 96 BI-01 Sewer Rising Main Duplication – proposed capital expenditure profile**

					Costs ($000s)	
Source	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**Total**
Submission to the Authority	-	-	4,152	-	-	4,152
Project Definition and Deliverables	-	3,679	-	-	-	3,679
Moreton Bay Regional Council Project Description Statement	170	65	3,145	-	-	3,380
BI-01 Sewer Rising Main Contract	-	-	3,280		-	3,280
Sewer Rising Main RMN BI-01 (375mm x 2900m) Whole of project forecast	-	-	3,950		-	3,950

Note: costs rounded to the nearest $1,000.

The cost provided in the regulatory submission to the authority is the most recent forecast. This cost is the project manager's forecast at project completion and includes contract variations for rock excavation, trenchless construction and scope increases. The other costs identified in the documentation submitted to the Authority are forecasts arising from a range of sources from the initial project scoping to output from the final investigation. The $4,151,858 provided in Unitywater's submission to the Authority will be the focus of the review.

7.13.2. Project description

An existing 500 mm diameter rising main serves the west and north areas of Bribie Island. A number of sewage pump stations link in to the rising main. The 500 mm diameter main was installed in 1998/99 to augment an existing 375 mm diameter line. The 375 mm diameter line was converted to a recycled water main in 2007/08.

The project is for the design and construction of 2900 m of 450 mm diameter polyethylene sewer rising main to duplicate the existing rising main on Bribie Island that extends from wastewater pump station BI-01 to Bribie Island Wastewater Treatment Plant. The new rising main is to include non-return and sluice valves on each main, to allow them to be shut off and operated together or individually.

The pipeline installation method will be with a combination of trenching and directional drilling.

7.13.3. Provided documentation

The key reference documents used for this review are:

- *Final Design Report*, Moreton Bay Regional Council, 13 May 2010
- *C 9004: C-EMS-09 – BI-01 Sewer Rising Main Duplication*, Tender Review, MWH, 29 August 2010
- *Project Definition and Deliverables (PDD)*, Unitywater, 25 October 2010
- *Project Description Statement*, Moreton Bay Regional Council, 18 September 2009
- *BI-01 Sewer Rising Main Duplication Contract*, Unitywater, 15 October 2010
- *Procurement Probity Plan*, Unitywater, 28 July 2010
- *Network Projects Risk Register BI-01 Risk Tool*, Unitywater
- *Sewer Rising Main BI-01 Chart of Accounts*, Unitywater
- *Review Initial Investigation on Alignment Options meeting minutes*, MWH, 27 January 2010
- *Review Final Design Report meeting minutes*, MWH, 19 May 2010
- *Trunk Infrastructure Planning Sewerage*, GHD, no date provided
- *Contract C9004 – Duplicate RM BI-01 (Cotterill Rd) to BISTP*, Unitywater
- *Response to RFI ID No 0012*, Unitywater, 05 October 2011

7.13.4. Prudency

Cost driver

The cost driver nominated for this project by Unitywater is growth. The *Project Description Statement* states the reason for the project is insufficient capacity in the rising main from wastewater pump station BI-01 to the Bribie Island wastewater treatment plant to provide for growth.

The Trunk Infrastructure Planning Sewerage report provides average dry weather flows and peak wet weather flows for Bribie Island that were projected using Planning Information and Forecasting Unit (PIFU) population forecasts (September 2006). Using this information we have completed high level calculations that demonstrate the current sewer is likely to be nearing or exceeding capacity, and therefore would be unable to accommodate the projected growth.

The primary driver of growth has been demonstrated.

Decision making process

The pipeline alignment is adjacent to Goodwin Drive and First Avenue. A number of route options within this alignment are detailed in the *Review of Initial Investigation on Alignment Options*

meeting minutes from the 27 January 2010, including three alignments options along both Goodwin Drive and First Avenue, as detailed below.

1) *"Goodwin Drive –*
   - *The existing pipelines are within an easement parallel to the road. The existing easement is too narrow for an additional rising main. Widening the easement may affect an important habitat*
   - *The east side of the road has a very wide berm. Some of this area may be required for future road widening. The berm contains a DN450 AC water main, Telstra cables, power poles with high voltage overhead power lines, and underground power for street lighting. Subject to (Council) Roads (Department) approval, the line could be constructed by open cut, approximately 5-6m from the road boundary (outside the allocated services corridor).*
   - *The berm on the west side of the road is very narrow, and drops off to a deep drain. The pipeline could be constructed by directionally drilling below the footpath. The only (adjacent) services are power for street lighting.*
   - *The selection will be based on practicality of directional drilling and (Council) Roads (Department) requirements*
2) *First Avenue –*
   - *The north side of the road is not practical because of services and existing commercial development.*
   - *On the south side, the existing rising main, recycled water main and water main occupy the water/sewer corridor. Outside this area there are established trees that will affect the alignment. However an alignment following the footpath appears to be practical. This may also need to be directionally drilled, and would be subject to (Council) Roads (Department) approval.*
   - *An alternative would be to locate the rising main around the perimeter of the sports fields. This would avoid clashes with other services, but would require (Council) Parks (Department) approval.*
   - *The alignment on the south side of the road is preferred, subject to (Council) Roads (Department) approval and (the) practicality of construction."*

An alternate option for the reuse of an existing 375 mm diameter rising main was considered. The 375 mm diameter rising main was the original sewer main. This however has been converted to a recycled water main in 2007/08. The Review of Initial Investigation on alignment options meeting minutes demonstrate that this option was considered unlikely to be viable as the council had spent a considerable sum on the main.

The selected alignment as detailed in *Final Design Report* meeting minutes from the 19 May 2010 is:

- *"Within road reserve from BI-01 pump station along the west side of Goodwin Drive, crossing to the south side of First Avenue. The section along First Avenue will be directionally drilled to avoid damage to trees.*
- *From First Ave, the pipeline follows the access to BISTP (ie Bribie Island Wastewater Treatment Plant) through reserve areas. One section will be directionally drilled below the carriageway because of the limited width available."*

Given the above information on consideration of alternatives we consider the decision making process to be reasonable.

The project has been assessed as prudent.

The primary driver of growth has been demonstrated.

7.13.5. Efficiency

The scope of works

The project is for the design of a new sewer rising main to duplicate the existing rising main that extends from wastewater pump station BI-01 to Bribie Island Wastewater Treatment Plant. The pipeline is to be installed by open cut and trenchless construction methods.

The Trunk Infrastructure Planning Sewerage report provides average dry weather flows and peak wet weather flows for Bribie Island that were projected using PIFU population forecasts (September 2006). Using this information we have completed high level calculations that demonstrate the requirement for the sewer duplication. Our calculations indicate that a 375 mm diameter ductile iron cement lined pipe (internal diameter 406 mm) would likely be sufficient to handle current and future loads. However, as detailed in the *Final Design Report*, the selection of 450 mm outside diameter polyethylene main (internal diameter 346 mm or 366 mm depending on the Standard Dimension Ratio (SDR)) has been made based on the requirements for directional drilling and the protection the polyethylene pipe provides against potentially aggressive soils when compared to 375 mm diameter ductile iron cement lined pipe.

Given the supporting evidence for the scope of works is appropriate.

Standards of service

The project aligns with the Unitywater Customer Charter, particularly:

> *"Protecting your health and the environment by operating and maintaining the infrastructure for the effective collection, transport and treatment of sewage."*

Installation of nominal 375 mm diameter pipe would likely meet the flow requirements of the sewer duplication. However, Unitywater has selected 450 mm outside diameter polyethylene pipework, which is more suitable for the directional drilling requirements and the potentially acid sulphate soil.

The SDR rating of the polyethylene pipework has not been provided and so it has not been possible to check the impact on the velocities.

Project cost

Invitation to tender documents were forwarded to eight members of the panel of providers and six tender returns were received on the 11 August 2010. The tenders were evaluated according to the following criteria:

- Price 60%
- Previous relevant experience 20%
- Methodology for project delivery including timing 20%

The contract was awarded to Redline Contracting based on their tender being the highest scoring tender in accordance with the procurement probity plan. The contract was for $2,674,934 plus GST. The C 9004: C-EMS-09 – BI-01 Sewer Rising Main, Tender Review demonstrates the tender review process.

Information provided by Unitywater in *Contract C9004 – Duplicate RM BI-01 (Cotterill Rd) to BISTP* (Bribie Island Wastewater Treatment Plant) includes variations that were approved during the project. The variations were for rock excavation, trenchless construction and increased scope, and totalled to $585,633.

The contract cost and variations total to $3,260,567, which combined with previous expenditure of $670,712 (as detailed in the *Response to RFI ID No 0012*) is $3,931,279. This total cost is approximately five percent less than the project cost identified in Unitywater's submission to the Authority. No information has been provided as to the intended use of the five percent difference.

The cost per metre of constructing the sewer is $1,432 per metre. Rates for construction of 450 mm outside diameter polyethylene sewer in the Gold Coast were obtained. These were $1,172 per metre, plus $800 per meter for horizontal directional drilling, resulting in a total cost of $1,972 per metre. The contract document extract provided by Unitywater indicates that the sewer will be installed by trenchless technology from chainage 0.00 m to chainage 1,907.98 m. Assuming the 1,908m length of trenchless construction is completed by horizontal directional drilling; the construction rate for the 450 mm outside diameter polyethylene sewer increases to $1,698 per

metre. Consequently the unit cost of sewer construction for the project is comparable, but lower than the unit cost obtained for a similar project in the Gold Coast.

The project is assessed as efficient.

An appropriate scope of works, acceptable standards of service and achievable project delivery have been demonstrated.

7.13.6. Timing and Deliverability

The target date for delivery of the project is for the 2010/11 financial year. Advice provided by Unitywater during the interview indicated that the project is in its commissioning phase and is due for operation in November 2011.

This timeframe is assessed as achievable.

7.13.7. Efficiency Gains

The duplication of the rising sewer main should avoid the current sewerage system exceeding its capacity. No information is provided for efficiency gains that may be realised through the project.

7.13.8. Allocation of overhead costs

No allowance has been made for the allocation of overhead costs to this project.

7.13.9. Policies and procedures

An assessment of the project's compliance with the initiatives identified by the Authority is provided in **Table 97** below:

- **Table 97 BI-01 Sewer Rising Main Duplication - compliance with the Authority's initiatives**

Initiative	Achievement Yes/No/Partial	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole of entity) perspective	Yes	The project is required to ensure that the system has enough capacity to meet current and future needs.

Initiative	Achievement Yes/No/Partial	Comment
A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is uniformity of cost estimating across all proposed major projects	Partial	Cost estimates were provided in the: ■ Project Description Statement ■ Chart of Accounts The chart of accounts appears to be a template for calculating project costs.
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	Yes	■ Final Design Report, Moreton Bay Regional Council, 13/05/2010 ■ Project Definition and Deliverables (PDD), Unitywater, 25/10/2010 ■ Project Description Statement, Moreton Bay Regional Council, 18/09/2009 ■ Procurement Probity Plan, Unitywater, 28/7/2010
An implementation strategy to be developed for each major project that includes recommendation on delivery methodology, program and a risk review process	Partial	Some details were included in the following documents. No clear project program or methodology were provided ■ Network Projects Risk Register BI-01 Risk Tool, Unitywater ■ Sewer Rising Main BI-01 Chart of Accounts, Unitywater
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	Partial	Gate 1, Gate 2 and Gate 4 were referred to in connection with the Project Description Statement, Project Definition and Deliverables and Tender report respectively however no information on what constitutes a Gate 1, 2 or 4.

7.13.10. Summary

The project is for the design and construction of 2900 m of 450 mm diameter sewer rising main to duplicate the existing rising main on Bribie Island that extends from wastewater pump station BI-01 to Bribie Island Wastewater Treatment Plant. Advice provided by Unitywater during the interview indicated that the project is in its commissioning phase and is due for operation in November 2011.

The project has been assessed as prudent.

The primary driver of growth has been demonstrated.

The project has been assessed as efficient.

An appropriate scope of works, acceptable standards of service and achievable project delivery have been demonstrated.

7.14. Ngungun Street, Landsborough – Water Pump Station Project

7.14.1. Proposed capital expenditure

Table 98 reports the proposed capital expenditure of the Ngungun Street, Landsborough – Water Pump Station Project within the 2011/12 to 2013/14 budgets.

- **Table 98 Ngungun Street, Landsborough – Water Pump Station Project – Proposed capital expenditure profile**

	Costs ($000s)				
Source	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**Total**
Submission to the Authority	-	719	-	-	719
Project Description Statement	-	-	-	-	780
Regional Water Infrastructure Strategic Growth Planning Study Volume 1	-	-	-	-	780
C0285 Ngungun St water pump station - expenditure question	66	719	-	-	785

Costs detailed above closely correspond with each other, with less than a one percent variance in their total amounts.

7.14.2. Project description

The project, as stated in the *Project Description Statement,* aims to provide the "*trunk supply capacity required to comply with Unitywater's Desired Standards of Service (DSS), whereby, reservoir depletion does not occur during 3 days of peak demand."*

This is confirmed in the *Regional Water Infrastructure Strategic Growth Planning Study Volume 1* document that states:

> *"Under 2011 demands, over 3 consecutive days of maximum demand, the Beerwah reservoirs were identified to (be) empty. A number of pressure failures were also identified in the Beerwah region. To resolve both of the above issues, a booster pump station for operation during high demand times is proposed for construction on the 300 mm western trunk main at the Ngungun Street control valve site. The proposed size of the booster pump station is 115 L/s @ 35 m head, with equivalent standby capacity."*

7.14.3. Provided documentation

The key reference documents used for this review are:

- *Project Description Statement,* Unitywater, 4 April 2011
- *QE09969-3000-OEC-RI-M3-0010 (Response to RFI),* Unitywater, 4 October 2011

- *Caloundra City Council Water Supply and Sewerage Planning. Planning Report*, Kellogg, Brown & Root Pty Ltd, 20 April 2004
- *Caloundra City Council Water Supply and Sewerage Planning. Planning Report Addendum*, Kellogg, Brown & Root Pty Ltd, 8 December 2006
- *Regional Water Infrastructure Strategic Growth Planning Study Volume 1*, MWH, July 2010
- *Regional Water Infrastructure Strategic Growth Planning Study Volume 2*, MWH, July 2010
- *QA Overview*, Unitywater
- *Ngungun St Landsborough - WPS - Project Program*, Unitywater, 3 October 2011
- *Copy of Ngungun St Landsborough - WPS - Risk Assessment*, Unitywater, October 2011
- *C0285 Ngungun St water pump station - expenditure question*, Unitywater, October 2011

7.14.4. Prudency

Cost driver

The cost driver nominated for this project by Unitywater is growth as detailed in the *Project Description Statement*.

The *Caloundra City Council Water Supply and Sewerage Planning. Planning Report* states that the desired standard of service for water supply is a "*reliable water supply"*. The report also demonstrates that growth is a valid driver through the population growth projections.

Population forecasts were completed by SGS Economics & Planning using population forecasts from the Department of Local Government and Planning (DLGP)'s Planning Information and Forecast Unit (PIFU). These forecasts were allocated to areas suitable for greenfield growth and redevelopment within Caloundra City Council in conjunction with Council staff. The *Planning Report Addendum* states that Kellogg, Brown & Root aggregated this data for each of the sewer and water priority infrastructure areas. This is an appropriate methodology.

The resolution of pressure issues will be achieved when the augmentation for growth is completed. Consequently the primary driver of growth as assessed as appropriate with legal obligations (compliance) being regarded as a subordinate driver.

Decision making process

Several options that were considered are detailed in the *Project Description Statement* including the 'do nothing' option. The investigated options are:

- 'Do nothing'
- Pipe augmentation
- Upgrade existing pump stations and check valve on Steve Irwin Way

- Booster pump station

All options except the booster pump station were eliminated at this stage and no Net Present Value calculation has been completed. The assessment of the options is stated in the *Project Description Statement* as:

- *"'Do nothing' risks*
  - *'H20Map modelling has shown the existing network to be insufficient to meet storage requirements, see attached model results;*
  - *'In the event of 3 days max day demand, existing reservoirs in this region will run dry, leaving 11,000 customers without water; and*
  - *'Running customers out of potable water represents an unacceptable risk to Unitywater refer to the risk register for inherent risk profiles.*
- *Pipe augmentation option requires augmentation of the entire supply line back to the distribution tanks to resolve head loss issues in the long term. Material and installation costs alone would be in excess of $6.5million.*
- *Upgrade pump station #2 and a check valve does not work in the short term and is not a long term solution.*
- *The proposed booster pumps are to deliver approximately 115 L/s at 35 m head with equivalent standby pumps and will require a non return valve installation on the parallel main."*

A further reason to eliminate the pipe augmentation option is given in the option description section that states "*while the identified 3086m of 375mm trunk main augmentation resolves the reservoir depletion issue in 2011, in future years the head loss in upstream and downstream trunk mains also becomes an issue and reservoir drawdown becomes an issue again well before the desired 25 year period, upgrade of the entire supply infrastructure (12 km) is too costly to consider a feasible option. As the deficiency is related to max day demand the additional trunk mains would not be fully utilised on a regular basis for a number of years and the associated volume would add to existing water quality problems on an average day."* This statement indicates that the proposed option does not meet the design requirements and so is not a feasible option even without the relatively high cost.

No Net Present Value calculations have been completed for this project, as there is only one feasible option.

The project is assessed as prudent.

The primary driver of growth has been demonstrated.

7.14.5. Efficiency

The scope of works

Of the options identified only one satisfies the project driver while not leading to further issues in the long term and so the preferred scope of work is the best means of achieving the desired outcomes.

The project proposes to construct the following:

- A booster pump station on the existing 300 millimetre diameter rising main upstream of the existing Gympie Street control valve
- A non return valve is to be installed on the 200mm trunk supply main on Steve Irwin Way to separate the pump suction and discharge

These works are assessed as appropriate to meet the desired outcomes of the project.

Standards of service

The *Project Description Statement* details the project's strategic fit with the Unitywater Corporate Plan 2010-2015 as follows:

- *"Strategic Objective 1 – Customer Satisfaction*
  - *'Meet our customers' expectations'*
- *Strategic Objective 2 – Integrated Whole of Region Business*
  - *'Deliver water supply and sewerage services'; and*
- *Strategic Objective 4 – Sustainable Value x Growth*
  - *'Drive efficiencies'"*

In addition the project aims to meet Unitywater's Desired Standard of Service such that reservoir depletion does not occur during three days of peak demand.

Project cost

The project cost is detailed in an extract of the *Regional Water Infrastructure Strategic Growth Planning Study* that has been appended to the *Project Description Statement*.

An allowance of 20 percent has been made for indirect and administrative costs and a contingency of 30 percent has been applied to the project. The *QE09969-3000-OEC-RI-M3-0010 (Response to RFI)* document states that *"the estimate for this project was based on a GHD unit rates report (provided previously) with a 30 percent contingency added."* These were to apply a unit cost of $5,303 per kW to the required pump power estimate of 113kW and then add a 30 percent contingency resulting in a total cost of $779,001.60. This calculation used December 2004 rates to

produce the project cost. The rates have been checked against similar previous project experience and have been found to correspond to these rates.

As the project is only at the feasibility stage then this methodology is considered appropriate and so the project cost can be assessed as efficient.

7.14.6. Timing and Deliverability

The project program has been provided that shows a construction completion date of 12 February 2013 and a commissioning completion date of 12 March 2013. The *QE09969-3000-OEC-RI-M3-0010 (Response to RFI)* document states that the program will be refined once an Asset Delivery Project Manager has been appointed.

The *Copy of Ngungun St Landsborough - WPS - Risk Assessment* is a high level risk assessment of generic risks and does not contain any specific risks. The following are the risks that are detailed in the document:

- Safety
- Environment
- Financial
- Service delivery
- Legal and regulatory
- Image and reputation

This does not allow a review of the barriers to the project deliverability.

7.14.7. Efficiency Gains

No efficiency gains have been identified.

7.14.8. Allocation of overhead costs

20 percent has been allowed for indirect and administration costs.

7.14.9. Policies and procedures

An assessment of the project's compliance with the initiatives identified by the Authority is provided in **Table 99** below:

- **Table 99 Ngungun Street, Landsborough – Water Pump Station - compliance with the Authority's initiatives**

Initiative	Achievement Yes/No/Partial	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole of entity) perspective	N/A	Project is off a small scale and does not relate to a regional perspective.
A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is uniformity of cost estimating across all proposed major projects	Yes	A contingency of 30 % has been applied to the project. Pricing has been based on a cost per kW of the proposed pumps.
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	Yes	A Project Description Statement has been provided outlining basic information relating to the project, including the problem, objectives, success criteria, assumptions and budget.
An implementation strategy to be developed for each major project that includes recommendation on delivery methodology, program and a risk review process	N/A	The project cost demonstrates that the project is not a 'major project'.
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	Yes	Project Delivery Document is submitted for approval at the first 'gate' in this process.

7.14.10. Summary

The project has been assessed as prudent.

The primary driver of growth has been demonstrated.

The project has been assessed as efficient.

An appropriate scope of works, acceptable standards of service, and reasonable project costs have been demonstrated.

Value of capital expenditure assessed as not prudent or efficient – Nil.

7.15. Coolum Sewage Treatment Plant Augmentation

7.15.1. Proposed capital expenditure

Table 100 shows the proposed cost of the Coolum Sewage Treatment Plant Augmentation within the 2011/12 to 2013/14 budgets.

Table 100 Coolum Sewage Treatment Plant Augmentation– Proposed capital expenditure profile

	Costs ($000s)			
Source	**2011-12**	**2012-13**	**2013-14**	**Total**
2011/12 Information Template	373	15,408	33,033	48,814
Final Report: Coolum and Suncoast Augmentation Assessment – Project Estimate by Project Support Pty Ltd (Appendix of MWH Report)	-	-	-	37,402

The costs presented in the supporting documentation do not agree with the costs in Unitywater's submission to the Authority.

7.15.2. Project description

Coolum Sewage Treatment Plant is one of ten sewage treatment plants within the Sunshine Coast region, for which Unitywater is responsible.

Coolum Sewage Treatment Plant was originally constructed as a 3,000 EP lagoon system and commissioned in 1978. Since then, two separate augmentations have occurred:

- Stage 1 – upgraded to an extended aeration plant, in 1984, with a capacity of 10,000 EP
- Stage 2 – capacity increase of 15,000 EP with a biological nutrient removal process in 1997

These two stages provide Coolum Sewage Treatment Plant with a total design capacity of 25,000 EP.

The current catchment has a load of approximately 26,000 EP, which is in excess of the current design capacity. Although, Coolum Sewage Treatment Plant regularly achieves the release quality limits, it has occasionally breached its maximum dry weather flow, with 11 exceedances recorded in 2009. In addition, the population predictions for within the catchment, estimate that by 2026 the catchment load will increase to 45,000 EP. With the current design capacity limited to 25,000 at Coolum Sewage Treatment Plant, Unitywater is upgrading (or 'augmenting') the existing Sewage Treatment Plant.

7.15.3. Provided documentation

The key reference documents used for this review are:

- *Final Report: Coolum and Suncoast Augmentation Assessment, Volume 1, Master Report*, MWH, December 2010
- *Coolum & Suncoast STP Augmentation – Project Needs Analysis*, Unitywater, February 2011

7.15.4. Prudency

Cost driver

The nominated cost drivers for this project by Unitywater are growth and legal obligation (compliance). This is consistent with the drivers mentioned in the *Coolum & Suncoast STP Augmentation Project Needs Analysis*.

The conclusion that this project is driven by growth is supported by the following:

- Coolum Sewage Treatment Plant is currently over capacity by approximately 1000 EP. Using the basis of 225 L/ EP/ d, this is a daily exceedance of the STPs design capacity of 225 kL
- *Coolum & Suncoast STP Augmentation – Project Needs Analysis* has population figures generated by both the Planning Information Forecasting Unit and Unitywater's Integrated Demand Model growth projections, which indicate 35,000 EP and 49,000 EP respectively in 2026
- *Final Report: Coolum and Suncoast Augmentation Assessment* uses a catchment population of 45,000 EP as a 'base case' based on the adoption of both Unitywater's Northern Region Demand Model and the Planning Information Forecasting Unit from the previous Maroochy Shire Council Local Government Area

As stated in the Coolum & Suncoast STP Augmentation - Project Needs Analysis:

> *"The projected growth in load on the plant will increase the regularity of non-conformance with the environmental licence. Without augmentation the increasing load will cause deterioration in effluent and eventually result in water quality breaches in addition to the current flow breaches."*

The conclusion that this project is driven by legal obligation (compliance) is supported by the following:

- As mentioned previously, in 2009 11 exceedances were reported for the maximum dry weather discharge limit for the Coolum Sewage Treatment Plant. The current licence for Coolum Sewage Treatment Plant (Environmental Authority, License SR0301) states that the maximum discharge limit is 8.25 ML/d. If using an assumed sewage generation loading of 210 L/EP/day

(as our experience with Brisbane wastewater treatment plants), to achieve a daily volume of 8.25 ML/d, the calculated population is approximately 39,300 EP. It is clear that the Coolum Sewage Treatment Plant is under capacity

Whilst incidences of non compliance are occasionally occurring, this is due to overloading the plant resulting from growth before necessary augmentation. The primary driver of 'growth' has been demonstrated along with the subordinate driver of compliance. The resolution of the growth driver will resolve the compliance driver.

Decision making process

The multi criteria options analysis was conducted by MWH as detailed in the *Final Report: Coolum and Suncoast Augmentation Assessment*. The MWH report assessed the need for augmentation for the sewage treatment plants at Coolum, Suncoast, Nambour and Maroochydore. The relative merits of options to alter Coolum Sewage Treatment Plant, Suncoast Sewage Treatment Plant and Maroochydore Sewage Treatment Plant. The *Final Report: Coolum and Suncoast Augmentation Assessment* states that "*the Nambour (Wastewater Treatment Plant) scope was the same as the 'base case' for all shortlisted options and so Nambour (Wastewater Treatment Plant) has not been considered for the short listed options.*" The analysis did not include a 'do nothing' option.

The preferred option, identified as the 'base case', incorporated amendments to Coolum Wastewater Treatment Plant plus amendments to Suncoast Wastewater Treatment Plant and Maroochydore Wastewater Treatment Plant. Full details of the shortlisted options are reported in *Section 6 Short Listed Options* of the *Final Report: Coolum and Suncoast Augmentation Assessment*. The parameters that differentiated the options are:

- The value of flow diverted to another catchment
  - None for Coolum Wastewater Treatment Plant 'base case'
- The value of flow received from another catchment
  - None for Coolum Wastewater Treatment Plant 'base case'
- The 2026 design horizon value for the 2012 upgrade to the Wastewater Treatment Plants
  - 45,000 EP for Coolum Wastewater Treatment Plant 'base case'
- The effluent quality standards
  - 3 mg/ L of total nitrogen to 1 mg/ L of total phosphorous and Class A for Coolum Wastewater Treatment Plant 'base case'
- The effluent disposal location for flows up to 3 x Average Dry Weather Flow
  - 45,000 EP at Cod Hole (relocation required) for Coolum Wastewater Treatment Plant 'base case'

- The effluent disposal location for flows greater than 3 x Average Dry Weather Flow
  - 45,000 EP at River Discharge (existing location) for Coolum Wastewater Treatment Plant 'base case'
- Requirement for river health offset works
  - None for Coolum Wastewater Treatment Plant 'base case'

Once these options were developed, the non financial assessment included:

- River health and water quality
- Regulatory approvals
- Project implementation and performance
- Environmental / social an d cultural / health and safety

The financial assessment included capital cost analysis, operating cost analysis, and Net Present Value analysis.

The decision making process is assessed as appropriate.

The project has been assessed as prudent.

7.15.5. Efficiency

The scope of works

The scope of work, as documented by the consultant estimator, Project Support Pty Ltd (in the Appendices section of the MWH Report), defined the 'base case' to comprise of the following:

- New Inlet Works
- New Bioreactor (Stage 3) which includes:
  - Anaerobic Tanks
  - Oxidation Ditch
- Refurbishment of 3 existing Clarifiers and construction of 1 new Clarifier
- Cloth media filters
- New chlorine building with additional chlorinator, 2 additional contact tanks (1 for wet weather)
- Solids dewatering upgrade
- Additional alum storage and dosing
- Upgrade of hypochlorite dosing system
- Odour control unit

- All other associated civil, mechanical and electrical equipment, instrumentation and works.

We consider the process augmentation of the Coolum Sewage Treatment plant is satisfactory for the capacity upgrade and the effluent licence conditions of total nitrogen of 3 mg/L and total phosphorous of 1 mg/L.

Standards of service

In terms of Unitywater's Desired Standards of Service, the standards still operate under the existing service standards of Moreton Bay Water and Sunshine Coast Water. Therefore, under the Sunshine Coast Regional Council Customer Service Standards, this project directly relates to the following service:

> *"Customers will be provided with a service for the collection, transportation and treatment of sewage and disposal/ reuse of recycled water."*

Appropriate sewage generation factors have been used. The process has been designed to achieve the licence conditions.

Project cost

The estimated capital costs of the project, as per the estimate provided by Project Support Pty Ltd, are as shown in **Table 101**. These costs include the decommissioning of some existing infrastructure.

- **Table 101 Capital Cost Estimate from Project Support Pty Ltd**

Item	Capital Cost
Site Civils & Establishments	2,593,593
Influent Mains	2,471,533
Bioreactor	3,867,296
Clarifiers	5,384,050
Cloth Media Filters	836,531
Chlorine Building & Chlorine Dosing	1,780,027
Biosolids	254,751
Other Chemical Treatment	162,826
Odour Control	1,038,326
Pump stations	685,515
Pipelines	1,231,980
Misc work	5,473,313
Subtotal	**25,779,741**
Contingency	7,733,922
Design and Commissioning	2,381,363
Owners Costs	1,507,124
Total	**37,402,150**

Project Support Pty Ltd has used market rates and compared previous project experience to estimate the costs. The costs are assessed as reasonable.

However, the anticipated costs for other associated works as advised by Unitywater, have not been itemisation as clearly. From the *Coolum & Suncoast STP Augmentation - Project Needs Analysis*, the costs are as in **Table 102**. These costs include a sum of $347,000 that was spent in the 2010/11 financial year. The total cost minus this sum is $48.816 million, which is comparable to the sum reported in the regulatory submission to the Authority. No breakdown of the costs for the 'pipelines effluent reuse' or the 'contingency for potential undefined scope' has been provided in the documentation received.

- **Table 102 Revised Capital Works Cost Estimate as Supplied by Unitywater**

Item	Revised Capital Cost
STP Upgrade	25,780,000
Pipelines and Effluent Reuse	7,762,000
Contingency (for potential unidentified scope)	10,086,000
Subtotal	**43,628,000**
Design and Commissioning	3,322,000
Owners Costs	2,213,000
Total	**49,163,000**

The increase in the revised Unitywater capital costs is at the upper end of the cost estimate range of plus 30 percent.

The cost can be assessed as reasonable notwithstanding this.

Further explanation of the 'pipelines effluent reuse' or the 'contingency for potential undefined scope' should be provided.

7.15.6. Timing and Deliverability

Coolum & Suncoast STP Augmentation - Project Needs Analysis contains a Project Schedule as summarised in **Table 103**:

- **Table 103 Project Schedule**

Description	Completion (Committed)	Completion (Forecast)
Needs analysis completed	February 2011	
Procurement model selected	End May 2011	
Business case completed	End July 2011	
Business case approved		September 2011

Description	Completion (Committed)	Completion (Forecast)
Approvals / licence applications submitted		December 2011
Contract documentation approval		February 2012
Tendering (submissions received)		May 2012
Approvals / licences received		August 2012
Construction contract awarded		August 2012
Construction completed		October 2013

This is also confirmed by the Unitywater website (http://unitywater.com/Coolum-Sewage-Treatment-Plant-Augmentation.aspx) that states that:

> *"Construction is expected to commence in September 2012, with the upgrade commencing operation in January 2014."*

Several risks were identified by Unitywater in the *Coolum & Suncoast STP Augmentation - Project Needs Analysis* including:

- Project risks
- Operational risks
  - Breach of environmental licence
  - Major process unit failure
  - Increased sewerage network overflows and surcharges
- Corporate risks
  - Asset failures and conditions
  - Stakeholder management – regulator
  - Breach of legislation and statutory provisions
  - Environmental harm

No mitigation was included in the documentation provided.

The project schedule is assessed as achievable based on our experience.

7.15.7. Efficiency Gains

The refurbishment of Coolum Sewage Treatment Plant is necessary and the new works associated with the upgrade will achieve an extension of asset life.

No analysis was done by MWH or Unitywater with regards to any efficiency gains to be obtained by transferring sewage to Nambour Sewage Treatment Plant.

7.15.8. Allocation of overhead costs

Owners' costs of $2,213,000 are included. The detail of these and therefore, whether they are specific overhead costs are not provided.

7.15.9. Policies and procedures

An assessment of the project's compliance with the initiatives identified by the Authority is provided in **Table 104** below:

- **Table 104 Coolum Sewage Treatment Plant Augmentation compliance with the Authority's initiatives**

Initiative	Achievement Yes/No/Partial	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole of entity) perspective	Yes	The MWH report did consider the capital expenditure with regards to four different plants within the region.
A standardised approach to cost estimating, including a standardised approach to estimates for items such as contingency, preliminary and general items, design fees and contractor margins, so that there is uniformity of cost estimating across all proposed major projects	Partial	The cost estimate by Project Support Pty Ltd (within the MWH report) did include contingencies and design fees. Likewise the final submission by Unitywater also included a $10 million contingency for "potential unidentified scope" and design fees. As this project was during the transition period of Unitywater, it is not possible to assess the cost estimating across "all proposed major projects" from Unitywater.
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	No	None was provided.
An implementation strategy to be developed for each major project that includes recommendation on delivery methodology, program and a risk review process	Partial	Yes, Coolum & Suncoast STP Augmentation – Project Needs Analysis, was provided, however this contained very few details with regards to delivery methodology, program and risk assessment.
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	No	No information was provided.

7.15.10. Summary

Coolum Sewage Treatment Plant was originally constructed at a 3,000 EP lagoon system, commissioned in 1978 and has been augmented twice to give a total design capacity of 25,000 EP. The sewage treatment plant has occasionally breached its maximum dry weather flow, with 11

exceedances recorded in 2009. In addition, the population predictions for within the catchment estimate that by 2026, the catchment will increase to 45,000 EP.

The project has been assessed as prudent.

The primary driver of growth has been demonstrated along with the subordinate driver of compliance. The resolution of the growth driver will resolve the compliance driver.

The project has been assessed as efficient.

An appropriate scope of works, acceptable standards of service, reasonable project costs and achievable delivery have been demonstrated.

7.16. Overall sample capital project review summary

Ten projects were identified as a representative sample of Unitywater's capital expenditure program. These projects have been assessed against the Authority's definitions of prudency in particular the relevant driver and the decision making process and efficiency, including the standards of service, scope of work, timeliness of delivery and the costs.

The ten projects reviewed comprise 54 percent of the proposed 2011/12 financial year capital expenditure, 10 percent of the 2012/13 financial year capital expenditure and 13 percent of the 2013/14 financial year capital expenditure. The capital expenditure of the sample projects comprises of 28 percent of the total capital expenditure over the period.

All of the projects have been assessed as both prudent and efficient.

Table 105 provides an overview of the final assessment made for each project of the project sample chosen for assessment of prudency and efficiency.

- **Table 105 Sample project summary - revised capital expenditure profile ($000s)**

Project	Cost 2011/12 to 2013/14	Prudent	Efficient	Revised Cost 2011/12 to 2013/14
Burpengary Wastewater Treatment Plant Stage 2 Augmentation	59,029	Prudent	Efficient	59,029
South Caboolture STP Upgrade and Augmentation (Stage 2)	51,013	Prudent	Efficient	51,013
Customer Services and Billing Solution Project	8,571	Prudent	Efficient	8,571
Fleet-Light	11,236	Prudent	Efficient	11,236
Upgrade Wastewater Pump Station MF01	5,702	Prudent	Efficient	5,702
Kedron Brook Sewerage Catchment - New Sewerage Rising Main RMN260	5,083	Prudent	Efficient	5,083

Project	Cost 2011/12 to 2013/14	Prudent	Efficient	Revised Cost 2011/12 to 2013/14
Sewer Rising Main, Burpengary Creek to Burpengary East STP (525mm x 2880m)	4,855	Prudent	Efficient	2,470
Sewer Rising Main RMN-BI01 (375mm x 2900m)	4,152	Prudent	Efficient	4,152
Ngungun St, Landsborough - Water Pump Station	719	Prudent	Efficient	719
Coolum STP Augmentation	373	Prudent	Efficient	48,814

A summary of our assessment of the drivers identified for the capital projects reviewed is provided in **Table 106.**

- **Table 106 Assessment of capital project cost drivers**

Project	Drivers identified by Unitywater	Drivers recommended by SKM
Burpengary Wastewater Treatment Plant Stage 2 Augmentation	Growth	-
South Caboolture STP Upgrade and Augmentation (Stage 2)	Growth	Growth
Customer Services and Billing Solution Project	Legal obligation (compliance)	Legal obligation (compliance)
Fleet-Light	Renewal	Renewal
Upgrade Wastewater Pump Station MF01	Growth	-
Kedron Brook Sewerage Catchment - New Sewerage Rising Main RMN260	Legal obligation (compliance)	Improvement & Renewal
Sewer Rising Main, Burpengary Creek to Burpengary East STP (525mm x 2880m)	Growth	Improvement
Sewer Rising Main RMN-BI01 (375mm x 2900m)	Growth	Growth
Ngungun St, Landsborough - Water Pump Station	Growth	Growth & Legal obligation (compliance)
Coolum STP Augmentation	Growth & Legal obligation (compliance)	Growth & Legal obligation (compliance)

8. Interactions between capital expenditure, operating expenditure and demand forecasting

8.1. Short term forecast

8.1.1. Residential consumption

SKM's demand projection report finds that Unitywater has underestimated the likely demand from its residential sector by up to 18 percent in 2014. This is largely due to the continued reduction in average residential consumption implied by Unitywater's submission from its 2010 and 2011 levels. SKM believes that this is too conservative especially in light of the extremely wet year in 2011 and that rebound from restriction and weather affected consumption levels will occur. We thus expect that average consumption will increase resulting in higher total residential consumption by 2014.

- **Table 107 Residential consumption projections**

Residential Water Demand (ML)	2012		2013		2014	
	Unitywater proposed	SKM Rec'mended	Unitywater proposed	SKM Rec'mended	Unitywater proposed	SKM Rec'mended
Moreton Bay	19,027	20,813	19,410	22,064	19,854	23,342
Sunshine Coast	19,555	21,488	19,959	22,851	20,428	24,249
Unitywater	**38,582**	**42,302**	**39,369**	**44,915**	**40,282**	**47,591**

8.1.2. Non-residential consumption

We find that Unitywater's forecast of the water demand from its non-residential sector slightly underestimates the likely demand. There is a small difference in the forecast amounting to about 1.7 percent pa over the forecast period.

- **Table 108 Non-residential consumption projections**

Non-Residential Water Demand (ML)	2012		2013		2014	
	Unitywater proposed	SKM Rec'mended	Unitywater proposed	SKM Rec'mended	Unitywater proposed	SKM Rec'mended
Moreton Bay	2,973	3,025	3,033	3,096	3,102	3,167
Sunshine Coast	4,445	4,510	4,537	4,607	4,644	4,704
Unitywater	**7,418**	**7,535**	**7,570**	**7,703**	**7,746**	**7,871**

8.1.3. Wastewater equivalent base

Unitywater has not forecast wastewater connections. Instead, it has forecast an "equivalent base charge" which is based on the access charge of a residential customer. The sewerage access is generally charged on the number of pedestals.

The annual growth rate is based on dwelling growth projections by OESR. We recommend using the growth rate based on the updated OESR dwelling projections adjusted for low population growth. This results in a small reduction of about 1.3 percent in the number of wastewater equivalent base charges in both the residential and non-residential sector for Unitywater.

- **Table 109 Waste water projections**

Wastewater equivalent base charge	2012		2013		2014	
	Unitywater proposed	SKM Rec'mended	Unitywater proposed	SKM Rec'mended	Unitywater proposed	SKM Rec'mended
Residential						
Moreton Bay	117,278	116,755	120,599	119,493	124,026	122,231
Sunshine Coast	129,207	128,561	132,451	131,325	135,782	134,089
Unitywater	**246,485**	**245,317**	**253,051**	**250,818**	**259,808**	**256,320**
Non-Residential						
Moreton Bay	35,392	35,235	36,395	36,061	37,429	36,887
Sunshine Coast	11,615	11,557	11,907	11,806	12,206	12,054
Unitywater	**45,008**	**46,792**	**48,302**	**47,867**	**49,635**	**48,941**

8.1.4. Long term projections

Generally, we have recommended an average residential consumption projection increasing to 200 L/person/day after 4.5 years as an average for SEQ consistent with the Queensland Water Commission's target average consumption level. For Unitywater, this translates to average consumption for both Moreton Bay and the Sunshine Coast that are lower than the average SEQ level. Unitywater's long term network capacity planning criteria is to meet residential consumption of 230 L/person/day. This is in excess of where we believe Unitywater's average consumption will eventuate when rebound, from the low consumption levels as a result of the drought and restrictions, is complete. Whether the long term planning criteria should be lowered to reflect the likely lower average rate of consumption is however an issue to be debated given that changing the 230 L/person/day long term forecasting consumption target will require an explicit change to the desired service standard used to determine infrastructure capacity. We understand based on our discussion with Unitywater that there is a project currently under way in SEQ to review this standard and to determine if the reduced average consumption warrants a reduction in the long term planning criteria.

8.2. Relationship with capital expenditure

As discussed previously the current water consumption rate is below both the required 230 L/person/day and the aspired 200 L/person/day as contained within the SEQ Water Strategy. Trunk water infrastructure design criteria is based on the average day demand and factors of it, such as mean day maximum month (MDMM) and mean day (MD). These factors are greater than one and generally less than two. Consequently a change in the average day consumption rate can result in an amplified change to the design criteria. Notwithstanding this, caution should be used as, in practice a reduction in average day consumption does not necessarily mean that the peak consumption rate reduces. Peak consumption is a function of human behavioural responses to extreme weather. Consequently the average day to maximum day (AD:MD) factor may increase if the average day rate decreases, unless the customer behaviour is changed to reduce the use of water on extreme weather days.

Consequently the current impact of maintaining the current design criteria, whilst currently operating at lowered consumption rates, is that there is some reserve capacity with the distribution system. Coarse analysis suggests that this may be in the order of 20 percent. Without data from a longer period it would not be prudent to attempt to utilise this spare capacity as a long term solution, as the consumption habits of a population can change faster that the ability to implement trunk infrastructure.

With respect to water reticulation infrastructure, the critical design criterion is usually fire fighting flows. Consequently the reduction in unit consumption rates is unlikely to have a significant impact on the size of smaller diameter infrastructure.

Overall Unitywater's water system infrastructure sizes are unlikely to be highly sensitive to recorded variances in the unit consumption rate and reducing the rates is premature considering the limited amount of information available.

The augmentation of water distribution trunk infrastructure generally results in a step change in capacity and consequently the variance in near term demand forecast usually changes the anticipated date of the next augmentation only slightly. These are usually accommodated in timing reviews of these works, which are a mandatory action for strategic planning projects and their associated business cases.

With regard to wastewater, an increase in the consumption of reticulated drinking water does not lead directly to an increase in wastewater generation, as not all reticulated water is released to the sewers. In particular during water restrictions irrigation, which is not directly entrained into sewers, is dramatically reduced. Consequently when restrictions are lifted, water consumption can increase without a commensurate increase in wastewater generation.

The wastewater flows are likely to be more sensitive to inflow and infiltration, whereby storm water enters sewers directly or groundwater enters sewers through infrastructure defects, respectively.

It is usually co-incidental that the increase in wastewater generation from increased inflow and infiltration occurs in the same timeframe as increased reticulated water consumption as rainfall replenishes both surface water storages (ie dams) and groundwater tables.

The implementation of reduced infiltration gravity sewers (RIGS, Smartsewers, NuSewers) aims to reduce this inflow and the system is generally designed for the consequent reduction in the peaking factor.

Both water conservation measures and infrastructure improvements have significantly reduced design criteria such as average dry weather flows. These are generally already allowed for in the generation rate and peaking factors currently used.

With regard to wastewater treatment, the design criteria of various elements of a plant are either based on organic load or hydraulic load. A reduction in the amount of water transporting the organic load does not change the load, just the concentration. Consequently the size of these elements such as a reactor tank (anoxic and aerobic compartments) are not varied. For the elements where hydraulic load is the design criteria, these are usually specifically design based on gathered data and potential savings are only a small reduction in vessel height or pump capacity.

Consequently the cost of a treatment facility is generally not sensitive to changes in hydraulic load. Conversely they can be sensitive to apparently small changes in environmental licence concentrations, as these can require additional process elements.

As the required wastewater infrastructure is not highly sensitive to changes in generation rates, the demand aspect of connections is the significant factor. Wastewater system augmentations usually result in a step change in capacity and consequently the variances in near term demand forecasts usually change the anticipated timing slightly only.

8.3. Relationship with operational expenditure

The short term demands have been used to estimate budgets for several variable rate operating costs centres including:

- Bulk water costs
- Electricity
- Sludge handling
- Chemical costs

The assumption that the above operating costs are relating to water consumption apply to both the water service and the wastewater service, where a return factor (ratio between drinking water use and what is returned to the wastewater system) is generally applied. Hence, the growth index that has been used to estimate the required quantities should be revised, as per **Table 110**, below.

- **Table 110 Revised growth indices for variable operating costs**

Total water demand	2011/12		2012/13		2013/14	
	Unitywater proposed	SKM Revised	Unitywater proposed	SKM Revised	Unitywater proposed	SKM Revised
Moreton Bay	0.03%	8.39%	2.01%	5.55%	2.29%	5.36%
Sunshine Coast	-3.00%	5.07%	2.07%	5.62%	2.35%	5.44%
Total	**-1.57%**	**6.64%**	**2.04%**	**5.58%**	**2.32%**	**5.40%**

8.4. Relationship between capital expenditure and operational expenditure

There are often direct tradeoffs between capital expenditure and on-going operation and maintenance expenditure. For example, energy efficient motors can be installed having higher capital costs than standard motors but with lower operating costs due to reduced energy consumption, similarly, improved sludge dewatering plant will reduce sludge disposal costs as both volume and weight is reduced. Similarly, timing of capital plant replacement can impact on operation and maintenance costs as plant that is close to being time expired tends to be more expensive to maintain. In order to evaluate the cost/ benefit of capital spend to reduce operating expenditure, lifecycle cost analysis techniques must be applied.

From our discussions with Unitywater, examples of trade-off between capital and operating expenditure are:

- Including sludge digestion as part of sewage treatment plant upgrades to improve the 'value' of sludge and the method in which it can be disposed. Post digester sludge is stabilised, and is suitable for beneficial re-use
- Replacing electrical equipment with newer, more energy efficient equipment

9. Proposed revised templates

We have amended the submission templates for capital and operating expenditure in accordance with our evaluation of the operating and capital expenditure items reviewed on an exception basis.

A summary of changes for operating and capital expenditure items is provided below.

9.1. Operating expenditure

All of the sample operating expenditure categories evaluated were found to be both efficient and prudent and hence we have made changes to the 2011/12 Information Template only to reflect changes in operating budgets of volume related costs to take account our recommended growth projections in water and wastewater volumes. These changes are shown in **Table 111.**

- **Table 111 Recommended amendments to operating costs**

Category	Service	Revisions	2011/12	2012/13	2013/14
Bulk water demand		Unitywater assumed (ML)	46,000	46,939	48,028
		SKM revised (ML)	49,836	52,618	55,462
Bulk water	Water	Unitywater assumed ($'000)	83,727	100,744	119,124
		SKM revised ($'000)	80,651	99,356	119,695
Electricity	Water	Unitywater proposed ($'000)	669.6	731.1	798.3
		SKM revised ($'000)	725.4	819.6	921.9
	Other core water services	Unitywater assumed ($'000)	481.9	526.2	574.6
		SKM revised ($'000)	522.2	589.9	663.5
	Wastewater via sewer	Unitywater proposed ($'000)	5,700.5	6,224.5	6,797.1
		SKM revised ($'000)	6,176.0	6,977.7	7,849.1
	Trade waste	Unitywater proposed ($'000)	3.2	3.5	3.8
		SKM revised ($'000)	3.5	3.9	4.4
Chemical	Water	Unitywater proposed ($'000)	299.4	316.3	334.4
		SKM revised ($'000)	324.4	354.6	386.2
	Other core water services	Unitywater proposed ($'000)	498.8	527.0	557.3
		SKM revised ($'000)	540.5	590.9	643.5
	Wastewater via sewer	Unitywater proposed ($'000)	4,060.5	4,290.0	4,535.9
		SKM revised ($'000)	4,399.2	4,809.1	5,237.9
	Trade waste	Unitywater proposed ($'000)	0.7	0.7	0.8
		SKM revised ($'000)	0.7	0.8	0.9
Sludge handling	Wastewater via sewer	Unitywater proposed ($'000)	4,283.7	4,525.8	4,785.2
		SKM revised ($'000)	4,641.0	5,073.5	5,525.8
	Trade waste	Unitywater proposed ($'000)	-	-	-
		SKM revised ($'000)	-	-	-

9.2. Capital expenditure

As we found all capital expenditure in our sample to be prudent and efficient we have made no changes to the 2011/12 Information Template in respect of capital expenditure forecasts.

10. Conclusion

We have reviewed the prudency and efficiency of a sample of Unitywater's operating and capital expenditure costs for 2011/12 to 2013/14 based on the information provided by Unitywater. In addition we have reviewed the policies and procedures adopted by Unitywater for operating and capital expenditure budget planning. We have also reviewed the progress made by Unitywater in implementing the initiatives identified by the Authority from their 2010/11 interim price monitoring report. The following section presents our conclusions from this review.

10.1. Information adequacy

Unitywater has supplied comprehensive supporting information to enable us to complete an assessment of the prudency and efficiency for a sample of operating costs and capital expenditure of selected projects. Supply of adequate information has, in the past, been impacted by the availability of information from its participating councils. As time progresses and as Unitywater establishes its own ICT services and implements its own procedures for capital project evaluation and initiation, we expect this limitation of participating council information and information systems to have less impact on Unitywater's future ability to provide necessary information for regulatory purposes.

10.2. Process and procedure

10.2.1. Issues identified in the Authority's 2010/11 report

Unitywater has made significant progress in implementing policies and procedures to address the initiatives outlined by the Authority with the exception of a consistent approach to project cost estimation and implementing a major project implementation strategy. However, both of these are currently being developed.

10.2.2. Budget formation

We have examined the procedures and processes used by Unitywater to formulate the operating budget for 2011/12. In our assessment these are generally representative of good industry practice.

Unitywater promotes the use of zero-base forecasts where possible. Given that Unitywater has identified to us some inconsistencies with the data supplied by councils, and the fact that councils were not subject to regulatory examination of operating expenditure, we cannot conclude that the 2011/12 budget represents an efficient base year from which to forecast expenditure.

In this sense, we would support Unitywater's proposal for the development of zero base budgets for operating expenditure and linkages between maintenance expenditure and asset management procedures prior to the end of the interim price monitoring period.

Unitywater utilise a zero based budgeting process for capital projects which is consistent with good industry practice.

10.2.3. Standards of service review

Unitywater has developed a single aligned set of customer service standards applicable for all customers within the service area. We believe that they are progressing well in the development of their Water NetServ Plan which will be completed within the proposed timeframe (by July 2013).

A high-level comparison of the customer standards currently used by each of the entities indicates that the service standards used by Unitywater are comparable to those used by the other entities, with the exceptions of non-urgent response times.

10.2.4. Asset management and condition assessment

From our review of Unitywater's asset management and condition assessment processes we consider that Unitywater's practices are appropriate for a water and wastewater distribution and retail utility of Unitywater's standing and are in keeping with good industry practice.

There is clear evidence of Unitywater's progress towards implementing a standard approach to asset management across its regions including its approach to capital renewals evaluation, programming and implementation.

10.2.5. Procurement

Unitywater is in the process of documenting its policies and procedures for procurement. There are a number of standalone documents – such as the Procurement Principles document and the Selection Criteria document which are more in the way of guidance notes than procedural documents. There would be merit in Unitywater drawing these documents together to produce a comprehensive procurement procedures document having a consistent style.

There is no reference in the documentation to Unitywater adopting a Gateway Process for capital project approvals and there are no obvious procedures to ensure consistency of outcome of tender review evaluations (the selection criteria document sets out a range of assessment criteria, some 22, but leaves weighting of each criteria undefined – other than that weighting should generally be at least 5 percent which would imply that it is assumed that not all assessment criteria are employed for each assessment).

That said, the procedures that are documented are considered to be consistent with good industry practice.

10.2.6. Cost allocation

The current allocation methodology used by Unitywater is thorough and takes consideration of the cost driver for each of the cost elements, largely consistent with the Authority's requirement for casual cost allocations. The allocation of corporate costs across geographies (equal allocation) is acceptable, due to the similar sizes of the Moreton Bay and Sunshine Coast water businesses. We do not consider the allocation of costs between the wastewater via sewer and trade waste using the RAB to be suitable. Wastewater from residential households and trade waste are both conveyed in the same sewer network and treated at the same treatment plants – hence the same infrastructure in the RAB are being used. In our consideration, Unitywater's cost allocation model should be modified to reflect the actual cost drivers for wastewater transport and treatment. We understand from our interviews with Unitywater that a program of works has been established to improve the cost allocation and tariff structures for wastewater services.

Our review of the information provided, in particular the sample selection, indicates that there are occasional varied and inaccurate determination of the drivers for capital project expenditure and consequently the cost allocation.

Projects responding to instances of sewage overflow appear to be assigned the compliance driver, without considering the cause as opposed to the effect. Many overflow incidents are caused by the connection of too many households to a sewerage system with a current fixed capacity. This is due to inappropriate delay in augmentation responding to growth. This inappropriate action of not providing adequate capacity should not result in the continuance of inappropriate actions by nominating compliance as the driver, when timely action would have determined growth as the appropriate driver.

10.2.7. Asset Lives

Whilst the assumed asset lives for passive assets such as reservoirs and pipelines are relatively consistent between all entities, there are a number of material differences between the asset lives for the active assets (eg pump stations and treatment plants). This is because these assets comprise of a range of civil, mechanical and electrical assets, all with significantly different asset lives. For example, within the life of a wastewater pump station, the civil assets (building, pump well) are likely to remain relatively unchanged, whilst the pumps and control systems are likely to be replaced several times. The calculation of a combined asset life depends on the relative weighting of the civil, mechanical and electrical assets.

10.3. Operating expenditure

Table 112 presents an overview of prudency and efficiency reviews of Unitywater's operating expenditure which take into account changes arising from both our assessment of prudency and

efficiency and from our recommended changes in water and wastewater volume growth projections.

- **Table 112 Summary of prudency and efficiency of operating costs**

Category	Cost 2011/12	Prudent	Efficient	Revised cost 2011/12
Corporate costs	31,683	Prudent	Efficient	31,974
Employee expenses	57,804	Prudent	Efficient	57,804
Electricity costs	6,856	Prudent	Efficient	7,427
Chemical costs	4,860	Prudent	Efficient	5,265
Sludge handling	4,285	Prudent	Efficient	4,641

We have assessed all expenditure within our sample to be prudent and efficient.

10.4. Capital expenditure

A representative sample of ten projects have identified and assessed. We have assessed these projects against the Authority's definitions of prudency and efficiency, including the standards of work, scope of work and the costs.

All of the capital expenditure projects were assessed as prudent and efficient.

Table 113 presents an overview of prudency and efficiency reviews of Unitywater's capital expenditure.

- **Table 113 Overview of prudency and efficiency of capital expenditure projects ($000s)**

Project	Cost 2011/12 ($000s)	Prudent	Efficient
Burpengary Wastewater Treatment Plant Stage 2 Augmentation	59,029	Prudent	Efficient
South Caboolture STP Upgrade and Augmentation (Stage 2)	51,014	Prudent	Efficient
Customer Services and Billing Solution Project	8,571	Prudent	Efficient
Fleet-Light	5,883	Prudent	Efficient
Upgrade Wastewater Pump Station MF01	5,701	Prudent	Efficient
Kedron Brook Sewerage Catchment - New Sewerage Rising Main RMN260	5,083	Prudent	Efficient
Sewer Rising Main, Burpengary Creek to Burpengary East STP (525mm x 2880m)	4,855	Prudent	Efficient
Sewer Rising Main RMN-BI01 (375mm x 2900m)	4,152	Prudent	Efficient
Ngungun St, Landsborough - Water Pump Station	719	Prudent	Efficient
Coolum STP Augmentation	374	Prudent	Efficient

Appendix A Terms of Reference

Assessment of Operating Expenditure

Component 1 - Sample Selection

The consultant must propose a sample of operating expenditure for each entity, for approval by the Authority prior to detailed review.

The sample should include the top 10% of operation costs by value in each activity and geographic area, over the forecast period and for 2011/12. The sample should also include at least 50% of the total retail/distribution operating expenditure over the forecast period and for 2011/12. The sample should include a selection of unit or base rates and cost indexes.

Component 2 – Reasonableness of Operating Costs from 1 July 2011

The consultant must assess whether each of the entities' operating costs from 1 July 2010 are reasonable. In doing so, the consultant must:

a) assess whether the entities' policies and procedures for operational expenditure represent good industry practice;

b) assess the scale and cause of variances between forecasts provided in the entity's 2010/11 and 2011/12 returns;

c) assess the operating costs in aggregate, and for the sample of major operating expenditures that comprise a significant portion of retail and distribution operating costs identified in component 1 above. In doing so the consultant must have regard to:

   i. the drivers of operating expenditure including whether the expenditure is driven by legal obligations, new growth (see (e) below), operations and maintenance of existing infrastructure, or it achieves an increase in the standard of service that is explicitly endorsed by customers, external agencies or participating councils;

   ii. the conditions prevailing in relevant markets, historical trends in operating expenditure, the potential for efficiency gains or economics of scale, and relevant interstate and international benchmarks. For example, the source of unit rates and indexes must be given and the consultant must identify the reason for any costs higher than normal commercial levels;

d) accept the operational constraints imposed by the SEQ Urban Water Arrangements Reform Workforce Framework 2010, and identify the related costs in doing so compared to more competitive arrangements;

e) liaise with the Authority's consultants appointed for the review of demand and capital expenditure to ensure that consistent advice is provided to the Authority. In particular, the consultant must:

i. assess the effect of any revised demand forecasts, and assess the expenditure projections for consistency with these demand forecasts;
ii. assess the effect of any revised capital expenditure forecasts arising from the Authority's review of capital expenditure;

f) identify the value of an expenditure considered not to be reasonable;

g) provide a revised set of information templates to the Authority that contain only reasonable operating costs with all adjustments to the entities' submissions clearly indicated (focussing on Schedule 5.11.1 (operating costs)).

Component 3 – Cost Allocation

The consultant will also:

a) assess the methods adopted by the entities to allocate operating costs between services, against relevant benchmarks. This will involve as assessment of cost drivers, the approaches adopted by each entity, and approaches approved by economic regulators in other jurisdictions; and

b) report on the entities' progress in achieving the systems and information needed for informed pricing and reporting; and whether the information systems being put in place by the entities allow for a highly disaggregated and appropriately allocated system of cost recording.

Assessment of Capital Expenditure

Component 1 - Sample Selection

The consultant must propose a sample of capital expenditure for each entity, for approval by the Authority prior to detailed review.

The sample should include the top 10% of capital expenditure by value in each activity and geographic area, over the forecast period and for 2011/12. The sample should also include at least 50% of the total capital expenditure over the forecast period and for 2011/12 – if not, an additional random sample of assets comprising 30% (by number) of remaining assets is required. The sample should include a selection of unit or base rates and cost indexes.

For the purposes of quotation the consultant should assume a sample of 10 projects per entity (30 in total). The actual sample may differ, depending on each entity's submission (see worksheet 5.6.2). To this end, the consultant is required to provide an indicative unit rate per additional project.

Component 2 – Prudency and Efficiency of Capital Expenditure for 1 July 2011

The consultant must assess whether each of the entities' capital expenditure from 1 July 2010 is prudent (there is a demonstrated need for the expenditure) and efficient (it is cost-effective in its scope and standard, using market benchmarks).

In doing so, the consultant must follow the process and criteria set out in section 4.7 of the Final Report on SEQ Interim Price Monitoring Framework, and:

a) assess whether the entities' policies and procedures for capital expenditure represent good industry practice. In particular, the policies and procedures must reflect strategic development plans, integrate risk and asset management planning, corporate directives, be consistent with external drivers, and incorporate robust procurement practices;

b) assess entities' progress in addressing the issues identified in the Authority's 2010/11 report for future reviews (as set out in paragraph 2 in Background above);

c) assess whether the representative sample of capital expenditure projects (identified in component 1 above) is prudent and efficient.

Expenditure is:

i. prudent if it is required as a result of a legal obligation, new growth (see (e) below), renewal of existing infrastructure, or it achieves an increase in the reliability or the quality of supply that is explicitly endorsed or desired by customers, external agencies or participating councils;

ii. efficient (cost-effective), if:

- the scope of the works (which reflects the general characteristics of the capital item) is the beat means of achieving the desired outcomes after having regard to the options available, including more cost-effective regional solutions having regards to a regional (whole of entity) perspective, the substitution possibilities between capital and operation expenditure and non-network alternative such as demand management;
- the standards of works conforms with technical, design and construction requirement in legislation, industry and other standards, codes and manuals. Compatibility with existing and adjacent infrastructure is relevant as is Compliance with Strategic Asset Management Plans and Total Management Plans are likely to be highly relevant; and
- the cost of the defined scope and standards or works is consistent with conditions prevailing in the markets for engineering, equipment supply and construction. The consultant must substantiate its view with reference to relevant interstate and international benchmarks and information sources. For example, the source of comparable unit costs and indexes must be given and the efficiency of costs justified. The consultant should identify the reasons for any costs higher than normal commercial levels;

d) assess the deliverability and timing of capital expenditure program, and chart the capex historically delivered by participating councils from 1 July 2008 to 30 June 2010; the entities'

forecasts made in 2010/11 of the period 1 July 2010 to 30 June 2013; and entities'' current forecasts to 30 June 2014. Assess the scale and cause of variances between forecasts provided in the entities' 2010/11 and 201/12 returns;

e) liaise with the Authority's consultants appointed for the review of demand and operating expenditure to ensure that consistent advice is provided to the Authority. In particular, the consultant must:

   i. assess the effect of any revised demand forecasts, and assess the expenditure projections and cost drivers for consistency with these demand forecasts;
   ii. assess the effect of any revised operating expenditure forecasts arising from the Authority's operational expenditure consultant;

f) take into account any previous reviews of relevant assets provided by the entities, such as Priority Infrastructure Plans;

g) identify whether the capital expenditure forecasts encompass any efficiency gains or economies of scale, and identify a prudent and efficient level of these gains with reference to appropriate benchmarks;

h) identify the value of any expenditure considered not to be prudent or efficient;

i) assess the regulatory asset lives for capital expenditure in 5.8.1.1, and the tax asset lives for capital expenditure in 5.8.1.2, against relevant benchmarks;

j) provide a revised set of information templates to the Authority that contain only the prudent and efficient capital expenditure and useful asset lives, with all adjustments to the entities' submission clearly indicated in the relevant worksheets and also separately logged (focusing on Schedules 5.6.1 & 5.6.2 (Capital Expenditure) and 5.8.1.1 (Asset Lives (RAB)).

Component 3 – Cost Allocation

The consultant will also:

a) assess the methods adopted by the entities to allocate existing and future capital costs between services, against relevant benchmarks. This will involve as assessment of cost drivers, the approaches adopted by each entity, and approaches approved by economic regulators in other jurisdictions; and

b) report on the entities' progress in achieving the systems and information needed for informed pricing and reporting; and whether the information systems being put in place by the entities allow for a highly disaggregated system of cost recording.