Prudency and Efficiency Assessment - Queensland Urban Utilities

QUEENSLAND COMPETITION AUTHORITY

Price Monitoring of South East Queensland Water and Wastewater Distribution and Retail Activities 2013 - 2015

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SINCLAIR KNIGHT MERZ SKM

BDO

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Contents

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 five 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. Introduction

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

- Queensland Urban Utilities
- Unitywater
- Gold Coast City Council
- Logan City Council
- Redland City Council

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

To assist this process, the Authority appointed Sinclair Knight Merz (SKM) to review the capital and operating expenditure forecasts for provision of regulated services over the period from July 2013 – June 2015.

The consultancy consists of two components:

- Component 1 – Sample selection
- Component 2 – Prudency and efficiency of costs

Under the terms of appointment, SKM is required to:

a) Assess the existence of robust policies and procedures having regard to good industry practice, as well as compliance with such, using the review of processes and procedures implemented in approvals of expenditure and costs for a sample of capital expenditure projects and operating expenditure categories to evaluate such. In this assessment, SKM was required to determine if particular, policies and procedures reflect strategic development plans, integrate risk and asset management planning, if they support corporate directives, if they are consistent with external drivers, and if they incorporate robust procurement practices

b) Assess the robustness of the operating and capital expenditure program planning and delivery processes in an overall sense and identify any areas for improvement

c) Form a view on the prudency and efficiency of capital and operating expenditure, focusing on any areas of significant cost increase and identifying the reasons why such cost increases have occurred

In addition, the Authority engaged SKM to review the entities' progress in implementing the Authority's supported criteria; which are:

- Consideration of prudency and efficiency of capital expenditure from a regional (whole-of-entity and whole-of-sector) perspective
- Consideration of alternative investments, the substitution possibilities between operating costs and capital expenditure, and non-network alternatives such as demand management
- 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

- 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
- A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects
- Information on the compatibility with existing and adjacent infrastructure and consideration of modern engineering equivalents and technologies.
- Includes only commissioned capital expenditure from 1 July 2010 in the regulatory asset base (RAB) and therefore prices

SKM has prepared a report for each of the five water distribution and retail entities (Queensland Urban Utilities, Unitywater, Gold Coast City Council, Logan City Council and Redland City Council). This report documents SKM's assessment of the prudency and efficiency of the operating costs and capital expenditure for Queensland Urban Utilities for the July 2013 to June 2015 period. The assessment of project demand for this period will be addressed separately when the successful consultant for such has been decided upon by the Authority.

1.1 Terms of reference

SKM has 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 provided in Appendix G.

1.2 Prudency and efficiency

SKM has adopted the following definitions of prudency and efficiency of operating costs and capital expenditure generally in accordance with those set out by the Authority in its terms of reference:

- **Operating expenditure** is **prudent** if it is required to meet the entities' requirements relating to its legal and regulatory obligations or its contracts with customers
- **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
- **Capital expenditure** is **prudent** required as a result of a legal obligation, new growth, 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
- **Capital expenditure** is **efficient** if:
  - 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, the substitution possibilities between capital and operational expenditure and non-network alternatives such as demand management
  - 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. Compliance with regulatory obligations (eg, water NetServ[1] plans) is likely to be highly relevant.
  - The cost of the defined scope and standard of works is consistent with conditions prevailing in the markets for engineering, equipment supply and construction. In assessing such, SKM has substantiated its view with reference to relevant interstate and international benchmarks and information sources. For example, the source of comparable unit costs and indexes has been given where available and relevant and the efficiency of costs justified.

[1] Network Service Plans

1.3 Scope exclusions

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

- Review of capital costs before 2012-13 and after 2014-15 associated with projects that have been reviewed, unless expenditure is to be commissioned in the review period
- 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 SKM is reviewing the installation contracts of supplied goods
- Development of detailed budget cost estimates for the capital projects under review

1.4 Report overview

This report is structured as follows:

- Section 1 provides an introduction to the project
- Section 2 provides background in respect of Queensland Urban Utilities, the Authority and the scope of this review
- Section 2 provides a brief overview of the information provided by Queensland Urban Utilities for the purposes of this review
- Section 3 outlines SKM's review of Queensland Urban Utilities' management processes, and more specifically, its approach to planning and asset management
- Section 4 outlines SKM's assessment of the operating costs incurred/forecast by Queensland Urban Utilities
- Section 5 outlines SKM's assessment of capital expenditure incurred/forecast by Queensland Urban Utilities
- Sections 4.10 and 5.9 summarises the findings of SKM's assessment and presents the conclusions drawn from the review and recommendations in respect of the prudency and efficiency

1.5 Application of assessment

SKM's assessment of prudency and efficiency of capital expenditure applies to Queensland Urban Utilities' proposed expenditure from 1 July 2013 to 30 June 2015 and to an assessment of prudency and efficiency of proposed operational costs forecasts from 1 July 2013. The underlying information used to make this determination may only be relevant to the particular circumstances and activities that will be undertaken in 2013-15. 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.

2. Background

2.1 The 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 a number of council based and owned water utilities into three larger water entities. These entities owned 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 were Queensland Urban Utilities, Unitywater and Allconnex Water.

In addition to the retail distribution entities, four new bulk water entities that owned and operated the SEQ Water Grid were established on 1 July 2008.

On 1 July 2012, Allconnex Water was disestablished which enabled Gold Coast City Council, Logan City Council and Redland City Council to resume the delivery of water and wastewater services in their local government areas. As a result of these changes, five entities now own, operate and maintain the local water distribution and wastewater collection and treatment infrastructure in SEQ. These entities are responsible for the retail sale of water supply and wastewater services to customers. The progression of the responsible entity for the servicing areas is illustrated in Table 2 1.

Table 1 : Water distribution and retail entities servicing areas

Water Distribution and Retail Entities (Prior to 30 June 2010)	**Water Distribution and Retail Entities (1 July 2010 - 30 June 2012)**	**Water Distribution and Retail Entities (1 July 2012 - Present)**
Brisbane City Council	Queensland Urban Utilities	Queensland Urban Utilities
Ipswich City Council		
Lockyer Valley Regional Council		
Scenic Rim Regional Council		
Somerset Regional Council		
Sunshine Coast Regional Council	Unitywater	Unitywater
Morton Bay Regional Council		
Gold Coast City Council	Allconnex Water	Gold Coast City Council
Logan City Council		Logan City Council
Redland City Council		Redland City Council

Figure 2-1 : SEQ Water Grid as at 1 July 2012 (Queensland Urban Utilities, Spetember 2012)

A merger of the SEQ Water Grid Manager, LinkWater and the former Seqwater occurred on 1 January 2013 with the formation of the new the Seqwater. This new organisation has also accepted the water security and efficiency responsibilities previously performed by the Queensland Water Commission.

The five current entities are the subject of this interim price monitoring assessment. This price monitoring and this subsequent report is built on the three previous years of annual interim price monitoring from 1 July 2010 to 30 June 2013, and is being carried out against a backdrop of:

- Entities in the fourth year of an establishment phase (Queensland Urban Utilities and Unitywater)
- Entities in the second year following the disestablishment of Allconnex Water
- Historic data drawn from information provided by previous service providers
- Entities implementing developed processes and systems for:
  - Capital works evaluation, approval and budgeting
  - Operational expenditure budgeting

2.2 Queensland Urban Utilities

Queensland Urban Utilities provides water supply and wastewater services to approximately 1.3 million customers within an area covering some 14,384 km^2 (Figure 2-2). Queensland Urban Utilities service area stretches from Cape Moreton in the east to the outskirts of Toowoomba in the west, up to the Yabba State Forest in the north, and down to the New South Wales border along the Scenic Rim in the south. (Queensland Urban Utilities, Spetember 2012).

Water services are provided to more than 515,000 residential and 29,000 non-residential connections, whilst 491,000 residential and 27,000 non-residential connections allow Queensland Urban Utilities' customers to take

advantage of its sewerage services. Queensland Urban Utilities also services 5,028 trade waste and 225 recycled water customers. (Queensland Urban Utilities, Spetember 2012).

Queensland Urban Utilities' infrastructure assets include:

- 125 water reservoirs
- 39 water supply pumping stations
- 107 water booster pumping stations
- 8,885 km of water supply pipelines
- 28 sewage treatment plants
- 336 sewage pumping stations
- 9,076 km of sewerage pipeline (Queensland Urban Utilities, Spetember 2012)

Figure 2-2 : Queensland Urban Utilities service area (Queensland Urban Utilities, Spetember 2012)

Queensland Urban Utilities is jointly and wholly owned by the Brisbane City, Ipswich City, Lockyer Valley Regional, Scenic Rim Regional and Somerset regional councils. The six parties (Participants), ie Queensland Urban Utilities (formally Central SEQ Distributer-Retailer Authority) and the five Councils, have entered into a Participant Agreement (Participation Agreement, 9 June 2010) that outlines their relationship and respective obligations; a Statement of Obligations is incorporated (as Schedule 1) into the Agreement.

Under the provisions of the Participation Agreement, Queensland Urban Utilities is to be governed by a Board consisting of a minimum of four and a maximum of eight members; the Board is responsible for the way the Authority (Queensland Urban Utilities) performs its functions and exercises its powers. Board Members are

appointed by the Participants, and must include no more than two members who are employees of a participating council and at least three (independent) members who are not employees of a participating council.

It is noted that the Participation Agreement provides for the payment of a Participation Return (a form of dividend) to the Participants on the basis of their Participation Rights. Such rights are determined on the basis of the Participating Council's Regulated Asset Base as at 1 July 2010.

2.3 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

The Treasurer and Minister for Trade and the Attorney-General and Minister for Justice have referred the monopoly distribution and retail water and wastewater activities of Queensland Urban Utilities, Unitywater, Gold Coast City Council, Logan City Council and Redland City Council to the Authority for price monitoring from 1 July 2013 to 30 June 2015.

Under the referral, the Authority must:

- Provide information to customers about the costs and other factors underlying the provision of water and sewerage services including distinguishing between bulk and distribution/retail costs to the extent possible
- Allow the entities to treat bulk water costs as a 'cost-pass-through' item
- Monitor the change in prices of distribution and retail water and sewerage services for residential and non-residential customers
- Monitor water and sewerage revenues against the maximum allowable revenue based on the total prudent and efficient costs of carrying on the activity
- Advise a benchmark Weighted Average Cost of Capital(WACC) by 31 January 2013 and monitor the WACCs applied by the entities against the benchmark WACC
- Provide a Draft Report for 2013-15 by 31 January 2014 and a Final Report by 31 March 2014

3. Policies and procedures

3.1 Introduction

For Queensland Urban Utilities this section addresses the following task:

> *"Assess the existence of robust policies and procedures having regard to good industry practice, as well as compliance"* [2]

It includes the following specific assessment for capital expenditure, and a similar review for operating expenditure.

a) *"assess whether the entities' policies and procedures for capital expenditure are robust having regard to good industry practice, as well as compliance, In particular, the policies and procedures should reflect strategic development plans, integrate risk and asset management planning, corporate directives, regional priorities, be consistent with external drivers, and incorporate robust procurement practices*

b) *the review of policies and procedures should also report on whether the entity:*

   i. *considers the prudency and efficiency of expenditure from a regional perspective;*

   ii. *includes only commissioned capital expenditure from 1 July 2010 in the regulatory asset base (RAB) and therefore prices;*

   iii. *applies a standardised approach to cost estimating, including for items such as indexation, contingency, preliminary and general items, design fees and contractor margins;*

   iv. *prepares a summary document and implementation strategy for major projects and programs; and*

   v. *includes a 'toll gate' or 'gateway' review process at relevant milestone stages;*

c) *assess the robustness of each entity's capital expenditure program and delivery processes in an overall sense and identify any areas for improvement;"* [3]

3.2 Capital expenditure policies and procedures

3.2.1 Good industry practice

SKM considers that good industry practice for the development of capital projects and 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

This has been codified in the Gateway™ Process developed by the UK Office of Government Commerce, which has been endorsed by the Queensland Government and a number of other states for major infrastructure programs and projects.

[2] Referral Notice (g) i
[3] Terms of Reference 2013-15 SEQ Price Monitoring Assessment of Operating and Capital Costs issued to SKM by the Authority

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

- A phased process, starting with a project outline, through a series of approval gates 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
- Alignment with strategic business drivers such as strategic plans, customer service standards and compliance requirements
- Fully supported capital expenditure approval documentation incorporating:
    - The project background/rationale
    - The project drivers
    - The options reviewed to address the drivers, including the method of selecting the preferred option
    - For major projects, a fully costed and financially evaluated option studies, including a “do nothing” option, preferably on a present value, or, if appropriate, a net present value basis. This should also justify the timing of the project and that the staging of the works is appropriate (especially to meet growth needs) and that “gold plating” is not involved (eg where projects are staged, why lower cost solutions cannot be adopted for the earlier stage(s)).
    - 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 that should be presented, and notes that the estimates used for many projects can be expected to have an uncertainty of 30% or more.

Figure 3-1 : Typical estimation accuracies and expected documentation

	Class 4 Order of Magnitude	Class 3 Pre-Feasibility Study (PFS)	Class 2 Feasibility Study (FS)	Class 1 Definitive Estimate
Methodology	Capacity Factored Equpment Factored (2) Historical data/Parametric models	Conclusion of MTCs, budget pricing, factors and semi-detailed unit rates	Detailed MTOs, detailed until costs, budget pricing for all major equipment. Detailed equipment list.	Contribution of comments, awarded contracts, defined unit rates and detailed MTO's.
Purpose	Preliminary economic and technical investiaion. Project screening. Comparision or alterntives, configurations and options.	Economic feasibility of one or more chosen options.	Project approval and basis of securoing finacing "sustainable" study.	Detailed control, target measuement, change variation, monitor and control of implementation phase.
Basis of Estimate				
Accuracy-Indicative Range	±30% to ±100%	±20% to ±25%	±10% to ±15%	±5% to ±10%
Accuracy Develelopment	Judgemental	Evaluated	@Risk Detail Analysis	@ Risk Detail Analysis
Level of Project Definition	0% to 5%	10% to 30%	30% to 70%	70% to 100%
Level of Engineering (% of Total)	0 to 2%	2% to 5%	10% to 15%	5% to 10%
Expected Estimate Contingency Range	25% to 40%	15% to 20%	10% to 15%	5% to 10%
Contracting Strategy	Assumed	Preliminary	Defined	In place
Site				
Location	Assumed	Preliminary	Specific	Final
Maps and Surveys	None	Preliminary	Some detail	Detail
Soil Tests and Geotechnics	None	Preliminary	Final	Final
Site Visits	Not essential	Desirable	Essential	Consturction start
Construciton Support	Assumed	Proposed method	Detail support	Final
Construciton site Agreement	Assumed	Assumed	Prelim discussion	Final/In place
Delivery Strategy	Assumed	Preliminary	Initial strategy	Specific
General Project Data				
Project Scope Description	General	Preliminary	Defined	Defined
Plant production/Facility Capacity	Assumed	Preliminary	Defined	Defined
Hydrology	None	Preliminary	Defined	Defined
Integrated project Plan	None	Preliminary	Defined	Defined
Project Master Schedule	None	Preliminary	Defined	Defined
Escalation Strategy	None	Preliminary	Defined	Defined
Work Breakdown Structure (WBS)	General	Preliminary	Defined	Defined
Project Code of Accounts	None	Preliminary	Defined complete	Defined
Contingency Strategy	Assumed/Factored	Calculated	Detail calc./Analysis	Detail calc. on ETC
Engineering Deliverables				
Block flow Diagrams	Started Preliminary	Preliminary/ Complete	Complete	Complete
Plot Plans	None	Started	Preliminary/ Complete	Complete
Process Flow Diagrams (PFDs)	None	Startd/Preliminary	Preliminary/ Complete	Complete
Utility Flow Diagrams (LFDs)	None	Startd/Preliminary	Preliminary/ Complete	Complete
Piping & Instrumentation Diagrams (P&IDs)	None	Started	Preliminary/ Complete	Complete
Heat & Material Balances	None	Started	Preliminary/ Complete	Complete
Process Equipment List	None	Started/Preliminary	Preliminary/ Complete	Complete
Utility Equipment List	None	Started/Preliminary	Preliminary/ Complete	Complete
Electrical Single Line Diagrams	None	Started/Preliminary	Preliminary/ Complete	Complete
Specifciations & Data Sheets	None	Started	Preliminary/ Complete	Complete
General Arrangement Drawings	None	Started	Preliminary/ Complete	Complete
Spare Parts Inventory	None	% of Direct Cost	Started/Preliminary	Preliminary/ Complete
Detailed Design Drawings	None	None	Started	Preliminary/ Complete
Capital Cost Estimate				
Infrastructure Costs:	Assumed	Investigated	Finalise detail	Finalised
General Cost Approach	Factored block costs	Preliminary quanity	Detail quanity	Detail/acutal quanity
Major Equipment Costs	Data bank/factored	Single source	Multiple source	Fixed tender
Civil Work	Rough quantity	Preliminary	Detailed take-off	Tender prices
Structural Work	$/unit vol.	Prelim take-off	Detailed take-off	Tender prices
Piping and Instrumentation	% machinery	Prelim take-off/%	Detailed take-off	Tender prices
Electrical	$kW	Prelim take-off	Detailed take-off	Detailed estimates
Installation	Factored/%	Man-hours/unit rates	Man hours	Man-hours/ contract
Indirect Costs	% or total	Prelim calculation	Calculation	Detail calcuation

This approach is similar to the widely used front-end-loading (FEL) approach to capital project development and similar processes used within major resources companies.

In addition, the overall capital expenditure program 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 the substantial capital works programs during earlier years of the regulatory period.

As the multi-year capital expenditure program is updated each year through this planning process, its impact on operating costs should be incorporated into the following year's budget for review by senior management and approval by the Board.

3.2.2 Queensland Urban Utilities process

In its assessment of Queensland Urban Utilities' Capital expenditure Policies and Procedures, SKM reviewed the following documents supplied:

- "Queensland Urban Utilities Capital planning and delivery Process and governance arrangements" Ver. 2, 20 June 2013
- "Feasibility Report Template" Rev 0 26 March 2013
- "Queensland Urban Utilities Business Systems Overview" Ref TEM142
- "Minor Capital Project Submission Costing Sheet" TEM64
- "Minor Capital Project Submission Guidelines & Template" TEM 1
- "Water Netserv Plan – Part B" 6 December 2011

SKM note that although a report on the Enterprise Excellence program was referred to and identified in the interview with Queensland Urban Utilities, a report on the Enterprise Excellence program was not provided to SKM for review.

3.2.3 Standardised approach to cost estimating

For major projects, an independent cost estimate is required, and a spread sheet template on Queensland Urban Utilities' intranet is required to be used. This satisfies the requirement for major projects and is robust.

Queensland Urban Utilities' Capital Planning and Delivery Process contains the following guidance "*a project is considered "major" if it has an estimated value over $5 million or it is a complex or potentially high risk project. Projects not classed as "major" are classed as "minor".*"

Queensland Urban Utilities advised that for minor projects an MCPS Cost Estimation template is used for cost estimating. The document supplied "Minor Capital Project Submission Costing Sheet TEM64" did not contain a standardised approach to cost estimating. However, given the low level of impact a non-standard approach to cost estimating for minor projects has, Queensland Urban Utilities' approach to cost estimation of small projects is considered to be compliant with good industry practice.

3.2.4 Prepares a summary document

The Feasibility Report Template for major projects requires a "Project Abstract" which fulfils the requirement for a summary document and is robust.

The Minor Capital Project Submission Guidelines and Template requires a "Project Abstract" which fulfils the requirement for a summary document and is robust.

3.2.5 Prepares an implementation strategy

The Feasibility Report Template for major projects requires an implementation strategy be developed, and this process is robust.

The Minor Capital Project Submission Guidelines & Template does not require an implementation strategy. Given the low level of impact of not having an implementation strategy for minor works this is not considered to trigger a non-compliance with respect to good industry practice.

3.2.6 Includes a 'gateway' review process

Queensland Urban Utilities' Risk Management Framework adopts a similar process for project evaluation and approval to the Gateway™ Process, with five key review points or 'gates':

- Needs analysis
- Investment decision
- Procurement strategy
- Contract award
- Project debrief

This framework aligns with the Gateway™ Process, with the exception that it does not provide for a benefits realisation review once a project has been completed and the benefits have been, or are being, realised and measured against a baseline. Queensland Urban Utilities has advised that developing and implementing a benefits realisation process is planned but has yet to be developed.

This gap was also noted in the IWA-WSAA Report on its 2012 Asset Management Performance Improvement Project, which stated that:

> *"Consistently low scores were noted in many Process areas wherever there was reference to post activity review, for example project design reviews, post project delivery review, asset operation review and improvement, operating procedures documentation review and revision. This recurring theme indicates that important lessons for the whole of the organization with asset responsibilities are not being considered and fed back into the asset acquisition process."*

SKM considers that the Queensland Urban Utilities process does not yet fully meet the requirement of a gated review process that is in keeping with good industry practice.

3.2.7 Includes a detailed analysis of options for major projects

The Feasibility Report Template for major projects requires a detailed analysis of options which meets this requirement of the Gateway process, and is robust.

3.2.8 Only includes only commissioned capital expenditure from 1 July 2010 in the RAB

The Queensland Urban Utilities Commissioning Model translates capital expenditure as-incurred to as-commissioned using the WACC advised by the Authority. The commissioned value is reflected in the Queensland Urban Utilities data templates which are used by the Authority to roll forward the RAB.

3.2.9 Compliance

As well as generic legislation (ie general, not specific or special) Queensland Urban Utilities is required to comply with the following industry-specific regulatory requirements in its capital expenditure processes:

- Water Act 2000
- Water Supply (Safety and Reliability) Act 2008

- Sustainable Planning Act 2009
- Environmental Protection Act 1994
- Environmental Protection (Water) Policy 2009
- Plumbing and Drainage Act 2002
- Public Health Regulation 2005
- Australian Drinking Water Quality Guidelines
- South East Queensland Water (Distribution and Retail Restructuring) Act 2009
- Water and Sewerage Services Code for Small Customers in South East Queensland 2013
- Financial Accountability Act 2009
- Financial and Performance Management Standard 2009
- Queensland Procurement Policy

The Financial Accountability Act 2009 and the associated Financial and Performance Management Standard 2009 set out the financial management and reporting responsibilities of statutory bodies in Queensland, including Queensland Urban Utilities. In addition to this, the Act and Standard mandate compliance with the Queensland Procurement Policy. The Auditor-General is responsible for giving an opinion on whether these requirements have been complied with in all material respects.

SKM has reviewed Queensland Urban Utilities' major capital expenditure governing documents supplied with the results shown below.

Major governing documents supplied/ accessed	Issues arising from Queensland Urban Utilities documents
"Queensland Urban Utilities Corporate Plan 2012-2017"	Compliance is specifically addressed.
"Queensland Urban Utilities Water Netserv Plan Part B" 22 November 2011	Regulatory compliance is addressed in Appendix C, and the major industry-specific requirements are listed and explained.
"Queensland Urban Utilities Capital planning and delivery Process and governance arrangements" Ver 2, 20 June 2013	"*Legislation, regulations, guidelines, codes*" are specifically addressed. Sources on the Queensland Urban Utilities intranet are referenced.
"Audited financial statements for 2011-12"	The audit opinion on this most recent set of financial statements was given on 31 August 2012 and was unqualified. This signifies that the Queensland Audit Office did not discover any significant instances of non-compliance with the Financial Accountability Act, the Standard or the State's Procurement Policy (as it previously was). As well, a high level review of the entity's policies found that they included the relevant requirements.

SKM considers that the capital expenditure policies and procedures meet the compliance requirement and are robust with the exception that they do not provide for a benefits realisation review once a project has been completed.

As required by the Water Act 2000, Queensland Urban Utilities also publishes[4] customer service standards covering water supply interruptions, quality, pressure and volume and also customer response. These are largely set by Queensland Urban Utilities itself, and these vary between SEQ water utilities. They are listed as inputs to the Capital Planning and Delivery Process and the Water Netserv Plan Part B.

[4] http://www.urbanutilities.com.au/uploads/file/NEW%20Reports%20and%20policies/CustomerServiceStandards-UpdateFINAL_October%202012.pdf

3.2.10 Considers regional perspective

The South East Queensland Water (Distribution and Retail Restructuring) Act 2009 outlines the regional requirements for the Netserv Plans.

Also, among other things, the Bulk Water Supply Code intends to "*encourage co-ordinated network planning between the bulk and the distribution sectors to achieve infrastructure planning (including water quality improvements) on a best value for money basis*." [5]

The Netserv Plan Part B addresses regional issues in high level terms in sections 6.1 of the document. It specifically requires Queensland Urban Utilities to:

- *"Align with the growth projections in the South East Queensland Regional Plan*
- *Ensure its planning is consistent with the South East Queensland Regional Water Supply Strategy, including identifying supply constraints and demand horizons for regional water resource and per capita demand targets*
- *Give due consideration to the Healthy Waterways Strategy which is an initiative of the Queensland Government and South East Queensland councils to protect and enhance waterways, and deliver the South East Queensland Regional Water Quality Management Strategy*
- *Liaise and coordinate with the Grid Manager, and*
- *Continue to participate in regional forums to ensure a coordinated response to water quality issues."*

The "Queensland Urban Utilities Capital planning and delivery Process and governance arrangements" addresses regional issues in section 5.2 of the document.

These documents are compliant with this requirement and are robust.

The capital projects reviewed demonstrated a consideration of a regional response, such as the Flood Resilience Project. In response to the 2011 floods Queensland Urban Utilities has developed a strategy to become Flood Resilient. Queensland Urban Utilities state that the key drivers for this include:

- To deliver upon Queensland Urban Utilities Purpose and Vision
- To ensure continuity of essential services
- To achieve faster recovery to fully operational capability after flood events
- To reduce the environmental impact of potential future floods
- To improve public health outcomes during flood
- To reduce the business risk to future loss exposure
- To reduce insurance premiums
- To meet the outcome of the "Queensland Flood Commission Inquiry"

As part of the strategy developed for Sewerage Pump Stations, Queensland Urban Utilities intends to:

- Raise switchboards and generators by 300mm above the flood level
- Containerised transportable switchboards
- Pre-fabricate replacement modules (critical spares) (Queensland Urban Utilties, 2013)

SKM considers that the containerisation of transportable switchboards and the pre-fabrication of replacement modules and critical spares which can be utilised at multiple sites is an indication that Queensland Urban Utilties considers a regional approach in the development of its capital works.

[5] http://www.dews.qld.gov.au/__data/assets/pdf_file/0013/32305/bulk-water-supply-code.pdf section 13

3.2.11 Asset management system (related to capital renewals)

The asset management system is reviewed in **Section 3.3.4** below.

3.2.12 Procurement

Adoption of good industry practice in procurement helps to ensure that goods and services have been acquired on an efficient and prudent basis. Results-based principles and practices are set down in the Queensland Procurement Policy as well as in the *Public Expenditure and Financial Accountability Framework* and similar frameworks adopted internationally by the World Bank and other international agencies.

The good industry practices for the procurement of goods and services are:

- Procurement policy
  - It is comprehensive and adopts competitive procurement as the default method
  - It clearly defines when other methods can be used and how they are justified
  - It is freely available to the public
- Strategy – there is an active multi-year strategy to identify cost-saving opportunities that become available
- Competition – contracts are awarded by open competition unless otherwise justified
- Transparency
  - The public has ready access to procurement plans, bidding opportunities, evaluation criteria, and the results of tenders and requests for offer
  - Evaluation processes are documented and subject to independent audit
  - Losing bidders are offered feedback
- Complaints handling
  - There is an independent process for reporting and resolving complaints from bidders and potential bidders
  - These practices have been incorporated into Queensland Urban Utilities' policies.

Queensland Urban Utilities has confirmed that there is an active program to identify procurement-related savings in materials and services costs and thereby contribute to, or exceed, the Chief Executive Officer's three-year savings target of 10% as it applies to this category of costs. Procurement-related savings opportunities identified in relation to materials and services costs include:

- Implementing vendor managed inventory
- Bundling of multi-year maintenance contracts so providers can reduce the risk margin built into their prices
- Competitive supply of minor capital works such as sewerage connections
- Improved facilities management and fleet management
- Co-sourcing electricity with utilities having complementary demand profiles (our subsequent discussions with Seqwater indicate that this may not be an option for it, but it may be for other utilities)

3.2.13 Capital expenditure program and delivery processes

Queensland Urban Utilities sets out its infrastructure planning and delivery processes in the Capital planning and delivery Process and governance arrangements and in the Water NetServ Plan Part B. The Water NetServ Plan Part B incorporates the Authority's definitions of prudency and efficiency.

The key phases of Queensland Urban Utilities' delivery processes are as follows:

- Strategic planning - the development of overarching strategy for integrated water and wastewater services.

- Integrated water management planning –including specific integrated water management plans (detailed studies that consider integrated water management options for specific areas), broad scale integrated water management planning and assessment of alternate water strategy/total water cycle management options.
- Master planning- the development and investigation of individual supply areas in accordance with the businesses strategic planning and integrated water management outcomes based on future demands over a 30 year period and/or ultimate development. Master plans form the basis of the businesses' investment needs for the future. Recommendations made at this stage are refined through a process of feasibility investigations that explore all the options available together with the social, economic and environmental costs and benefits. These refined outcomes result in specific projects that are considered for inclusion in the capital program.
- Feasibility, business case and preliminary design – these phases identify options at a regional or catchment basis and outcomes from this "high level" planning produce specific items of capital investment. Feasibility studies are then undertaken for those elements of infrastructure which have been identified as being required within the next three years. Feasibility studies include both "hard engineering" asset solutions as well as alternative solutions that may enable deferment of capital expenditure (e.g. non-asset solutions) and include a Multi-Criteria Options Evaluation. Project estimates are refined throughout the project planning process. Once a solution is identified, a more accurate estimate is prepared. Following detailed design, the estimate is further refined prior to inclusion into the budget process. A third party review may be sought.
- Capital Renewals – based on an integrated asset management approach, where maintenance intervention will not resolve an underlying issue the identified works are included as a project in the Capital Program for renewal or rehabilitation.
- Capital Program - infrastructure items identified during the planning and asset maintenance and renewal processes are identified in the 30 year Capital Investment Plan (CIP), which details the proposed infrastructure investment on a year-by-year basis. Project justification documentation (Feasibility Reports, Minor Capital Project Submissions, Rehabilitation Submissions or Business Cases as appropriate) are developed for all projects contained within years 1 – 3 of the CIP. These documents determine the optimum triple bottom line solution to identified problems, issues, needs or opportunities. They discuss cost and risk criteria, and the project's contribution to meeting statutory, regulatory or customer needs. These documents form part of Queensland Urban Utilities' gateway procedures.
- An annual review and validation of the overall program is conducted prior to approval by Queensland Urban Utilities' Board. Queensland Urban Utilities state that infrastructure to be provided by is prioritised and timings are adjusted in order to achieve a balanced, affordable and deliverable expenditure profile. Adjustment and rationalisation of the 30 year investment profile is conducted on a regular basis to ensure that it remains an accurate current reflection of future capital investment.
- Capital Delivery - once the capital projects have been identified, reviewed and approved this stage includes detailed design, project and contract management, procurement strategy and undertaking the capital works.

From its review, SKM considers these processes to be robust and in line with good industry practice as they:

- Reflect strategic development – for example references to the Corporate Plan
- Are based on a gateway system
- Are consistent with regional priorities –references to South East Queensland Regional Plan

SKM believes there are opportunities to improve processes through the adoption of risk based costing (eg through use of Monte Carlo analysis or equivalent) for more complex and larger cost projects.

As noted previously is currently no formal Gate 5 Project Review and Closure documentation. This should include a review of benefits realisation, and be used to improve processes and decision making.

3.3 Operating expenditure policies and procedures

3.3.1 Good industry practice

In a regulated business it is necessary to demonstrate that a forecast operating cost budget is efficient and that the expenditure is necessary to meet or exceed regulated service delivery standards and to maintain assets to ensure that they meet or exceed their expected asset life. 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 good practice 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

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 consistent with that of an efficient operator. 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 are consistent with the provision of an annual revenue requirement, which, in turn, is 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 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 through their remaining economic life

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 vary 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].

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. These variations in the cost drivers of utilities require careful use of benchmarking between utilities to avoid misleading comparisons.

3.3.2 Operating budget formation

Queensland Urban Utilities links its annual budget process into its long-term financial modelling, as well as its corporate plan and its group (divisional) and operational plans. The operating budget is revised each year using both a top-down and bottom-up review of its components, namely:

- The base (business-as-usual[7]) budget
- Permanent additions to, and deletions from, the base
- Temporary changes (new initiatives and the ending of previous projects)
- Cost escalations, as recommended by consultants or drawn from relevant forecasts

In consultation with the Board, the Chief Executive Officer has set a three-year savings target of 10% in controllable operating costs - that is, excluding bulk water costs, depreciation and interest. Service areas have incorporated these savings into their budgets, including by translating the savings initiatives identified in the Enterprise Excellence Review. This program is being funded from 2013-14 to continue the identification and

[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.

[7] Business As Usual is a hypothetical situation in which a mature organisation is operating in a steady state of average growth with no unexpected or abnormal exogenous factors occurring. In a competitive market, the organisation should be operating efficiently and be actively seeking productivity improvements each year. In a less than fully competitive market, Business As Usual operations may or may not be efficient, depending on the impact of legacy decisions and practices and the extent of managerial and regulatory action to address them.

implementation of efficiencies to meet the entity's cost targets, including those set by the Executive leadership team following the Third Horizon Cost Review discussed in a previous review.

There are separate methods for estimating employee costs in detail, and for the cost of handling biosolids, electricity consumption and chemical usage. These methods draw on historical data (for example, office supplies and external audit fees) and predetermined costs (including rent, subscriptions, mandatory training fees and regulatory fees). As well, contractor costs are drawn from annual maintenance contracts, planned maintenance schedules and estimates of responsive maintenance.

Business managers present their budgets to the executive leadership team after which the Chief Financial Officer and Chief Executive Officer finalise the overall budget for submission to the Board. The Queensland Urban Utilities Board approved the 2013-14 budget in February 2013.

An area in which the budget process may be improved is through the development of a benchmarking process to compare controllable operating costs with those of similar entities and thereby help identify areas where cost efficiencies can be made. However, this would require the development of an externally facilitated process more detailed than that of the National Water Commission's and more in keeping with the cost-based audits of the type commissioned by OFWAT. Specifically, the external process would require information on particular operating cost items and functions, while the cost audit process would ensure valid comparisons can be made of these cost items and functions between the entities. In the current situation (in the absence of a valid and reliable benchmarking framework), SKM considers that the operating budget formation process is in accordance with good industry practice and is robust.

3.3.3 Compliance

As well as generic legislation, Queensland Urban Utilities is required to comply with the following industry-specific regulatory requirements in its operations:

- Water Act 2000
- Water Supply (Safety and Reliability) Act 2008
- Sustainable Planning Act 2009
- Environmental Protection Act 1994
- Environmental Protection (Water) Policy 2009
- Plumbing and Drainage Act 2002
- Public Health Regulation 2005
- Australian Drinking Water Quality Guidelines
- South East Queensland Water (Distribution and Retail Restructuring) Act 2009
- Water and Sewerage Services Code for Small Customers in South East Queensland 2013
- Financial Accountability Act 2009
- Financial and Performance Management Standard 2009
- Queensland Procurement Policy

As indicated in Section 3.2.9, the Queensland Audit Office did not report any significant instances of non-compliance with the Financial Accountability Act, the Financial and Performance Management Standard, or the Queensland Procurement Policy. A high level review of the entity's policies found that they included the relevant prescribed financial requirements.

SKM has reviewed Queensland Urban Utilities' major operating expenditure governing documents supplied and makes the observations shown below.

Table 2 : Assessment of major operating expenditure governing documents

Major governing documents supplied	Issues arising from Queensland Urban Utilities documents
"Queensland Urban Utilities Corporate Plan 2012-2017"	Compliance is specifically addressed.
"Queensland Urban Utilities Water Netserv Plan Part B". 22 November 2011	Regulatory compliance is addressed in Appendix C, and the major industry-specific requirements are listed and explained.
"Asset Management Overview" Draft Ver. 1, 28 June 2013	Asset management plans are stated as the funnel for all regulatory requirements.

From its review, SKM considers that the operating expenditure policies and procedures meet the compliance requirement and are robust.

3.3.4 Asset management system

Good industry practice for asset management is currently specified by PAS 55-1:2008, the Publicly Available Specification for Asset Management Part 1 Specification for the optimized management of physical assets. According to the Institute of Asset Management "*PAS 55 was initiated by and is now distributed and supported worldwide through the Institute of Asset Management.*"[8] For an organisation where "*physical assets are a key or critical factor in achieving its business goals*" PAS 55 sets out an "*international consensus about required good practices in the management of such physical assets*"[9].

A similar draft ISO standard is currently being developed, Draft International Standard ISO/DIS 55001 Asset management — Management systems — Requirements. According to the Asset Management Council of Australia this new ISO standard will "*specify the requirements for an asset management system to manage assets and asset systems over their life cycles*"[10]. Therefore once implemented, this standard will specify good industry practice.

Queensland Urban Utilities advised that it was aligning its systems with the ISO standard, and its objective was to comply with this standard[11] once the standard is finalised, therefore SKM undertook the review against ISO/DIS 55001rather than PAS 55.

SKM has reviewed the following documents supplied:

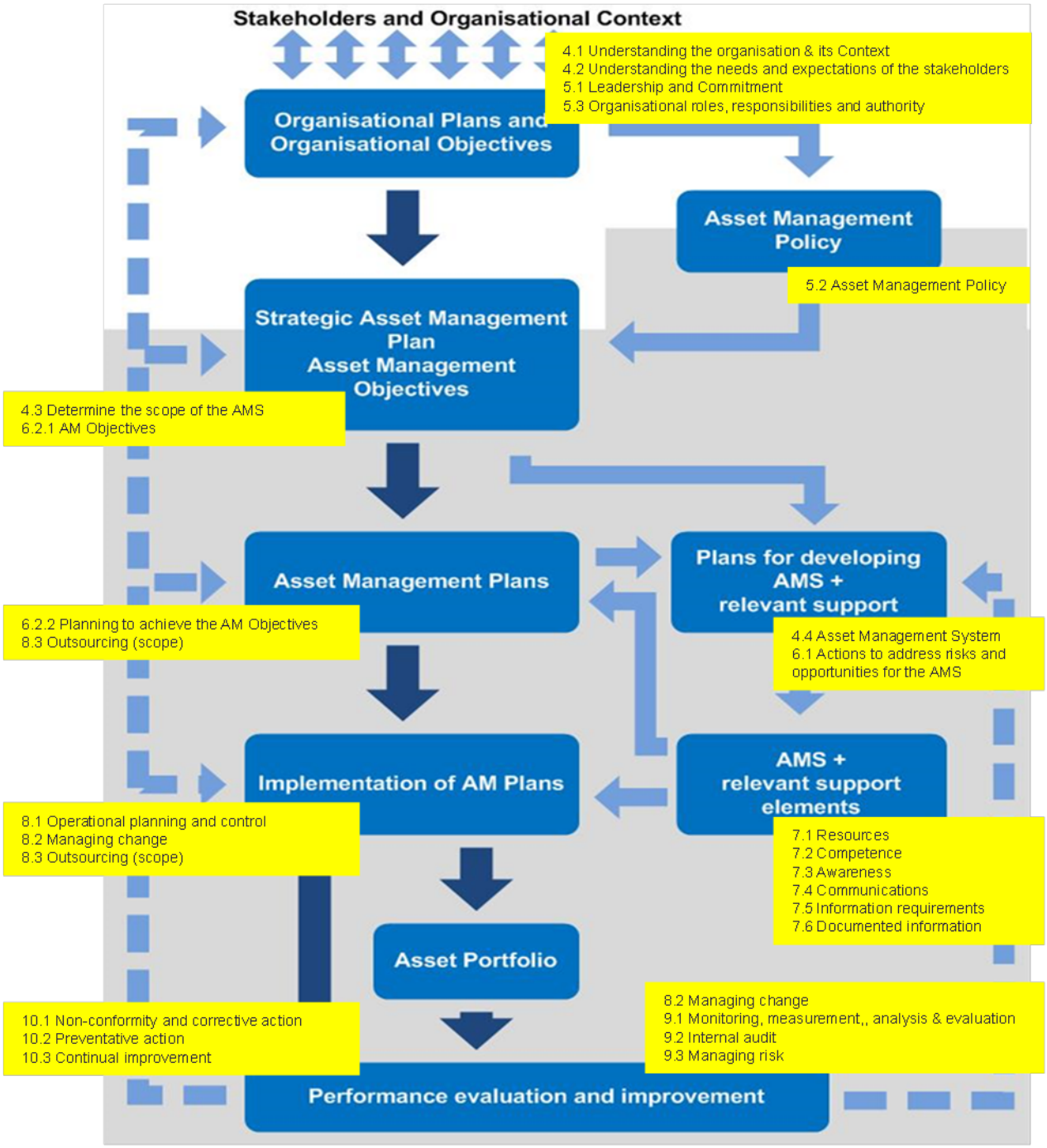
- "Asset Management Overview Draft Ver. 1, 28 June 2013" (Overview)
- "Asset Management Documentation Draft Ver. 1, 28 June 2013"
- "Asset Management QUU Principles Draft Ver. 1, 28 June 2013"
- "Asset Management Alignment with Corporate Plan Draft Ver. 1, 28 June 2013"
- "Asset Management Performance Monitoring Draft Ver. 1, 28 June 2013"
- "Queensland Urban Utilities 2011-12 Annual Report"
- "Queensland Urban Utilities Water Netserv Plan Part A". The document did not have an applicable date or version.
- "Asset Management Roles and Responsibilities Draft Ver. 1, 28 June 2013"
- "Asset Management Improvement Plan 2013 Draft Ver. 1, 1 April 2013"
- "Queensland Urban Utilities Asset Management Policy Version 1 7 June 2013" (Policy)
- "Asset Management Audit Benchmarking and Review Draft Ver. 1, 28 June 2013" (Review)

[8] http://theiam.org/products-and-services/pas-55/what-pas55 as at 13 September 2013
[9] PAS 55 Foreword
[10] http://www.amcouncil.com.au/asset-management-body-of-knowledge/asset-management-standards/333-why-an-asset-management-standard-is-needed.html as at 13 September 2013
[11] Overview, 5. Asset Management Objectives, 1

- "Australian Water Association Asset Management Technical Meeting 22 November 2011"
- "2012 Asset Management Performance Improvement Project Utility Report For Queensland Urban Utilities Final Report October 2012"

A schematic of the components of ISO/DIS 55001 is set out below.

Figure 3-2 : ISO/DIS 55001 schematic



The results of this review are summarised against the overall requirements of ISO 55001 (Draft as at 7/9/2012) below.

Table 3 : Comparison with ISO/DIS 55001

ISO 55001 Section reference	Asset management system requirements	Issues arising from Queensland Urban Utilities documents
4.2	Understanding the needs and expectations of stakeholders'	The documents reviewed are compliant with this section of the standard and robust.
4.3	Determining the scope of the asset management system	The documents reviewed are compliant with this section of the standard. However, the boundaries of the scope are not clearly documented. SKM considers that the processes are not robust in this requirement.
5.1	Leadership and commitment	The documents reviewed are compliant with this section of the standard. However, the commitment to resources is not clearly documented. SKM considers that the processes are not robust in this requirement.
5.2	Policy	The asset management policy (section 4.1 of the Overview) is not compliant with this section of the standard because the "commitment to satisfy applicable requirements" is not clearly documented in the policy itself. SKM considers that the processes are not robust in this requirement. The stand-alone Policy is compliant. These two asset management policy documents need to be made consistent to be robust.
5.3	Organizational roles, responsibilities and authorities	The roles and authorities are not compliant with this section of the standard because accountabilities for the linkage to the strategic plan, compliance with the International Standard and reporting on performance of the asset management system are not clearly documented. Two internal management committees are assigned accountabilities in this authority structure. SKM considers that assigning accountabilities to a management committee dilutes the accountability, compared to assigning accountability to a person. Assigning accountabilities to a management committee is not good industry practice and is not robust.
6.1	Actions to address risks and opportunities for the asset management system	The documents reviewed are compliant with this section of the standard and robust.
6.2	Asset management objectives and planning to achieve them	The documents reviewed are compliant with this section of the standard and robust.
7.1	Resources	The documents reviewed are not compliant with this section of the standard. Principal accountabilities are identified comprehensively, except as noted in 5.3 of this table. However, as noted in 5.1 above, overall resourcing of adequate numbers of full time equivalent staff and budgets needed to implement, operate and continuously improve the asset management system is not clearly identified.
7.2	Competence	The standard requires a full process of assessment and implementation to ensure persons are appropriately competent. An appropriate commitment is articulated in the Policy however its implementation is not clearly documented. The documents reviewed are therefore not compliant with this section of the standard.
7.3	Awareness	No adverse issues are apparent with compliance with this section of the standard.
7.4	Communication	No adverse issues are apparent with compliance with this section of the standard.
7.5	Information requirements	No adverse issues are apparent with compliance with this section of the standard.
7.6	Documented information	The documents reviewed are not compliant with this section of the standard as noted in this table.

ISO 55001 Section reference	Asset management system requirements	Issues arising from Queensland Urban Utilities documents
8.1	Operational planning and control	The documents reviewed are compliant with this section of the standard and robust.
8.2	Management of change	The documents reviewed are compliant with this section of the standard and robust.
8.3	Outsourcing	No adverse issues are apparent with compliance with this section of the standard.
9.1	Monitoring, measurement, analysis and evaluation	The documents reviewed are compliant with this section of the standard and robust.
9.2	Internal audit	There is not a dedicated audit of the asset management system. The audit program is not robust as it is not clearly documented that the other internal audits will cover the scope of an audit of the asset management system.
9.3	Management review	The documents reviewed (in particular the Asset Management Audit Benchmarking and Review) are not compliant with this section of the standard, as the requirements of the standard are not clearly covered by the scope of the Asset Management Audit Benchmarking and Review. Management review is the accountability of the Asset Technical Committee rather than an individual. This is not good industry practice and is not robust.
10.1	Nonconformity and corrective action	The documents reviewed are not compliant with this section of the standard, as the requirements of the standard are not clearly covered.
10.2	Preventive action	The documents reviewed are not compliant with this section of the standard, as the requirements of the standard are not clearly covered.
10.3	Continual improvement	The documents reviewed are compliant with this section of the standard and robust.

Given the above, the asset management systems of Queensland Urban Utilities are not compliant with good industry practice.

In 2013-14, Queensland Urban Utilities intends to address the following actions in its improvement plan:

- *"Consolidation of Asset System from Previous entities*
- *Potential Adoption of ISO50000 Standard*
- *Relationship between Asset Performance, Cost, Level of Service and Price*
- *Post Activity Review"*

Queensland Urban Utilities states that it aims to be "*in the top 80% of Water Authorities under the IWA/WSAA Aquamark benchmarking*" program[12]. This benchmarking program uses self-assessment, with subsequent review and validation by external consultants. The results are compared against those of other participating water authorities, not against a published standard of requirements for good industry practice. The relative results will therefore vary dependent on the other authorities participating. The resulting report "2012 Asset Management Performance Improvement Project Utility Report for Queensland Urban Utilities Final Report October 2012" indicated the asset management performance of Queensland Urban Utilities was above the median of the participating water authorities in five out of seven areas.

3.3.5 Procurement

As noted in Section 3.2.12, Queensland Urban Utilities' procurement policies and procedures adopt good industry practices and this extends to operating cost items except that, as indicated in Section 3.2.6, it does not yet undertake post-implementation benefits realisation reviews of projects. This creates a risk that expected cost-savings or other benefits that only become evident well after a project is commissioned are not verified,

[12] Overview, 5. ASSET MANAGEMENT OBJECTIVES, 1

thus lessening the accountability of the project proponent and the reliability of the business case approval process.

3.4 Conclusion

As detailed above, the requirements of Section 3.1 are addressed by the documents reviewed as summarised in the table below.

Table 4 : Summary of requirements

Requirements	Capital expenditure policies and procedures	Operating expenditure policies and procedures
Has a standardised approach to cost estimating	Compliant and robust	Not applicable
A summary document is prepared	Compliant and robust	Not applicable
An implementation strategy is prepared	Compliant and robust	Not applicable
Has a gateway review process	Compliant	Not applicable
Has a benefits realisation assessment process	Not compliant	Not applicable
Includes requirements to comply with relevant legislation	Compliant and robust	Compliant and robust
Includes requirements to take account of regional issues.	Compliant and robust	Compliant and robust
Only commissioned capital expenditure from 1 July 2010 is included in the RAB	Compliant and robust	Not applicable
Asset management in accordance with good industry practice	Not compliant	Not compliant
Procurement in accordance with good industry practice	Compliant and robust	Compliant and robust
Budget formation in accordance with good industry practice	Compliant and robust	Compliant and robust

Potential areas for improvement include:

- The adoption of risk based costing (eg Monte Carlo or equivalent) for more complex and larger cost projects
- The improvement of the Gate 5 Project Review and Closure documentation, including formal documentation, review of benefits realisation, and a mechanism to return finding from this stage to improve processes and decision making
- Adoption of a standardised approach for cost estimation on minor projects
- Adoption of the requirement of an implementation strategy for minor works

4. Operating expenditure

4.1 Overview of operating expenditure

The following table provides a breakdown of the operating expenditure submitted by Queensland Urban Utilities for the price monitoring period (financial years 2013-14 and 2014-15).

Over this period, Queensland Urban Utilities predicts that its total operating expenditure (excluding bulk water charges) will increase from $513.8 million (2011-13) to $539.7 million (2013-15), which represents a total increase of $25.9 million or approximately 5%. The forecast expenditure in 2013/14 is $8.1 million lower than expenditure in 2012/13, which is a reduction of 3%.

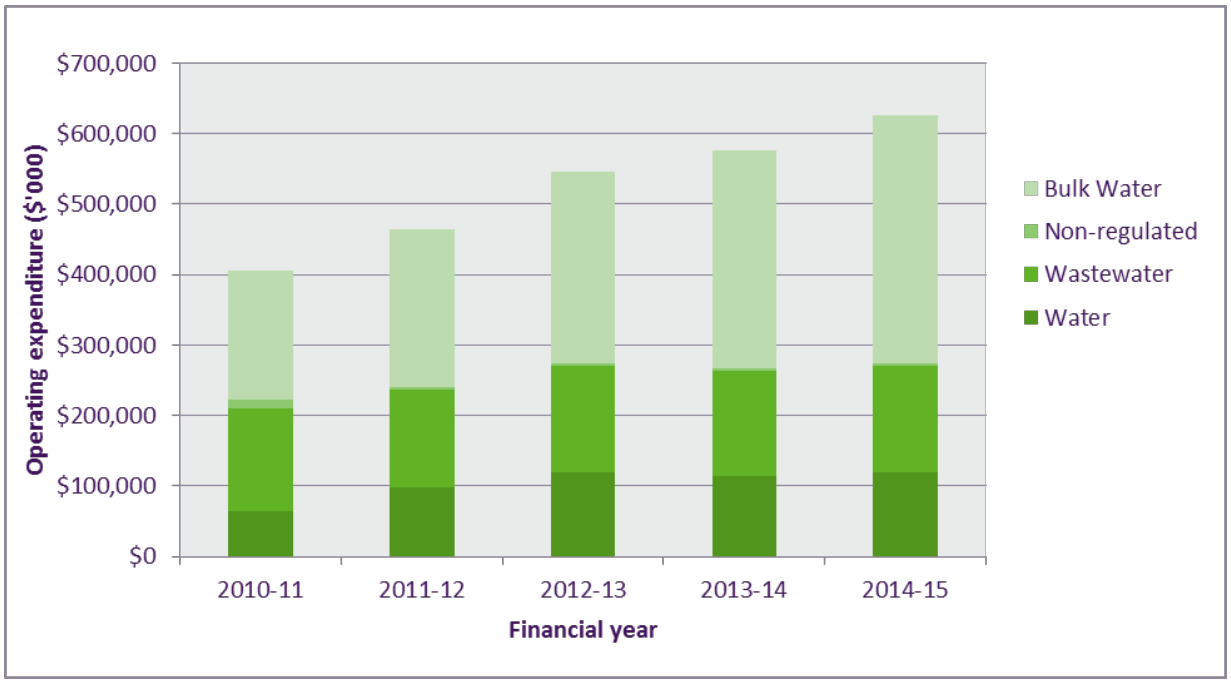
Table 5 : Total operating expenditure[13]

Service	2010-11 ($'000)	2011-12 ($'000)	2012-13 ($'000)	2013-14 ($'000)	2014-15 ($'000)
Bulk water	183,026.9	224,192.2	271,413.8	309,281.3	352,316.5
Water	64,815.0	98,734.9	118,712.9	114,884.2	118,840.7
Wastewater	145,808.7	137,762.2	152,478.9	148,351.1	151,756.7
Non-regulated	11,866.4	3051.1	3,051.4	2,906.1	3,006.8
Total	405,517.0	463,740.4	545,657.0	575,422.7	625,920.7
Total less Bulk water	**222,490.2**	**239,548.2**	**274,243.2**	**266,141.4**	**273,604.2**

The following graph provides an overview of the operating expenditure as detailed by Queensland Urban Utilities in its return to the Authority. The main points to be drawn from the graph of annual operating expenditure from the 2012-13 financial year to the 2014-15 financial year are that, across the period, the water services operating expenditure (excluding bulk water costs) increases by 0.01%; the wastewater services operating expenditure decreases by 0.4% and the non-regulated operating expenditure decreases by 1.3%. Over the same period, expenditure on bulk water (driven by both demand and unit price increase from the bulk water supplier) will increase by approximately 30%.

[13] QCA Information Requirement Template 2013-14

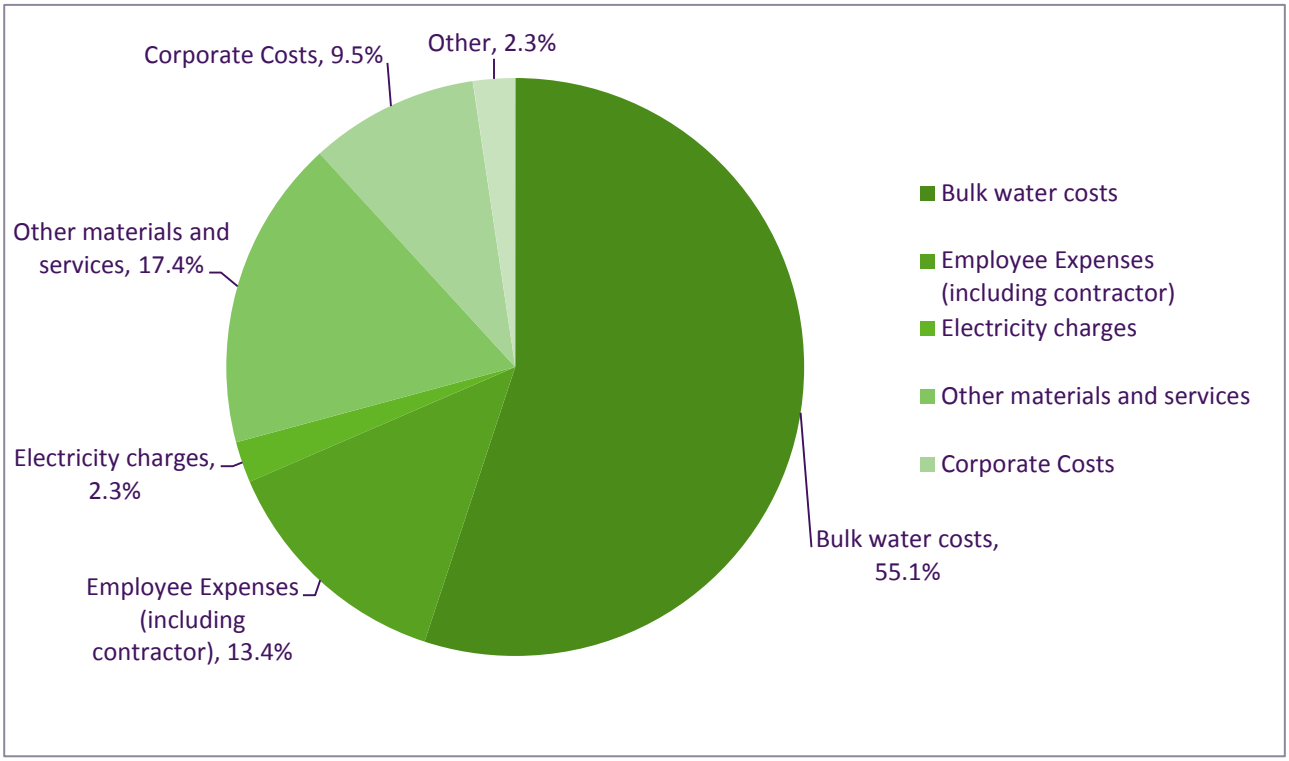
Figure 4-1 : Total operating expenditure[14]



Queensland Urban Utilities has an operating expenditure budget of $1,201 million (including bulk water charges) for the price monitoring period (financial years 2013-14 and 2014-15). The following figure indicates the breakdown of the operating expenditure budget in terms of the main cost categories. As is evident from the chart, the cost of purchasing bulk water is the main operating expenditure item.

[14] ibid.

Figure 4-2 : Total operating expenses for 2013-15 (including non-regulated costs)[15]



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

Table 6 : Water operating expenditure 2013-2015 ($'000)[16]

Item	2012-13 ($'000)	2013-14 ($'000)	2014-15 ($'000)
Bulk water costs	271,413.8	309,281.3	352,316.5
Employee expenses	31,967.2	31,180.6	31,522.7
Contractor expenses	563.9	263.1	153.1
GSL Payments	-	-	-
Electricity charges	1,633.5	1580.8	1,778.9
Sludge handling costs	7.9	8.1	8.6
Chemicals costs	69.0	80.9	84.4
Other materials and services	49,184.3	55,200.4	57,267.7
Licence or regulatory fees	424.2	409.2	419.4
Corporate costs	25,955.4	25,702.8	27,605.9
Non recurrent costs	8,907.6	458.2	-
Indirect taxes	-	-	-
Efficiency target	-	-	-
Total water operating expenses	**390,126.7**	**424,165.5**	**471,157.2**
Total less Bulk Water	**118,712.9**	**114,884.2**	**118,840.7**

[15] QCA Information Requirement Template 2013-14
[16] ibid.

Table 7 : Wastewater operating expenditure 2013-2015 ($'000)[17]

Item	2012-13 ($'000)	2013-14 ($'000)	2014-15 ($'000)
Employee expenses	43,842.2	44,457.6	45,231.0
Contractor expenses	1,211.3	131.7	23.8
GSL Payments	-	-	-
Electricity charges	9,873.4	11,351.0	12,714.7
Sludge handling costs	8,458.6	8,276.2	8,621.0
Chemicals costs	3,183.7	3,964.1	4,120.5
Other materials and services	49,129.2	50,197.5	49,393.1
Licence or regulatory fees	594.3	583.5	598.1
Corporate costs	28,038.9	28,830.9	31,054.5
Non recurrent costs	8,147.3	558.7	-
Indirect taxes	-	-	-
Efficiency target	-	-	-
Total wastewater operating expenses	**152,478.9**	**148,351.1**	**151,756.7**

Table 8 : Non-regulated operating expenditure 2013-2015 ($'000)[18]

Item	2012-13 ($'000)	2013-14 ($'000)	2014-15 ($'000)
Employee expenses	3,828.2	4,130.3	4,257.7
Contractor expenses	242.6	-	-
GSL Payments	-	-	-
Electricity charges	80.6	92.1	102.7
Sludge handling costs	-	-	-
Chemicals costs	13.0	-	-
Other materials and services	-1,683.1	-1,538.5	-1,588.9
Licence or regulatory fees	-	-	-
Corporate costs	428.3	222.3	235.3
Non recurrent costs	141.9	-	-
Indirect taxes	-	-	-
Efficiency target	-	-	-
Total non-regulated operating expenses	**3,051.4**	**2,906.1**	**3,006.8**

The following chart demonstrates the makeup of operating expenditure for each region in Queensland Urban Utilities for the price monitoring period (financial years 2013-14 and 2014-15). As the graph indicates Brisbane is by far the largest region in terms of operating expenditure and is about 80% of the total operating expenditure for both years, which is to be expected given the difference in customer size between Brisbane and the other regions.

[17] QCA Information Requirement Template 2013-14
[18] ibid.

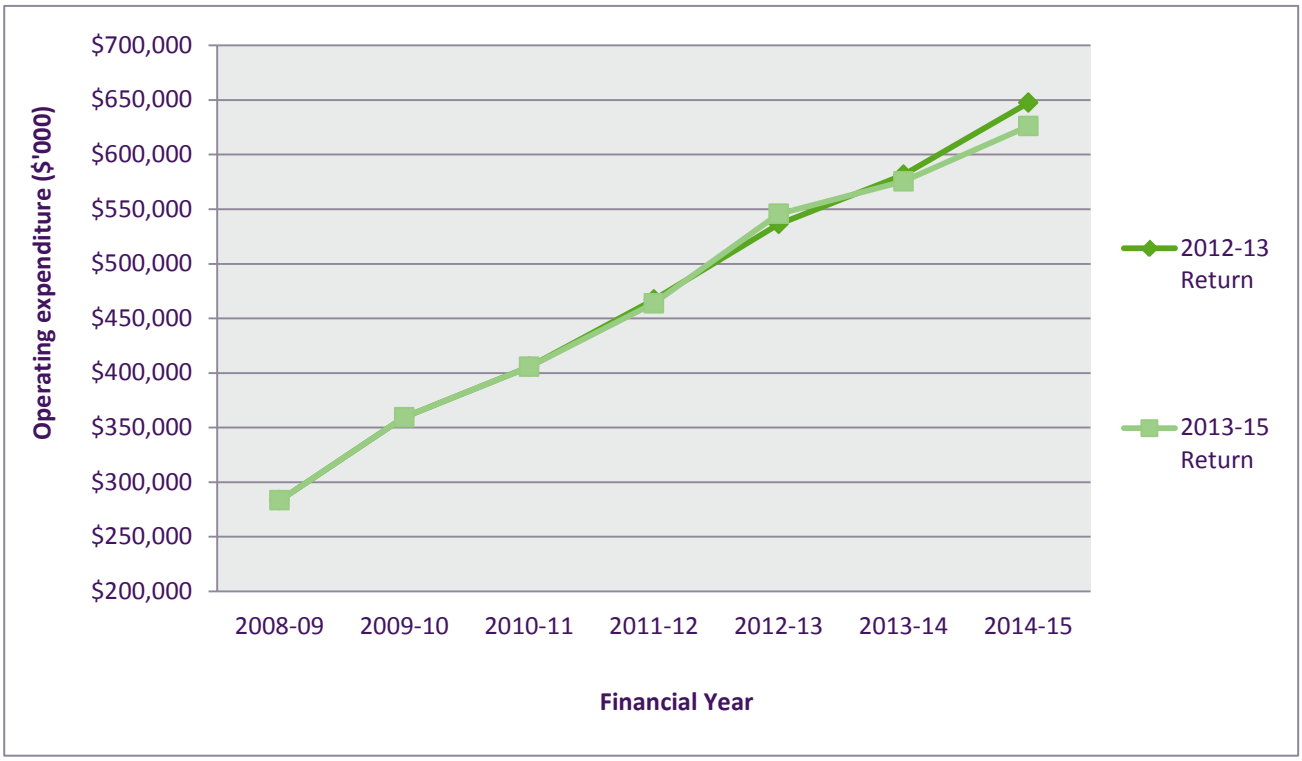
Figure 4-3 : Total operating expenditure per region[19]

4.2 Historical costs and variances

The following figure compares the forecast operating costs submitted by Queensland Urban Utilities in the 2012-13 Information Template and the 2013-15 Information Template. The graph shows that the 2013-15 submission predicts a moderate reduction in forecast operating expenditure compared to the 2010-11 Information Template.

[19] QCA Information Requirement Template 2013-14

Figure 4-4 : Comparison of forecasts – 2012-13 submission and 2013-15 submission (Source: 2012/13 Information Template, 2013/15 Information Template)



The variation between the 2012-13 submission and 2013-15 submission forecast operating expenditures are outlined in the following table.

Table 9 : Comparison of forecasts – 2012-13 and 2013-15 submissions ($'000) (Source: 2012/13 Information Template, 2014/15 Information Template)

Source	2010-11	2011-12	2012-13	2013-14	2014-15
Total operating expenditure					
2012-13 Information Template	405,517.0	467,045.0	536,289.7	581,483.3	647,451.4
2013-15 Information Template	405,517.0	463,740.4	545,657.0	575,422.7	625,920.7
Variance	0.0	-3,304.7	9,367.3	-6,060.6	-21,530.7
Total operating expenditure – excluding bulk water costs					
2012-13 Information Template	222,490.0	241,595.8	266,467.9	266,878.4	285,579.6
2013-15 Information Template	222,490.0	239,548.1	274,243.2	266,141.3	273,604.2
Variance	0.0	-2,047.6	7,775.3	-737.0	-11,975.4

The previous table and figure detail an increase of $9.4 million in total operating costs for the 2012-13 financial year and forecasts reduction from last year's estimates of $6.1 million and $21.5 million in 2013-14 and 2014-15 respectively.

Expenditure on bulk water is not a cost that is controllable by Queensland Urban Utilities. Water volumes are driven by consumer demand and growth, and unit prices determined externally. As such, SKM has also compared forecast operating costs between the 2012-13 and 2013-15 information templates (excluding bulk water expenditure) in Table 9. The results show that the 2013-15 Information Template forecasts a decrease in operating expenditure (less bulk water expenditure) for the interim price monitoring period as compared to the

2012-13 Information Template. The forecast reductions from last year's estimates, excluding bulk water costs, are respectively $0.7 million and $12.0 million in 2013-14 and 2014-15.

The Authority's Information Requirement specifies that information should be allocated to relevant service types. SKM has compared the forecast operating expenditure by service type with the 2012-13 Information Return.

Table 10 : Comparison of forecasts by service type – 2012-13 and 2013-15 submissions ($'000) (Source: 2012/13 Information Template, 2013/15 Information Template)

Service	2013-14 FY			2014-15 FY		
	2012-13 Return	2013-15 Return	Difference	2012-13 Return	2013-15 Return	Difference
Drinking water	423,783.9	424,165.4	381.5	477,366.3	471,157.2	-6,209.1
Other core water services	0.0	0.0	0.0	0.0	0.0	0.0
Wastewater via sewer	134,280.0	126,449.7	-7,830.3	144,787.0	129,359.2	-15,427.8
Trade waste	22,270.6	21,901.4	-369.2	24,108.8	22,397.5	-1,711.3
Other core wastewater services	0.0	0.0	0.0	0.0	0.0	0.0
Non-Regulated	1,148.8	2,906.1	1,757.4	1,189.3	3,006.8	1,817.5
Total	**581,483.3**	**575,422.7**	**-6,060.6**	**647,451.4**	**625,920.7**	**-21,530.7**

The data illustrates the major variance in operating costs between the 2012-13 Information Template and the 2013-15 Information Template is within the Wastewater via Sewer service, where forecasts have reduced by $7.8 million (5.8%) and $15.4 million (10.7%) for the 2013-14 and 2014-15 financial years respectively. The data shows that in the 2013-15 Information Template Queensland Urban Utilities has forecast an increase of $0.4 million in the Drinking Water service for 2013-14 and no increases in operating costs for regulated services for 2014-15.

The following tables summarise the variances for the 2013-14 and 2014-15 forecasts.

Table 11 : Comparison of 2013-14 expenditure forecasts – 2012-13 and 2013-15 submissions ($'000) (Source: 2012/13 Information Template, 2013/15 Information Template)

Service	Category	Operating expenditure ($'000)		
		2012-13 return	2013-15 return	Variance
Drinking Water	Bulk water costs	314,604.9	309,281.3	-5,323.6
	Employee expenses	42,925.9	31,443.7	-11,482.2
	Other materials and services	63,951.8	55,200.4	-8,751.4
	Corporate Costs	0.0	25,702.8	25,702.8
Wastewater via sewer	Employee expenses	47853.2	38182.1	-9,671.1
	Other materials and services	66,745.0	42,883.5	-23,861.5
	Corporate Costs	0.0	24,477.7	24,477.7
Trade waste	Employee Expenses	7861.8	6407.2	-1454.5
	Other materials and services	11,002.9	7,314.0	-3,689.0
	Corporate Costs	0.0	4,353.2	4,353.2

Table 12 : Comparison of 2014-15 expenditure forecasts – 2012-13 and 2013-15 Submissions ($'000) (Source: 2012/13 Information Template, 2013/15 Information Template)

Service	Category	Operating expenditure ($'000)		
		2012-13 return	2013-15 return	Variance
Drinking Water	Bulk water costs	361,871.8	352,316.5	-9,555.3
	Employee expenses	44,531.7	31,675.8	-12,855.8
	Other materials and services	68,423.7	57,267.7	-11,156.1
	Corporate Costs	0.0	27,605.9	27,605.9
Wastewater via sewer	Employee expenses	49653.0	38,759.3	-10,893.6
	Other materials and services	73,953.8	42,207.1	-31,746.6
	Corporate Costs	0.0	26,363.4	26,363.4
Trade waste	Employee Expenses	8155.0	6495.5	-1659.5
	Other materials and services	12,293.7	7,185.9	-5,107.8
	Corporate Costs	0.0	4,691.2	4,691.2

The main cost increase for 2013-14 and 2014-15 is in the area of Corporate Costs. However, it should be noted that these were not recorded in the 2012-13 submission, which prevents exact comparison of these costs with historic figures. It is noted that several other cost categories record decreases that may, in part, be due to costs being re-assigned to Corporate Costs.

The 2013-15 forecast includes a reduction in bulk water costs. This is due to a reduced forecast in demand and the reduced bulk water price path that was announced in May 2013. This includes a reduction of 2.5 c/kL in 2013-14 and 5 c/kL in 2014-15.

The variances identified above should be placed into context by considering the maturity of the organisation. Many of the variances reflect Queensland Urban Utilities' increasing ability and focus with respect to disaggregating costs as required by the Authority, and increasing ability of internal structures to manage assets (with less reliance on data from contributing Councils).

While some of the quantum of the costs reported are influenced by Queensland Urban Utilities greater ability to disaggregate costs to the level required by the Authority other costs indicate an increasing reduction in expenditure.

4.3 Costs in aggregate

Queensland Urban Utilities' 2013-15 Information Submission to the Authority shows an increase in operating expenditure for each financial year of the forecast as is shown in Table 13. The operating expenditure in the table includes the bulk water costs. For comparison the percentage increase in yearly bulk water costs are also included

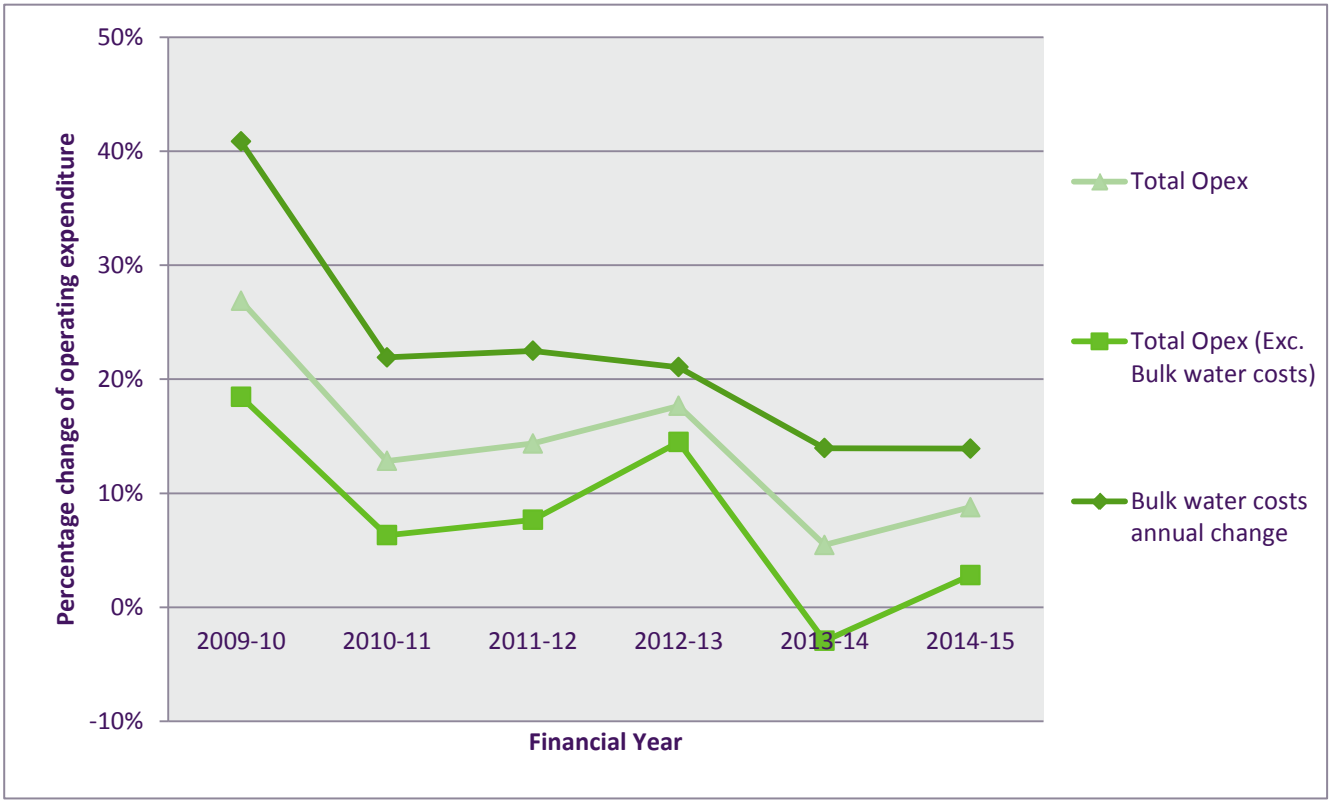
Table 13 : Queensland Urban Utilities annual operating expenditure (Source: 2013/15 Information Template)

Financial Year	Operating Expenditure ($'000)	Annual Increase Percentage	Percentage Annual Increase in Bulk Water Charge
2008-09	283,239	-	-
2009-10	359,389	27	41
2010-11	405,517	13	22
2011-12	463,740	14	22
2012-13	545,657	18	21

Financial Year	Operating Expenditure ($'000)	Annual Increase Percentage	Percentage Annual Increase in Bulk Water Charge
2013-14	575,422	5	14
2014-15	625,920	9	14

The increases are above annual inflation rates, which for the five years preceding 2013 was approximately in the range of 1.0 to 4.0%. Queensland Urban Utilities' annual increases in operating expenditure broadly follow the annual increase in bulk water charge as is shown in the following figure (**Figure 4-5)**. The shape of the graph indicates that factors other than bulk water costs influence the operating expenditure such as a peak in 2012-13.

Figure 4-5 : Annual changes in expenditure – 2013-15 return(Source: 2013/15 Information Template)



The figures in the 2013-15 Information Template indicate that increases to the following costs are the main reasons (ie changes of $1.0 M) for the rise in operating expenditure in 2013-14.

SKM has assessed:

- Bulk water charge
- Other Materials and Services
- Electricity costs

Queensland Urban Utilities has indicated that the following cost categories have a decrease in 2013-14.

- Labour costs
- Non recurrent costs

With respect to 2014-15, the data in the 2013-15 Information Template indicate that the following cost categories are predicted to be the main reasons for the rise in operating expenditure:

- Bulk water charge
- Electricity costs
- Other Materials and Services
- Corporate Costs

Queensland Urban Utilities has indicated that the following cost category has a decrease in 2014-15.

- Non recurrent costs

4.4 Benchmarking

4.4.1 Comparability of data

The various differences between water utilities affect the validity of benchmarking Queensland Urban Utilities' operating expenditure against other utilities' expenditure. The comparator utilities used for benchmarking against Queensland Urban Utilities are operating in Australia and the United Kingdom (UK) and are shown below (in **Figure 4-6** and **Figure 4-7**).

The operating expenditure data of other Australian utilities was obtained from the National Water Commission's National Performance Report 2011-12. The data utilised for international benchmarking was provided by Scottish Water and obtained from regulatory submissions to The Water Services Regulation Authority (UK) (Ofwat) for the 2010-11 financial period.

SKM is aware of differences between Australian and UK water markets which must be considered when comparing water utilities. Aspects such as climate (temperature, rainfall, storm events etc), topography, service areas, connection density, location (rural or urban), technologies used, asset age, regulations, bulk water supply, consumer expectations and labour requirements are just some of the factors which influence operating expenditure.

The UK water and wastewater industry is expected to be more efficient because of its incentive regulation regime and the focus on privatisation. The regulatory processes applied in the UK of past years were developed to drive out inefficient costs through developing a system of measurement of overall performance and comparative efficiency, and through the setting of measurable efficiency targets for operating costs, maintenance costs and capital expenditure.

Another issue with the comparison of international water utilities is that the treatment of bulk water and water security costs are different across jurisdictions given the different governance structures of the industry. The operating expenditure for Queensland Urban Utilities incorporates some return on capital investments at the bulk level which is due to the structure of the industry and the charges that Queensland Urban Utilities pays to the bulk water provider. This also impacts on the wastewater operating expenditure where bulk treatment is undertaken by the bulk water provider in some instances.

The Australian and International water utilities used for comparison with Queensland Urban Utilities are shown below in terms of number of water connections and number of sewage connections (Note data periods; Australian utilities: 2011-12, International utilities: 2010-11). The graphs show that the international water utilities (orange) generally have a higher number of water and sewage connections, whilst the Australian utilities (blue) have a lower number of connections, excluding Sydney which is middle of the range. Figure 4-6 shows that Wessex and Southern utilities have the most comparable amount of water connections to Queensland Urban Utilities and will be the most suitable for an international comparison of water operating expenditure. Figure 4-7 shows that Wessex, Northumbrian and Dwr Cyrmu utilities have the most comparable amount of sewage connections to Queensland Urban Utilities and will be the most suitable for an international comparison of wastewater operating expenditure.

Figure 4-6 : Number of water connections per utility

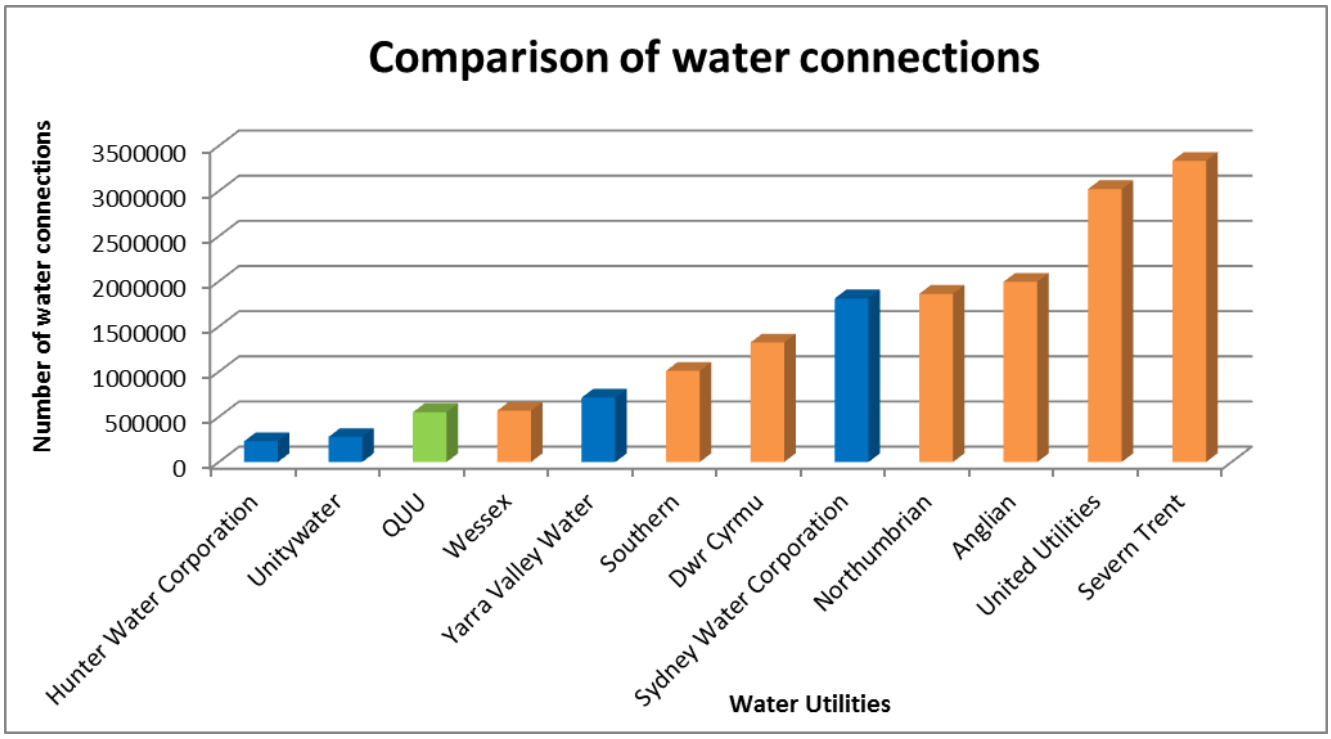
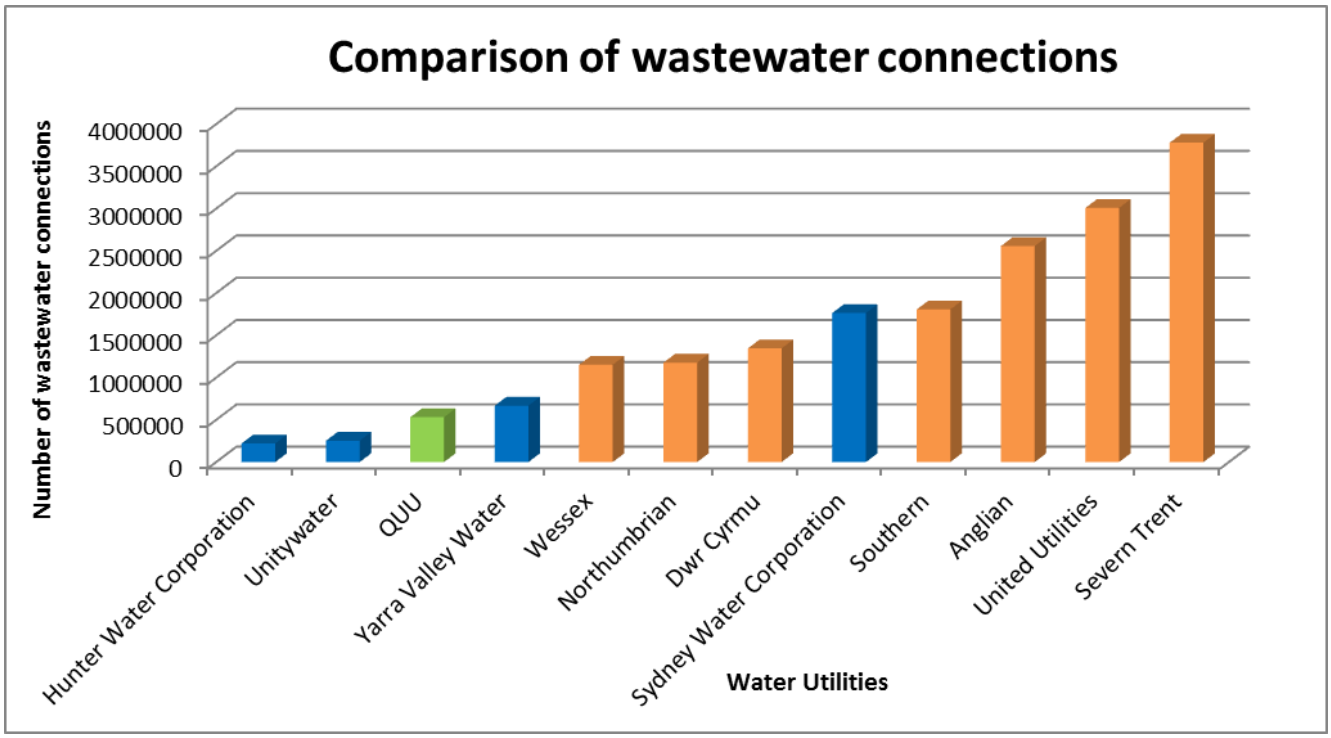


Figure 4-7 : Number of wastewater connections per utility



4.4.2 Australian benchmarking

In order to assess the aggregate operating costs for Queensland Urban Utilities SKM has carried out benchmarking against peers from around Australia. SKM has used data from the National Water Commission's National Performance Report 2011-12 to calculate suitable benchmarks. The data presented below for water

operating expenditure includes bulk water costs. A cost escalation index was applied to the National Water Commission data to adjust costs to 2013-14 dollars. The CPI obtained from the Australian Bureau of Statistics website of 2.4% for 2012-13 was applied along with an assumed CPI for 2013-14 of 2.4%. For comparison SKM have included benchmarks for Unitywater, Hunter Water Corporation, Sydney Water Corporation, Yarra Valley Water, South Australia (Adelaide) and Water Corporation (including urban and regional service areas) which are shown below in Table 14.

Table 14 : Queensland Urban Utilities aggregate cost metrics (Source: QUU 2013/15 Information Template, Unitywater 2013/15 Information Template, NWC National Performance Report 2011/12 (CPI applied))

Metric	Description	Queensland Urban Utilities ($)	Unitywater ($)	Yarra Valley Water ($)	Sydney Water Corporation ($)	Hunter Water Corporation ($)	Water Corporation ($)	South Australia Water - Adelaide ($)
Customers	Total OPEX per connection	1041	1,130	704	638	523	284	245
	Water OPEX per connection	767	737	382	358	236	316	307
	Wastewater OPEX per connection	268	373	322	280	287	249	180
Network size	Total OPEX per km of pipeline	31,700	48,413	26,707	24,877	12,393	15,841	15,576
	Water OPEX per km of pipeline	46,735	34,687	28,200	29,917	11,013	16,977	18,015
	Wastewater OPEX per km of pipeline	16,345	17,575	25,126	20,465	13,813	14,477	12,508
Volume	Total OPEX per ML of sourced water	4,127	9,278	3,734	2,334	1,852	1,540	1,835
	Water OPEX per ML of soured water	3,164	6,099	2,028	1,310	834	900	1,182
	Wastewater OPEX per ML of sourced water	1,107	3,090	1,706	1,024	1,017	639	652

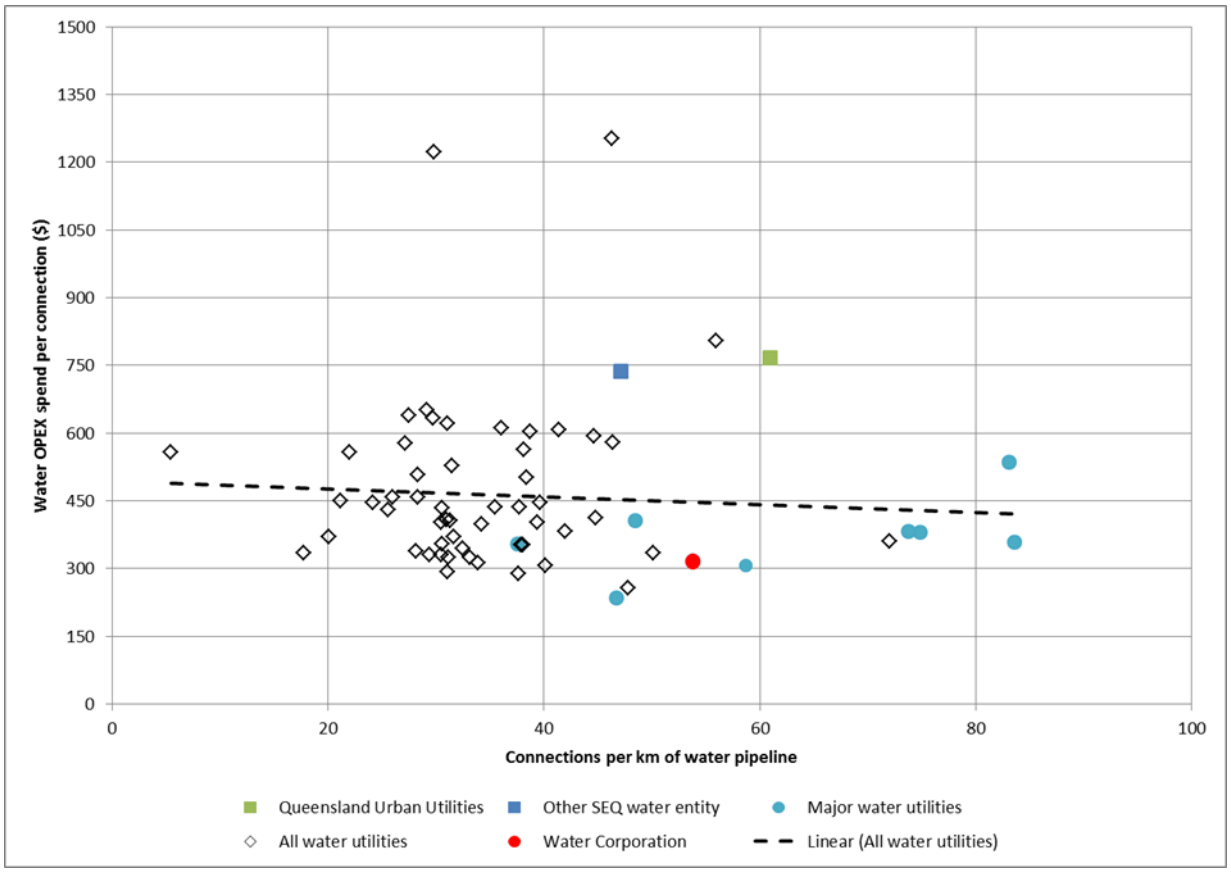
The table shows that Queensland Urban Utilities' operating expenditure for water services is higher than comparable water distributors/retailers in Australia but is consistent with another entity in the same region of Queensland. The opposite is true for Queensland Urban Utilities' operating expenditure for wastewater services. These figures are consistent with values for comparable water distributors/retailers in Australia and lower than another entity in the same region of Queensland.

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 larger networks. In order to show the

relative performance of Queensland Urban Utilities' operating expenditure with its peers a two dimensional normalisation was used to develop a cost curve for water and wastewater services.

In **Figure 4-8** the operating expenditure on water services for a range of Australian water utilities was compared, using data sourced from the National Water Commission National Performance Report 2010-11. Major water entities (ie those defined in the National Water Commission's data as having greater than 100,000 customers) – which have been considered to be industry peers of Queensland Urban Utilities are shown on the graph as blue circles. The red circle highlights Water Corporation (Western Australia) as this utility incorporates both urban and regional/rural areas and is comparative to Queensland Urban Utilities.

Figure 4-8 : Comparison of Queensland Urban Utilities' operating expenditure on water services with other Australian water utilities (Sources: QUU 2013/15 Information Template, Unitywater 2013/15 Information Template, NWC National Performance Report 2011/12 (CPI adjusted – assumed 2013/14 CPI to equate to 2012/13 CPI))

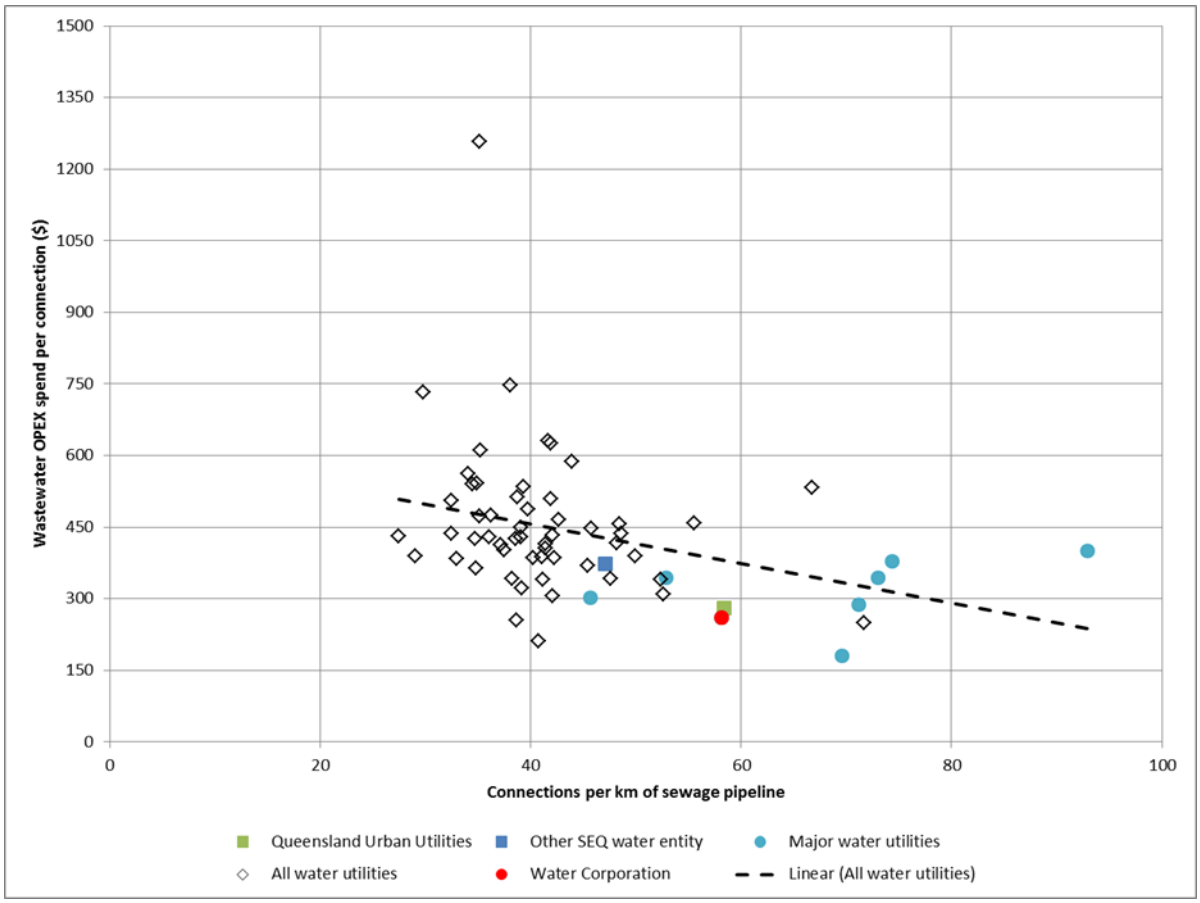


The graph demonstrates that Queensland Urban Utilities' water operating costs are generally higher than similar sized water service providers. The chart shows that Queensland Urban Utilities water operating costs are comparable to the other water distributors/retailers in this region of Queensland. Comparison with the Water Corporation shows that this comparative utility has lower water operating expenditure than Queensland Urban Utilities.

The impact of the bulk water price increases on operating costs is demonstrated by the data contained in the Queensland Urban Utilities 2013-15 Information Template. The bulk water charges are predicted to be 54.0% of the total operating expenditure in the 2013-14 financial year, increasing to 56.6% of the total operating expenditure in the 2014-15 financial year. There is insufficient industry information publicly available for full benchmarking of water operating expenditure excluding bulk water costs to be undertaken, largely as a result of the different water supply chain models used interstate.

Queensland Urban Utilities' wastewater operating expenditure is benchmarked in the following figure. Similar to the operating costs for water, the National Water Commission National Performance Report 2011-12 has been used as a data source for peer organisations; with a cost escalation applied to adjust costs to 2013-14 dollars. The cost escalation has used the CPI for 2012-13 of 2.4% and an assumed CPI for 2013-14 of 2.4%. The major Australian utilities are shown as blue dots and the red dot highlights Water Corporation.

Figure 4-9 : Comparison of Queensland Urban Utilities' operating expenditure on wastewater services with other Australian water utilities (Sources: QUU 2013/15 Information Template, Unitywater 2013/15 Information Template, NWC National Performance Report 2011/12 (CPI adjusted – assumed 2013/14 CPI to equate to 2012/13 CPI))



The chart shows that Queensland Urban Utilities wastewater operating costs are generally lower than similar sized wastewater service providers. Comparison with the Water Corporation shows that Queensland Urban Utilities has very similar wastewater expenditure to its comparative utility.

SKM concludes that Queensland Urban Utilities water operating costs are generally higher than similar sized water service providers largely arising from higher bulk water costs seen by Queensland Urban Utilities over comparator utilities. It is also evident that Queensland Urban Utilities wastewater operating costs are generally lower than similar sized water service providers and similar to Water Corporation.

4.4.3 International benchmarking

International benchmarking has been completed to compare Queensland Urban Utilities with the performance of water utilities operating overseas. A yearly cost escalation index and purchasing power parity conversion rate was applied to the Scottish Water International Benchmarking data to adjust costs to 2013-14 Australian dollars. The CPI adopted for each year was 3%, and the average 2011 purchasing power parity of 0.454627 was used to convert Great British Pounds to Australian Dollars instead of the average exchange rate of 0.62190[20]. The

[20] Pricing power parity 2011 average accessed via: http://stats.oecd.org/Index.aspx?datasetcode=SNA_TABLE4#

Australian water utilities data displayed in Figure 4-8 and Figure 4-9 is displayed again with the international water utilities data to show an overall comparison to Australian trends. SKM has inferred that bulk water costs are included in the total water operating expenditure for the UK water utilities, shown below in the table and graphs. SKM is not able to comment on the percentage that bulk water costs contribute to the total water operating expenditure based on the available data.

The following benchmarking will include operating expenditure for all utilities shown on the graphs above to illustrate UK trends, however the main analysis will focus on comparable utilities for water (Wessex and Southern) and wastewater (Wessex, Northumbrian and Dwr Cymu).

Table 15 below shows a comparison of the operating expenditure for water services of Australian and water utilities in the UK for the year 2013-14. It is evident that the UK water utilities shown below generally have lower operating expenditure for water and wastewater services compared to Queensland Urban Utilities. Although there are several differences between water and wastewater services in Australia and the UK, this table provides some indication of the industry benchmarks in the UK.

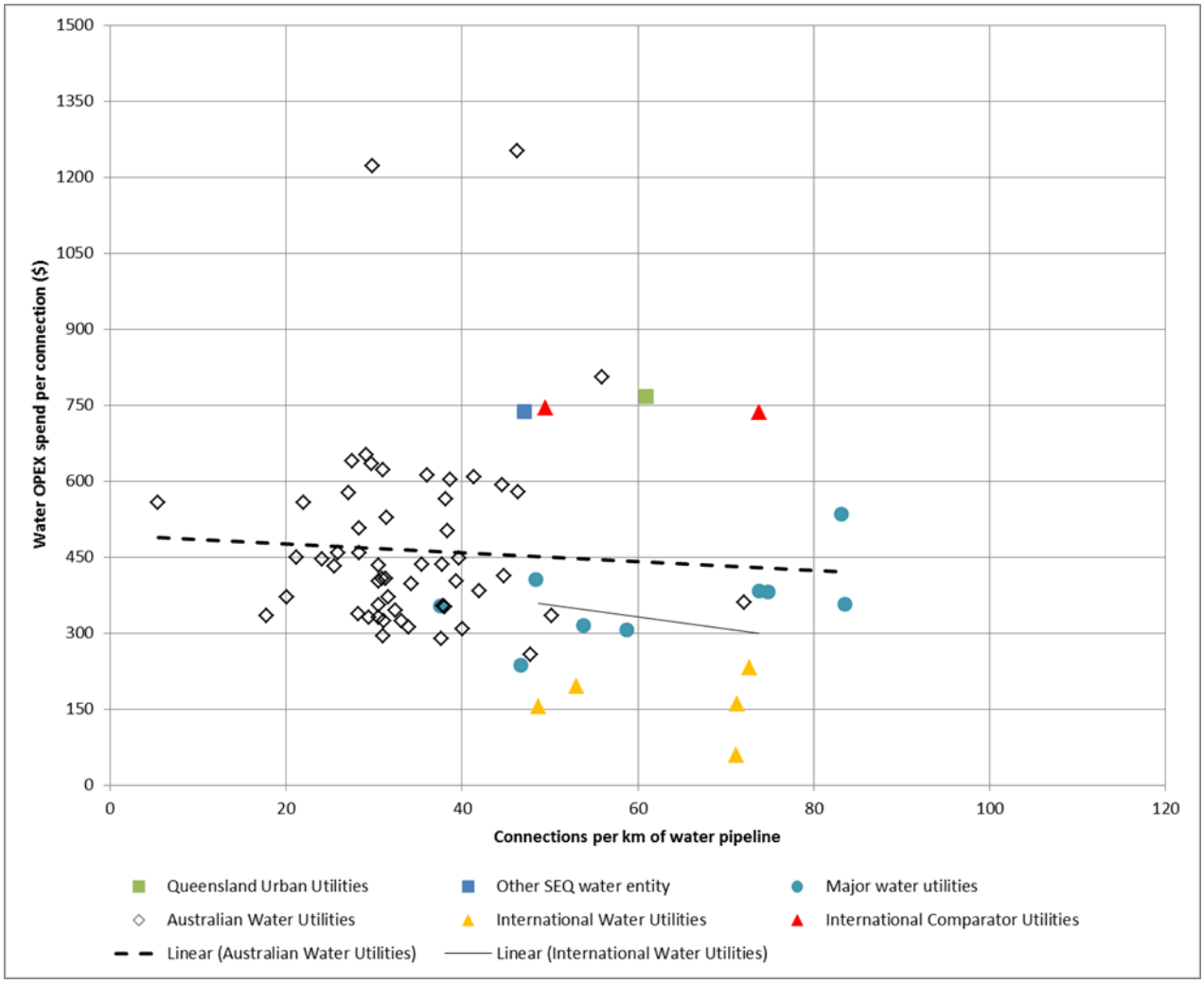
Table 15 : Queensland Urban Utilities and international water utilities aggregate cost metrics (Source: QUU 2013/15 Information Template, Unitywater 2013/15 Information Template, Scottish Water International Benchmarking 2010/2011 v2.xls (Annual CPI of 3% applied))

Entity	Customers		Network size	
	Water OPEX per connection ($AUD/connection)	Wastewater OPEX per connection ($AUD/connection)	Water OPEX per km of pipeline ($AUD/km)	Wastewater OPEX per km of pipeline ($AUD/km)
Queensland Urban Utilities	767	268	46,735	16,345
Unitywater	737	373	34,687	17,575
Wessex	744	218	36,774	14,399
Southern	735	185	54,226	15,316
Dwr Cyrmu	154	426	7,507	30,947
Northumbrian	231	347	16,760	25,230
Anglian	194	234	10,293	13,549
United Utilities	59	162	4,174	11,092
Severn Trent	159	203	11,364	14,002

Figure 4-10 below displays the water services operating expenditure (2013-14) for Queensland Urban Utilities, other Australian water utilities and water utilities operating in the UK which are previously highlighted in the table above.

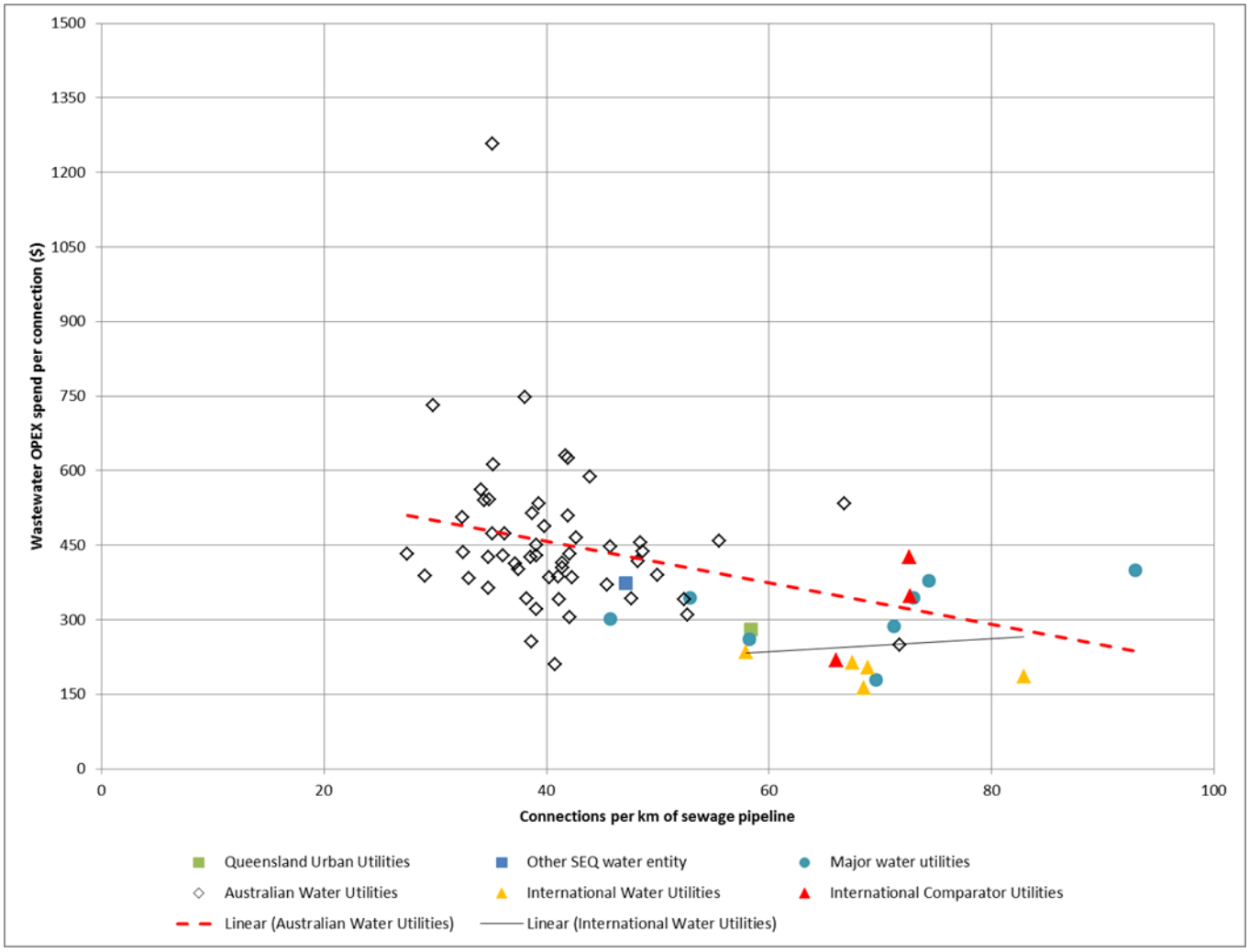
The green square on the graph shows that Queensland Urban Utilities' water operating expenditure is higher than international water utilities. The international water utilities' trend-line is significantly below the Australian water utilities' trend-line, whilst also showing a greater decrease in operating expenditure as the amount of connections per km increases. The two red triangles represent Wessex and Southern utilities which are comparable to Queensland Urban Utilities in terms of number of connections. They are shown to have the highest operating expenditure compared to the other UK utilities, whilst being slightly lower than Queensland Urban Utilities' operating expenditure.

Figure 4-10 : Comparison of Queensland Urban Utilities' operating expenditure on water services with other Australian and international water utilities (Sources: QUU 2013/15 Information Template, Unitywater 2013/15 Information Template, Scottish Water International Benchmarking 2010/2011 v2.xls (Annual CPI of 3% applied))



Queensland Urban Utilities' wastewater operating expenditure is benchmarked against international water utilities in Figure 4-11 for the 2013-14 period. The wastewater operating expenditure for most of the UK utilities is slightly lower than the Queensland Urban Utilities' expenditure. The international trend-line shows an overall lower expenditure than Australian trends, with Queensland Urban Utilities slightly higher than international trends. The international trend-line shows an increase in expenditure as connections per km increase, whilst the Australian trend-line decreases in operating expenditure as connection density increases. The three red triangles represent the most comparable UK utilities (Wessex, Northumbrian and Dwr Cyrmu). These utilities have a greater connection density than Queensland Urban Utilities yet both Northumbrian and Dwr Cyrmu show a greater wastewater operational expenditure per connection. This shows that Queensland Urban Utilities performs well against international benchmarks in terms of wastewater operational expenditure, despite having a lower connection density making it harder to reduce operating expenditure.

Figure 4-11 : Comparison of Queensland Urban Utilities' and operating expenditure on wastewater services with other Australian and international water utilities (Sources: QUU 2013/15 Information Template, Unitywater 2013/15 Information Template, Scottish Water International Benchmarking 2010/2011 v2.xls (Annual CPI of 3% applied))



It is evident from the benchmarking results that Queensland Urban Utilities' water operating expenditure is higher than many water utilities in the UK, whilst wastewater operating expenditure is aligned with UK trends and slightly lower than the UK comparator utilities. Although this is a high level assessment with limitations of comparability, it is evident that water utility operations in the UK are overall more efficient than Australia. SKM is of the opinion that water operating expenditure could be decreased to be further aligned with UK utilities. However, it is noted that wastewater operating expenditure of Queensland Urban Utilities compares well against international benchmarks.

4.5 Sample selection

In undertaking a review of prudency and efficiency of operating expenditure the Authority has selected a sample of costs for detailed investigation. The sample is shown in the following table.

The selection of a sample is based on the categories that attract the largest portion of operating expenditure and includes both fixed and variable costs. Bulk Water costs have been excluded from the sample. Bulk Water costs are determined by other agencies and are not within the control of Queensland Urban Utilities. The sample includes 94.6% and 94.9% of the total forecast operating expenditure (less bulk water and non-regulated services) for 2013-14 and 2014-15 respectively.

Table 16 : Operating expenditure sample selection for Queensland Urban Utilities (Source: 2013/15 Information Template)

Category	Service	Operating Expenditure ($000)	
		2013-14	2014-15
Corporate costs	Drinking water	25,702.8	27,605.9
	Wastewater via sewer	24,477.7	26,363.4
	Trade waste	4,353.2	4,691.2
	Total	54,533.7	58,660.4
Employee costs	Drinking water	31,443.7	31,675.8
	Wastewater via sewer	38,182.1	38,759.3
	Trade waste	6,407.2	6,495.5
	Total	76,033.0	76,930.6
Electricity costs	Drinking water	1,580.8	1,778.9
	Wastewater via sewer	9,596.6	10,751.1
	Trade waste	1,754.3	1,963.5
	Total	12,931.8	14,493.6
Other Materials & Services	Drinking water	55,200.4	57,267.7
	Wastewater via sewer	42,883.5	42,207.1
	Trade waste	7,314.0	7,185.9
	Total	105,397.8	106,660.8
Total Sample		248,896.3	256,745.5
Total operating expenditure, less bulk water and non-regulated services		263,235.2	270,597.4
Percentage		94.6%	94.9%

The four selected categories (corporate costs, employee costs, electricity costs and other materials and services) are discussed separately over the following four sections.

4.6 Corporate costs

This section analyses Queensland Urban Utilities corporate costs in total, by function, for the year-to-year budget changes, and by employee and non-employee costs (Sections 4.6.1 to 4.6.4). It then uses this analysis, with available benchmarks, to assess the prudence and efficiency of corporate costs, and to identify potential efficiency savings (Sections 4.6.5 to 4.6.8), noting that the entity is already targeting 10% savings in controllable operating costs over five years and that a proportion of these savings is likely to come from corporate costs.

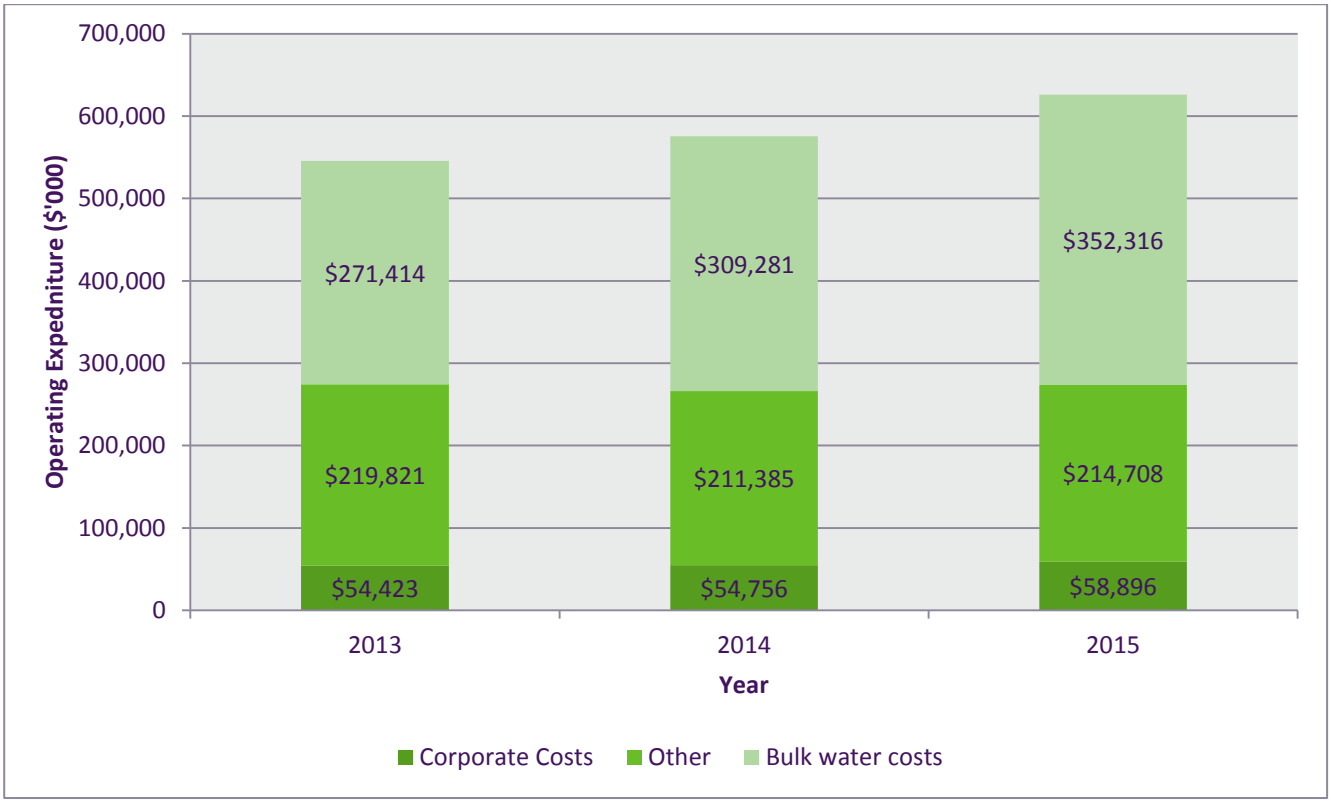
Corporate functions are areas in which:

- Economies of scale from a previous amalgamation can be achieved through a medium-term process of natural attrition and, where available, redundancies and
- Organisations generally have been achieving cost-savings through on-going improvements in information technology and workflow automation

4.6.1 Costs in total

Corporate costs comprised 10.0% of Queensland Urban Utilities' operating costs in 2012-13, and represent 19.8% of operating costs once bulk water costs are excluded. The budgeted/forecast annual changes in corporate costs, bulk water costs, and other operating costs over the next two years are shown in Figure 4-12.

Figure 4-12 : Corporate costs and total operating costs (nominal $'000)



The year-to-year changes in the proportions of corporate costs are shown in Table 17.

Table 17 : Changes in Corporate Costs

	2012-13	2013-14	2014-15
Percentage of Total Operating Costs	10.0	9.5	9.4
Percentage of Total Operating Costs less Bulk Water Costs	19.8	20.6	21.5

While corporate costs represent a declining proportion of total operating costs, they represent an increasing proportion of total operating costs once bulk water costs are excluded.

Definition and comparability

Corporate costs are defined by Queensland Urban Utilities to include the costs of management and administrative functions that generally cannot be directly attributed to the operational costs of delivering water and sewerage services. In the current organisational structure, the corporate functions are:

- Office of the CEO
- Finance, Risk and Procurement Services
- IT Services (excluding ICT Separation Program)
- People and Safety activities
- Strategy and Growth activities
- Marketing and Communications activities

In relation to the comparability of corporate costs between its regulated entities, the Authority's report *SEQ Interim Price Monitoring for 2011-12* (Part B, p.99) noted Queensland Urban Utilities' advice that:

> *"These costs are closely aligned to the Authority's definition of Corporate Costs with the following exceptions: it excludes environmental management costs (these are held within an operations responsibility code); and it includes accounts receivables for sundry charges."*

The report by the Authority's consultant for the 2011-12 Interim Price Monitoring evaluation noted that the functional realignment of corporate services in 2011-12 led to a significant movement of roles between corporate cost centres. This resulted in the transfer of 30.9 FTEs from corporate to operations cost centres. As a result, the consultant found that:

> *"Inconsistencies in the basis of the figures [for corporate employee costs] compromise year-on-year comparisons and benchmarking."*

For the current review, Queensland Urban Utilities' *QCA Interim Price Monitoring Information Return 2013-15* (p.32) noted that:

> *"In previous submissions to the QCA, Queensland Urban Utilities did not separate corporate costs from labour and other materials and services. This was due to the expenditure not being mutually exclusive; therefore Queensland Urban Utilities provided information on corporate costs separately to the submission.*
>
> *Queensland Urban Utilities has now incorporated corporate costs in the data template as part of this information return following off-system analysis and extensive re-categorisation of costs. Historic costs have also been presented for consistency."*

A time series of corporate costs is given in Table 18, with adjustments to the amounts shown in Figure 4-12 to provide a more valid like for like comparison of corporate functions. However, as the notes to the table indicate, there were a number of one-off costs and accounting changes which invalidate a time series comparison prior to 2012-13.

Table 18 : Corporate Costs in Total (nominal $'000)

Component	2010-11 Actual ($'000)	2011-12 Actual ($'000)	2012-13 Est. Actual ($'000)	2013-14 Budget ($'000)	2014-15 Forecast ($'000)
Corporate costs	25,643	34,580	54,423	54,756	58,896
less Non-regulated services corporate costs	-902	-546	-428	-222	-235
Regulated Corporate Costs	**24,741**	**34,034**	**53,994**	**54,534**	**58,660**
less Comparability adjustments#	-1,417	-2,749	-11,614	-10,824	-11,290
Adjusted Aggregate Costs	23,324	31,285	42,380	43,710	47,370
Increase over previous year*		34.1%	35.5%	3.1%	8.4%

Adjusted for the cost of four responsibility centres – CEO Executive Manager's Office (including property management), Procurement, Strategy & Growth, and Office of the COO – that are now accounted for as corporate costs.

* Queensland Urban Utilities advised that the large increases up to 2012-13 were due to the following factors:

Actual cost increases

- $1.4m increase in insurance premiums
- $1.196 m one-off increase in consultancies for Finance, Risk and Procurement (including QCA price monitoring)…
- 2012-13 budget of $0.55m for relocation to Green Square
- 2012-13 budget of $0.5m for insurance claims below the excess
- $0.4m net increase in 2012-13 ICT licences

Changed accounting practices

- a higher proportion of 2012-13 TSA costs allocated to corporate in 2012-13 (not quantified)
- procurement costs no longer allocated across the business (not quantified)

Allocation to non-regulated costs

In the entity's data template, there are separate totals for corporate costs allocated to each of the regulated services: water and wastewater; and to non-regulated services. The corporate costs allocated to the two regulated services in total reconcile with the amounts shown in the Information Return (Table 4-10, p.33).

The excluded costs of non-regulated services comprise a small proportion, as shown in Table 19.

Table 19 : Cost allocations to Unregulated Services

	2010-11 Actual ($'000)	2011-12 Actual ($'000)	2012-13 Est. Actual ($'000)	2013-14 Budget ($'000)	2014-15 Forecast ($'000)
Percentage total costs allocated to unregulated services	2.9%	0.7%	0.6%	0.5%	0.5%
Percentage corporate costs allocated to unregulated services	3.5%	1.6%*	0.8%	0.4%	0.4%

* The major reduction in non-regulated costs in 2011-12 was due to the reclassification of services from 'not regulated' to regulated.

While Table 19 shows that the proportions of corporate and total costs allocated to unregulated services have differed, the variances have declined over time and are not significant. As a consequence, there was no material over-allocation or under-allocation of corporate costs to regulated services. Therefore, the allocations are now appropriate.

4.6.2 Cost of each function

For each corporate function, the costs in the base year (2012-13) and the budgeted/forecast costs in 2013-14 and 2014-15 respectively are shown in Table 20.

Table 20 : Cost of each Corporate Function (nominal $)

Corporate Function	2012-13 Estimated Actual ($'000)	2013-14 Budget ($'000)	2014-15 Forecast ($'000)
Office of CEO	10,610	13,785	15,346
People & Safety	7,681	7,741	8,124
Finance, Risk & Procurement	13,671	12,427	12,832
Information Services	14,753	14,422	15,819
Strategy & Growth	957	967	1,012
Operations – Corporate & Marketing	6,322	5,191	5,528
Total	53,994	54,534	58,660

Queensland Urban Utilities has advised that the increase from 2012-13 to 2013-14, of $540,000 or 1.0%, is due to:

1) Corporate's share of the target reduction of 50 FTEs across all divisions
2) A 3% increase in remuneration costs per employee
3) A 2.5% increase in non-labour costs
4) A decline in business-as-usual costs (of $1,245,000), and an increase in new initiatives and temporary projects (of $2,667,000), as set out in Table 21.

It attributes the increase from 2013-14 to 2014-15, of $4,126,000 or 7.6%, to:

1) No increase in FTEs
2) A 3% increase in remuneration costs per employee
3) A 2.5% increase in non-labour costs
4) An increase in business-as-usual costs (of $6,705,000 for the ICT Investment Program) and a decline in new initiatives and temporary projects (of $3,507,000), as also set out in Table 21.

The temporary budget changes referred to above are detailed in Table 21.

Table 21 : Temporary Budget Changes (nominal $)

Projects/programs	Responsibility Centre	2012-13 Budget ($'000)	2013-14 Budget ($'000)	2014-15 Estimate ($'000)
Business as Usual				
• Competency Framework	People & Safety	0	154	154
• Workforce Planning Enterprise	People & Safety	0	102	102
• Consultancy fees	Finance	1,500	205	205
• ICT Investment Program	ICT	4,306	4,100	10,805
Sub-total		*5,806*	*4,561*	*11,266*
New Initiatives & Temporary Projects				
Improvements				
Efficiency Program	Office of CEO			
• Enterprise Excellence Review – Phase 2		0	1,221	0
• Portfolio Management Office		732	266	0
• Operations Business Improvement Team		302	1,310	0
Payroll Implementation	People & Safety	0	256	0
Leadership Development	People & Safety	200	0	0
Implementation of Culture Map	People & Safety	0	461	461
Safety Program	People & Safety	660	820	750
Marketing & Communications - branding	Retail	217	102	0
Review of Q-Pulse risk management tool	Finance	0	82	0
e-business strategy initial implementations	Retail	150	154	210
Compliance				
EBA 2 + EBA3 Implementation	People & Safety	0	256	0
Sub-total		2,261	4,928	1,421
Total		**8,067**	**9,491**	**12,688**

4.6.3 Employee costs

The largest cost item in the 2012-13 corporate budget was employee costs, which accounted for 45% of overall costs that year. The budgeted/forecast cost for corporate employees is given in Table 22**,** together with a comparison of employee numbers for each function.

Table 22 : Corporate FTEs and Costs

	FTE Numbers		
	2012-13 Budget	**2013-14 Budget**	**2014-15 Estimate**
Office of CEO *	36.6	28.6	Not yet estimated
People & Safety	56.3	56.3	
Finance, Risk & Procurement	79.1	79.1	
Information Services	58.0	47.1	
Customer & Community - Marketing	15.2	15.2	
Operations - Corporate	6.0	10.0	
Strategy & Growth	3.0	5.0	
Total Corporate *	**254.2**	**241.3**	
less vacancy rate & productivity FTEs	-10.3	-8.4	
Total Budgeted FTE No.*	**243.9**	**232.9**	
	Employee Costs (nominal $)		
	2012-13 Budget	**2013-14 Budget**	**2014-15 Estimate**
Total Corporate Employee Costs	$24,434,000	$24,921,000	$24,493,000
Cost per Corporate Employee #	$100,180	$107,003	$105,165
Change from Previous	-	6.8%	-1.7%

* excludes 39 FTEs from the ICT Separation Program, for comparability with cost data

assumes the same number of FTEs in 2014-15 as in 2013-14

As indicated above, the budgeted and estimated employee costs for Queensland Urban Utilities as a whole were based on a 3% reduction in FTEs in 2013-14, no increase in FTEs in 2014-15 (but a potential reduction to help fund efficiency savings), and a 3% unit labour cost escalation in each of those years. It is noted that these labour cost escalations (and any productivity offsets) are subject to the outcome of current negotiations on a new Certified Agreement.

It is noted that the corporate employee costs include salary and salary-on-costs, such as superannuation, payroll tax, workers' compensation, leave provisions and overtime. SKM considers that the average corporate employee costs appear reasonable.

4.6.4 Non-employee costs

For the remaining (non-employee) categories of corporate costs, a time series comparison is given in Table 23.

Table 23 : Non-labour Corporate Costs (nominal $) by Function as Provided by QUU

	Contractor costs			Licence & Regulatory costs			Other Materials & Services		
	2012-13 Est. Actual $'000	**2013-14 Budget $'000**	**2014-15 Forecast $'000**	**2012-13 Est. Actual $'000**	**2013-14 Budget $'000**	**2014-15 Forecast $'000**	**2012-13 Est. Actual $'000**	**2013-14 Budget $'000**	**2014-15 Forecast $'000**
Office of CEO	600	3,239	3,740	-	-	-	6,431	7,233	8,351
People & Safety	1,388	-	-	-	-	-	1,544	3,004	3,468
Finance, Risk & Procurement	1,196	119	117	677	694	801	3,158	2,905	3,353
Information Services	408	-	-	-	-	-	10,322	9,578	11,057

	Contractor costs			Licence & Regulatory costs			Other Materials & Services		
	2012-13 Est. Actual $'000	2013-14 Budget $'000	2014-15 Forecast $'000	2012-13 Est. Actual $'000	2013-14 Budget $'000	2014-15 Forecast $'000	2012-13 Est. Actual $'000	2013-14 Budget $'000	2014-15 Forecast $'000
Strategy & Growth	97	-	-	-	-	-	54	363	419
Operations – Corporate & Marketing	1,108	-	-	-	-	-	2,412	2,478	2,861
Total	**4,798**	**3,358**	**3,856**	**677**	**694**	**801**	**23,290**	**25,561**	**29,510**
% of Total Corporate	8.9%	6.2%	6.6%	1.3%	1.3%	1.4%	44.3%	46.9%	50.3%
Change from Previous		-30.0%	14.8%		2.5%	15.4%		9.8%	15.4%
$/FTE							82,326	109,751	126,707

The recurrent costs in each of the three categories have been escalated by 2.5% for each year. The assumption that non-labour costs would escalate by inflation, as measured by the CPI, was based on a consultant's recommendation. The CPI estimate of 2.5% aligns with the November 2012 forecast by the Reserve Bank of Australia used by the entity. (It is noted that the Reserve Bank of Australia has since continued to forecast CPI inflation over the short-term at this mid-point of its 2-3% target range for monetary policy - and that both the Commonwealth and Queensland budgets for 2013-14 have adopted the 2.5% assumption for CPI inflation over the medium-term.).

SKM considers the use of CPI as the index for non-labour costs to be reasonable and in line with industry practice, and the proposed escalation factor of 2.5% also to be reasonable and consistent with the forecast movement in similar costs in the Australian market to 2014-15.

In 2012-13, Other Material and Services comprised almost as large a proportion of corporate costs (44.3%) as employee costs. In 2013-14 and 2014-15, this cost category is forecast to overtake employee costs as the largest component of corporate costs.

4.6.5 Prudence and efficiency

To assess whether Queensland Urban Utilities' budgeted and estimated corporate costs for 2013-14 and 2014-15 are at a level which is prudent and efficient, they were compared with:

1) The entity's previous cost levels - having regard for organisational changes, changes in accounting treatment, and cost-saving projects
2) A range of corporate costs ratios incurred by other utilities - having regard for jurisdictional and other factors which would affect the validity of those comparisons
3) A bottom-up review of corporate functions and costs, compared with those of similar organisations, to the extent that relevant and reliable information was available

In undertaking this analysis, SKM was aware of, and made allowances for, the limitations of benchmarking. These limitations include:

4) Differences in organisational structures and in the definition of corporate costs between Australian utilities
5) The relative size and maturity of the organisations
6) The effects of inflation when comparing costs in absolute terms.

SKM also noted, the results of the Authority's 2012-13 review in which the Authority:

- Agreed that the entity should be moving towards the 10-12% benchmark adopted by the New South Wales' Council on the Cost and Quality of Government (for corporate costs as a proportion of total operating costs including bulk water costs)
- Proposed to retain the recommended savings of $2.95m in its draft report
- Noted the entity's initiative to reduce non-bulk operating costs by 10% relative to the 2012-13 budget

4.6.6 Top-down benchmarks

For the SEQ retail distribution entities, the ratio of corporate costs to total operating costs after bulk water costs are excluded provides a more useful 'top down' indicator of whether their corporate costs are efficient when compared with those of water utilities whose bulk water costs are significantly lower.

A comparison of the entity's corporate costs as a proportion of operating costs with other urban water utilities in Australia is as follows:

Table 24 : Corporate cost comparison

Utility	Size (OPEX$)	Corporate Costs/Operating Costs	Comment
Sydney Water[21]	$901 M	19.8%	Excludes bulk water costs 2011-12 actuals IPART review found scope for significant efficiency gains
Queensland Urban Utilities[22]	$274 M	19.8%	Excludes bulk water costs 2012-13 estimated actuals Corporate costs said to align with QCA definition
Allconnex Water[23]	$380 M	14.3%	Excludes bulk water costs 2011-12 budget In transition from Council SLAs
Unitywater[24]	$243 M	33.8%	Excludes bulk water costs 2013-14 forecast Corporate costs are said to align with QCA definition
Hunter Water[25]	$122 M	28.8%	Includes customer service function IPART review sought continuing efficiency of 0.25%, including from upgrading business systems

(Comparisons are not available for the three Melbourne utilities as the ESC review has not gone to this level.)

Reviews by IPART's consultants generally found there was scope for cost savings, including at Hunter Water where the Operating Costs per Connection are significantly lower than at Queensland Urban Utilities and Unitywater. (Accordingly, it is likely that the definition of corporate costs used by Hunter Water is wider than that used by the QCA, such that comparisons of corporate costs to operating costs would not be valid.)

[21] IPART, *Final Report - Review of prices for Sydney Water Corporation's water, sewerage, stormwater drainage and other services from 1 July 2012 to 30 June 2016*
[22] *Queensland Urban Utilities QCA Information Requirements Templates 2013_14 nfp*, 2 July 2013
[23] QCA, *SEQ Interim Price Monitoring for 2011/12 Part B*.
[24] *Unitywater QCA Information Requirements Template_2013-15, July 2013*
[25] IPART, *Final Report - Review of prices of Hunter Water Corporation's water, sewerage, stormwater drainage and other services from 1 July 2013 to 30 June 2017*

4.6.7 Cost escalations

Employee costs

From Table 25, the average cost of a corporate employee has been forecast to increase by 6.8% in 2013-14 (from $100,180 to $107,003) in 2013-14 and, on the assumption of no decrease in FTEs, to fall by 1.7% in 2014-15.

Applying the 3% escalation to the 2012-13 base of $100,180 leads to the adjustment indicated in Table 4.21.

Table 25 : Budget Cost Adjustments for Corporate Employees (nominal $)

	2012-13	2013-14
Cost per employee – from Table 4-18	$100,180	$107,003
Cost per employee – escalated by 3%	$100,180	$103,185
Number of employees – from Table 4-18	243.9	232.9
Budgeted cost – from Table 4-18	$24,434,000	$24,921,000
Adjusted cost	$24,434,000	$24,031,786
Proposed adjustment of QUU Budget on Corporate Employee costs		**$889,214**

Non-employee costs

Table 26 shows the average cost of Other Materials and Services per corporate employee in 2012-13 to be $82,326, and to increase substantially in following years. However, it is inappropriate to apply an escalation to this figure as it combines 'business as usual' costs with New Initiatives and Temporary Projects (to which escalations are not applied).

Reconciling the year-to-year changes and escalations in corporate non-labour costs gives the results in Table 4-22.

Table 26 : Escalation of Non-Labour Costs (nominal $)

		Source
2012-13 Estimate Actual Non-labour Costs Total	$28,765,000	Table 4.19 • Other Materials & Services $23,290,000 • Contractors $4,798,000 • Licence & Regulatory $677,000
less efficiency (3%, excluding Enterprise Efficiency Program of $732,000 and $302,000)	-$832,000	Table 4.17
plus base escalation * (2.5% of $20,698,000)	$517,000	Budget of $28,765,000 *less* $8,067,000 New Initiatives & Temporary Projects
plus 2013-14 net increase in New Initiatives	$1,424,000	New Initiatives/ Temporary Projects/ Changes in BAU spreadsheet
Revised 2012-13 Estimate Actual Non-labour Costs Total	***$29,874,000***	
***Less* 2013-14 Budget Non-labour Costs Total**	**$29,613,000**	Table 4.19 • Other Materials & Services $25,561,000 • Contractors $3,358,000 • Licence & Regulatory $694,000

		Source
= Efficiency Saving to be Realised	***$261,000[26]***	
2013-14 Budget Non-labour Costs Total	**$29,613,000**	**Table 4.19**
plus base escalation * (2.5% of $20,122,000)	$503,000	Budget of $29,613,000 *less* $9,491,000 New Initiatives & Temporary Projects
plus 2014-15 net increase in New Initiatives	$3,197,000	New Initiatives/ Temporary Projects/ Changes in BAU spreadsheet
Revised 2013-14 Budget Non-labour Costs	***$33,313,000***	
***Less* 2014-15 Forecast Non-labour Costs Total**	**$34,167,000**	Table 4.19 • Other Materials & Services $29,510,000 • Contractors $3,856,000 • Licence & Regulatory $801,000
= SKM Identified Efficiency Saving	**$854,000**	

From this reconciliation, it is evident that the entity will achieve internal saving of $261,000 in 2013-14, and the entity's non-employee corporate costs should be adjusted downwards by $854,000 in 2014-15.

4.6.8 Bottom-up review

Employee Costs

Queensland Urban Utilities 2013-14 budget provides for 232.9 corporate employees (FTEs), which is 18.8% of its total FTEs of 1,238. As indicated in Table 4.18, the entity has not translated into FTEs the further savings it has targeted for 2014-15. Taking account of the 3% escalation, the 1.7% decline in the budget translates to an anticipated saving of 11 FTEs across the corporate functions (4.7% of 232.9). However, this is not a savings adjustment as it is already accounted for in the 2014-15 estimates.

People and safety

As staff numbers are the main driver of the size of this function, this function is best compared using the ratio of staff to total staff in the entity. For Queensland Urban Utilities, the ratio is 4.5% - that is, 56.3 HR staff for 1,238 total staff.

The QCA review of SunWater by Deloitte in 2011 drew on a database of 74 utilities in the USA and found that SunWater's ratio of 2% (that is, 10 HR staff for 497 total employees) was inefficient by a factor of 1 FTE, while indicating that SunWater also had the equivalent of 10 FTEs as HR contractors. SKM also notes that SunWater had 1 Safety FTE outside its HR function. Adjusting for these differences gives a local benchmark of 4.02% (20 HR staff per 497 total staff), and a US-based benchmark of 1.8% (albeit for larger utilities). As Queensland Urban Utilities is more than twice the size of SunWater, it should exhibit some economies of scale in the People and Safety function.

Applying the local benchmark of 4.02% to the expected overall staffing of 1,188 in 2013-14 equates to this function requiring 47.8 FTEs. Accordingly, SKM considers that there is an efficiency saving potential of 8.5 FTEs in the People and Safety function.

Senior management

In terms of senior management remuneration, as disclosed in the 2011-12 annual report, SKM finds that it is in line with that of other large utilities in South-east Queensland.

[26] Note: The $261,000 is not a recommended downward adjustment; it is a saving that will be achieved by the entity in its own course of operations.

In terms of the size of the senior management team, Queensland Urban Utilities has nine key management personnel compared with, for example, the 10 at Sydney Water, which IPART's consultants found to be excessive. While the number of senior managers at Queensland Urban Utilities is high, it is not excessive in comparison with other utilities that are of a similar size and stage of development. At the same time, as the organisation matures, its senior management team would be expected to decline towards the size of Unitywater's, which has seven 'key management personnel'.

Finance

The entity's Finance function has 33% of the budgeted FTEs for corporate and 23% of corporate operating costs. However, as it includes the sub-functions of Risk and Procurement Services, SKM is unable to make a valid comparison in the absence of a full review of its scope.

SKM notes that the planned implementation of a new Enterprise Resource Planning (ERP) system from 2014-15 should facilitate greater efficiencies through workflow automation and less manual processing. In particular, the Third Horizon review discussed in the previous Halcrow review found that corporate costs could be reduced by an estimated $700,000 through optimising the Procure to Pay processes. This saving should start to accrue after the ERP system is implemented. A business case estimating the benefits and costs of a new ERP system is yet to be prepared, although a cost allowance has been included in the ICT Investment Program.

As with People and Safety, SKM expects that savings can be realised in this and other corporate functions as the entity matures, noting that some of those savings would require investments in new systems.

Non-employee costs

The major costs in this account would normally be the variable or semi-variable employee overheads, including the cost of rent, building services, IT hardware and software, supplies and stationery. However, as no detailed benchmarking information is available in this cost category, no bottom-up review has been carried out for non-employee costs.

Licence and regulatory costs

These costs are minor and are largely not controllable.

4.6.9 Conclusion

SKM finds that there is scope for Queensland Urban Utilities to achieve additional savings from its 2013-14 budget and its 2014-15 estimates for corporate costs, as shown in **Table 27.**

Table 27 : Suggested Adjustments to Budget/Estimates (nominal $)

	2013-14	2014-15
Adjusted labour cost escalations – Table 4.21	$889,000	$0
Adjusted non-labour escalations – Table 4-22		$854,000
Reduction of FTEs *	$877,000	$0
Total Adjustments	$1,766,000	$854,000

* 8.5 FTEs in People and Safety at adjusted average cost of $103,185. The reduction of 10 Corporate FTEs in 2014-15 is already taken up in that year's Budget Estimate.

4.7 Employee expenses

This section analyses Queensland Urban Utilities' employee expenses, including consideration of prudency, efficiency, delivery of service, market conditions and a comparison against savings targets. It should be noted

that this section excludes those employee expenses related to corporate costs, in accordance with reporting requirements to the Authority.

4.7.1 Overview of operating expenditure

The labour cost budget for this item includes all staff Queensland Urban Utilities employs in the operation of its water supply, wastewater treatment business and corporate offices.

For the period of 2011-12 to 2012-13, Queensland Urban Utilities employee expenses amounted to $157 M, whilst the forecast employee expenses allocations for the period of 2013-15 to be $152 M, which represents a decrease of 3.0%. Table 28 shows the previous and proposed employee expenses for Queensland Urban Utilities between 2010-11 and 2014-15.

Table 28 : 2013-15 Submission employee expenses ($'000)

Source	2010-11	2011-12	2012-13	2013-14	2014-15
Information Template[27]	78,733	82,631	77,584	76,033	76,931
Information Return[28]	78,733	82,631	73,624[B] 77,584[F]	76,033[B]	76,931[F]

B = budgeted, F = forecasted

A more detailed breakdown of the employee and contractor expenses (excluding non-regulated expenses) for Queensland Urban Utilities is contained in Table 29.

Table 29 : 2013-15 Submission employee expenses by service ($'000)

Service	Category	2010-11	2011-12	2012-13	2013-14	2014-15
Drinking water	Employee expenses	25,397	31,208	31,967	31,181	31,523
	Contractor expenses	298	257	564	263	153
Wastewater via sewer	Employee expenses	43,733	42,634	37,380	38,071	38,743
	Contractor expenses	1,198	980	1,035	111	17
Trade waste	Employee expenses	7,934	7,377	6,462	6,387	6,488
	Contractor expenses	173	176	176	21	7
All services	*Employee expenses*	*77,064*	*81,219*	*75,809*	*75,639*	*76,754*
All services	*Contractor expenses*	*1,669*	*1,413*	*1,775*	*395*	*177*
TOTAL		78,733	82,631	77,584	76,033	76,931

These forecast allocations for employee and contactor expenses are shown in Figure 4-11 and Figure 4-12. Employee expenses for the period 2012-13 to 2014-15 are relatively constant, whilst the allocations for contractor services decrease significantly over the same period.

Queensland Urban Utilities has advised that the marked variance in the contractor expenses is not due to a corporate decision to use less external resources but more due to the method by which these costs are forecast. For reporting purposes to the Authority, Queensland Urban Utilities defines contractors as Non-PAYG contractors (ie directly filling an internal role) and consultancies. Sub-contractors are regarded as external resources that generally provide their own materials and equipment, and these costs are forecast as Other Materials and Services.

[27] *QCA Information Requirements Templates 2013_14 nfp*, 2 July 2013
[28] *QCA Information Return 2013-15 (Signed)*, 27 June 2013

Queensland Urban Utilities is anticipating that the use of external resources will increase over the period 2012-13 to 2014-15 as the focus of the asset management program moves to 70% of maintenance activity being planned, and the most cost effective solution is implemented. Figure 4-13 illustrates that Queensland Urban Utilities is not planning to use contract staff as a direct alternative to a FTE positions, but will be contracting service delivery to external providers which be captured as sub-contractor costs under Other Materials and Services (refer Section 4.9).

Figure 4-13 : Employee Expenses from 2013-15 submission

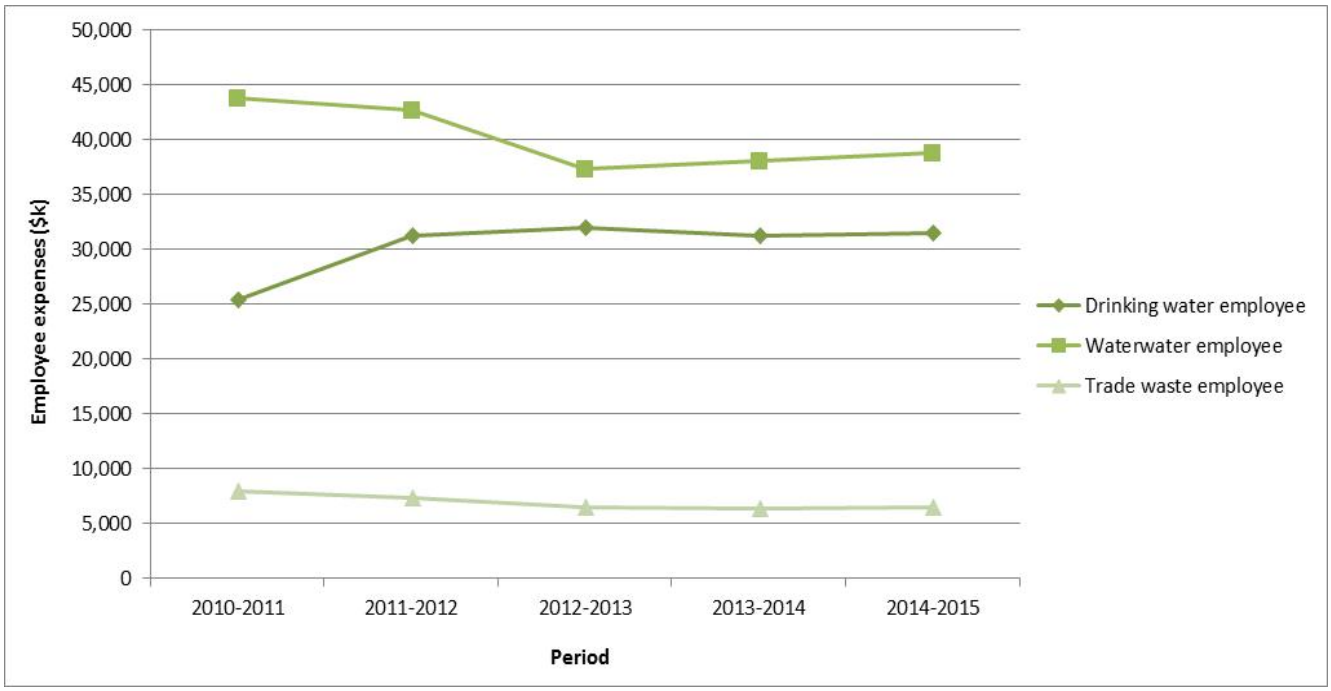
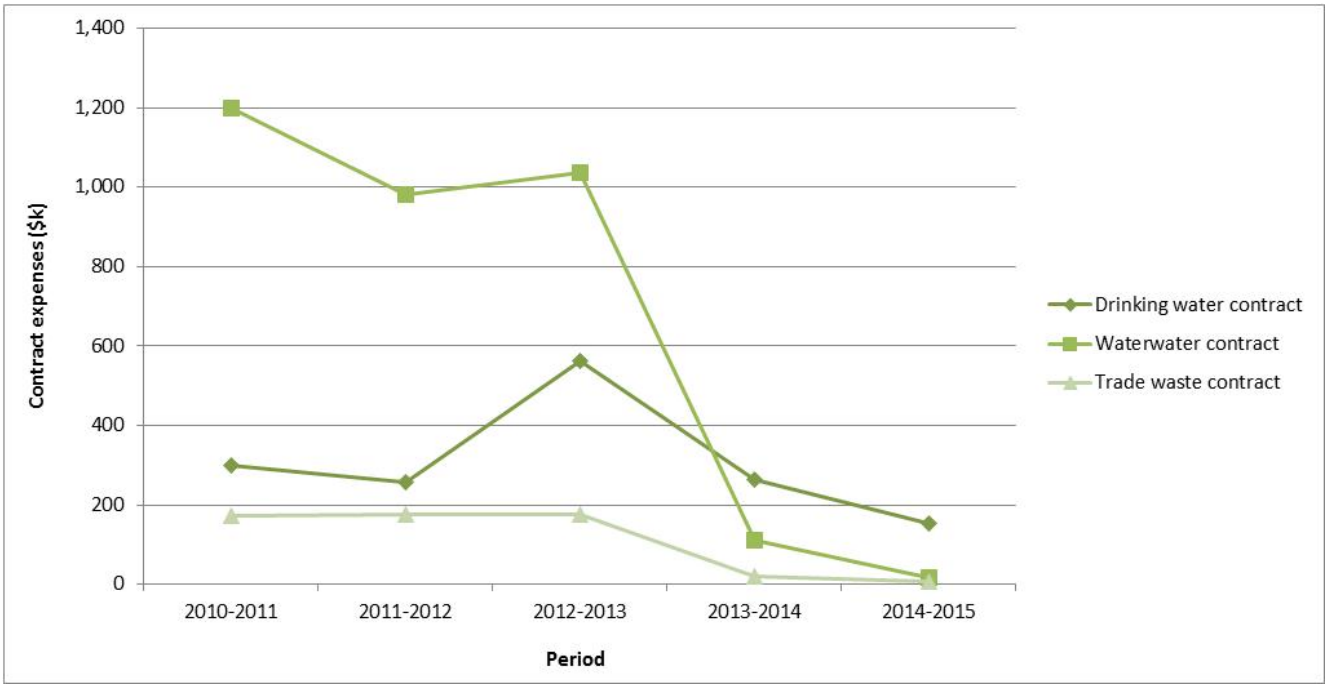


Figure 4-14 : Contractor Expenses from 2013-15 submission



The annual variances are shown in Table 30 for both employee and contractor expenses for each service.

Table 30 : Dollar ($'000) and percentage (%) variances on the previous year's expenditure

Service	Category	2010/11-2011/12		2011/12-2012/13		2012/13-2013/14		2013/14-2014/15	
		$	%	$	%	$	%	$	%
Drinking water	Employees	5,811	22.9	759	2.4	-787	-2.5	342	1.1
	Contractors	-41	-13.8	307	119.5	-301	-53.3	-110	-41.8
Wastewater via sewer	Employee s	-1,099	-2.5	-5,254	-12.3	691	1.9	672	1.8
	Contractors	-218	-18.2	55	5.7	-924	-89.3	-95	-85.1
Trade waste	Employees	-557	-7.0	-915	-12.4	-75	-1.2	102	1.6
	Contractors	3	1.7	0	0.3	-156	-88.4	-13	-64.5
All services	*Employees*	4,155	5.4	*-5,410*	-6.7	-170	-0.2	*1,115*	*1.5*
All services	*Contractors*	-256	*-15.3*	362	25.6	-1,380	-77.7	*-218*	*-55.2*
TOTAL		**3,897**	**4.9**	**-5,047**	**-6.1**	**-1,551**	**-2.0**	898	1.2

SKM notes that Queensland Urban Utilities stated that *"… the increase in labour expenses from $73.6 million in the 2012-13 budget to $76 million budget in 2013-14 is partly due the result of a decrease in the capitalisation of labour. From 2012-13 to 2013-14, we have altered our capitalisation policies, resulting in a reduced amount of labour expenditure being capitalised … the forecast for 2014-15 has been derived by applying cost indexation [3%] to the 2013-14 budget, no labour growth, a reduction for completed new initiatives/temporary projects and an assignment of 60% of the efficiency factor."*[29]

Queensland Urban Utilities has advised that while the submission stated a change in capitalisation policy, SKM considers that it was not so much a change in policy but rather a change in its application. This resulted in more labour being capitalised in 2012/13 than was budgeted for. There is no link between the application of the capitalisation of labour and the number of FTEs employed by Queensland Urban Utilities. The capitalisation is a reflection of the capital works undertaken by the business. Any differences between the budget and the forecast capital works result in different capitalisation amounts.[30]

The operational expenditure numbers provided in the Information Return are consistent with those shown in the Microsoft Excel Information Requirement Template provided.

4.7.2 Provided documentation

The key reference documents used for this review are:

- QCA Information Requirements Templates 2013_14 nfp, Queensland Urban Utilities, 2 July 2013
- QCA Information Return 2013-15 (Signed) Not for Publication, Queensland Urban Utilities, 27 June 2013
- 2012-13 Q3 Forecast.xlsm, Queensland Urban Utilities, 20 June 2013
- 2013-14 Budget.xlsm, Queensland Urban Utilities, 20 June 2013
- Commissioning Model 5yr Summary 2014.xlsm, Queensland Urban Utilities, 3 May 2013
- Comparison 2012 Submission vs. Current.xlsm, Queensland Urban Utilities, 26 June 2013
- DevChrgs Model.xlsm, Queensland Urban Utilities, 13 May 2013
- Growth data sets V7a.xls, Queensland Urban Utilities, 12 June 2013
- Master_Pricing_Sundry_Charges_13-14(excel2003).xls, Queensland Urban Utilities, 26 June 2013
- Master_Pricing_Utility_Charges_13-14final.xlsm, Queensland Urban Utilities, 20 June 2013

[29] Queensland Urban Utilities, *QCA Interim Price Monitoring: Information Return 2013-15*, 28 June 2013, section 4.2.5.3, p. 31
[30] Queensland Urban Utilities response to SKM draft report, 23 August 2013

- Sewerage Full Cost Model 2013-14 v2a.xlsm, Queensland Urban Utilities, 28 June 2012
- Asset Mgmt Policy, Queensland Urban Utilities, 11 June 2013
- AWA Asset management technical meeting PPT PDF, Queensland Urban Utilities, 26 June 2013
- Project closure report (Cost Escalation)-Final-9 Aug 2012, Queensland Urban Utilities, 20 June 2013
- WSAA_QUU_Final_Utility_Report (3), Queensland Urban Utilities, 12 June 2013
- Annual Report 2011-12, Queensland Urban Utilities, 13 June 2013
- Corporate Plan 2012-17, Queensland Urban Utilities, 13 June 2013
- Water Netserv Plan Part A, Queensland Urban Utilities, 13 June 2013

4.7.3 Prudency

SKM understands that the expenditure on employee costs is used to meet the following driver categories:

- Legal obligations
- Operations and maintenance of existing infrastructure

Queensland Urban Utilities 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 Queensland Urban Utilities is required to fulfil its obligations and therefore SKM is of the opinion that this expenditure is prudent.

4.7.4 Efficiency

Queensland Urban Utilities has applied a global 3% efficiency target to all controllable costs across the business, including labour costs across all divisions. This target has been included in the allocations for the 2013 - 14 operational expenditure forecast. However, the actual programs for achieving this target have not yet been established, and therefore this efficiency factor has been applied broadly across the labour costs.

4.7.4.1 Calculation of costs

The labour requirements for the 2013-14 forecast has been based on changes to the 2012-13 staffing levels, with consideration of two indices - growth index and a labour cost index.

Queensland Urban Utilities stated in its Information Return that *"… no growth indexation has been applied to labour costs for 2014 - 15."*[31] This is supported by anecdotal evidence provided by Queensland Urban Utilities staff that there is currently a policy of no additional FTEs in place.

In response to an SKM Request For Information, the calculation of the number of FTEs for the 2013-14 budget was based on adjustments to the 2012-13 staffing levels, with adjustments for vacancies and a productivity factor. Queensland Urban Utilities has advised[32] that:

- The 2012-13 budget development included a vacancy rate of 3.5% that was adjusted through 'FTE numbers' and 'Labour costs'. The Executive Leadership Team also agreed on a further productivity target of $1.0 million that was removed from the budget. FTE numbers were not adjusted for the further $1.0 million reduction.
- In developing the 2013-2014 budget the vacancy rate and further productivity target were aggregated and agree with the ELT as 4.5% (3.5% plus a further 1% ($1.0 million on a net labour budget of $100 M)). This was adjusted and aligned through both the 'FTE numbers and Labour Costs' to ensure consistency of application.

[31] Queensland Urban Utilities, *QCA Interim Price Monitoring: Information Return 2013-15*, 28 June 2013, p. 30.
[32] Response to RFI QUU 035 of 6 August 2013

- Further efficiency targets of 3% of FTE's and Labour Costs were also included in the 2013-14 budget, ie on a year-on-year basis the labour costs reduce by 3% as the 4.5% 'vacancy rate and further productivity target' is consistent across both 2012-13 and 2013-14.

Three factors that directly affected the staffing levels for 2013-14 are:

- Acquisition of SAS Laboratories (a non-regulated service)
- Reduction in the number of temporary FTEs associated with the completion of the ICT Separation Program
- Targeted reduction of 50 FTEs as part of the efficiency targets of 3% of total operating costs

The development of the budget FTEs for the 2013-14 forecast as presented by Queensland Urban Utilities is shown in Table 31.

Table 31 : 2013-14 FTEs calculation

Area	Area of activity	2012-13	2013-14	Variance	% Variance
Corporate	Office of the Chief Executive Officer	75.6	28.6	-47.0	-62.6
	People and Safety	56.3	56.3	0.0	0.0
	Finance	79.1	79.1	0.0	0.0
	ICT	58.0	47.1	-10.9	-18.8
	Customer and Community - Marketing	15.2	15.2	0.0	0.0
	Operations - Corporate	6.0	10.0	4.0	66.7
	Strategy and Growth	3.0	5.0	2.0	66.7
	Subtotal	293.2	*241.3*	*-51.9*	*-17.7*
Other	Customer and Community	150.0	150.0	0.0	0.0
	Operations	896.8	864.7	-32.1	-3.6
	SAS Laboratories	0.0	40.7	40.7	-
	Subtotal	1,046.8	*1,055.4*	*8.6*	*0.8*
Forecast	**Total FTEs**	**1,340.0**	**1,296.7**	**-43.3**	**-3.2**
	Vacancy rate	3.5%	3.5%		
	Productivity factor	-	1.0%		
	Budgeted FTEs	**1,293.1**	**1,238.3**	**-54.8**	**-4.2**

SKM noted that the reductions in FTEs detailed in the Information Return does not reconcile with the details shown in Table 31, but does have the same net reduction in FTEs.

Queensland Urban Utilities stated that there were:

- Reduction of 50 FTEs as part of efficiency target of 3% reduction in operating costs
- Reduction of 39 temporary FTEs associated with completion of the ICT Separation Program
- Additional 34 FTEs associated with acquisition of SAS Laboratories

Queensland Urban Utilities has advised that it combined the FTEs from the SAS Laboratories with the small Goodna laboratory facility to include 40.7 FTEs in the 2013-14 forecast. This represents a significant increase in the number of FTEs because SAS Laboratories was not included in the 2012-13 budget. The information included in the QCA template for 2012-13 is based on the Q3 forecast for 2012-13. At that time, the purchase of SAS Laboratories was known and therefore the costs associated with SAS Laboratories and its employees were included.

SAS Laboratories employee costs are directly allocated to non-regulated services.

Queensland Urban Utilities advised that *"… through efficiencies there is an expectation of lower FTEs in 2014-15 but the split between efficiencies derived from labour and materials and services is not sufficiently formed to derive FTE numbers. We have targeted labour expense efficiencies in the 2014-15 forecast but how many FTEs this will result in depends upon which staff it relates to*."[33]

SKM noted that Queensland Urban Utilities has retained 15 FTEs for *Customer and Community - Marketing*, and increased the number of FTEs for *Operations - Corporate and Strategy and Growth*. Queensland Urban Utilities has advised that "*… the 15 FTEs are in the Marketing and Communications Team, and undertake more than solely marketing activities. This responsibility centre was separated out in the identification of corporate FTEs to satisfy the QCA Information Requirements on corporate costs –*

- *Brand advertising and corporate image making;*
- *Corporate/community sponsorships and donations;*
- *Internal communication.*

This team encompasses Customer and Community Engagement, Integrated Communication and Marketing, Customer Research Services, Media Relations (including Social Media) and Internal Communication.

Marketing and Communications activities fit into four broad categories:

- *Meet legislative requirements (e.g. in relation to pricing notification, environmental notifications, customer notifications; preparation of public documents and reports; billing communication and tenant advisory notices)*
- *Meeting requirements of Customer Service Standards (e.g. notification of planned and unplanned service outages; community engagement and consultation associated with infrastructure major and rolling project planning and delivery)*
- *Reducing cost to serve (e.g. e-business strategy, internal communication to support organisational change programs)*
- *Reputation and stakeholder management (e.g. issues and crisis management, media relations, stakeholder engagement, strategic communication advice)*

Performance of individual staff members is documented in annual Performance Plans (PfPs), and aligned to Key Performance Indicators outlined in the Queensland Urban Utilities Corporate Plan. Specifically, these relate to the Brand Index score, Corporate Reputation Index score, Brand Driver Scores for Value, Reliability, Transparency and Customer Focus. Media relations staff also have individual Key Performance Indicators around the number of positive media stories generated per month, and timeliness of daily media reports."[34]

The 2013-14 budget has been based on a breakdown of salaries and overtime costs for FTEs in each district, together with regulatory journal adjustments for labour originally captured under Other Materials and Services, and some relevant corporate costs.

These costs have been broken down across the five product areas:

1) Water reticulation system
2) Sewerage
3) Asset creation
4) Non-regulated
5) Support services

[33] Advice received from Queensland Urban Utilities in response to RFI QUU 014-018 17 July 2013
[34] Response to RFI QUU 035 of 6 August 2013

In generating the Employee Expenses budget for 2013-14, asset creation and support services are removed as this labour is accounted for elsewhere.

Table 32 : 2013-14 Employee Expenses budget (values in $)

Area	Water reticulation	Sewerage	Total regulated	Non-regulated	Total
Brisbane	21,446,381	31,578,278	53,024,659	4,116,493	57,141,152
Ipswich	6,268,784	8,350,108	14,618,892	10,570	14,629,462
Lockyer Valley	1,339,829	1,413,424	2,753,253	1,506	2,754,759
Scenic Rim	1,217,538	2,008,823	3,226,361	1,506	3,227,867
Somerset	908,080	1,106,972	2,015,052	186	2,015,238
TOTAL	**31,180,612**	**44,457,605**	**75,638,217**	**4,130,261**	**79,768,478**

4.7.4.2 Assessment of efficiency

The budget allocations include:

- Salaries and wages
- Overtime
- Superannuation
- Payroll tax
- Other labour related costs
- PAYG contract staff
- Employee cost efficiencies

Of the budget allocations, salaries and wages and superannuation are costs that are determined by Enterprise Bargaining Agreements and payroll tax is a jurisdictional cost. **Table 33** illustrates the relative contributions of overtime, PAYG contract labour and employee cost efficiencies as percentages of the regulated employee expenses as included in the 2013-14 budget.

Table 33 : 2013-14 contributions to budget (values in $)

Area	Overtime	% Total Regulated	PAYG contract	% Total Regulated	Employee Cost Efficiencies	% Total Regulated
Brisbane	3,592,582	6.8	1,038	negligible	-152,722	-0.3
Ipswich	1,269,901	8.7	136	negligible	-25,134	-0.2
Lockyer Valley	152,658	5.5	350	negligible	-5,799	-0.2
Scenic Rim	271,497	8.4	-	-	-5,799	-0.2
Somerset	161,262	8.0	-	-	-3,864	-0.2
TOTAL	**5,447,900**	**7.2**	**1,524**	**negligible**	**-193,318**	**-0.3**

Whilst SKM noted that there has been a reduction of 3.2% in the number of FTEs in the 2013-14 forecast (before adjustments for vacancy and productivity) which is in line with the corporate efficiency initiative of reducing 3% of total operating costs, SKM has some concerns with regards to the efficiency of the employee expenses budget:

- The level of overtime that has been included in the 2013-14 budget is considered high. The decrease of 32.1 FTEs or 3.6% in the Operations area is consistent with the anecdotal evidence provided by Queensland Urban Utilities that there is more use being made of external resources to undertake

maintenance work, in light of the corporate move to doing more planned maintenance. Hence the higher overtime budget is not considered to be consistent with the greater use of external resources.

An internal cost efficiency review[35] has previously identified overtime as an area of potential savings for Queensland Urban Utilities. SKM considers that the increased use of sub-contractors and more planned work should significantly reduce overtime levels. The Queensland Urban Utilities submission does not address the level of overtime, nor were there any programs identified to reduce the level of overtime either through the use of external resources or through the review of work arrangements for the internal workforce.

Queensland Urban Utilities has advised[36] that the recommendation in relation to reducing overtime costs from the internal cost efficiency review has not eventuated in practice. Queensland Urban Utilities has implemented changes in the roster as recommended by Third Horizon to reduce the level of overtime undertaken by Operations staff. However, these changes have not resulted in actual reductions in overtime being incurred, and therefore the budgeted overtime costs for 2013/14 were not reduced.

The primary drivers for overtime are:

- Operations - 92% of all overtime is undertaken by Operations staff
- Customer & Community - 3% of overtime is due to Call Centre hours of operations and billing processes that have to occur outside of normal operating hours
- Corporate areas - 5% of overtime providing support to business operations through planned and responsive activities including emergency and disaster management

For the overtime undertaken by Operations staff:

- 53% is due to responsive maintenance due to burst water mains and sewer overflows
- 32% is attributable to infrastructure maintenance in relation to works that need to carried out in non-peak periods due to product flow rates and traffic management activities
- 14% is in the continuous operation of Treatment plants and the need to have staff on site to manage the facilities
- 1% is incurred by the Planning and Major Projects teams within Operations

Queensland Urban Utilities concluded that *"… due to the nature of responsive maintenance and Queensland Urban Utilities current operational structure, these activities are undertaken by Queensland Urban Utilities staff. Therefore, the level of overtime in relation to this would not be impacted by any change in the number of FTEs. In addition to this, the overtime in relation to responsive maintenance is dependent on the number of responsive incidents rather than the number of FTEs that Queensland Urban Utilities employs. While there is an increase in planned maintenance work being undertaken for 2013/14, there is not expected to be a reduction in responsive maintenance during this time. While there is a link between planned and responsive maintenance over time, there is a material lag-time between when increased planned maintenance would expect to result in decreased responsive maintenance."*[37]

SKM acknowledges that there will be a period of time between an increase in planned maintenance and an associated decrease in the level of responsive maintenance activity. However, SKM considers that any business case for a move to a more planned maintenance environment should have considered the cost benefit of the change, and forecast when a financial benefit should start to be achieved. Therefore, whilst SKM agrees with Queensland Urban Utilities that the impact of increase planned maintenance will likely not have an immediate impact on the 2013/14 forecast; SKM considers that Queensland Urban Utilities should have a timeline for when cost benefits should begin to be achieved. The move to planned maintenance will

[35] conducted by Third Horizon 18 July 2011
[36] Queensland Urban Utilities response to SKM draft report, 23 August 2013
[37] Queensland Urban Utilities response to draft SKM report, 23 August 2013

be part of the development of the Queensland Urban Utilities asset management system, and the investigation of whole-of-life costs associated with assets.

From SKM's knowledge of the industry and experience of other utility sectors, we believe that the general industry benchmark for maintenance overtime is 5% or lower.[38] Therefore, SKM is of the opinion that the allocation for overtime in the 2013-14 budget should be reduced by $1.55 M[39] to drive the achievement of the reduced costs projected by Third Horizon in the internal cost review.

- The purpose of the employee cost efficiencies was to increase the vacancy rate from 3.5% to 4.5%. For the budget 2013-14, this was allocated across the business based on each area's total labour costs, resulting in a high number of small value adjustments.

4.7.5 Delivery of service

A total of 864.7 FTE personnel are employed to perform work for the operation of water and wastewater services, and capital delivery. This represents a decrease of 3.6% on the operations staffing level for 2012-13, and reflective of the corporate move to more planned maintenance using a mix of internal and external resources.

SKM noted that the 2013-14 budget includes regulatory journal entries that total $61.9 M. The reallocation of costs from Other Materials and Services to Employee Expenses is required because the financial burden process does not split labour from materials and services. This is necessary to comply with reporting requirements to the Authority under its specified categories.

4.7.6 Market conditions

Queensland Urban Utilities have stated that "… *based on an internal analysis of industry trends regarding expected increases on overall labour costs, Queensland Urban Utilities has applied a 3% cost index to labour expenditure which includes costs resulting from actual direct labour costs, costs associated with organisational change and any expected increases. The analysis of industry trends focused on Certified Agreements (wages, terms and conditions of employment) for government employees within Queensland and comparable utilities across Australia in order to provide an up-to-date estimate of the labour market."*[40]

Based on experience with other utilities around Australia, SKM is of the opinion that the 3% cost index on labour costs is consistent with that included in other Enterprise Bargaining Agreements (EBAs) either in place or under negotiation. SKM also notes that a nominal productivity factor is also typically included, requiring savings to be made to in part offset the increased cost to the business due to the indexed pay increase.

Queensland Urban Utilities is currently seeking a performance/productivity target regarding absenteeism through the negotiations of the second EBA (known as EBA2). The current average is 14 days per person per year, with the target being sought of 11 days per person per year across the three years of EBA2. This target is in support of the additional 1% productivity factor that has been factored into the Employee Expenses for the 2013-14 budget. The anticipated commencement date for EBA2 is September/October 2013.

4.7.7 Comparison against saving targets

In the previous review[41], the key issues identified by Halcrow were:

- Need to offset 4.25% salary increases with on-going productivity improvements to ensure Queensland Urban Utilities remains sustainable under a CPI related price cap regime

[38] The benchmark for overtime is calculated as [no. of overtime hours]/[total no. of hours]. The recommended threshold value of 5% has been based on a benchmarking study conducted by Charles Brooks Associates which benchmarked maintenance best practice performance including labour productivity, work management, personnel management and maintenance costs in the US market. This 5% threshold for overtime is also recommended in a report by the US Department of Energy into O & M Best Practices.

[39] Adjustment calculated using data from Queensland Urban Utilities 2013-14 budget for overtime compared to [Labour Expenses + ½ of Labour Allocations] for water and sewerage services in each region, assuming 5% overtime hours at time-and-a-half rates

[40] Queensland Urban Utilities, *QCA Interim Price Monitoring: Information Return 2013-15*, 28 June 2013, section 4.2.5.3, p. 31

[41] Halcrow, *SEQ Water and Wastewater Price Monitoring 2012-13: Queensland Urban Utilities,* January 2013

- Noted that expenditure did not decrease as expected with the completion of the then current transition projects and introduction of new systems
- Concerns about potentially incurring excessive additional labour costs on the shift of emphasis from a reactive to proactive maintenance program

The 2012-13 pricing review stated that the *"… efficient level of employee expenses is in the order of 5-10 percent less than forecast {for 2012-13]. Accordingly, a reduction of $4.84 million (5 percent) is proposed."*[42]

The savings that have been achieved by Queensland Urban Utilities are due to a number of factors that have been identified by SKM:

- A reduction of 4.2% in the number of FTEs in the 2013-14 budget
- A marked reduction of contractor expenses (i.e. PAYG contract staff) from 2012-13 to 2014--15
- A plan to use more sub-contractors to undertake planned maintenance, alleviating the concern about excessive additional labour hours from the previous review

4.7.8 Summary

The engagement of employees to operate and maintain the infrastructure under the responsibility of Queensland Urban Utilities is required to fulfil its obligations and is considered prudent.

The expenditure of labour in operating and maintaining the infrastructure is considered by SKM to be not efficient. Queensland Urban Utilities has committed to savings in employee and contractor expenses through targeted efficiency programs and SKM has identified a number of these cost saving initiatives in the development of the FTEs for the 2013-14 budget. However, the level of overtime included in the 2013-14 budget is considered high by general industry standards, and SKM recommends that a reduction of $1.55 million be applied to the 2013-14 budget allocations.

Table 34 below classifies the documentation received and identifies any further information required to adequately review each section.

Table 34 : Employee Expenses quality of information provided

Section of OPEX review	Documentation Status	Additional Information Required
Prudency		
• Cost driver		
Efficiency		
• Calculation of costs		
• Market conditions		
• Benchmarking		
Comparison against saving targets		Reasonable at a high level against 2012-13 recommendations, but 2013-14 forecast includes high level of overtime that is not noted as part of an efficiency improvement initiative

4.8 Electricity costs

This section analyses Queensland Urban Utilities' electricity costs, including consideration of prudency, efficiency, delivery of service, market conditions and a comparison against savings targets.

[42] ibid., section 5.7, p. 112

4.8.1 Overview of operating expenditure

Queensland Urban Utilities uses electricity for transfer of water and wastewater, treatment of wastewater and for corporate offices and other buildings.

Electricity is supplied to Queensland Urban Utilities for use at its sites by the following two retailers:

- Origin Energy supplies electricity to the large contestable sites (>100 MWh consumption per annum)
- QEnergy supplies electricity to the small contestable sites (<100 MWh consumption per annum)

Queensland Urban Utilities has proposed total non-regulated electricity expenses (including bulk water prices) for the period of 2013-2015 to be $27.4 M.

Table 35 details the electricity expenditure detailed in the Information Template and in the Information Return document for Queensland Urban Utilities between 2011 and 2015. The Information Template data recorded in the table excludes non-regulated electricity expenditure and it is assumed that the Information Return data corresponds to this as it is included in the document submitted to the Authority. The data shows that the electricity expenditure corresponds between the two documents.

Table 35 : Queensland Urban Utilities previous and proposed operating expenditure (in nominal $'000)

Source	2010-11	2011-12	2012-13	2013-14	2014-15
Information Template	11,596	10,279	11,537	12,932	14,494
Information Return	11,596	10,279	11,537	12,932	14,494
Difference	**0**	**0**	**0**	**0**	**0**

A more detailed breakdown of the regulated electricity expenses (excluding aggregated non-regulated services) for Queensland Urban Utilities from the 2013-15 submission is shown in Table 36.

Table 36 : Queensland Urban Utilities previous and proposed operating expenditure (in nominal $'000)

Source	2010-11	2011-12	2012-13	2013-14	2014-15
Drinking water	1,499.3	1,633.1	1,633.5	1,580.8	1,778.9
Wastewater via sewer	8,514.3	7,297.2	8,346.5	9,596.6	10,751.1
Trade waste	1,582.3	1,348.3	1,526.9	1,754.3	1,963.5
TOTAL	**11,595.9**	**10,278.6**	**11,536.9**	**12,931.7**	**14,493.5**

The annual expenditure predicted in the 2013-15 submission is shown in **Figure 4-15**.

Figure 4-15 : Annual Expenditure 2013-15 Submission

Table 37 illustrates the yearly changes in the expenditure detailed in the Information Template from Financial Year 2011-12.

Table 37 : Percentage (%) and dollar ($'000) increases on the previous year's expenditure

Source	2010-11 -2011-12		2011-12 - 2012-13		2012-13 - 2013-14		2013-14 – 2014-15	
	%	$	%	$	%	$	%	$
Drinking water	8.9	133.8	0.1	0.4	-3.2	-52.7	12.5	198.2
Wastewater via sewer	-14.3	-1,217.1	14.4	1,049.4	15.0	1,250.1	12.0	1,154.5
Trade waste	-14.8	-234	13.3	178.6	14.9	227.4	11.9	209.2
TOTAL	-11.4	-1,317.3	**12.0**	**1,228.4**	**12.4**	**1,424.8**	**12.1**	**1,561.9**

Queensland Urban Utilities has advised that the significant decrease in electricity expenditure in 2010/11 is due to a new contract being entered into at that time. The increases thereafter are predominately due to price increases rather than primarily due to treatment plants coming back on-line following repairs to damage from the 2011 floods.[43]

For financial year 2013-14, Queensland Urban Utilities has applied a 2.3% increase for electricity rates for small sites (<100 MWh). For large sites (>100 MWh) a contract rate increase of 11.6% has been applied until 31 December 2013 (when the contract ends) and then 2.3% thereafter. A 7.5% increase for the 2013-14 network charges was applied to the actual monthly network charges incurred during 2012-13.

For financial year 2014-15 Queensland Urban Utilities has stated that the "*cost indexation used… is taken from the SKM.MMA report for the medium scenario for commercial businesses.*"

Queensland Urban Utilities models the electrical expenditure using two Microsoft Excel models for its eastern service area (Brisbane) and western service area (Ipswich, Lockyer Valley, Scenic Rim and Somerset). Inputs from various sources are entered into each model. Queensland Urban Utilities advised that the sources for

[43] Queensland Urban Utilities additional information to SKM, 30 August 2013

these include the CarbonScope system for electricity usage, Energetics monthly billing data and the EDI reports.

Two sewage treatment plants, Oxley Creek and Luggage Point, have cogeneration plants. These allow electricity to be generated from sewage. SKM has been informed that there is no net exporting to the grid.

In the response to RFI QUU 43-45, Queensland Urban Utilities provided the following table detailing the average cost of electricity.

Table 38 : Queensland Urban Utilities average cost of electricity

Region	2012-13			2013-14		
	$ (000)	KWh (000)	$/KWh	$ (000)	KWh (000)	$/KWh
East	8,926	75,929	0.1176	10,346	74,537	0.1388
West	2,221	14,750	0.1506	2,841	15,327	0.1854
Total	11,147	90,680	0.1229	13,187	89,865	0.1467

Queensland Urban Utilities has advised that "… *unit costs are different between the regions because different equipment, different tariffs and charges, different load profiles and a different mix of small and large sites are involved."*[44]

4.8.2 Provided documentation

The key reference documents used for this review are:

- *QCA Information Requirements Templates 2013_14 nfp,* Queensland Urban Utilities, 2 July 2013
- *QCA Information Return 2013-15 (Signed) Not for Publication,* Queensland Urban Utilities, 27 June 2013
- *2012-13 Q3 Forecast.xlsm,* Queensland Urban Utilities, 20 June 2013
- *2013-14 Budget.xlsm,* Queensland Urban Utilities, 20 June 2013
- *Commissioning Model 5yr Summary 2014.xlsm,* Queensland Urban Utilities, 3 May 2013
- *Comparison 2012 Submission vs. Current.xlsm,* Queensland Urban Utilities, 26 June 2013
- *DevChrgs Model.xlsm,* Queensland Urban Utilities, 13 May 2013
- *Growth data sets V7a.xls,* Queensland Urban Utilities, 12 June 2013
- *Master_Pricing_Sundry_Charges_13-14(excel2003).xls,* Queensland Urban Utilities, 26 June 2013
- *Master_Pricing_Utility_Charges_13-14final.xlsm,* Queensland Urban Utilities, 20 June 2013
- *Sewerage Full Cost Model 2013-14 v2a.xlsm,* Queensland Urban Utilities, 28 June 2012
- *Asset Mgmt Policy,* Queensland Urban Utilities, 11 June 2013
- *AWA Asset management technical meeting PPT PDF,* Queensland Urban Utilities, 26 June 2013
- *Project closure report (Cost Escalation)-Final-9 Aug 2012,* Queensland Urban Utilities, 20 June 2013
- *WSAA_QUU_Final_Utility_Report (3),* Queensland Urban Utilities, 12 June 2013
- *Annual Report 2011-12,* Queensland Urban Utilities, 13 June 2013
- *Corporate Plan 2012-17,* Queensland Urban Utilities, 13 June 2013
- *Water Netserv Plan Part A,* Queensland Urban Utilities, 13 June 2013
- *RFI QUU 001-008*, Queensland Urban Utilities, 17 July 2013

[44] Queensland Urban Utilities response to SKM draft report, 23 August 2013

- *RFI QUU 40-42*, Queensland Urban Utilities, 23 July 2013
- *QEnergy Market Contract and Conditions*, QEnergy, 1 July 2011
- *Schedule*, Origin Energy, 11 May 2011
- *QUU Response to SKM Draft*, Queensland Urban Utilities, 22 August 2013

4.8.3 Prudency

Queensland Urban Utilities is required to supply drinking water and treat wastewater to meet license conditions for public health and environmental discharge limitations.

Electricity allows both potable water and wastewater flows to be transferred and enables the treatment of wastewater. All pump stations, process plants and office facilities require electricity to function and operate safely. As the population of South East Queensland 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.

SKM understands that the expenditure on electricity is used to meet the following driver categories:

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

Queensland Urban Utilities advised that *"… electricity costs arise as a result of using electricity for the following purposes:*

- *operating sewage treatment plants*
- *pumping sewage*
- *pumping water*
- *operating buildings and facilities*
- *operating equipment."*

SKM considers the operational expenditure on electricity to be prudent as it enables water supply, wastewater transfer and treatment and office facilities to operate.

4.8.4 Efficiency

SKM has been informed that Queensland Urban Utilities is seeking efficiencies in its electricity expenditure through a variety of means.

These efficiencies include a target of 2.5% reduction in electricity usage or a saving of $354,000 in the 2013/14 budget. This target has been set by the Board and has been applied at the level of each individual site. The previous target of 3.5% was met in the previous 2012-13 financial year.

The broad nature of the efficiency target allows for different approaches to be adopted at treatment and pumping stations:

- On-site control of maximum demand through load shedding or rescheduling of operations
- Replacement of old assets with more energy efficient assets
- Revised maintenance schedules

4.8.4.1 Calculation of costs

Queensland Urban Utilities purchases electricity under two separate contracts for large and small contestable sites. As discussed in section 4.8.1, large sites have annual electricity consumption greater than 100 MWh, whilst small sites use less than 100 MWh per annum.

To calculate the forecast electricity usage for each site, Queensland Urban Utilities uses a Microsoft Excel model with the sites split into East and West depending upon its geographical location. The model provides for a detailed analysis of electricity usage based on historical data, and monthly billing data to manage costs.

Queensland Urban Utilities advised that there are 32 large contestable sites and around 600 small contestable sites. The contestable sites inputs are entered in the model including energy consumption and energy costs from the CarbonScope[45] system and loss factors from EDI reports. In the QCA Information Return 2013-15, details of increases to two categories of electricity charges, the usage charge and the network charges, are provided. SKM has assumed that the sites listed in the 'O - Cont1&2' tab of the electricity forecast models represent large sites as distinguished in the Information Return.

The electricity forecast models includes consideration of smaller assets such as gauges and pump stations. Different calculations are used for the sites depending on if they have been assigned to water, wastewater or 'both'. The costs for 2013-14 appear to be based on the 2011-12 data and use the same growth increases as the large sites depending on the type of service the asset provides. For example, the category of assets identified as 'both' uses an average of the water and wastewater growth indices.

The outputs of the Microsoft Excel models are adjusted based on known changes to the electricity usage such as upgrades to treatment plants. As the budgeting process is done at the end of the calendar year, the method uses the previous year's usage which is adjusted to the current year and then projected to the next year to generate the budget for the following year.

Queensland Urban Utilities' approach to modelling the electrical expenditure was demonstrated to SKM in discussions on the 18 July 2013. SKM considers the modelling approach to be a robust and reasonable basis for generating the electricity forecasts, although the output from the model is based on a number of key assumptions.

4.8.4.2 Modelling assumptions

The electricity forecast models for East and West sites contain the calculations of the electrical expenditure for Queensland Urban Utilities' assets for 2013-14, and is based on a number of key assumptions.

1) The model uses historical data from the contestable sites, which is inferred to be from 2011-12 to calculate the demand in 2012-13 and then in 2013-14. For water and wastewater flows, the growth figures are 2% for 2012-13 and for 1.75% for 2013-14. The calculation is split the year into two parts from January to June nominated as C1 and from July to December known as C2. The calculation splits the financial year into two parts C1 and C2 because electricity supply contracts and rates are based on calendar years. The historical data is different because the energy consumption and peak demands in the two parts are different.
2) Queensland Urban Utilities advised that *"… growth, cost, and efficiency factors are applied within this model to derive an initial cost which is then further adjusted by management during the budget process to arrive at a budgeted figure."*[46]

   Subsequently volume growth and flow projection increases are added that are obtained from the Planning and Finance department. Finally a cost increase is applied as per the "SKM MMA electricity forecasts generated for the Water Services Association of Australia (WSAA)" as stated in the Information Return.

[45] CarbonScope is an energy and carbon data management system marketed by Energetics. It provides annual energy consumption and cost information which is used in the establishment of the electricity forecasts.
[46] Queensland Urban Utilities, *QCA Interim Price Monitoring: Information Return 2013-15*, 28 June 2013, section 4.2.4, p. 29

The indexation factors from the SKM MMA report for the medium scenario for commercial businesses relating to impacting unit cost of operating costs are shown in Table 39.

Table 39 : Queensland Urban Utilities assumed indexation factors impacting unit cost of operating costs

Expenses	2012-13	2013-14	2014-15
Electricity costs	6.2%	4.85%	10.3%

These indexation factors are applied when actual or more accurate information is not available. In instances where contract information is available, this supersedes the estimates from the SKM MMA report. Examples of this include plant known to be out of service due to flood damage and new plant that has been recently commissioned and brought on-line.

For the small contestable sites, Queensland Urban Utilities has adopted the recommendation of the SKM MMA report that the increase is forecast to increase by 2.3%, although Queensland Urban Utilities believes this to be a very conservative forecast.

3) Specific models are used for chemicals, bio solid management costs (sludge) and electricity. These models incorporate volumetric projections with known price points and assumptions regarding operating conditions. e.g. CAMBI[47] offline, CAMBI online.

4) Increases in Queensland Urban Utilities' electricity usage can be driven by factors outside the entity's control. A major environmental factor is rainfall, with wet days resulting in higher energy consumption. As an example, Queensland Urban Utilities staff provided anecdotal evidence that electricity costs at the Eagle Farm site can double if there is persistent wet weather.

4.8.4.3 Assessment of efficiency

This breakdown highlights the annual average costs and year-on-year variances in electricity expenses, water volume purchased, and number of properties serviced for waste water and trade waste.

Table 40 shows the breakdown[48] of electricity costs for drinking water, waste water and trade waste services.

This breakdown highlights the annual average costs and year-on-year variances in electricity expenses, water volume purchased, and number of properties serviced for waste water and trade waste.

Table 40 Electricity costs by service (All values in nominal $s)

Service	Costs	2010/11	2011/12	2012/13	2013/14	2014/15
Water	Electricity expenses ($'000s)	1,499.3	1,633.1	1,633.5	1,580.5	1,778.9
	Variance year-on-year	-	8.9%	0.0%	-3.2%	12.6%
	ML purchases	120,225.5	125,116.7	131,488.1	134,065.0	138,134.4
	Variance year-on-year	-	4.1%	5.1%	2.0%	3.0%
	$/ML	12.5	13.1	12.4	11.8	12.9
	Variance year-on-year	-	4.7%	-4.8%	-5.1%	9.2%
Waste water	Electricity expenses ($'000s)	8,514.2	7,297.2	8,346.5	9,596.6	10,571.1
	Variance year-on-year	-	-14.3%	14.4%	15.0%	10.2%
	Properties serviced	484,663.0	492,741.0	497,185.9	502,670.0	510,611.0
	Variance year-on-year	-	1.7%	0.9%	1.1%	1.6%
	$/property	17.6	14.8	16.8	19.1	20.7

[47] CAMBI is a reference to the Cambi Thermal Hydrolysis process which is used at the Oxley Creek Sewage Treatment Plant to generate biogas from dewatered waste activated sludge

[48] Data sourced from Queensland Urban Utilities *QCA Information Requirements Template* for 2013-15 pricing submission

Service	Costs	2010/11	2011/12	2012/13	2013/14	2014/15
	Variance year-on-year	-	-15.7%	13.4%	13.7%	8.4%
Trade waste	Electricity expenses ($'000s)	1,582.3	1,348.3	1,526.9	1,754.3	1,963.5
	Variance year-on-year	-	-14.8%	13.2%	14.9%	11.9%
	Properties serviced	4,651.0	4,755.0	4,609.0	4,660.0	4,726.0
	Variance year-on-year	-	2.2%	-3.1%	1.1%	1.4%
	$/property	340.2	283.6	331.3	376.5	415.5
	Variance year-on-year	-	-16.7%	16.8%	13.6%	10.4%

In its Information Return[49], Queensland Urban Utilities nominated the following indexation and adjustment factors:

- 2.5% efficiency factor which SKM confirmed has been included in the electricity forecast model[50]
- consumption growth factor of 1.7% for 2013/14 in accordance with the adjusted Office of Economic and Statistical Research (OESR) property growth factor in customer connections
- for large contestable sites in 2013/14, supply contract rates were subject to an increase of 11.6% to December 2013, and 2.3% in accordance with the SKM MMA report to June 2014; in addition, 19% increase applied to network charges to December 2013 and 7.5% to June 2014
- for small contestable sites in 2013/14, Queensland Urban Utilities adopted the SKM MMA report recommendation of 2.3% increase in electricity price
- for all sites in 2014/15, Queensland Urban Utilities has based the 2014/15 forecast on the 2013/14 values escalated by a cost index. The SKM MMA report recommended a cost indexation of 10.3% (refer Table 39)

The 2.3% cost escalation used by Queensland Urban Utilities is materially lower than the increase in electricity charges announced by the Authority in May 2013.[51]

SKM noted the minimal growth rates in both water and waste water services, with a forecast 2% growth in bulk water purchases and 1.1% increase in the number of waste properties serviced (refer Table 40). One of the major contributing factors to the 14 5 increase in the forecast electricity costs for waste services in 2013/14 is due to waste treatment plants being returned to service following repair to damage suffered during the 2011 flooding event in South East Queensland.

Table 41 shows the breakdown of the electricity forecast costs for 2013/14 for the five districts and water/wastewater services.

Table 41 Electricity 2013/14 forecast by district (Values in nominal $'s)

District	Service	Electricity costs	Electricity% of Total	Carbon tax	Carbon tax% of Total	Total
Brisbane	Water	818,543	86.3	130,348	13.7	948,891
	Waste water/trade waste	7,605,547	82.7	1,586,372	17.3	9,191,918
Ipswich	Water	386,585	89.8	43,982	10.2	430,567
	Waste water/trade waste	1,503,847	85.5	255,302	14.5	1,759,149
Lockyer Valley	Water	79,138	93.3	5,641	6.7	84,779
	Waste water/trade waste	109,071	91.3	10,440	8.7	119,510

[49] Queensland Urban Utilities, *QCA Interim Price Monitoring: Information Return 2013-15*, 28 June 2013, section 4.2.4, p. 29
[50] Cell B67 in worksheet *O-Total* of electricity forecast models *Electricity Budget SDE 2013-14 - QCA - 18.07.13 - AP.xls* and *Electricity Budget SDW 2013-14 - QCA - 18.07.13 - AP.xls*
[51] Queensland Competition Authority, *Final Determination: Regulated Retail Electricity Prices 2013-14*, May 2013

District	Service	Electricity costs	Electricity% of Total	Carbon tax	Carbon tax% of Total	Total
Scenic Rim	Water	50,346	89.4	5,990	10.6	56,336
	Waste water/trade waste	187,931	90.1	20,697	9.9	208,628
Somerset	Water	53,656	89.1	6,574	10.9	60,230
	Waste water/trade waste	65,092	90.7	6,677	9.3	71,769
TOTAL		**10,859,756**	**84.0**	**2,072,023**	**16.0**	**12,931,779**

SKM noted that the 2013/14 forecast includes a significant allowance for the impact of the current carbon pricing mechanism in use in the Australian economy. These allowances should be reviewed should there be a change in the carbon pricing regime.

The pricing of electricity for the large contestable sites are based on contracts with Origin Energy which are based on wholesale electricity prices and network charges, whilst the electricity pricing for the small contestable sites are based on contracts with QEnergy which consider regulated tariffs set by the Authority. The increase in demand has been identified for both the water and waste water services, through minimal growth rates and repairs to sites damaged during the 2011 flood event. There is no consideration in the electricity forecasts for exporting of electricity to the grid. Whilst Queensland Urban Utilities has 2 co-generation sites, the Oxley Creek site was damaged during the 2011 flood event and the Luggage Point site has insufficient biogas production and storage facility to generate electricity for long periods.

SKM considers the electricity forecast models used to generate the 2013/14 forecast have been based on sound assumptions, and the forecasts for the large and small contestable sites are considered reasonable.

4.8.4.4 Delivery of service

Queensland Urban Utilities obtain electricity under two contracts relating to large contestable (> 100 MWh pa) and small contestable (< 100 MWh pa) sites and also generate electricity at two of its sewage treatment plants. The contracts are delivered by two external parties selected following a competitive tender process. The electricity contracts have been provided to SKM for both QEnergy and Origin Energy. Both contracts run from 1 July 2011 to 31 December 2013, as these terms were considered to be most advantageous to Queensland Urban Utilities in ensuring *"… a very favourable percentage discount for a reasonable period of time*"[52] for small contestable sites and low prices for large contestable sites.

The report detailed the tenders received for electricity supply contracts for both large and small contestable sites, together with a price evaluation and an assessment of any value-added services included in the offers. SKM considers the evaluation to be thorough and the recommendations made and approved to be reasonable and consistent with the tender offer evaluations.

SKM considers that Queensland Urban Utilities has demonstrated a robust and auditable process in the procurement of electricity.

4.8.4.5 Market conditions

As a large user of electricity, Queensland Urban Utilities has declared its electricity load as contestable and separated the sites into large and small, depending upon the consistent MWh demand. A threshold of 100 MWh has been used to discriminate between the site ratings, and separate supply contracts have been used for the large and small sites. This is consistent with electricity procurement arrangements for other water utilities.

The separation of the sites into two groups provides a sound platform to achieve price efficiencies, as the larger sites are subject to wholesale pricing and value-adding services, whilst the smaller sites are based on regulated tariffs with pricing discounts.

[52] Queensland Urban Utilities, *Post Market report - Supply of Retail Electricity*, 11 May 2011, p. 11

4.8.4.6 Efficiencies and economies of scale

SKM was informed that Queensland Urban Utilities has revised its operations to reduce peak electricity demand. Control rooms now have demand read-outs that are designed to assist in the reduction of peak demands. These read-outs indicate when 90% of the maximum demand has been reached so that load can be shed or processes re-scheduled to reduce the instantaneous demand.

Queensland Urban Utilities advised that it intends to avoid peak electricity charges when re-negotiating its contracts as they assume that its peak electricity usage (on wet days) will not occur simultaneously with the peak usage in the network.

In the long term Queensland Urban Utilities aims to use cogeneration and other beneficial re-use from sewage to reduce its reliance on external electricity providers and hence reduce its expenditure. Queensland Urban Utilities identified sewage treatment plants at Wacol, Beaudesert and Gatton as sites where this approach may be possible.

Currently cogeneration facilities are installed at two sewage treatment plants, Oxley Creek and Luggage Point. Queensland Urban Utilities has advised that *"… currently cogeneration facilities are installed at two sewage treatment plants – Oxley Creek and Luggage Point. SKM was informed that the Oxley Creek cogeneration plant was destroyed in the 2011 flood. Only one (at any point in time) of two cogeneration plants at Luggage Point is operational due to limited production of biogas."*

SKM considers that investigation of the feasibility of cogeneration (or other beneficial re-use) is consistent with good industry practice, and could potentially result in long term reduction in expenditure on electricity supplies. Other means such as the use of energy efficient and permanent magnet motors on its pumps to improve efficiency or a revised control system that allows staggered starting to reduce maximum demand charges could be investigated as means of addressing site peak demand.

4.8.5 Comparison against 2012-13 recommendations

The previous pricing review concluded that Queensland Urban Utilities costs were both prudent and efficient.[53]

In the 2012-13 pricing review, Halcrow concluded that *"… given the minimal net adjustment … Halcrow does not consider an adjustment to the aggregate forecast appropriate. Accordingly, Queensland Urban Utilities' forecast electricity costs for 2012-13 are considered both prudent and efficient. Halcrow notes, however, that there is further scope for the implementation of energy efficiencies. Third Horizon has identified potential savings in the order of $800,000 per annum and believes there is opportunity to increase this to more than $1 million per annum; only $400,000 has been incorporated into the 2012-13 forecast. Furthermore, Queensland Urban Utilities has acknowledged that improvements are required to the system for allocating costs to enable improved product and regional costing. This should lead to a better understanding of electricity use and the potential to identify further savings."*[54]

Queensland Urban Utilities has advised that *"… Third Horizon initiatives are currently being implemented. While the cost forecast reductions have been applied to the budget, the information is not yet available to determine how effective these recommended actions have been."*[55] Queensland Urban Utilities advised these initiatives include the introduction of site energy facilitators at each large site to monitor site demand and take action when load is within 90% of site maximum demand.

Queensland Urban Utilities have broken down the cost of electricity across various asset types:

- 68% is involved with treatment plants (55% in blowers and aeration systems)
- 22% with sewage pumps

[53] Halcrow, *SEQ Water and Wastewater Price Monitoring 2012-13: Queensland Urban Utilities,* January 2013, section 5.3.3.8, pp 78-79
[54] Halcrow, *SEQ Water and Wastewater Price Monitoring 2012-13: Queensland Urban Utilities*, Jan 2013, section 5.3.3.8, p. 79
[55] Queensland Urban Utilities response to SKM draft report, 23 August 2013

- 9% with waste pumps
- 1% with other asset types

The 2.5% efficiency target included in the 2013/14 forecast has been based on achieving savings through:

- replacement of old assets
- improved maintenance regimes, with stricter diffuser cleaning and testing
- improved demand management

These strategies address part of the Third Horizon recommendations regarding potential savings, which related to proactive energy management and energy efficiency initiatives.[56] The other savings identified by Third Horizon relate to the efficient operation of biosolids and cogeneration facilities. The Oxley Creek facility is still being repaired and the Luggage Point currently has limited operation of its cogeneration facility. SKM considers that any cost savings identified by Halcrow relating to efficiencies in improved operations at these sites will not be achieved until later.

4.8.6 Summary

The electricity expenditure is assessed as prudent. The expenditure is required to meet legal obligations, to meet new growth and to allow the operation and maintenance of existing infrastructure.

The approach that has been used by Queensland Urban Utilities in procuring electricity follows good industry practice. The calculation of forecast electricity costs has been based on a robust model using reasonable and auditable assumptions. SKM is satisfied that the forecast costs for 2013/14 generated by the East and West site models are reasonable and efficient. SKM noted that the broad 2.5% efficiency factor has been included in the development of the 2013/14 forecast.

Whilst SKM is satisfied that this forecasting approach is robust, it does not specifically highlight any efficiency gains under the initiatives that were included in the Third Horizon cost efficiency review. However, the 2013/14 forecast has included consideration of the broad proactive energy management and energy efficiency initiatives recommended by Halcrow, and included these within the 2.5% efficiency target for 2013/14.

Therefore, SKM considers the 2013/14 forecast expenditure to be efficient. It should be noted that the forecast includes a significant 16% allowance for the impact of the current carbon pricing mechanism in Australia. Any changes to the carbon pricing regime that may occur should be considered.

4.9 Other materials and services

This section analyses Queensland Urban Utilities' other materials and services costs, including consideration of prudency, efficiency, delivery of service, market conditions and a comparison against savings targets.

4.9.1 Overview of operating expenditure

The Other Materials and Services category covers a range of different expenses that are not directly allocated to other defined categories.

Queensland Urban Utilities stated in its Information Return 2013-15 document:

> *"The 'other materials and services' category encompasses a range of different expense categories and is predominantly designed to capture expenses that are not captured in the other defined categories …*
>
> *Costs within the other materials and services category include (but are not limited to):*
>
> - *bad and doubtful debts*

[56] Third Horizon Consulting Partners, *Cost Efficiency Review*, 18 July 2011, p. 15

- *sub-contractors*
- *postage*
- *printing*
- *rent (property)*
- *plant and equipment hire"*[57]

Queensland Urban Utilities has advised that the costs included in Other Materials and Services are:

1) *Contractors and sub-contractors*: external contractors who deliver planned and responsive maintenance and installation of new connections
2) *Materials*: these are the materials required to deliver daily activities from internal stores or external suppliers
3) *Materials - electrical*: materials required to support daily activities by electrical fitters
4) *Materials - fine crusher run*: materials required for repairs of burst water mains
5) *Materials - mechanical*: materials required to support daily activities by mechanical fitters
6) *Materials - pipe fittings*: materials required to support daily activities by field staff across a number of different activities such as new connections, planned maintenance, responsive maintenance
7) *Materials - cold mix*: material required for repairs of burst water mains
8) *Materials - water meters*: materials required to support daily activities by field staff across a number of different activities such as new connections and responsive maintenance
9) *Services - mowing*: external contractors required to mow Queensland Urban Utilities' sites
10) *Services - plumbers*: reimbursement of plumbing services to customers for work performed by external plumbers on Queensland Urban Utilities' assets

Queensland Urban Utilities has proposed a total Other Materials and Services expenses for the period of 2012-13 to 2014-15 to be $305.6 M. Table 42 shows the previous and proposed Other Materials and Services expenses for Queensland Urban Utilities between 2010-11 and 2014-15.

Table 42 : 2013-15 submission operating expenditure ($'000)

Service	2010-11	2011-12	2012-13	2013-14	2014-15
Drinking water	30,068.7	45,095.3	49,184.3	55,200.4	57,267.7
Other core water services	-	-	-	-	-
Wastewater via sewer	36,850.1	36,358.0	41,903.4	42,883.5	42,207.1
Trade waste	6,619.0	6,194.0	7,225.8	7,314.0	7,185.9
Subtotal regulated services	*73,537.8*	*87,647.3*	*98,313.5*	*105,397.9*	*106,660.7*
Non-regulated	7,138.4	1,345.1	-1,683.1	-1,538.5	-1,588.9
TOTAL	**80,676.2**	**88,992.4**	**96,630.4**	**103,859.4**	**105,071.8**

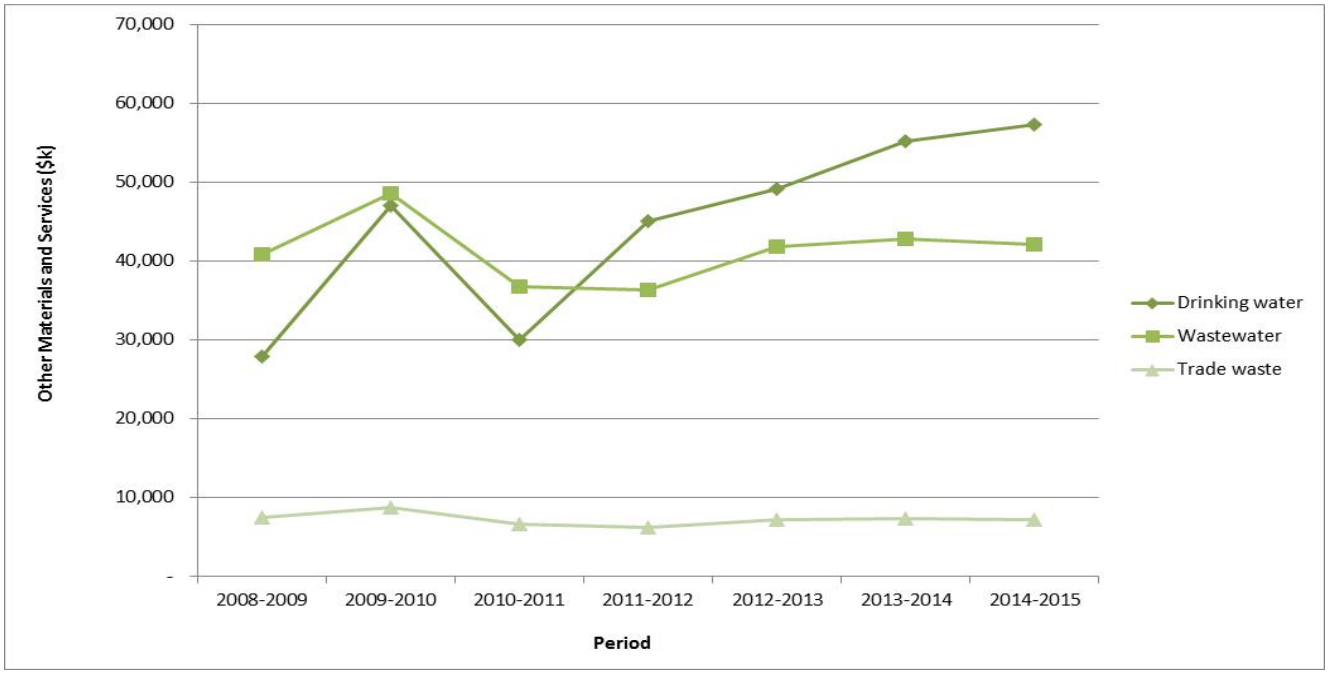
These forecast allocations for Other Materials and Services are shown in Figure 4-16.

The graph illustrates that the expenditure for the water reticulation system will exceed the wastewater expenditure from 2011-12 and will continue to rise over the period 2012-13 to 2014-15 in line with the leakage identification and rectification program that will commence in 2013-14, together with the ongoing program for fire hydrant inspection and rectification that was started in 2012-13.

[57] Queensland Urban Utilities, *QCA Interim Price Monitoring: Information Return 2013-15*, 28 June 2013, section 4.2.6, p. 31

Expenditure related to wastewater services is forecast to remain relatively constant from 2012-13 to 2014-15.

Figure 4-16 : Other Materials and Services from 2013-15 submission



The annual variances are shown in Table 43 for each service.

Table 43 : Value ($'000) and percentage variances on previous year's expenditure

Service	2010-11 - 2011-12		2011-12 - 2012-13		2012-13 - 2013-14		2013-14 - 2014-15	
	$	%	$	%	$	%	$	%
Drinking water	15,026.6	50.0	4,089.0	9.1	6,016.1	12.2	2,067.3	3.7
Other core water services	-	-	-	-	-	-	-	-
Wastewater via sewer	-492.1	-1.3	5,545.4	15.3	980.1	2.3	-676.4	-1.6
Trade waste	-425.0	-6.4	1,031.8	16.7	88.2	1.2	-128.1	-1.8
Subtotal regulated services	*14,109.5*	*19.2*	*10,666.2*	*12.2*	*7,084.4*	*7.2*	*1,262.8*	*1.2*
Non-regulated	-5,793.3	-81.2	-3,028.2	-225.1	144.6	8.6	-50.4	-3.3
TOTAL	**8,316.2**	**10.3**	**7,638.0**	**8.6**	**7,229.0**	**7.5**	**1,212.4**	**1.2**

SKM noted that there were negative value allocations included in Other Materials and Services for aggregated non-regulated services.

Queensland Urban Utilities has explained the general process for reallocation of costs which may in negative values in the budget as follows:

> *"The Forecasting Information System (FIS) takes information from the General Ledger and summarises it at a higher level in preparation for forecasting and reporting … EOSA (FIS item) Other Materials and Services represent[s] a large group of expense accounts that do not fall into other more specific groupings, such as chemicals and electricity. Also a large component of Other Materials and Services represents all expenses that are recorded in the General Ledger under Product 5 - Support Services. These are all allocated via the Burden process to all other products: Water, Sewerage, Asset Creation and Non-regulated Services. This incorporates all labour and materials and services expenses together.*

> *As part of the regulatory journals, to allow reporting to the QCA … [these allocations are] … split into labour (EOLA) and other materials and services (EOSA) based on the total labour expenses sitting in Product 5 - Support Services. This leads to large negative amounts in EOSA as the amounts are transferred via the regulatory journal to EOLA from EOSA."*[58]

With specific regard to the negative expenses for aggregated non-regulated services, Queensland Urban Utilities explained these as follows:

> *"The reason for the negative Non-regulated Services expenses from 2012/13 is due to a journal being posted to transfer the charges for providing laboratory testing services to Water and Sewerage from Non-regulated Services."*[59]

The operational expenditure numbers provided in the Information Return are consistent with those shown in the Microsoft Excel Information Requirement Template provided.

4.9.2 Provided documentation

The key reference documents used for this review are:

- *QCA Information Requirements Templates 2013_14 nfp,* Queensland Urban Utilities, 2 July 2013
- *QCA Information Return 2013-15 (Signed) Not for Publication,* Queensland Urban Utilities, 27 June 2013
- *2012-13 Q3 Forecast.xlsm,* Queensland Urban Utilities, 20 June 2013
- *2013-14 Budget.xlsm,* Queensland Urban Utilities, 20 June 2013
- *Commissioning Model 5yr Summary 2014.xlsm,* Queensland Urban Utilities, 3 May 2013
- *Comparison 2012 Submission vs. Current.xlsm,* Queensland Urban Utilities, 26 June 2013
- *DevChrgs Model.xlsm,* Queensland Urban Utilities, 13 May 2013
- *Growth data sets V7a.xls,* Queensland Urban Utilities, 12 June 2013
- *Master_Pricing_Sundry_Charges_13-14(excel2003).xls,* Queensland Urban Utilities, 26 June 2013
- *Master_Pricing_Utility_Charges_13-14final.xlsm,* Queensland Urban Utilities, 20 June 2013
- *Sewerage Full Cost Model 2013-14 v2a.xlsm,* Queensland Urban Utilities, 28 June 2012
- *Asset Mgmt Policy,* Queensland Urban Utilities, 11 June 2013
- *AWA Asset management technical meeting PPT PDF,* Queensland Urban Utilities, 26 June 2013
- *Project closure report (Cost Escalation)-Final-9 Aug 2012,* Queensland Urban Utilities, 20 June 2013
- *WSAA_QUU_Final_Utility_Report (3),* Queensland Urban Utilities, 12 June 2013
- *Annual Report 2011-12,* Queensland Urban Utilities, 13 June 2013
- *Corporate Plan 2012-17,* Queensland Urban Utilities, 13 June 2013
- *Water Netserv Plan Part A,* Queensland Urban Utilities, 13 June 2013

4.9.3 Prudency

Queensland Urban Utilities has an ongoing maintenance program which targets the reliability and availability of network assets. To facilitate this program, Infrastructure and Reliability, staff is aligned to specific asset classes.

The key principles of the asset management framework are:

- Risk managed approach across the lifecycle of the assets

[58] Queensland Urban Utilities response to SKM Request For Information, 17 July 2013
[59] Queensland Urban Utilities response to SKM draft report, 23 August 2013

- Proactive management of the assets from a lowest whole-of-life cost perspective whilst satisfying agreed service levels
- Condition and performance assessment of assets
- Employees and contractors are aware and accountable for their asset management responsibilities

The current balance of maintenance activities is 65% responsive maintenance and 35% planned maintenance. Queensland Urban Utilities is moving towards the maintenance program being largely planned, with 70% of maintenance as planned work and 30% responsive. This is considered to be in accordance with good practice for a water utility.[60]

The asset management plans currently in place focus primarily on asset renewal and are legacy documents from Brisbane Water. These are currently subject to an internal review, and will be extended to cover the operation, maintenance, renewals and disposal of the assets. The asset management plans will be rationalised to cover the main water and sewerage asset classes:

- Water network
- Sewer network
- Sewage pumping station and rising mains
- Water meters
- Water reservoirs
- Water pumping stations
- Sewage treatment plant

The primary drivers for operational expenditure in a broad sense are:

- Operations and maintenance of existing infrastructure
- Satisfying any legal obligations that may apply
- Identifying and improving the standard of service provided to customers

Queensland Urban Utilities is required to supply drinking water and treat wastewater to meet license conditions for public health and environmental discharge limitations. There is a requirement for materials and services to operate and maintain the infrastructure under the responsibility of Queensland Urban Utilities to fulfil its obligations and therefore SKM is of the opinion that this expenditure is prudent.

4.9.3.1 Assessment of Major Programs

There are three major maintenance programs covered by the 2013-15 submission:

1) Queensland Urban Utilities has established a Memorandum of Understanding (MOU) with Queensland Fire and Rescue Service (QFRS) as a major customer. Under this MOU, Queensland Urban Utilities have commenced a two-year maintenance program on fire hydrants to validate the serviceability of every hydrant, and ensure that all are compliant with regulatory and jurisdictional requirements. This program was commenced in 2012-13, and will continue during 2013-14.
2) The MOU with the QFRS is a voluntary arrangement that addresses issues with regards the serviceability of all fire hydrants with the Queensland Urban Utilities precinct. It documents the procedures and communications activities required to ensure that legal obligations and communication activities for water flows for firefighting purposes are maintained. Queensland Urban Utilities has agreed to inform QFRS if there is a change to the current maintenance program of inspecting all hydrants every two years. This program was introduced following the 2011 floods where a number of fire hydrants were damaged and

[60] Third Horizon cost efficiency review, 18 July 2011.

thereby created significant risk to some communities in relation to access to appropriate fire hydrants and fire flows.

3) The MoU refers to the Department of Environment and Resource Management (DERM) Planning Guidelines for Water Supply for technical advice on water pressure levels required for firefighting. In addition to this, Queensland Urban Utilities has formed its own Planning Guidelines for its water and wastewater network in relation to fire flows (based on DERM guidelines). The maintenance program for the fire hydrants is designed to ensure that Queensland Urban Utilities continues to satisfy these fire flow requirements.

4) More broadly, a flow rate of 15 litres per second is required, and the Queensland Urban Utilities maintenance program includes the inspection, cleaning and repair of all hydrants to ensure this flow rate is achieved. SKM noted that maintenance requirements for fire hydrants are broadly specified through the Queensland Development Code MP 6.1 and more specifically detailed in Australian Standard AS1851.61 Section 4 specifies the routine servicing activities to be completed on a monthly, 6-monthly, annual and 5-yearly basis.

5) The primary driver for this expenditure is considered to be operation and maintenance of existing infrastructure, and SKM is satisfied that this particular program expenditure is prudent.

6) A program of asset condition assessment, with special consideration of any certification issues.

7) Queensland Urban Utilities has a plan to adopt a risk based approach to assessing the current assets and in preparing improvement plans for each asset class. The current asset management plans were inherited from Brisbane Water and focus on asset renewals. These plans are to be updated and extended to include operation and maintenance, including nominating the inspection cycle for each asset class.

8) To implement this approach, it is crucial that Queensland Urban Utilities has an accurate evaluation of the water network assets, and therefore it is necessary to have a program to assess current asset condition, and identify any certification issues.

9) SKM considers this expenditure to be prudent.

10) There is a targeted program investigating unaccounted for water, which is thought to be mostly in the reticulated water system.

11) With regards to unaccounted for water, SKM noted in the National Performance Report of 2011-12 published by the National Water Commission that the reported water loss for Queensland Urban Utilities rose from 79 litres per service connection per day in 2010-11 to 96 litres per service connection per day in 2011-12. The reported performance of other Australian urban water utilities is shown in Table 44.

Table 44 : Reported water losses as litres/service connection/day

Area	Utility	2007-08	2008-09	2009-10	2010-11	2011-12
ACT	ACTEW	62	60	62	64	59
NSW	Hunter Water Corporation	80	94	88	84	75
NSW	Sydney Water Corporation	91	81	73	79	85
SA	SA Water - Adelaide	63	78	63	68	73
Vic	Barwon Water	38	46	52	52	61
Vic	City West Water	59	61	46	62	65
Vic	South East Water Ltd	57	62	50	61	74
Vic	Yarra Valley Water	75	67	62	51	50
WA	Water Corporation - Perth	86	82	75	78	91
QLD	Queensland Urban Utilities				79	96

[61] QDC MP 6.1 refers to AS1851:2005, which has been subsequently updated as AS1851:2012

This table illustrates that the Queensland Urban Utilities network is reporting the highest losses. Therefore, SKM considers this program to be prudent expenditure.

4.9.4 Efficiency

Queensland Urban Utilities have indicated that the intention of the current submission is keep controllable costs down through imposing and achieving internal efficiency targets. These efficiencies are being identified in a number of different ways:

- A program known as "New Initiatives" which has defined projects intended to achieve efficiencies within the business or comply with new obligations or requirements
- An Enterprise Excellence Review to identify specific efficiency opportunities in business-as-usual activities

  SKM has insufficient information to determine the effect that the Enterprise Excellence Review will have on Other Materials and Services. It is understood that the Enterprise Excellence Review is targeting 10% savings over 3 years.
- A broader application of efficiency targets across the business as a percentage reduction that is not specifically targeted

4.9.4.1 Calculation of costs

The forecasting for the Other Materials and Services expenditure is explained in the Information Return document as follows:

> *"The forecast costs related to other materials and services are based on a 'bottom-up' budget process that is undertaken by Queensland Urban Utilities' Executive Leadership Team for each of the different divisions within Queensland Urban Utilities."*[62]

With respect to the cost indexation the Information Return document details:

> *"Queensland Urban Utilities received external advice from PwC that recommended the use of an estimate of general inflation given that there is no available industry forecast suitable for our general costs (which are contained within other materials and services)."*[63]

Queensland Urban Utilities has advised that the annual budget is developed using a combination of approaches:

- For preventative maintenance work, historical data is used to develop a set of standard job costs. These standard jobs cover general maintenance and inspections, and include consideration of labour, material and contracted services. These standard jobs are then used with the annual programed preventative maintenance activity to generate the annual expenditure.
- For corrective and responsive maintenance, forecast annual costs are based on historic levels of activity; that is, Queensland Urban Utilities has assumed that the historic number of water main bursts will continue during the period 2014-15 to 2018-19.

There is a separate report for recognised one-off events that required responsive maintenance, and there is no consideration of this in the budget allocations.

SKM noted that the costing system used by Queensland Urban Utilities collects historic data for planned and responsive maintenance, including geographical and category information but anecdotal evidence provided by Queensland Urban Utilities staff was that the data is not specific to particular services. In addition, standard job costs for contracting work are used where historic information is available.

[62] ibid., section 4.2.6, p. 31
[63] ibid., section 4.2.6.2, p. 31

The standard job costs generated using this data are intended to reflect actual costs incurred for similar work. SKM is of the opinion that this approach is both auditable and robust, and the process provides a reliable base for generating maintenance activity based forecasts for the operational expenditure forecast.

4.9.4.2 Assessment of overall efficiency

Table 45 shows the total Other Materials and Services forecasts for 2013-14 and 2014-15, with revised numbers[64] for 2011-12 and 2012-13 based on the cost allocation method used in developing the 2013-15 pricing submission.

Table 45 : Other Materials and Services summary (values in nominal $'000)

	2011-12	2012-13	2013-14	2014-15
Total operational expenditure (excl. bulk water charges)	254,929.3	274,243.2	266,141.4	273,604.2
Other Materials and Services forecast	88,992.4	96,630.4	103,859.4	105,071.8
Proportion of total operational expenditure forecast	34.9%	35.2%	39.0%	38.4%
Variance year-on-year	-	0.9%	10.8%	-1.5%

The following table shows the split of Other Materials and Expenses allocations between water and wastewater activities.

Table 46 : Other Materials and Services distribution (values in nominal $'000)

Service	2010-11		2011-12		2012-13		2013-14		2014-15	
	$	%	$	%	$	%	$	%	$	%
Drinking water	30,069	40.9%	45,095	51.5%	49,184	50.0%	55,200	52.4%	57,268	53.7%
Wastewater via sewer	36,850	50.1%	36,358	41.5%	41,903	42.6%	42,884	40.7%	42,207	39.6%
Trade waste	6,619	9.0%	6,194	7.1%	7,226	7.3%	7,314	6.9%	7,186	6.7%
Regulated services	*73,538*	100.0%	*87,647*	100.0%	*98,314*	100.0%	*105,398*	100.0%	*106,661*	100.0%
Non-regulated	7,138		1,345		-1,683		-1,539		-1,589	
TOTAL	**80,676**		**88,992**		**96,630**		**103,860**		**105,072**	

The values shown in Table 46 vary from those reported previously in pricing submissions and associated pricing reviews due to a change in cost allocation method applied in 2013-14. Table 46 shows adjusted values for the period 2010-11 to 2014-15.

Section 4.7.1 shows that the expenses allocated to drinking water services have increased $6.1 million or 12.2% in 2013-14, reflecting the planned maintenance program identified by Queensland Urban Utilities and the focus on identifying and repairing major leaks in the reticulation system.

Table 47 shows a comparison of the unit costs for Other Materials and Services expenses for megalitres of water supplied and wastewater properties services, based on the adjusted values for the revised cost allocation method.

Table 47 : Comparison of Other Materials and Services costs (values in nominal $'000)

Annual comparison	2010-11	2011-12	2012-13	2013-14	2014-15
Total regulated allocations ($'000)	73,537.8	87,647.3	98,313.5	105,397.9	106,660.7

[64] The numbers for 2011-12 and 2012-13 have been revised from those used in Table 5.47 of the Halcrow report of Jan 2013

Annual comparison	2010-11	2011-12	2012-13	2013-14	2014-15
Total water & waste demand (ML)	126,956	131,848	138,104	140,681	144,750.4
Average cost ($/ML)	579.2	664.8	711.9	749.2	736.9
Variance year-on-year	**-**	**14.8%**	**7.1%**	**5.2%**	**-1.6%**
Water allocation ($'000)	30,068.7	45,095.3	49,184.3	55,200.4	57,267.7
Total water demand (ML)	120,226	125,117	131,488	134,065	138,134
Average cost ($/ML)	250.1	360.4	374.1	411.7	414.6
Variance year-on-year	**-**	**44.1%**	**3.8%**	**10.1%**	**0.7%**
Wastewater allocation ($'000)	36,850.1	36,358.0	41,903.4	42,883.5	42,207.1
Wastewater properties serviced	484,663	492,741	497,186	502,670	510,611
Average cost ($/property)	76.0	73.8	84.3	85.3	82.7
Variance year-on-year	**-**	**-3.0%**	**14.2%**	**1.2%**	**-3.1%**
Trade waste allocation ($'000)	6,619.0	6,194.0	7,225.8	7,314.0	7,185.9
Trade waste properties serviced	4,651	4,755	4,609	4,660	4,726
Average cost ($/property)	1,423	1,303	1,568	1,570	1,521
Variance year-on-year	**-**	**-8.5%**	**20.4%**	**0.1%**	**-3.1%**

From Table 47, SKM has noted that:

- The increase in 2013-14 forecasts is almost entirely due to a 12.2% rise in allocation for water related materials and services (against a modest 2% increase in water demand) due to the planned maintenance program and the focus on the reticulation system and unaccounted for water identified by Queensland Urban Utilities
- The step increase in 2012-13 for wastewater services was due to the shift to planned maintenance, and the mapping of sewer mains in local regions
- The 2014-15 forecast includes a 3.1% decrease in allocations for wastewater and trade waste services, and a reasonably constant expenditure for water services

4.9.4.3 Assessment of 2013-14 forecasts

In the 2013-14 budget, the Other Materials and Services costs are split across the following headings:

- *Finance costs - Doubtful debts*: provision for bad and doubtful debts
- *Finance costs - Other*: allocations for imputed stamp duty
- *Services and Materials Costs - Agency receipting*: allocations for bank charges
- *Services and Materials Costs - Directors' expenses*: allocations for directors' fees
- *Services and Materials Costs - Insurance*: provisions for insurance claims and premiums
- *Services and Materials Costs - Other*: broad expenditure category including materials and services for maintenance and support areas, plant and equipment hire, property rent, vehicle operation and maintenance, telecommunications and other costs

The major variances identified between the 2012-13 actual expenditure and the 2013-4 forecast are shown in Table 48. SKM noted that one of the biggest variances is in contractor/sub-contractor costs where the allocation in the 2013-14 budget is $3.9 million or 24% higher than the 2012-13 allocation. This increase is being driven by the move to more planned maintenance, and represents an increase over and above the 2012-13 allocation identified in the previous price monitoring review.

Table 48 : Other Materials and Services - major variances (values in nominal $'000)

Expenditure item	2012-13	2013-14	Variance	Variance (%)
Insurance premiums & related charges	3,336.9	4,189.7	852.8	25.6%
Conference/course fees	1,001.2	1,478.4	477.2	47.7%
Conference/course fees - New Initiatives	88.3	625.3	536.9	608.0%
Contractor/sub-contractor costs	16,336.8	20,242.7	3,905.9	23.9%
Local Authority charges	608.1	59.6	-548.5	-90.2%
Other telecommunications - HSMAN	957.2	0.0	-957.2	-
Rent - property	4,857.4	6,466.8	1,609.4	33.1%
Services - Customer Call Centre	1,279.3	0.0	-1,279.3	-
Services - efficiencies	0.0	-3,316.5	-3,316.5	-
Services - special projects	1,715.7	589.4	-1,126.3	-65.7%
Services - sludge bin/hopper hire	89.6	769.9	680.3	759.0%

The following table clarifies the reasons for the major variances identified between the 2012-13 expenditures and 2013-14 forecast.

Table 49 : Other Materials and Services major variances

Expenditure item	Variance
Insurance premiums & related charges	In the previous 2012-13 pricing review, Halcrow advised that *"… during 2011/12, Queensland Urban Utilities was co-insured with Brisbane City Council which meant the costs were shared. As a result of the 2011 flood and subsequent claims for the insurance company, issues were identified in having this co-insurance arrangement with Brisbane City Council and it was decided that Queensland Urban Utilities should have its own insurance policy. The 2011 floods have also materially increased the premiums that Queensland Urban Utilities is required to pay for sufficient insurance cover."*[65] SKM understands that the increase in 2013-14 is due to a further rise in insurance premiums.
Conference/course fees, including New Initiatives	SKM noted that there is an allocation of $625.3 k for training associated with the New Initiatives program. Queensland Urban Utilities has advised that this forecast expenditure primarily relates to the implementation of the Culture Map and a portion of the Payroll/HR Information training. These have been identified as temporary projects by Queensland Urban Utilities and are temporary in nature. Due to a change in payroll provider for the business, this training is for team leaders and employees in the payroll system and processes.
Contractor/sub-contractor costs	This $3.9 million increase in contractors/subcontractors is primarily driven by the increase in planned maintenance. Queensland Urban Utilities also advised that $400k of the increase relates to movement of condition monitoring costs from *Services - special projects* (see below)
Local Authority charges	This variance results from reductions in Council rates due to exemptions.
Other telecommunications - HSMAN	These costs were previously part of the Transitional Service Agreement (TSA) and are no longer incurred.
Rent - property	The increase in rent relates to Queensland Urban Utilities' move in office locations. Previously Queensland Urban Utilities was located in the Brisbane Transit Centre on a discounted rate through the Brisbane City Council. This lease expired and Queensland Urban Utilities was required to relocate. This has resulted in an increase in rent for the Queensland Urban Utilities corporate office location in Fortitude Valley. In addition, rent for other site locations has increased by more than the Consumer Price Index.

[65] Halcrow, SEQ Water and Wastewater Price Monitoring 2012-13: Queensland Urban Utilities, January 2013, table 5.55, p. 95

Expenditure item	Variance
Services - Customer Call Centre	The call centre is a service delivered in house and is therefore under 'Employee Expenses'.
Services - efficiencies	This is the cost account used to target efficiencies to responsibility centres across the business. It does represent approximately 3% of the Other Materials and Services forecast in line with the broad corporate efficiency target of 3%.
Services - special projects	The primary reason for the reduction in this account is the movement of costs from this account to specific natural accounts for the designated projects. The largest example of this is condition monitoring where $400k was transferred from this account to contractors/subcontractors.
Services - sludge bin/hopper hire	This variance is due to additional storage requirement for the disposal of sludge from sewerage treatment plants.

Queensland Urban Utilities has advised[66] that the planned maintenance budget increases are primarily in the following activities:

- reduction in unaccounted for water - this program is to identify leaks in reticulation mains through leak detection and completion of rectification
- fire hydrant inspection and repairs - this program is to maintain the serviceability and operational capability of the fire hydrants in order to meet Queensland Urban Utilities' obligations to provide adequate firefighting capability

The Third Horizon Consulting Partners cost efficiency review of July 2011 identified that Queensland Urban Utilities had struggled to deliver its budgeted maintenance program. This has resulted in:

- low planned vs. reactive ratio of 33:67 (in 2010/11) compared to 70:30 for a best practice utility
- significantly costly asset failures that potentially could have been avoided

Over the recent years, Queensland Urban Utilities has steadily improved the ratio of planned vs. responsive maintenance. In 2012/13, the ratio achieved was 48:52.

Table 50 Planned and responsive maintenance ratios

Expenditure	Year	All Assets		Civil		Mechanical & Electrical	
		Planned	Responsive	Planned	Responsive	Planned	Responsive
Actual	2010/11	33%	67%	-	-	-	-
	2011/12	41%	59%	32%	68%	56%	44%
	2012/13	48%	52%	`44%	56%	56%	44%
Budget	2013/14	-	-	-	-	64%	36%

Queensland Urban Utilities has developed maintenance strategies for each class. There are two main philosophies that have been adopted to maintain the Queensland Urban Utilities assets - "run to replace" and "avoid fail". The majority of the passive assets are run-to-replace, because failures of these assets have small customer impacts and relatively low cost. As a result, these assets have significant responsive budgets; for example:

		Planned	Responsive
Water Reticulation	Actual expenditure 2012/13	$5.6 M	$15.8 M

[66] Queensland Urban Utilities response to SKM draft report, 23 August 2013

The large passive assets with significant customer impact and active assets are "avoid fail" assets are maintained through the planned maintenance program. The planned maintenance programs on these assets include condition monitoring and scheduled preventative maintenance.

With these two different strategies being followed, Queensland Urban Utilities consider it may be difficult to achieve the industry best practice target of 70:30 for planned to responsive maintenance ratio.

The historic maintenance performance as shown in table above has been calculated across all of the asset classes. The following tables summarises the performance for "avoid fail" assets only.

Table 51 Planned and responsive maintenance ratio for "avoid fail" assets only

Expenditure	Year	Planned	Responsive
Actual expenditure	2012/13	66%	34%

Queensland Urban Utilities has noted that the Third Horizon cost efficiency review indicated that there was a projected saving of $5 million in the second year of the program. However, this potential saving was based on the avoidance of significant asset failure. Queensland Urban Utilities *"… does not currently budget in the operational budget for significant asset failures. Hence the increase in planned maintenance will reduce the potential or likelihood of a significant asset failure but will not reduce the cost of the failure or the current responsive maintenance budget."*[67]

4.9.4.4 Assessment of standard job costs

The bottom-up approach that Queensland Urban Utilities have adopted for maintenance programs based on standard job costs provides a robust and reliable base for forecasting the expenditure. These standard jobs include standard rates for contracted work where it is known the program will be undertaken by external parties. Queensland Urban Utilities has advised it undertakes a regular check on external and internal costs to assess the reasonableness of the costs and to identify where it would be more efficient to use external resources. This internal cost review includes consideration as to whether it is more cost effective to purchase or hire plant and equipment.

SKM has had experience with the use of standard maintenance jobs as unit costs for maintenance expenditure, and considers this approach that has been adopted by Queensland Urban Utilities as being consistent with good industry practice in other industries, and provides an auditable and robust methodology for developing expenditure forecasts. These standard job costs are based on historic data, and are intended to reflect actual costs incurred for similar work.

SKM has insufficient information to provide an independent review of the standard job costing used by Queensland Urban Utilities. Whilst the standard job costings consider historic expenditure, there is insufficient documentation available to determine or confirm the efficiency of these costs against external providers.

4.9.4.5 Assessment of costs

SKM noted that the Queensland Urban Utilities submission summarised the Other Materials and Services forecast as supporting the *"… continued approach to increase our planned maintenance program*" and as *"… planned maintenance is more cost-effective than reactive maintenance … Queensland Urban Utilities considers it prudent to have an increased focus on planned maintenance …* [and] *it is expected that this increase in planned maintenance will lead to a reduction in reactive maintenance in the future*."[68]

However, SKM is not satisfied that Queensland Urban Utilities has considered the impact of the change to planned maintenance in the 2013-14 and 2014-15 forecasts. Whilst the full impact of this change will take time to be fully realised, SKM does not accept these forecasts including the same level of responsive maintenance at

[67] Queensland Urban utilities response to SKM draft report, 23 August 2013
[68] Queensland Urban Utilities, *QCA Interim Price Monitoring: Information Return 2013-15*, 28 June 2013, section 4.2.6.3, p. 32

historic levels (refer Section 4.6). This would suggest that the asset management framework is not developed sufficiently to identify the anticipated impact of the move to planned maintenance.

Whilst the approach to using standard job costings is in line with good industry practice, SKM does not consider that Queensland Urban Utilities has demonstrated a good understanding of life cycle costings for its network assets, and the efficiencies that have been identified are typically annual maintenance expenditure efficiencies or one-off changes in practices that achieve cost savings.

For this reason, SKM has doubts about the efficiency of the increase in contractor/subcontractor costs in 2013-14 and whether this has been considered as part of an overall maintenance expenditure reduction program, and the impact that this increase in planned maintenance will have on network performance, particularly with regards to responsive maintenance.

4.9.5 Delivery of service

As indicated in the list of items that comprises Other Materials and Services, both in-house and external parties are used to deliver this service.

Queensland Urban Utilities is currently monitoring costs of internal and external resources to assess the more cost effective option for each work program. Queensland Urban Utilities have advised that it is not possible to disaggregate the costs for all work completed using internal resources and contracted work to external parties. This stems from the fact that Queensland Urban Utilities does not collect information on each of the significant number of different services provided to customers, nor the method in which it is provided. For reporting purposes to the Authority, Queensland Urban Utilities defines contractors as Non-PAYG contractors (i.e. directly filling an internal role) and consultancies. These costs are recorded separately as Contractor Costs. As sub-contractors generally provide their own materials and equipment, Queensland Urban Utilities classifies these costs within Other Materials and Services.

Queensland Urban Utilities have advised that the number of Full Time Equivalent positions (FTEs) has been capped, with a freeze imposed on any further recruitment. In delivering the Other Materials and Services component, FTEs are to be used as the first option, with external contractors only engaged to supplement this internal workforce where necessary.

SKM is of the opinion that this approach is reasonable, and suggest that Queensland Urban Utilities are planning the delivery of the maintenance program in a reasonable manner.

4.9.6 Comparison against saving targets

In 2011, Queensland Urban Utilities undertook a cost efficiency review[69] which examined potential areas of efficiencies across the business following the establishment of operations as an amalgamation of water distribution and retail services from five councils.

1) One of the areas identified was the delivery of the budgeted maintenance plan. The ratio of planned to responsive maintenance in 2011 was determined to be 33% planned 67% responsive; in contrast, the best practice for a water utility was considered to be 70% planned 30% responsive. This initiative has required the development of standard contracting job costs to be used in generating the activity-based part of the operational expenditure forecast.
2) This has required an assessment of the cost effective delivery method for the maintenance program, and is consistent with the corporate direction outlined in Section 4.9.3. The projected savings were $5 million in the second year of the program, with the savings to be due to the avoidance of asset failure.
3) Another area for improvement identified was reducing unproductive activities such as reduced travel to depots for administrative purposes, externally benchmarking task times and contracting of reactive work. This was projected as requiring an investment of $1.5 million and anticipated savings between $0.51 million and $1.13 million per annum.

[69] Conducted by Third Horizon Consulting Partners

4) The cost efficiency review estimated supplier consolidation, improved use of category management and improved procurement processes to deliver savings between $4.5 million and $9.7 million per annum for a maximum investment of $0.4 M.

5) The use of a third party call centre was anticipated to save $2.4 million per annum. This area was identified as a potential improvement area as the Brisbane City Council was seeking an increase of $900,000 to the existing agreement.

SKM has received insufficient documentation to identify the full implementation of these saving opportunities. In particular, the anticipated savings due to the effects of the planned maintenance approach are not evident in the 2013-14 budget. SKM noted the Queensland Urban Utilities advice that it does not include any amount in the operational expenditure forecasts for significant asset failures and therefore any reduction in asset failure will not be reflected as savings against the responsive maintenance budget.

Queensland Urban Utilities advised of savings in materials ($440,000) and plant and equipment ($255,000) due to changes to procurement. The 2013-14 budget has no forecast amount for the Customer Call Centre, which represents a reduction of $1.28 million on the 2012/13 expenditure.

In the previous pricing review, there was an adjustment made to the operational expenditure to reflect the Authority's view that the increase provided for planned maintenance in the 2012-13 budget was unlikely to be realised. Queensland Urban Utilities advised that 97% of the allocation was delivered.

Queensland Urban Utilities has applied global efficiency targets to controllable costs across the business. The actual projects of how these targets will be met have not yet been established, and therefore an allocation was made across both labour and materials and services.

During the development of the 2013-14 budget, the allocation of the 3% efficiency target was nominally split as 60% to labour and 40% to materials and services. For the 2014-15 budget, the allocation of the $5M target for this period was 33% to labour and 67% to materials and services.

The $5 million was a target in real dollars and therefore needed to be escalated within Queensland Urban Utilities' models to apply to 2014/15; as a result, a split between expenditure categories was required. This split was based on a *"… high level internal assessment that efficiencies were more likely to be from materials and services in that year. The actual impact of the allocation on the overall cost is minimal. The variation between the indexation factors (3% for labour and 2.5% for materials and services) is the only difference. If Queensland Urban Utilities were to switch the mix of the efficiencies between labour and materials and services (i.e. 67%/ 33%), this would result in a change in the indexed value of the efficiency of $8,000 (i.e. indexation of $141k vs. $133k). Queensland Urban Utilities regards the allocation of this efficiency target for 2014/15 to be appropriate and the impact of this allocation to be quite minor."*[70]

In the 2012-13 pricing review, Halcrow expressed reservations with regards to the increased allowance for contractor involvement in the Planned Maintenance Program. The analysis concluded that the additional $10.8 million included in the 2012-13 budget was equivalent to an additional 54 FTEs. Halcrow proposed that the additional contract maintenance crews should be limited to 20 FTEs with a saving of $6.82 M.[71]

From the actual expenditure for 2012-13, SKM noted that Queensland Urban Utilities did not reduce the contractor allowance, spending $16.3 M.

SKM has noted that the 2013-14 forecast includes an allocation of -$3.32 million against a cost item *Services - Efficiencies.* This represents 3% of the 2013-14 operating expenditure forecast, and this account was designed to impose efficiencies on the responsible centre within the business.

[70] Queensland Urban Utilities additional information to SKM, 30 August 2013

[71] In an email of 29 August 2013, the Authority advised that *"… Halcrow's initial saving of $6.82 [million] based on concerns about a $10.8m increase in contractor costs was calculated on a mistaken categorisation of costs. This was partly due to a lack of clarity regarding the detailed cost information provided by QUU … QUU provided an explanation of the costs categorisation in response to Halcrow's draft report. However, Halcrow did adjust its findings as a result. Halcrow still had concerns with the increase of $7.7m (revised from $10.8m) and applied a revised saving of $3.70m … The QCA accepted Halcrow's revised recommended savings."*

4.9.7 Policies and procedures

Queensland Urban Utilities is currently using a set of asset management plans that were inherited from Brisbane Water as part of the establishment of the entity. These 12 asset management plans currently focus primarily on asset renewals, based on a run-to-fail approach.

As part of the asset management continual improvement program, Queensland Urban Utilities is reviewing all of the plans with a view to reducing the total number of plans to 7, covering the main water and sewage asset classes. As part of the move to a planned maintenance regime, these asset management plans will be extended to include the operation, maintenance, renewal and disposal of assets. A risk based approach in assessing the current assets will be introduced, together with identifying improvement plans for each asset class. Condition based assessment will be a core activity for the asset management system, with the current inspection and maintenance cycles to be reviewed.

This review is planned to be completed during 2014.

Queensland Urban Utilities have advised that the asset management framework will be developed in line with the requirements of ISO 5500 Asset Management Standard and that they intend to seek accreditation in the future.

4.9.8 Summary

SKM noted that there have been reductions in some of the annual forecast expenditure for Other Materials and Services from 2012-13 to 2014-15. Some of these changes have been identified through targeted and broader non-specific programs. SKM noted that there is a shift to undertaking more planned maintenance, which SKM endorses as being in line with good industry practice, although there is no forecast or commentary provided by Queensland Urban Utilities of the anticipated impact that this change in maintenance policy will have on the level of responsive maintenance. SKM is concerned that this leaves the move to more planned maintenance too open ended, and recommends that Queensland Urban Utilities develops a forecast of anticipated cost benefits for the change in maintenance philosophy to support any further expenditure, particularly through additional contractor/sub-contractor expenses.

Other Materials and Services is a very broad category that covers maintenance specific materials and delivery costs, together with a range of other costs such as bad and doubtful debts, postage, printing and property rent. SKM has based this assessment on the high level costs for this category, focusing on the higher cost item items such as materials and services related to asset maintenance arrangements and any known efficiency programs.

Therefore, the overall Other Materials and Services expenditure is assessed as prudent as the primary drivers of *Operations and maintenance of existing infrastructure* and *Legal obligations* have been demonstrated and an appropriate decision making process.

The costs for Other Materials and Services are generated using a combination of bottom-up estimates based on standard job costs and planned maintenance activities, and the other sundry categories based on the previous year's allocation escalated using CPI as proxy as the escalation factor. This forecasting approach for the maintenance expenditure is considered to demonstrate a rigor and robustness that suggests the forecasts should be reliable and auditable. However, this approach cannot be considered efficient until these standard job costs have been benchmarked against external contractors and other water industry participants. SKM has insufficient documentation to clarify if these standard jobs represent efficient costs.

SKM considers there should be a reduction of $3.5 million (i.e. excluding $400k from the forecast expenditure of $3.9 million due to Special Project costs) in the contractor/subcontractor costs. The previous review identified that there were savings to be made in this area, and the 2012-13 expenditure exceeded the original 2012-13 forecast and failed to realise any savings in contractor expenses. SKM is not satisfied that the move to planned maintenance and the use of additional contractors to support this program has been properly considered for the impact and cost benefit in reduced responsive maintenance costs. As stated above, SKM considers that

Queensland Urban Utilities should outline the cost efficiency of the maintenance program before allocating additional resources to its implementation.

Therefore, the overall Other Materials and Services expenditure is assessed as not efficient. SKM recommends that the forecast operational expenditure for Other Materials and Services for regulated services is reduced by $3.5 million in the 2013-14 forecast.

Table 52 below classifies the documentation received and identifies any further information required to adequately review each section.

Table 52 : Other Materials and Services quality of information provided

Section of OPEX review	Document status	Additional information required
Prudency		
• Cost driver		
Efficiency		
• Calculation of costs		
• Delivery of service		
• Market conditions		
Benchmarking		No internal benchmarking done of standard job costs, examples available of business case for using internal vs. external resources
Comparison against saving targets		Justification of marked variance in 2013-15 submission allocations versus QCA 2012-13 recommendations for contractor/subcontractor expenses
Policy and procedures		Asset management documents provided - noted these are subject to review
Timing and deliverability		Qualitative discussion about proposed method of delivery and past assessment of planned maintenance delivery - require information on plan for delivery of increased planned maintenance program - ability to deliver was questioned in previous pricing review
Efficiency gains		Forecast of savings in reduced responsive maintenance due to increased planned maintenance program

4.10 Summary assessment of operational expenditure

Consistent with the findings of the 2012-13 price monitoring review, SKM considers Queensland Urban Utilities to be a relatively inefficient water utility when compared with industry peers in Australia and the United Kingdom with regards to the water reticulation network, but is comparable with efficient utilities in these jurisdictions with regards to wastewater operations.

The asset management plans that Queensland Urban Utilities currently have were inherited from the Brisbane City Council, and these were found to be more focused on a run-to-fail approach, with little or no detail with regards to lifecycle management and costings. SKM noted that Queensland Urban Utilities is moving to a more planned maintenance approach, targeting 70% planned work and 30% responsive maintenance as opposed to the current 52% responsive and 48% planned maintenance split. The review and development of new asset-focused asset management plans with consideration of whole-of-life issues is currently underway, and Queensland Urban Utilities have advised that the target for completion of these asset management plans is during 2014.

The lack of a complete and robust asset management system has contributed to the inefficiencies in using internal and external labour to move to a more planned maintenance approach. SKM considers that the increase in contractor/sub-contractor costs discussed in Section 4.6 is due to the Queensland Urban Utilities looking to shift the balance through the split of available labour rather than moving to a more planned approach through a better understanding of its water network assets and the associated whole-of-life considerations. SKM has questioned the efficiency of further increasing the contractor/sub-contractor costs in 2013/14 as a result.

Queensland Urban Utilities has demonstrated an awareness of its operating costs and the impact these have on costs to its customers through a number of efficiency programs and targets that are in differing stages of implementation. The broad 3% efficiency target that is a Board initiative has been demonstrated in some areas of the operational expenditure forecast. The recommendations for cost savings presented by Third Horizon in June 2011 have been implemented in part, although the quantum of the saving is not apparent to SKM as there is insufficient documentation to verify if all of the projected savings have or are being achieved.

A change in cost allocation has made it difficult to make direct comparisons between the recommendations included in the 2012-13 price monitoring review and the allocations included in the 2013-15 submission. Costs that had previously been included under the broad Other Materials and Services have been shifted to corporate costs, and this has made it difficult to identify any savings that may have been made.

The largest adjustments are in the corporate costs. SKM considers that the rushed separation program as highlighted by Halcrow has continued to contribute higher costs than are considered appropriate. SKM's analysis has identified a number of savings, including a reduction in the number of FTEs across corporate functions.

Further, SKM recommends that Queensland Urban Utilities reviews and improves its asset management system to achieve long-term efficiencies in its operational expenditure. The shift to a more planned maintenance approach will promote more efficient numbers of internal and external FTEs with the mix to suit the different services provided by Queensland Urban Utilities. This system will also support the selection and installation of more energy efficient assets, and allow for more efficient operation of treatment and pumping stations. A more refined asset management system will, in addition, facilitate reporting on benefits and performance improvements due to the planned maintenance approach and assist to identify any efficiencies that have been achieved.

4.10.1 Corporate Plan goals

In its 2012-2017 Corporate Plan, Queensland Urban Utilities suggested that one of its corporate goals for 2017 is to *"… have the lowest operating cost per property of any comparable water utility in Australia*."[72] Queensland Urban Utilities reported an operating cost per property of $443 in 2012, and a forecast operating cost per property of $499 in 2017.

SKM noted that the forecast cost in 2017 is 12.64% higher than the cost in 2012, and this represents an average annual increase of 1.66%, which is lower than the forecast Consumer Price Index (CPI) for the same period. The three-year average growth for the operating expenditure between 2012/13 and 2014/15 for water services is 0.04% per annum and -0.37% per annum for wastewater services. The nominated property growth rate nominated by Queensland Urban Utilities in its pricing submission[73] based on data from the Office of Economic and Statistical Research (OESR) across all of the regions was 1.7%.

SKM has insufficient information to verify the nominated value of $443 per property shown in the 2012-2017 Corporate Plan, or the relative comparison of the forecast value of $499 per property in 2017 against its industry peers in Australia However, the efficiency initiatives and the savings recommended by SKM in this expenditure review are consistent with the corporate goal of achieving a real decrease (relative to CPI) in the operating cost per property.

[72] Queensland Urban Utilities, *Corporate Plan 2012-2017*, p. 9
[73] Queensland Urban Utilities, *QCA Interim Price Monitoring: Information Return 2013-15*, 28 June 2013, section 3.2.1.3, p. 18

4.10.2 Recommended adjustments to operational expenditure

The following reductions to the 2013-14 and 2014-15 forecasts are recommended:

- Corporate Costs - reduction of $1.766 million in 2013-14 and $0.854 million in 2014-15 through a reduction of FTEs across corporate functions
- Employee Expenses - reduction of $1.55 million in 2013-14 due to excessive overtime allocation, and $1.60 million in 2014/15 (which is equivalent to the proposed 2013/14 reduction escalated by 3.0% in line with the unit rate escalation of employee expenses between 2013/14 and 2014/15)
- Electricity - no reduction in 2013/14, although any changes in the carbon pricing mechanism in Australia should be monitored and included
- Other Materials and Services - reduction of $3.5 million in 2013-14 for unjustified contractor/sub-contractor costs and $3.59 million in 2014/15 (which is equivalent to the proposed 2013/14 reduction escalated by 2.5% in line with the unit rate escalation of other material and services between 2013/14 and 2014/15)

Table 53 Summary of reductions to 2013/14 operating expenditure forecast (values in nominal $'000s)

Category	2013/15 submission	Recommended reduction	Revised 2013/14 budget	Variance
Corporate Costs	54,534	1,766	52,507	-3.7%
Employee Expenses	75,639	1,550	74,089	-2.0%
Electricity	12,932	0	12,932	0.0%
Other Materials and Services	103,859	3,500	100,359	-3.4%
Total 2013/14 forecast[74]	266,141	6,816	259,325	-2.6%

Table 54 Summary of reductions to 2014/15 operating expenditure forecast (values in nominal $'000s)

Category	2013/15 submission	Recommended reduction	Revised 2014/15 forecast	Variance
Corporate Costs	58,660	854	57,806	-1.5%
Employee Expenses	76,754	1,600	75,154	-2.1%
Electricity	14,494	0	14,494	0.0%
Other Materials and Services	105,072	3,588	101,484	-3.4%
Total 2014/15 forecast[75]	273,604	6,042	267,562	-2.2%

[74] There are other categories included in the total 2013/14 forecast, and therefore these values are not the summation of the individual categories shown

[75] There are other categories included in the total 2014/15 forecast, and therefore these values are not the summation of the individual categories shown

5. Capital expenditure

This section contains a review of prudency and efficiency of Queensland Urban Utilities' proposed capital expenditure for the 2013-15 financial years. The section includes the following sub-sections:

- Overview of Queensland Urban Utilities' capital expenditure for 2013-15
- The Authority's sample selection
- Overview of prudency and efficiency of capital expenditure
- Summary prudency and efficiency reviews of the each selected sample
- Summary and recommendations

5.1 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 or construction of new assets in response to increased demand, growth or variations required by a customer. Capital expenditure to provide increased security of supply should be included in growth.
- **Renewals** – capital expenditure associated with the replacement and or enhancement of an asset that currently meets service performance standards and legislative requirements but faces an unacceptable risk of future non-compliance. The renewal will maintain existing levels of service over the life cycle of the asset.
- **Improvements** – capital expenditure associated with upgrading service outcomes to improve asset efficiency, reliability or increase the anticipated life of an asset to prevent service non-compliance or capacity shortfall. It must achieve an increase in the reliability of the quality of supply that is explicitly endorsed or desired 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 (but not limited to) the Water Act, South-East Queensland Water (Distribution and Retail Restructuring) Act, Water Supply (Safety and Reliability) Act and OH&S.

Queensland Urban Utilities has reported capital expenditure of $1,432 million over the five year period from 2010-11 to 2014-15 with $263 million forecast in 2013-14 and $346 million forecast in 2014-15. The value of donated/gifted assets is shown in Table 55.

Table 55 : Capital Expenditure (as commissioned) ($'000) (Queensland Urban Utilities, 2013)

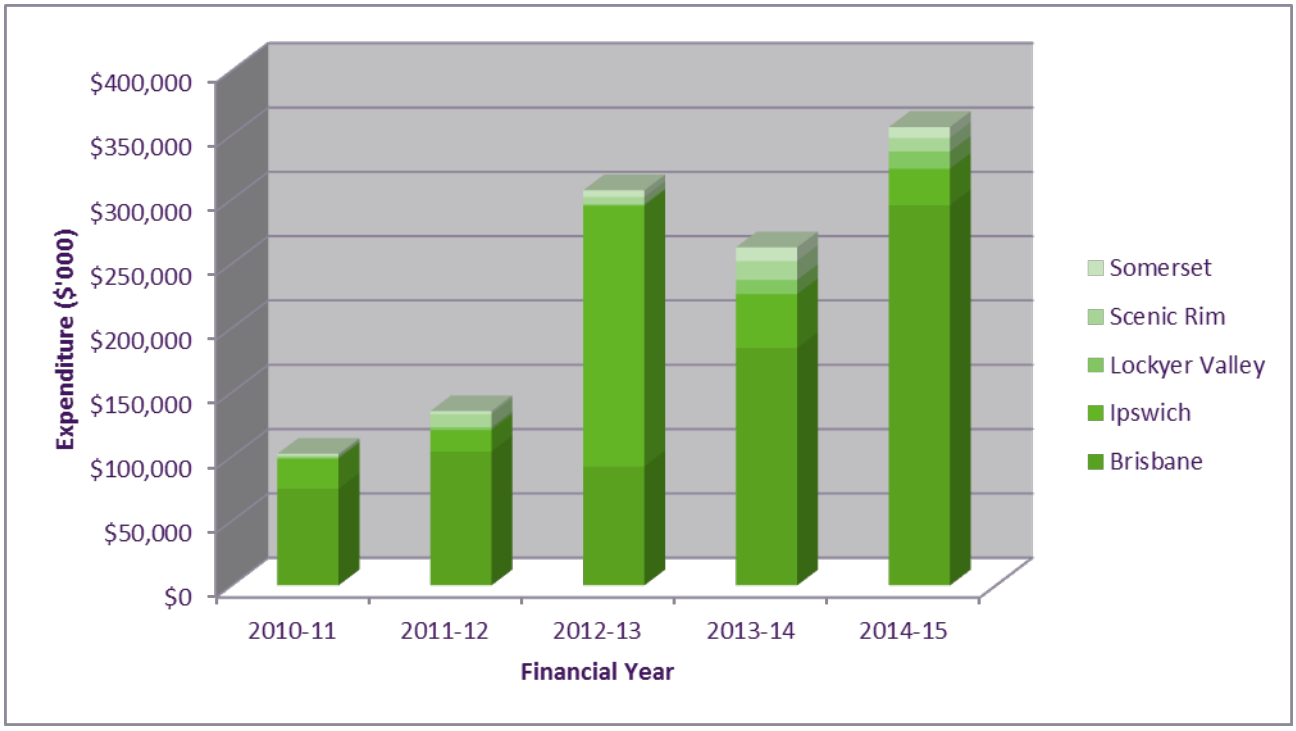
Expenditure	2010-11a	2011-12 a	2012-13f	2013-14 f	2014-15 f	Total 2010-11 to 2014-15
Total capital expenditure	157,745	179,273	362,672	323,226	421,392	**1,444,306**
Value of donated/gifted assets	55,498	43,849	55,604	60,393	65,062	**280,406**
Capital expenditure (excl donated assets)	102,247	135,424	307,068	262,833	356,330	**1,163,902**

Note: a = actual; f = forecast

Total capital expenditure is increasing steadily over the reported period, although shows a reduction in 2013-14.

Queensland Urban Utilities planned to commission approximately $609 million (excluding donated assets) in the two years to the end of the financial year 2014-15. The breakdown of costs (excluding donated assets) on an as commissioned basis for the 2012-13 to 2014-15 financial years' budgets can be seen below in Figure 5-1 below.

Figure 5-1 : Forecast capital expenditure for 2012-13 to 2014-15 by region (excluding donated assets) (Queensland Urban Utilities, 2013)



A breakdown of the total expenditure by region and product is shown in Table 56 and Table 57 respectively. It is noted that, historically, the Lockyer Valley, Scenic Rim and Somerset regions received negligible capital expenditure. The capital expenditure for the Lockyer Valley region is forecast to increase from 2013-14, expenditure in the Scenic Rim region has increased since 2011-12 and expenditure in the Somerset region has gradually increased since 2010-11.

Table 56 : Forecast net capital expenditure - as commissioned by region ($'000) (excluding donated assets) (Queensland Urban Utilities, 2013)

Region	2010-11[a]	2011-12[a]	2012-13[f]	2013-14[f]	2014-15[f]	Total 2010-11 to 2014-15
Brisbane	75,105	104,121	92,389	184,479	295,493	**751,587**
Ipswich	23,330	16,618	202,828	41,913	28,407	**313,096**
Lockyer Valley	1,115	2,145	1,007	11,030	13,332	**28,629**
Scenic Rim	1,416	10,269	5,674	14,729	10,684	**42,772**
Somerset	1,281	2,272	5,169	10,682	8,413	**27,817**
Total	**102,247**	**135,424**	**307,068**	**262,833**	**356,330**	**1,163,902**

Note: a = actual; f = forecast

Table 57 : Forecast net capital expenditure - as commissioned by product ($'000) (excluding donated assets) (Queensland Urban Utilities, 2013)

Product	2010-11[a]	2011-12[a]	2012-13[f]	2013-14[f]	2014-15[f]	Total 2010-11 to 2014-15
Water	31,510	42,626	7,899	71,621	72,633	**226,289**
Sewerage	51,015	84,123	257,966	178,491	266,144	**837,739**

Product	2010-11[a]	2011-12[a]	2012-13[f]	2013-14[f]	2014-15[f]	Total 2010-11 to 2014-15
Recycled Water	6	835	1,118	2,374	1,989	**6,322**
Support	19,716	7,840	40,085	10,347	15,564	**93,552**
Total	**102,247**	**135,424**	**307,068**	**262,833**	**356,330**	**1,163,902**

Note: a = actual; f = forecast

Review of the expenditure by region and product reveals that:

- Approximately 65% of total capital expenditure over the five year period is incurred in the Brisbane region, with a further 27% in the Ipswich region; the proportion of capital expenditure in the remaining regions varies up to a maximum of approximately 4%
- The allocation of expenditure by region in 2013-14 and 2014-15 is more focussed in the Brisbane region, with approximately 70% and 83% of total forecast respectively; the proportion allocated to Ipswich in 2013-14 and 2014-15 is slightly less than the five year average 16% and 8% of total forecast respectively, with the five year average being approximately 27% whilst the remaining regions each receive 2-6%
- The majority (72%) of expenditure over the five year reporting period is incurred in respect of sewerage assets; water supply assets account for a further 19%, with the remaining 9% attributed to recycled water and support
- There is a slightly greater focus on water services in 2013-14 with an increase to 27% of the total capital expenditure; this is offset by a reduction in expenditure proportioned to sewerage assets (68%), whilst the proportion of expenditure on recycled water and support services had peaks in 2010-11 and 2012-13, of 19% and 13% respectively, as compared to the five year average

A breakdown of the total expenditure by region and product as a percentage is shown in Table 58 and Table 59 respectively.

Table 58 : Forecast net capital expenditure percentage - as commissioned by region ($'000) (excluding donated assets) (Queensland Urban Utilities, 2013)

Region	2010-11[a]	2011-12[a]	2012-13[f]	2013-14[f]	2014-15[f]	Total 2010-11 to 2014-15
Brisbane	73%	77%	30%	70%	83%	**65%**
Ipswich	23%	12%	66%	16%	8%	**27%**
Lockyer Valley	1%	2%	0%	4%	4%	**2%**
Scenic Rim	1%	8%	2%	6%	3%	**4%**
Somerset	1%	2%	2%	4%	2%	**2%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Note: a = actual; f = forecast

Table 59 : Forecast net capital expenditure percentage - as commissioned by product ($'000) (excluding donated assets) (Queensland Urban Utilities, 2013)

Product	2010-11[a]	2011-12[a]	2012-13[f]	2013-14[f]	2014-15[f]	Total 2010-11 to 2014-15
Water	31%	31%	3%	27%	20%	**19%**
Sewerage	50%	62%	84%	68%	75%	**72%**
Recycled Water	0%	1%	0%	1%	1%	**1%**
Support	19%	6%	13%	4%	4%	**8%**

Product	2010-11[a]	2011-12[a]	2012-13[f]	2013-14[f]	2014-15[f]	Total 2010-11 to 2014-15
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Note: a = actual; f = forecast

The allocation of capital expenditure incurred in relation to each of the drivers is shown in Table 60.

Table 60 : Forecast net capital expenditure - as commissioned by driver ($'000) (excluding donated assets) (Queensland Urban Utilities, 2013)

Driver	2010-11[a]	2011-12[a]	2012-13[f]	2013-14[f]	2014-15[f]	Total 2010-11 to 2014-15
Growth	4,681	28,329	211,235	88,886	158,064	**491,195**
Renewal	83,148	82,418	55,834	132,857	149,973	**504,230**
Compliance	4,568	11,111	1,078	17,852	7,337	**41,946**
Improvement	9,849	13,565	38,920	23,238	40,956	**126,528**
Total	**102,247**	**135,424**	**307,068**	**262,833**	**356,330**	**1,163,902**

Note: a = actual; f = forecast

Review of the expenditure by region and product reveals that:

- Expenditure over the five year reported period is principally driven by growth and renewals, in approximately equal proportions (42% and 43% respectively) with compliance and improvement accounting for much smaller portions (4% and 11% respectively)
- For 2013-14 the predominate driver is renewal (51%) followed by growth (34%) with compliance and improvement accounting 7% and 9% respectively; while for 2014-15 the distribution between growth and renewals is relatively equal (44% and 42% respectively) with compliance and improvement accounting 2% and 11% respectively

The allocation of capital expenditure incurred in relation to each of the drivers as a percentage is shown in Table 61.

Table 61 : Forecast net capital expenditure percentage - as commissioned by driver ($'000) (excluding donated assets) (Queensland Urban Utilities, 2013)

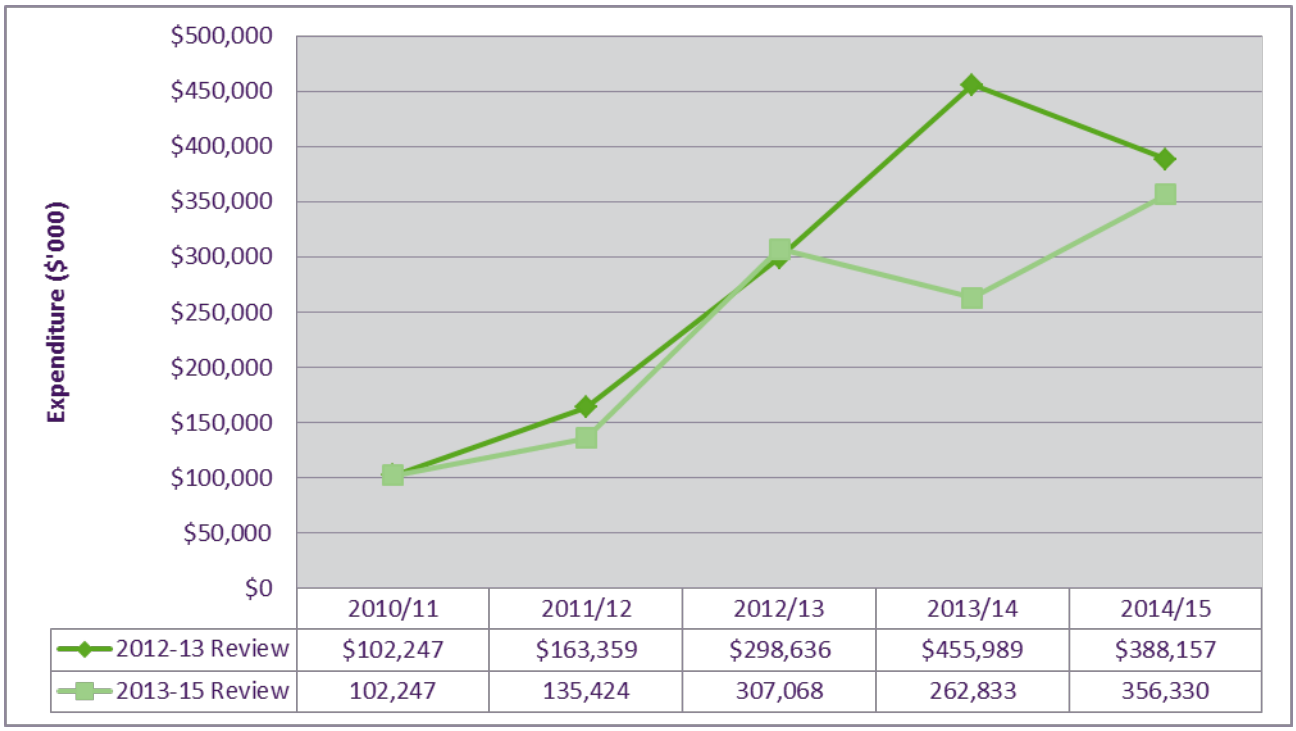
Driver	2010-11[a]	2011-12[a]	2012-13[f]	2013-14[f]	2014-15[f]	Total 2010-11 to 2014-15
Growth	5%	21%	69%	34%	44%	**42%**
Renewal	81%	61%	18%	51%	42%	**43%**
Compliance	4%	8%	0%	7%	2%	**4%**
Improvement	10%	10%	13%	9%	11%	**11%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Note: a = actual; f = forecast

5.2 Historical delivery

The expenditure over the five year reported period reviewed in the previous regulatory review was compared to those submitted by Queensland Urban Utilities for the same period, as shown in Figure 5-2. It can be seen that Queensland Urban Utilities has reduced forecast expenditure significantly for 2013-14, by approximately $193 million, and to a lesser extent for 2014-15, by approximately $42 million.

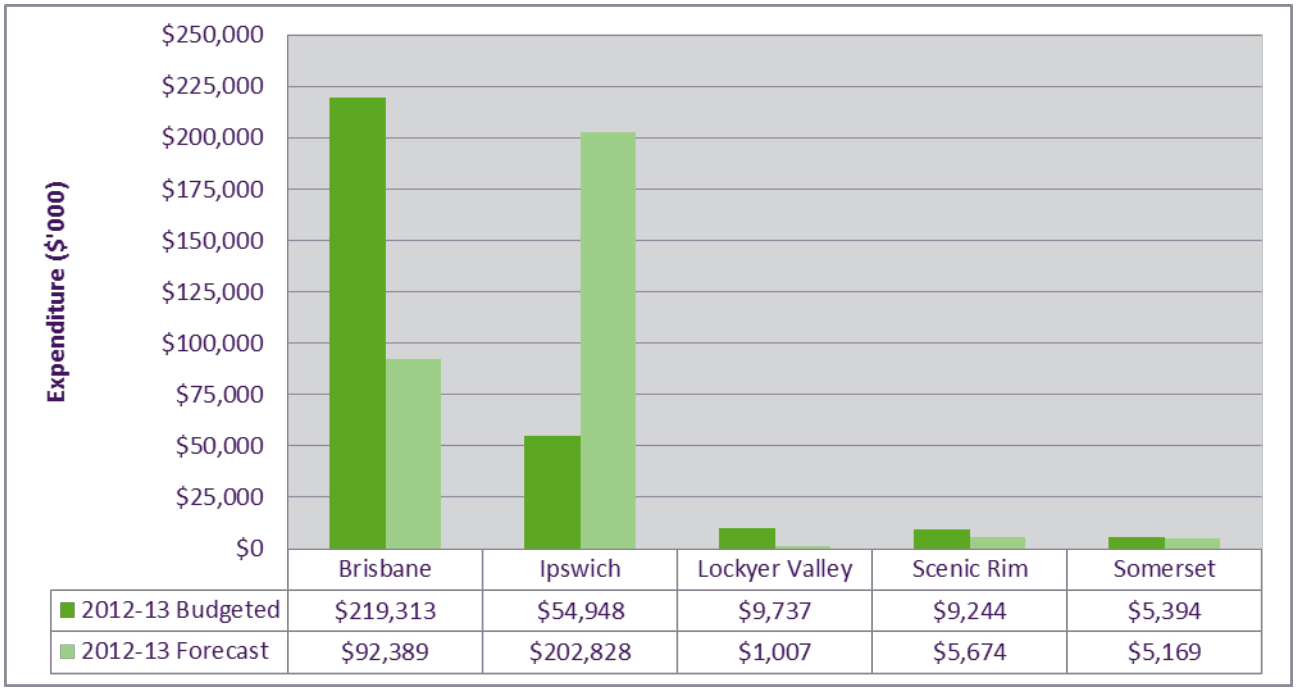
Figure 5-2 : Comparison of five year reported expenditure ($000s)



Queensland Urban Utilities submission to the Authority includes actual, budgeted and forecast expenditure, as relevant, for the period from 2010-11 to 2014-15, both as incurred and as commissioned.

It is noted that there is significant variation ($193.1 million) in the capital expenditure budget for 2012-13 as compared to the forecast expenditure. The expenditure by region is outlined in Figure 5-3.

Figure 5-3 : Comparison of 2012-13 budgeted and forecast expenditure by region ($000s) (Queensland Urban Utilities, 28 June 2013)



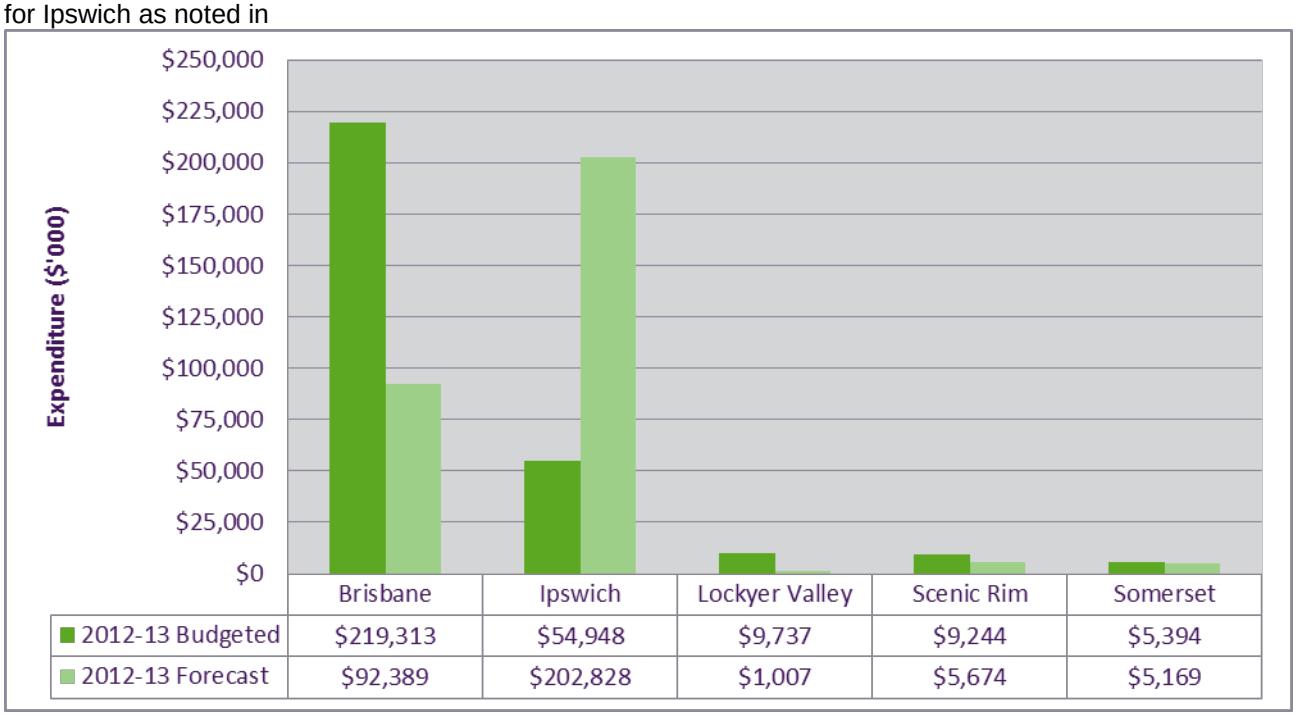
	Brisbane	Ipswich	Lockyer Valley	Scenic Rim	Somerset
2012-13 Budgeted	$219,313	$54,948	$9,737	$9,244	$5,394
2012-13 Forecast	$92,389	$202,828	$1,007	$5,674	$5,169

From Figure 5-3 it is evident that there has been a significant decrease in the expenditure for the Brisbane region and a significant increase in the expenditure for the Ipswich region.

Queensland Urban Utilities stated that the reduction in forecast from Brisbane is in part due to delay in commissioning by 7 months of a major project, BWWCAA22 Brisbane Bulimba Creek Trunk Sewer Upgrade - Padstow Road to Coora St ($55 M), due to wet weather and construction delays. The balance reduction is mainly associated with the change in approach for commissioning of rolling program expenditure to the year after expenditure.

Queensland Urban Utilities stated that the increase in growth as commissioned for 2012-13 when compared to budget is primarily due to the early completion of two major projects, IWWCAA29 Ipswich Woogaroo Creek (Goodna) Trunk Sewer Augmentation and IWWTAA22 Ipswich Goodna WRP Upgrade Stage 4A - Regional Sewerage Scheme for Goodna and Wacol Catchments Phase 1. These were originally budgeted for commissioning in 2013-14. These two projects account for the significant corresponding increase in expenditure

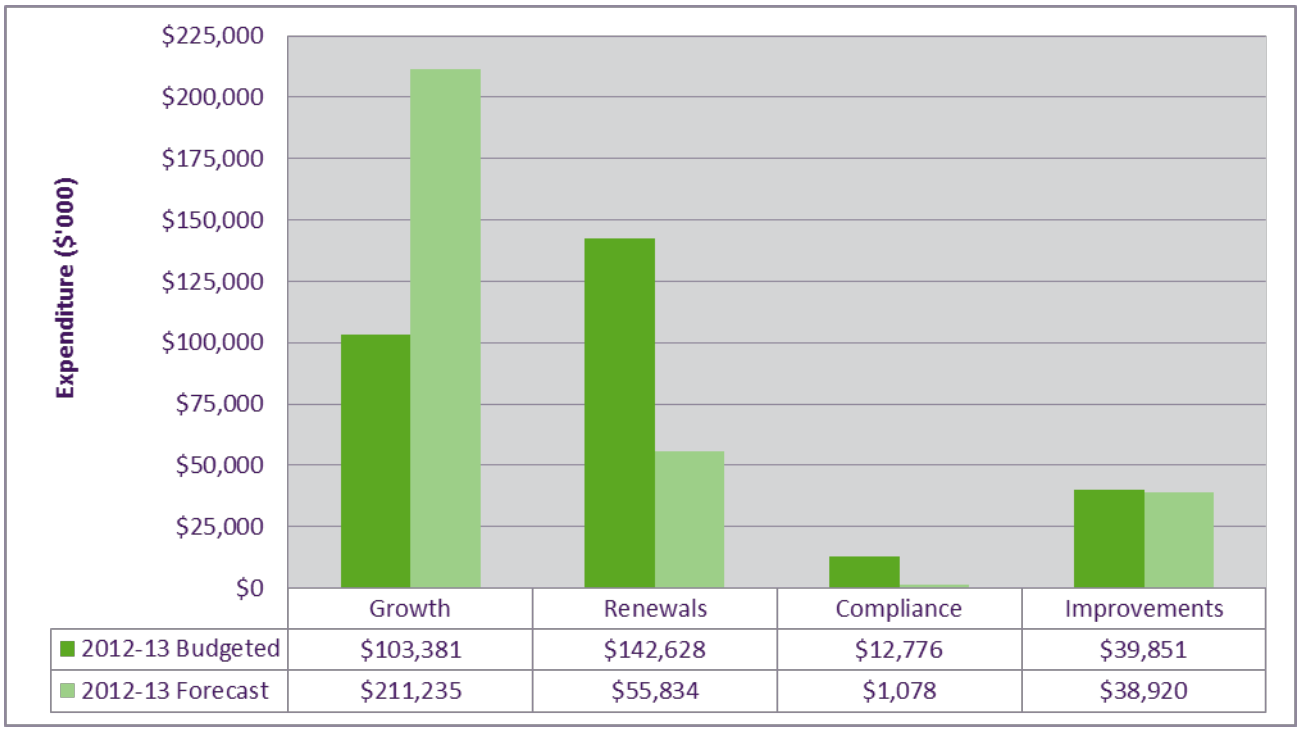
for Ipswich as noted in



	Brisbane	Ipswich	Lockyer Valley	Scenic Rim	Somerset
2012-13 Budgeted	$219,313	$54,948	$9,737	$9,244	$5,394
2012-13 Forecast	$92,389	$202,828	$1,007	$5,674	$5,169

The expenditure by driver is outlined in Figure 5-4. It is noted that capital expenditure driven by growth in 2012-13 is double that originally budgeted, and seven times that actually spent in 2011-12.

Figure 5-4 : Comparison of 2012-13 budgeted and forecast expenditure ($000s) (Queensland Urban Utilities, 28 June 2013)



	Growth	Renewals	Compliance	Improvements
2012-13 Budgeted	$103,381	$142,628	$12,776	$39,851
2012-13 Forecast	$211,235	$55,834	$1,078	$38,920

Further explanation of the variation in capital expenditure is provided in Table 62 for each project where the amount to be commissioned in the 2012/13 year has changed by ± $1.5 million.

Table 62 : Commissioned capital comparison between 2012 and 2014 Information Requirements submissions

Project	Variance (Increase/decrease) ($'000)	Driver for variance
Increases		
Brisbane Gowan Road Pump Station Rising Main Replacement	3,250	Delay in final commissioning of the new of the new main.
Brisbane Luggage Point WRP Wet Weather Relief Overflow	8,721	Slight delay in final commissioning of the project from 2011/12.
Brisbane Luggage Point WRP Primary Settling Tanks No.1 and No. 2 Refurbishment	2,108	Slight delay in final commissioning of the project from 2011/12.
Brisbane Fairfield Branch & Yeronga Sewer Branch Line No. 2 Augmentation	3,959	Slight delay in final commissioning of the project from 2011/12.
Ipswich Woogaroo Creek (Goodna) Trunk Sewer Augmentation	63,608	Commissioning was bought forward from 2013/14 due to early completion of the project.
Ipswich Goodna WRP Upgrade Stage 4A - Regional Sewerage Scheme for Goodna and Wacol Catchments Phase 1	115,828	Commissioning was bought forward from 2013/14 due to early completion of the project.
Ipswich Rosewood WRP Upgrade - Stage 2a	2,489	Project cost increased due to numerous unforseen operational issues and additional scope.
Somerset Fernvale WRP Implementation	5,169	Due to lower than expected population growth the new treatment facility is now not required by 2012/13. As a consequence the project has been deferred.
ICT Separation Program	6,122	Funding required to separate IT systems from Brisbane City Council was higher than anticipated.
Brisbane Green Square Head Office Fitout	9,275	Accounting treatment for the fitout of the new head office was finalised, with costs to be capitalised and offset by landlord incentive payments that will be amortised over the life of the lease.
Sub total	**220,529**	
Decreases		
Lockyer Valley Water Supply Contingency Improvement	-3,147	Project has been delayed due to late procurement and complex nature of the works.
Brisbane Bulimba Creek Trunk Sewer Upgrade - Padstow Road to Coora St	-55,194	The contractor has fallen behind the agreed project delivery schedule. As a consequence commissioning has been deferred to 2013/14.
Brisbane Wastewater Treatment Flood Recovery	-7,303	Delay in recovery of flood damaged assets at Brisbane's sewage treatment plants mainly Oxley STP due to the complex nature of works.
Proposed Efficiency Dividend	-12,544	Estimate reduction in the overall commissioned value due to project savings not yet identified.
Project Deferrals not yet identified	-7,421	Estimate reduction for delayed commissioning due to project deferrals not yet identified.
Sub total	**-85,609**	

An increase in $220.5 million has been offset by a decrease in $85.6 million for individual projects (as shown in Table 62) and $107.6 million for rolling programs (as shown in Table 63).

Queensland Urban Utilities' submission recognises that some variance is due to a change in Queensland Urban Utilities' capitalisation policy in relation to rolling renewals programs. For these programs, capital expenditure is to be commissioned in the year after it is incurred for regulatory purposes. Previously it had been commissioned within the year it was incurred. This change was to align the regulatory treatment with the accounting treatment of the expenditure.

Table 63 : Commissioned capital comparison between 2012 and 2014 Information Requirements submissions - decreases as follows due to revised commissioning year of rolling programs to the year post actual expenditure

Project	Variance (Increase/decrease) ($'000)
Brisbane Water Reticulation System Renewals Program	- 11,685
Ipswich Water Reticulation System Renewals Program	- 3,795
Scenic Rim Water Reticulation System Renewals Program	- 2,308
Brisbane Water Trunk System Renewals Program	- 3,735
Brisbane Water Reservoirs Renewals Program	- 4,653
Brisbane Water Meters Renewals Program	- 5,607
Brisbane Water Fire Hydrants Renewals Program	- 4,000
Brisbane Sewer Reticulation System Renewals Program	- 3,408
Brisbane Sewer Trunk System Renewals Program	- 16,539
Brisbane Sewer Rising Mains Renewals Program	- 7,218
Brisbane Sewer Creek and Waterway Crossings Renewals Program	- 3,505
Brisbane Sewer Pump Stations Renewals Program	- 4,119
Brisbane Water Reclamation Plant Renewals Program	- 4,408
Scenic Rim Water Reclamation Plant Lagoons Enhancements	- 2,074
Lockyer Valley Water Reclamation Plant Lagoons Enhancements	- 2,734
Brisbane Water Distribution Minor Enhance Program	- 3,102
Ipswich Water Distribution Minor Enhance Program	- 1,971
Brisbane Water Supply System Service Capacity Improvement Program	- 3,092
Brisbane Wastewater Transport Minor Enhance Program	- 2,095
Ipswich Wastewater Transport Minor Enhance Program	- 2,048
Brisbane Sewer Pump Station Reliability Improvement Program	- 4,198
Brisbane Odour Compliance Program	- 3,335
Brisbane Water Reclamation Plant Minor Enhance Program	- 3,508
Brisbane Capital Planning and Design Program*	- 2,700
Ipswich Capital Planning and Design Program*	- 1,800

*Decreases due to the revised commissioning year of the capital planning and design program to 2 years post actual expenditure. This aligns better with actual timing of commissioning.

The reduction in compliance as commissioned expenditure is due to the change in approach for commissioning of rolling program expenditure to the year after expenditure. There is no impact on service standards as the project deliverables will still be realised as scheduled.

5.3 Sample selection

A sample capital expenditure projects and programs for detailed analysis and review was selected by the Authority. This sample was discussed and agreed during the Project Kick-off Meeting on 2 July 2013.

The capital expenditure projects and programs chosen for review are shown below in Table 66.

Table 64 : Capital expenditure programs reviewed ($000s) (Queensland Urban Utilities, 2013)

Project Number	Project Name	Region	Driver	Previous Years	2013-14 ($000)	2014-15 ($000)	Total ($000)
BWWCAA01	Brisbane Sewer Reticulation System Renewals Program	Brisbane	Renewal	NA	4,530†	7,528†	**12,058**
BDWDAA06	Brisbane Water Meter Renewals Program	Brisbane	Renewal	NA	7,767†	6,224†	**13,991**
BWWCAA21	Brisbane Woolloongabba Sewer Catchment Augmentation	Brisbane	Growth	46,223	33,346	-	**79,569**
BDWDAA30	Brisbane Bartleys Hill/Wellers Hill Zone connection Including Twin River Crossing	Brisbane	Growth	500	3,000	19,131	**22,631**
BFSPAA01	Brisbane Flood Resilience Program Sewage Treatment Plants	Brisbane	Improvement	-	11,362	7,277	**18,639**
IWWCAA31	Ipswich Bundamba Creek Trunk Gravity Main Implementation Stage 1a and 1b	Ipswich	Growth	14,002	100	-	**14,102**
Total Sample (6 Projects)				**60,725**	**60,105**	**40,160**	**160,990**

† Year expenditure to be commissioned

5.4 Commissioning model summary

Queensland Urban Utilities' capital expenditure is applied to the regulatory asset base (RAB) on an 'as-commissioned' basis as required by the QCA. To forecast capital expenditure on this basis, 'as-incurred' estimates of capital expenditure are first produced. The following sections outline the development of the capital expenditure 'as-commissioned' for inclusion in the RAB.

Capital expenditure that is not commissioned in the year of expenditure has, in the year of expenditure, six months of interest capitalised (at the regulatory weighted average cost of capital). For each subsequent year, prior to project commissioning, a full year of interest is capitalised on the previous expenditure. In the year the project is commissioned, and the project capital work in progress (CWIP) is added to the RAB, the carried forward amount from the previous year's CWIP has six months of interest capitalised.

The as-incurred expenditure described above, is used as a basis for the development of budget and forecast estimates of as-commissioned capital expenditure for the period 2010-11 through 2014-15.

The Queensland Urban Utilities Commissioning Model (an excel-based spreadsheet) translates capital expenditure as-incurred to as-commissioned using the WACC advised by the Authority. The commissioned value is reflected in the Queensland Urban Utilities data templates which are used by the Authority to roll forward the RAB.

Table 65 below provides a summary of Queensland Urban Utilities' Commissioning Model's values for as-incurred and as-commissioned expenditure for the sample projects selection.

Table 65 : Commissioning Model Summary for Sample Projects Selection (Queensland Urban Utilities, 2013)

Project	2013-15 as incurred expenditure ($000)	Total as incurred expenditure ($000)	2013-15 as commissioned expenditure ($000)	Total as commissioned expenditure ($000)	Commissioned A – Annual E – End of project
BDWDAA06 - Brisbane Water Meter Renewals Program	10,264	26,726	13,597	22,256	A
BDWDAA30 - Brisbane Bartleys Hill_Wellers Hill Zone Connection Including Twin River Crossing	22,131	22,631	23,472	23,472	E
BFSPAA01 - Brisbane Flood Resilience Program Sewage Treatment Plants	18,639	18,639	11,362	11,362	A
BWWCAA01 - Brisbane Sewer Reticulation System Renewals Program	11,860	19,066	11,616	14,185	A
BWWCAA21 - Brisbane Woolloongabba Sewer Catchment Augmentation	33,346	79,569	81,311	88,340	E
IWWCAA31 - Ipswich Bundamba Creek Trunk Gravity Main Implementation Stage 1a and 1b	100	14,102	15,672	15,672	E

During the following report, SKM has referred to as-incurred expenditure (unless otherwise specifically stated) to allow for direct comparison with supporting documentation and actual costs.

In addition, the QUU commissioning model contains hard coded values, rather than formulae, in the worksheet for the 2013-14 and 2014-15 financial years, so it is not possible to calculate the commissioned value of adjustments. In consultation with the QCA SKM recommended adjustments on an as-incurred basis.

5.5 Detailed investigations

The findings of the detailed investigations for each of the projects or programs reviewed are summarised in the following sections. Detailed reports for each project outlining the base assumptions for the below findings are presented in Appendix A to Appendix F.

5.5.1 BWWCAA01 Brisbane Sewer Reticulation System Renewals Program

The Sewer Reticulation Renewals Program is aimed at managing the risk associated with the ongoing deterioration of reticulation sewer assets. Reticulation sewers are those with a diameter smaller than 300 mm. The program aims to achieve the reliable and safe transportation of sewage from the sewerage reticulation networks to sewage treatment plants without negative impacts on the community and the environment.

This is a rolling program to rehabilitate or replace underperforming reticulation sewer mains. The reticulation sewer mains renewals programs cover all Queensland Urban Utilities regions; however the Brisbane region has been selected for review by the Authority due to the size of the program.

SKM believes that renewal is the appropriate driver for the scope of work as the renewal of reticulation sewer assets is required to ensure the continued service of aging assets.

Sewer reticulation mains are operated on a “run to rehabilitation” basis. This means that for a main to be included with the renewals program it first has to be identified as having an issue. Mains to be included in the program are identified through a process which includes economic analysis of line segments and inspection of an asset after a failure has occurred in the past. CCTV inspection is used to identify sewer which potentially require structural relining added to the program subsequent to evaluation of alternatives and concurrent activities. Projects are prioritised based on customer service reliability standards, history of failure, condition of assets and risk assessment. SKM is satisfied that renewal projects are identified through an appropriate process and added to the program subsequent to evaluation of alternatives and concurrent activities.

Queensland Urban Utilities utilises a cost estimation database for the development of cost estimates for rehabilitation submissions which is based on work completed in previous years and unit rates developed in 2007 by an independent consultant. In addition the programs of work are delivered through a Standing Offer Arrangement of approved rehabilitation contractors. The Standing Offer Arrangement for Sewer Rehabilitation and Associated Works was appointed in 2012 after an open tender for both small and large diameter sewer rehabilitation works. SKM agrees that the use of a cost estimation database which is periodically reviewed and updated to reflect changes in market conditions is a satisfactory method of determining costs estimates. The competitive tendering of suitable packages of work within the program will ensure the costs are consistent with prevailing market conditions.

Based on tender submission documents, provided by Queensland Urban Utilities and the Sewer Renewals Program - Program List 2013-14, SKM calculated the cost of the two main packages of work for the program. There was a difference of approximately $3.40 million between Queensland Urban Utilities’ and SKM’s cost estimates for the program.

Subsequently, Queensland Urban Utilities has advised that there was an error in calculating the costs of the program relating to the application of the flow control and traffic control costs in the database. Correction of this error results in a saving of $2.3 million.

SKM recommends a further reduction in costs due to high project management costs. SKM recommends that a total of $3.16 million be removed from the overall 2012-13 and 2013-14 budget programs.

5.5.2 BDWDAA06 Brisbane Water Meter Renewals Program

Queensland Urban Utilities owns and maintains a total of over 418,000 domestic and non-domestic meters used for billing purposes. The Brisbane Water Meters Renewals Program scope incorporates the replacement and

rehabilitation of water meters as required. The majority of the water meters included in the water meter renewal program are 20 mm meters used for billing domestic properties. The review focused on the program of works undertaken in 2012-13 and 2013-14 as the works are commissioned the year after incurred, ie the 2012-13 works will be commissioned and capitalised in 2013-14.

This is a rolling program to replace non-operational and malfunctioning water meters. The water meter renewals programs covers all Queensland Urban Utilities regions, however the Brisbane region has been selected for review by the Authority due to the size of the program.

SKM believes that renewal is the appropriate driver for the scope of work as the renewal of water meters is required to achieve accurate billing to customers and for revenue protection.

Meters to be included in the renewals program are determined based on a number of potential issues including: results of water meter compliance testing, attrition statistics and kilolitre and age based replacement points. SKM is satisfied that water meters requiring renewal are identified through an appropriate process and are prioritised appropriately.

Queensland Urban Utilities utilises a unit rate for water meters based on the actual cost from previous years for the development of cost estimates. SKM agrees with the methodology used by Queensland Urban Utilities to determine the average actual cost for meter replacement and agrees with the application of $196 per meter for cost estimation. The use of a cost estimation database which is updated to reflect changes in contract rates and supply arrangements is a satisfactory method of determining costs estimates. SKM has adopted a unit rate of $196 per meter for the 2013-14 program as this reflects the average actual cost for meters.

The water meters renewal program is delivered Skilltech, a contractor engaged by Queensland Urban Utilities through a competitive tendering process. SKM considers that the delivery for the program through a contractor selected through a tender process is appropriate. However, the procurement of water meters through Skilltech has not been demonstrated as the least cost procurement method. Queensland Urban Utilities state that Skilltech has a greater purchasing power due to the size of Skilltech's business. However, Queensland Urban Utilities has not demonstrated that this assumption is correct through market testing. As such, for consistency, SKM has adopted the findings of the Authority's 2011-12 review that annual savings of 5% could be realised through Queensland Urban Utilities negotiating bulk supply contracts.

SKM considers that $1.1 million should be removed from the overall 2012-13 and 2013-14 budget programs.

5.5.3 BWWCAA21 Brisbane Woolloongabba Sewer Catchment Augmentation

The Woolloongabba Sewerage Catchment lies in Brisbane's inner southern suburbs of Woolloongabba, Stones Corner, Buranda and East Brisbane. The S1 South Sewerage Catchment Master Planning Study - Review 2006 identified that the Woolloongabba Sewerage Catchment suffered from major capacity issues requiring immediate attention. The Queensland Government and Brisbane City Council have nominated Woolloongabba and Buranda as priority urban renewal areas to meet regional growth targets.

Population projections for the Woolloongabba Sewerage Catchment are predicted to increase by approximately 50% from current populations. This projected growth places additional stress on the already overloaded system and will result in uncontrolled overflows occurring within the catchment during daily morning peak in 2016. There is a requirement for immediate action to address deficiencies as well as to cater for future growth. Based on the adopted population projections, SKM accepts that the Woolloongabba Sewerage Catchment is currently under capacity and is in need of upgrade to meet current and future population projections.

A number of alternative options for servicing the Woolloongabba Sewer Catchment were considered. The options were assessed using a multi-criteria analysis process and cost estimates. The overall preferred strategy is a gravity sewer augmentation option where the key deficiencies are addressed by three strategic interceptor sewers and the remainder of the deficiencies are addressed by localised upgrades. SKM is satisfied that an appropriate range of options was selected and adequately reviewed, that the most efficient option has been selected and that the scope of works is appropriate to meet the project need.

The project was spilt into two parts to ease delivery of the project during the transitional period (in which Queensland Urban Utilities was formed). SKM is satisfied that the tendering process used for the procurement of the D&C contract for Part B of the overall project is robust and will have resulted in a market price based on a VFM assessment.

Overall, SKM finds the project to be prudent and efficient.

5.5.4 BWWCAA21 Brisbane Bartleys Hill/Wellers Hill Zone connection including Twin River Crossing

The Bartleys Hill/Wellers Hill Water Supply Zone (WSZ) Connection project involves the construction of a new trunk main to link the Wellers Hill WSZ and Bartleys Hill WSZ. The Bartleys Hill WSZ is supplied from Bartleys Hill Reservoir in Ascot, comprising two reservoirs with a combined capacity of 19.8 ML. This is less than the 2011 peak day demand storage requirement of 24.2 ML under SEQ Water Supply and Sewerage Design and Construction Code.

A major water supply incident in September 2011, where both supply trunk mains to Bartleys Hill reservoir failed, caused the reservoir to run dry and affect 12,000 customers. A feasibility report was commissioned to evaluate and propose solutions to the issue of water supply reliability and security to the zone, and address water supply requirements to facilitate growth development in the area.

SKM considers that the existing combined capacity of the Bartleys Hill Reservoirs, of 19.8 ML, is not sufficient for the 2011 WSZ population which requires a capacity of approximately 24.2 ML or future population growth. As a result, SKM accepts that additional water supply capacity is required and that the primary driver for the project is growth.

A number of alternative options were considered to both improve the reliability to and within the Bartleys Hill WSZ, and to meet the SEQ Water Supply and Sewerage Design and Construction Code. The option selected was the construction of a dual cross river connection between Bartleys Hill WSZ and Wellers Hill WSZ. The alignment of the mains is still in the process of being determined. SKM is satisfied that this option is appropriate to meet the project needs.

Draft documentation has been provided to SKM states the project will be complete in April 2016. As the project is not scheduled for completion until April 2016, SKM considers that the entire $22.1 million budgeted for the project should be deferred and all costs should only be added to the RAB once commissioned in 2015-16.

5.5.5 BFSPAA01 Brisbane Flood Resilience Program Sewage Treatment Plants

During the January 2011 flood event in Brisbane many of Queensland Urban Utilities' sewerage pump stations and sewage treatment plants (STPs) were inundated by flood waters. The result was significant loss in electrical and control infrastructure for many of Queensland Urban Utilities' sewerage assets. These failures resulted in environmental harm, public health risks and the need to mobilise scarce resources in a time of disaster. The program involves the raising, relocating or fixing selected equipment to the agreed flood protection level.

The Brisbane Flood Resilience Program covers the Oxley, Fairfield and Karana Downs STP. This review primarily focuses on the expenditure proposed for the Oxley STP as it comprises the majority of the expenditure, approximately 80%.

The work at the Oxley STP is aimed at improving the plant’s flood resilience in the short term. Although it may not be feasible to completely flood proof the treatment plant, modification to a key number of electrical and mechanical assets will improve its resilience and minimise down time in the event of another flood of the same magnitude as experienced in 2011. The level of flood waters around the plant infrastructure varied from no flood water to 3 m above ground level due to the undulating nature of the land.

SKM considers that improvement is the driver for the scope of work.

The decision to undertake the works is underpinned by assumptions on a significant increase in insurance costs. SKM has been provided with the basis of these assumptions, including historical evidence. As such, SKM determines that the project is prudent.

The Oxley Sewage Treatment Plant Short Term Flood Resilience Program Minor Capital Project Submission states that *"operational issues will be managed by construction and installation of new assets followed by staged changeovers of equipment."* When SKM sought clarification of what would happen to existing assets that will become redundant following the changeover, but are still within their useful asset life, Queensland Urban Utilities indicated that redundant assets with some useful life will be salvaged to be kept as a spare unit for use elsewhere (may need to be refurbished), be used for spare parts, be sold as is, or refurbished and sold, in accordance with QUU policy on disposal of assets. SKM considers the plan for redundant assets to be the best approach for managing the situation. SKM would expect cost savings to be made as a result of this process, in the order of 10% of the new equipment costs, approximately $300,000.

As the project has not been tendered and hence market tested, SKM has developed bottom up cost estimates for components of the detailed cost estimate developed by Queensland Urban Utilities. These estimates were developed based on the information provided by Queensland Urban Utilities, and SKM's knowledge from past projects and of the current market. The components selected for review included major civil structures, switchboards and the control system. SKM has reviewed approximately $3.5 million or 47% of the total construction costs. Comparison of the Queensland Urban Utilities and SKM estimated costs ($3.47 million as compared to $3.29 M) indicates that the overall estimates are within 5%. SKM is satisfied that the costs used for budgetary purposes have been developed appropriately and are in line with market conditions. The determination of actual costs through a market tendering process is appropriate. SKM considers that these conclusions are applicable to Fairfield and Karana Downs STP flood resilience work as well.

5.5.6 IWWCAA31 Ipswich Bundamba Creek Trunk Gravity Main Implementation Stage 1a and 1b

The Bundamba Sewerage catchment services the areas of Booval, North Booval, Silkstone, Eastern Heights, Raceview and adjoining areas. It is anticipated that the system will be required to service significant growth (4% p.a. over 36 years) in the future due to planned development in the Deebing Creek and Ripley Valley areas, which are located at the upstream end of the catchment. The ultimate equivalent population of the catchment is expected to increase from approximately 50,000 Equivalent Persons (EP) to approximately 200,000 EP.

Modelling of the existing system undertaken for the 2007 Sewerage Masterplan Report indicated that the main sewer was approaching full capacity along some sections of the main Bundamba trunk. Hydraulic limitations were identified in the McCartney Street and Cascade Street sewer sections. Queensland Urban Utilities has advised that the network has a history of overflows during wet weather events including popped manholes, and overflow into nearby properties including a nearby school playing field. This project will address the current hydraulic limitations of the sewer, with the upgraded sewers designed to service the ultimate population. SKM considers that, based on the proposed growth in the network, the current hydraulic limitations of the sewer and the history of overflow events during wet weather events this project is prudent.

SKM note that the loading rate of 210 L/EP/day is higher than the ADWF loading rate of 180 L/EP/d specified by the SEQ Water and Sewerage Planning Guidelines. However, at commencement of the detailed design process, the SEQ Water and Sewerage Planning Guidelines were not in place. As such, SKM agrees that the use of the guidelines in place at the time was appropriate.

The decision by Queensland Urban Utilities to remove the Bundamba Trunk Main Stage 1 project from the Thiess CPWC contract resulted in significant project savings, demonstrating project cost efficiency.

SKM notes that a significant contingency allowance has been allowed in the total 2013-14 forecast project completion expenditure, comprising over 10% of the total project costs. Given the late stage of the project, this contingency allowance appears excessive. A further breakdown of this contingency cost was not provided. SKM recommends a reduction in this contingency of 50% ($798,000).

This project incurred costs prior to the formation of Queensland Urban Utilities. Only capital expenditure incurred from 1 July 2010 can be rolled up into the commissioned value. Pre-2010 expenditure is already taken account of in the RAB as at 1 July 2010. Queensland Urban Utilities has verified that the only costs incurred from July 2010 are to be commissioned and subsequently added to the RAB.

SKM recommends a reduction in this contingency, of $0.80 million from the Forecast Project Completion Expenditure ($14.8 M).

5.6 Overall sample capital project review summary

A sample of six projects was assessed as a representative sample of the capital expenditure program Queensland Urban Utilities for the 2013-15 period. These projects have been assessed these 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.

Of the six projects reviewed in detail, all expenditure was found to be prudent.

One project was found to be prudent and efficient (Brisbane Wooloongabba Sewer Catchment Augmentation).

For the two renewals projects (Brisbane Sewer Reticulation System Renewals Program and Brisbane Water Meter Renewals Program) SKM found the projects not to be efficient as the cost estimates for future works did not reflect actual historical costs for the works.

In addition, for the Brisbane Water Meter Renewals Program, the least cost procurement method for meters has not been demonstrated. For consistency, SKM has adopted the findings of the Authority's 2011-12 review that annual savings of 5% could be realised through Queensland Urban Utilities negotiating bulk supply contracts.

For the Brisbane Sewer Reticulation System Renewals Program, a reduction is recommended to amend an error in the calculation of the program cost using the database costing tool, and also to account for high project management costs.

For the Ipswich Bundamba Creek Trunk Gravity Main Implementation Stage 1a and 1b, an adjustment was recommended to reduce the current high contingency allowances.

For the Brisbane Bartleys Hill/Wellers Hill Zone connection Including Twin River Crossing, as this project will not be commissioned during the review period the costs should be deferred and all costs should only be added to the RAB once commissioned in 2015-16.

For the Brisbane Flood Resilience Program minor adjustments are recommended to account for redundant assets with some useful life that can be used elsewhere (ie used for spare parts, be sold as is, or refurbished and sold).

Table 66 provides an overview of the final assessment made for each project or program.

Table 66 : Overview of prudency and efficiency of capital expenditure sample selection ($'000)

Project Name	Project Number	Assessment			Queensland Urban Utilities Proposed1			Proposed Adjustment			SKM Recommended		
		Prudent	Efficient	Comment	Previous years	2013-14	2014-15	Previous years	2013-14	2014-15	Previous years	2013-14	2014-15
Brisbane Sewer Reticulation System Renewals Program	BWWCAA01	✓	✘	Project considered prudent, but not efficient. Reduction to reflect error in calculation of costs and high PM costs	0	4,530	7,528	0	-395	-2,769	0	4,135	4,759
Brisbane Water Meter Renewals Program	BDWDAA06	✓	✘	Project considered prudent, but not efficient. Reduction to reflect actual unit rates. Also application of 5% saving as there may be an opportunity to negotiate bulk supply contracts	0	7,767	6,224	0	-697	-410	0	7,070	5,814
Brisbane Woolloongabba Sewer Catchment Augmentation	BWWCAA21	✓	✓	Project considered prudent and efficient.	46,223	33,346	0	0	0	0	46,223	33,346	0
Brisbane Bartleys Hill/Wellers Hill Zone connection Including Twin River Crossing	BDWDAA30	✓	✘	Project considered prudent, but not efficient as it is anticipated that the works will not be completed and commissioned within the 2013-15 review period.	500	3,000	19,131	-500	-3,000	-19,131	0	0	0
Brisbane Flood Resilience Program Sewage Treatment Plants	BFSPAA01	✓	✘	Project considered prudent. Minor adjustments for efficiency regarding the resale value of existing assets.	0	11,362	7,277	0	-319	0	0	11,044	7,277
Ipswich Bundamba Creek Trunk Gravity Main Implementation Stage 1a and 1b	IWWCAA31	✓	✘	Project considered prudent, but not efficient. Reduction to reflect the removal of excessive contingency allowances.	14,002	100	0	-798	0	0	13,204	100	0
Total					**60,725**	**60,105**	**40,160**	**-1,298**	**-4,411**	**-22,310**	**59,427**	**55,694**	**17,850**

[1] *Commissioning Model 5yr Summary 2014.xls,* (Queensland Urban Utilities, 2013)

5.7 Efficiency gains

SKM has documented efficiency gains achieved by Queensland Urban Utilities in its review of the six sampled project reviews.

SKM has reviewed Queensland Urban Utilities' capital expenditure against other Australian water companies. In particular, SKM sourced data from the National Performance Report 2011–12 from which a number of comparative metrics were developed.

Whilst SKM considers benchmarking a useful tool for highlighting areas of potential inefficiency, the nature of capital expenditure is that it is typically 'lumpy', easily skewed by the commissioning of one or two large projects (for example the $85 million Brisbane Woolloongabba Sewer Catchment Augmentation Project), so comparisons for a single point in time are difficult. Due to the nature of capital expenditure, benchmarking of capital expenditure over a short period of time is problematic and does not provide useful outcomes for analysis.

SKM considers "bottom-up" benchmarks are likely to provide the most meaningful comparisons for the Authority, though some measures could be used for internal time-series benchmarks. Overall, SKM considers benchmarking to be a more useful tool in assessing operating expenditure than capital expenditure, as it is generally more consistent over time, and directly related to factors such as network size, number of customers or demand.

5.8 Asset lives

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

The Authority's information requirement template allows information to be provided on the following two sheets.

- 5.8.1.1 Asset Lives Details for Regulatory Asset Base
- 5.8.1.2 Asset Lives Details for Regulatory Asset Base - Tax Purposes

These categories are considered below.

Within its Return Queensland Urban Utilities included the following in relation to regulatory depreciation:

> *"Queensland Urban Utilities calculates depreciation for regulatory purposes using the straight-line method. The RAB value is grouped by region and asset class and depreciated using the average remaining asset life for each group. Depreciation is calculated based on the opening RAB plus the addition of 50% of each year's 'as-commissioned' capital expenditure and following indexation.*
>
> *Queensland Urban Utilities has continued to calculate depreciation using the nominal asset lives applied in the 2012/13 price monitoring submission. Disposals due to the January 2011 flood have been included in 2010/11 at the financial asset register written down value (WDV) – which is based on the RAB."*

5.8.1 Useful lives for new assets

Information on asset lives for major assets, such as reservoirs, treatment and pump stations have been provided in the Authority's information requirement template. The only categories not completed were as follows: water treatment (as expected, Queensland Urban Utilities does not have any water treatment plants), land, distribution infrastructure not included in another category, support services and unallocated cash contribution.

Table 67 shows the asset lives for new assets.

Table 67 : Asset lives for new assets

Asset	Drinking water	Wastewater via Sewer	Trade waste
Reservoirs	90	90	90
Pump stations	25	30	30
Treatment		25	25
Associated telemetry and control systems	10	10	10
Meters	15	15	15
Billing systems	5	5	5
Corporate systems	10	10	10
Sundry property, plant and equipment	10	10	10
Building other than infrastructure housing	60	60	60
Mains	70	65	65
Establishment Costs	5	5	5

Source: *Information Requirements Template 2013_14* (Queensland Urban Utilities, 2014)

SKM has compared the provided asset lives to available benchmarks. The Water Services Association of Australia (WSAA), the Pressure Sewerage Code of Australia (WSA 07-2007 V1.1) and the WSAA Water Supply Code of Australia (WSA 03-2011) provide benchmarks for asset lives.

Table 68 presents benchmarks of selected asset lives and a comparison with those used by Queensland Urban Utilities.

Table 68 : Benchmarking of asset lives

Asset	Benchmark	Comment
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 03-2011 Water Supply Code of Australia suggests a typical asset design life of 100 years for water mains, 30 years for valves.	A 70 year asset life for water infrastructure and a 65 year assets life for wastewater infrastructure is reasonable
Reservoirs	The WSA 03-2002 Water Supply Code of Australia suggests a typical asset design life of 50 years for reservoirs.	Compared to benchmarks, the assumption of a 90 year asset life appears high, however, from our experience many reservoirs are in service for longer than 50 years. The inclusion of an asset life for reservoir assets for wastewater and trade waste is assumed to be an error.
Treatment	No combined treatment asset life is provided.	Treatment consists of a number of civil, mechanical and electrical assets. A combined asset life of 25 years is reasonable
Pump stations	The WSA 03-2011 Water Supply Code of Australia suggests a typical asset design life of 20 years for pumps (note that this contributes to the mechanical component only).	The assumption of a 25 and 30 year asset life, for water and wastewater pump stations respectively, is reasonable.
Telemetry & SCADA	The WSA 03-2011 Water Supply Code of Australia suggests a typical asset design life of 15 years for SCADA.	The assumption of a 10 year asset life is reasonable.

5.8.2 Useful lives for new assets for tax purposes

Information on asset lives for major assets, such as reservoirs, treatment and pump stations have been provided in the Authority's templates. As with the useful lives for new assets the same categories were not completed.

The TR 2013/4 Taxation Ruling Income tax: effective life of depreciating assets (applicable from 1 July 2013) 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, 2013)

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 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
- An analysis of the decline of market value of an asset class

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, 2013)

SKM cross referenced the effective tax lives provided by Queensland Urban Utilities with the 'Effective lives (Industry Categories)' Table A as at 1 July 2013 provided in the TR 2013/4 Taxation Ruling (ATO, 2013).

Table 69 : Review of effective life

Asset	Drinking water	Wastewater via Sewer	Trade waste	Revised Effective Life (Tax)+
Reservoirs	80	80	80	80
Pump stations	30	30	30	25
Treatment		30	30	Comprised of a number of individual assets
Associated telemetry and control systems	10	10	10	10
Meters	20	20	20	20
Billing systems	3	3	3	Not covered
Corporate systems	3	3	3	Not covered

Asset	Drinking water	Wastewater via Sewer	Trade waste	Revised Effective Life (Tax)+
Sundry property, plant and equipment	8	8	8	Require further clarification of assets to determine life
Building other than infrastructure housing	40	40	40	No direct correlation with asset type
Mains	80	80	80	80
Establishment Costs	5	5	5	Not covered

+Determined through review of Australian Government TR2013/4 Taxation Ruling: Income Tax, effective life of depreciating assets (applicable from 1 July 2013)

The Authority template refers to an asset class as opposed to individual assets, i.e. for treatment plants, sundry plant and equipment and establishment costs, which cannot be cross referenced with TR 2013/4 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 selected 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 comparable to the 30 years suggested by Queensland Urban Utilities. It should be noted that this calculation was performed to determine a relative figure. For a more accurate determination the Authority information requirement template would need to be modified to include all asset types, and the quantities, at each treatment 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 SKM considers 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 2013/4 Taxation Ruling, therefore a revised effective tax life cannot be determined.

The effective asset lives for pump stations, for both water and wastewater, do not correlate to TR 2013/4 Taxation Ruling guidance. It is suggested that these be reviewed by Queensland Urban Utilities when next assessing its effective lives.

It should also be noted that whilst SKM offers advice based on publicly available information and our interpretation is based on experience, the above should not be interpreted by either the Authority or by Queensland Urban Utilities as tax advice. Therefore, although SKM can advise that effective lives do not correlate to TR 2013/4 Taxation Ruling guidance; it is recommended that Queensland Urban Utilities seeks guidance from its accountants/auditors regarding estimates of effective asset lives for tax purposes.

5.8.3 Asset lives summary

Whilst the assumed asset lives for passive assets such as reservoirs and pipelines is relatively consistent between both 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.

5.9 Summary assessment of capital expenditure

In general for the six sampled projects reviewed in detail, SKM has found that:

- The sampled projects demonstrate that Queensland Urban Utilities has followed its robust policies and procedures for capital delivery, including production of feasibility studies, procurement strategies and business cases and undertaking gateway, independent estimates and third party reviews where required
- All projects have documentation clearly identifying the key driver for the project and demonstrating a thorough review of project options to address the project need including financial analysis
- All projects demonstrate a consideration of risk and asset management
- For rolling programs, the production of cost estimates, based on historical costs for an adequate package of competitively tendered works, is appropriate. However, SKM has found that costs tend to be higher than those historically encountered. Whilst this increase may be as a result of an increase in an allowance for contingency, SKM considers these increases to be excessive
- For individual projects (eg the Brisbane Sewer Reticulation System Renewals Program and the Brisbane Flood Resilience Program Sewage Treatment Plants) the allowance for project management and overheads is high. Queensland Urban Utilities has stated (for the Brisbane Sewer Reticulation System Renewals Program) that these allowances are in line with its standard cost estimation process. However, as this process has not been provided for review, this cannot be verified.
- For individual projects, it is noted that the contingency allowances remain high throughout the life of the project, including those close to completion, when at least some of the project risks would have been expected to have either been realised or mitigated and hence the contingency reduced
- Some projects have been classified as 'minor' projects (ie less than $5 M), when they should have been classified as 'major' projects (eg the Brisbane Water Meter Renewals Program, and the Oxley Creek component of the Brisbane Flood Resilience Program Sewage Treatment Plants Project).
- There are often inconsistencies between sources of information. Whilst SKM is aware projects progress over time, and hence changes to scope and costs are therefore likely, these changes are not always clearly documented in the information provided for this review.

SKM recommends the following:

- That the contingency allowance on projects is reviewed periodically and reduced when risks have either been realised or mitigated
- That the project classification is reviewed at logical steps (eg on the completion of project documentation) and amended if required
- That the project summary documents (where possible) significant variations to scope and costs

On the basis of the detailed review undertaken in respect of the six sampled projects, one project has been demonstrated to be prudent and efficient (Brisbane Woolloongabba Sewer Catchment Augmentation).

SKM has recommended that the allowed 2013-14 expenditure be reduced for the remaining five projects, as follows:

- One project for which the actual contracted unit rates are less than the rates adopted for forward budgeting purposes (Brisbane Water Meter Renewals Program). In addition, for the Brisbane Water Meter Renewals Program, the least cost procurement method for meters has not been demonstrated. For consistency, SKM has adopted the findings of the Authority's 2011-12 review that annual savings of 5% could be realised through Queensland Urban Utilities negotiating bulk supply contracts. SKM recommends a total reduction of $1.1 million for the Brisbane Water Meter Renewals Program.
- One project which a reduction is recommended to amend an error in the calculation of the program cost using a database costing tool and also to account for high project management costs (Brisbane Sewer Reticulation System Renewals Program). For the Brisbane Sewer Reticulation System Renewals Program SKM recommends a total reduction of $3.2 M.

- One project which is not expected to be delivered within the review period (Brisbane Bartleys Hill/Wellers Hill Zone connection including Twin River Crossing). SKM recommends that $22.6 million is deferred until the project is commissioned.
- One project for which the contingency allowance is considered excessive (Ipswich Bundamba Creek Trunk Gravity Main Implementation Stage 1a and 1b). SKM recommends a reduction of $0.8 M.
- One project where minor cost savings are expected through the sale or re-use of spare parts (Brisbane Flood Resilience Program Sewage Treatment Plants). SKM recommends a reduction of $0.3 M.

SKM recommends that 2013-15 forecast expenditure in respect of the sampled projects is reduced by $28.02 M, which represents a 17% reduction in the forecast expenditure ($160.99 M) for those projects. This includes $22.63 million to be deferred until 2015-16.

6. Conclusions and recommendations

6.1 Policies and procedures

As detailed in Section 3.1 are addressed by the documents reviewed as summarised in the table below.

Table 70 : Summary of requirements

Requirements	Capital expenditure policies and procedures	Operating expenditure policies and procedures
Has a standardised approach to cost estimating	Compliant and robust	Not applicable
A summary document is prepared	Compliant and robust	Not applicable
An implementation strategy is prepared	Compliant and robust	Not applicable
Has a gateway review process	Compliant	Not applicable
Has a benefits realisation assessment process	Not compliant	Not applicable
Includes requirements to comply with relevant legislation	Compliant and robust	Compliant and robust
Includes requirements to take account of regional issues.	Compliant and robust	Compliant and robust
Only commissioned capital expenditure from 1 July 2010 is included in the RAB	Compliant and robust	Not applicable
Asset management in accordance with good industry practice	Not compliant	Not compliant
Procurement in accordance with good industry practice	Compliant and robust	Compliant and robust
Budget formation in accordance with good industry practice	Compliant and robust	Compliant and robust

Potential areas for improvement include:

- The adoption of risk based costing (eg Monte Carlo or equivalent) for more complex and larger cost projects
- The improvement of the Gate 5 Project Review and Closure documentation, including formal documentation, review of benefits realisation, and a mechanism to return finding from this stage to improve processes and decision making
- Adoption of a standardised approach for cost estimation on minor projects
- Adoption of the requirement of an implementation strategy for minor works

6.2 Operating costs

Consistent with the findings of the 2012-13 price monitoring review, SKM considers Queensland Urban Utilities to be a relatively inefficient water utility when compared with industry peers in Australia and the United Kingdom with regards to the water reticulation network, but is comparable with efficient utilities in these jurisdictions with regards to wastewater operations.

The asset management plans that Queensland Urban Utilities currently have were inherited from the Brisbane City Council, and these were found to be more focused on a run-to-fail approach, with little or no detail with regards to lifecycle management and costings. SKM noted that Queensland Urban Utilities is moving to a more planned maintenance approach, targeting 70% planned work and 30% responsive maintenance as opposed to the current 65% responsive 35% planned maintenance split. The review and development of new asset-focused asset management plans with consideration of whole-of-life issues is currently underway, and Queensland Urban Utilities have advised that the target for completion of these asset management plans is during 2014.

The lack of a complete and robust asset management system has contributed to the inefficiencies in using internal and external labour to move to a more planned maintenance approach. SKM considers that the increase in contractor/sub-contractor costs discussed in **Section 4.6** is due to the Queensland Urban Utilities looking to shift the balance through the split of available labour rather than moving to a more planned approach through a better understanding of its water network assets and the associated whole-of-life considerations. SKM has questioned the efficiency of further increasing the contractor costs and the overtime allocation in 2013/14 as a result.

Queensland Urban Utilities has demonstrated an awareness of its operating costs and the impact these have on costs to its customers through a number of efficiency programs and targets that are in differing stages of implementation. The broad 3% efficiency target that is a Board initiative has been demonstrated in some areas of the operational expenditure forecast. The recommendations for cost savings presented by Third Horizon in June 2011 have been implemented in part, although the quantum of the saving is not apparent to SKM as there is insufficient documentation to verify if all of the projected savings have or are being achieved.

A change in cost allocation has made it difficult to make direct comparisons between the recommendations included in the 2012-13 price monitoring review and the allocations included in the 2013-15 submission. Costs that had previously been included under the broad Other Materials and Services have been shifted to corporate costs, and this has made it difficult to identify any savings that may have been made.

The largest adjustments are in the corporate costs. SKM considers that the rushed separation program as highlighted by Halcrow has continued to contribute higher costs than are considered appropriate. SKM's analysis has identified a number of savings, including a reduction in the number of FTEs across corporate functions.

Further, SKM recommends that Queensland Urban Utilities reviews and improves its asset management system to achieve long-term efficiencies in its operational expenditure. The shift to a more planned maintenance approach will promote more efficient numbers of internal and external FTEs with the mix to suit the different services provided by Queensland Urban Utilities. This system will also support the selection and installation of more energy efficient assets, and allow for more efficient operation of treatment and pumping stations. A more refined asset management system will, in addition, facilitate reporting on benefits and performance improvements due to the planned maintenance approach and assist to identify any efficiencies that have been achieved.

6.2.1 Recommended adjustments to operational expenditure

The following reductions to the 2013-14 and 2014-15 forecasts are recommended:

- Corporate Costs - reduction of $1.766 million in 2013-14 and $0.854 million in 2014-15 through a reduction of FTEs across corporate functions
- Employee Expenses - reduction of $1.55 million in 2013-14 due to excessive overtime allocation, and $1.60 million in 2014/15 (which is equivalent to the proposed 2013/14 reduction escalated by 3.0% in line with the unit rate escalation of employee expenses between 2013/14 and 2014/15)
- Electricity - no reduction in 2013/14, although any changes in the carbon pricing mechanism in Australia should be monitored and included
- Other Materials and Services - reduction of $3.5 million in 2013-14 for unjustified contractor/sub-contractor costs and $3.59 million in 2014/15 (which is equivalent to the proposed 2013/14 reduction escalated by 2.5% in line with the unit rate escalation of other material and services between 2013/14 and 2014/15)

Table 71 Summary of reductions to 2013/14 operating expenditure forecast (values in nominal $'000s)

Category	2013/15 submission	Recommended reduction	Revised 2013/14 budget	Variance
Corporate Costs	54,534	1,766	52,507	-3.7%
Employee Expenses	75,639	1,550	74,089	-2.0%

Category	2013/15 submission	Recommended reduction	Revised 2013/14 budget	Variance
Electricity	12,932	0	12,932	0.0%
Other Materials and Services	103,859	3,500	100,359	-3.4%
Total 2013/14 forecast[76]	266,141	6,816	259,325	-2.6%

Table 72 Summary of reductions to 2014/15 operating expenditure forecast (values in nominal $'000s)

Category	2013/15 submission	Recommended reduction	Revised 2014/15 forecast	Variance
Corporate Costs	58,660	854	57,806	-1.5%
Employee Expenses	76,754	1,600	75,154	-2.1%
Electricity	14,494	0	14,494	0.0%
Other Materials and Services	105,072	3,588	101,484	-3.4%
Total 2014/15 forecast[77]	273,604	6,042	267,562	-2.2%

6.3 Capital expenditure

In general for the six sampled projects reviewed in detail, SKM has found that:

- The sampled projects demonstrate that Queensland Urban Utilities has followed its robust policies and procedures for capital delivery, including production of feasibility studies, procurement strategies and business cases and undertaking gateway, independent estimates and third party reviews where required.
- All projects have documentation clearly identifying the key driver for the project and demonstrating a thorough review of project options to address the project need including financial analysis.
- All projects demonstrate a consideration of risk and asset management.
- For rolling programs, the production of cost estimates, based on historical costs for an adequate package of competitively tendered works, is appropriate. However, SKM has found that costs tend to be higher than those historically encountered. Whilst this increase may be as a result of an increase in an allowance for contingency, SKM considers these increases to be excessive.
- For individual projects (eg the Brisbane Sewer Reticulation System Renewals Program and the Brisbane Flood Resilience Program Sewage Treatment Plants) the allowance for project management and overheads is high. Queensland Urban Utilities has stated (for the Brisbane Sewer Reticulation System Renewals Program) that these allowances are in line with its standard cost estimation process. However, as this process has not been provided for review, this cannot be verified.
- For individual projects, it is noted that the contingency allowances remain high throughout the life of the project, including those close to completion, when at least some of the project risks would have been expected to have either been realised or mitigated and hence the contingency reduced.
- Some projects have been classified as 'minor' projects (ie less than $5 M), when they should have been classified as 'major' projects (eg the Brisbane Water Meter Renewals Program, the Oxley Creek component of the Brisbane Flood Resilience Program Sewage Treatment Plants Project).
- There are often inconsistencies between sources of information. Whilst SKM is aware projects progress over time, and hence changes to scope and costs are therefore likely, these changes are not always clearly documented in the information provided for this review.

SKM recommends the following:

[76] There are other categories included in the total 2013/14 forecast, and therefore these values are not the summation of the individual categories shown

[77] There are other categories included in the total 2014/15 forecast, and therefore these values are not the summation of the individual categories shown

- That the contingency allowance on projects is reviewed periodically and reduced when risks have either been realised or mitigated
- That the project classification is reviewed at logical steps (eg on the completion of project documentation) and amended if required
- That the project summary documents (where possible) significant variations to scope and costs

6.3.1 Recommended adjustments to capital expenditure

On the basis of the detailed review undertaken in respect of the six sampled projects, one project has been demonstrated to be prudent and efficient (Brisbane Woolloongabba Sewer Catchment Augmentation).

SKM has recommended that the allowed 2013-14 expenditure be reduced for the remaining five projects, as follows:

- One project for which the actual contracted unit rates are less than the rates adopted for forward budgeting purposes (Brisbane Water Meter Renewals Program). In addition, for the Brisbane Water Meter Renewals Program, the least cost procurement method for meters has not been demonstrated. For consistency, SKM has adopted the findings of the Authority's 2011-12 review that annual savings of 5% could be realised through Queensland Urban Utilities negotiating bulk supply contracts. SKM recommends a total reduction of $1.1 million for the Brisbane Water Meter Renewals Program.
- One project which a reduction is recommended to amend an error in the calculation of the program cost using a database costing tool and also to account for high project management costs (Brisbane Sewer Reticulation System Renewals Program). For the Brisbane Sewer Reticulation System Renewals Program SKM recommends a total reduction of $3.2 M.
- Two projects for which the actual contracted unit rates are less than the rates adopted for forward
- One project which is not expected to be delivered within the review period (Brisbane Bartleys Hill/Wellers Hill Zone connection including Twin River Crossing). SKM recommends that $22.6 million is deferred until the project is commissioned.
- One project for which the contingency allowance is considered excessive (Ipswich Bundamba Creek Trunk Gravity Main Implementation Stage 1a and 1b). SKM recommends a reduction of $0.8 M.
- One project where minor cost savings are expected through the sale or re-use of spare parts (Brisbane Flood Resilience Program Sewage Treatment Plants). SKM recommends a reduction of $0.3 M.

SKM recommends that 2013-15 forecast expenditure (as incurred) in respect of the sampled projects is reduced by $28.02 M, which represents a 17% reduction in the forecast expenditure ($160.99 M) for those projects. This includes a recommended deferral of $22.63 million to be deferred until 2015/16.

It was not possible for SKM to calculate the commissioned value of adjustments as the QUU commissioning model contains hard coded values, rather than formulae, in the worksheet for the 2013-14 and 2014-15 financial years. In consultation with the QCA SKM recommended adjustments on an as-incurred basis.

Table 73 : Summary of reductions to capital expenditure forecast ($'000s)

Project Name	Project Number	Comment	Queensland Urban Utilities Proposed		Proposed Adjustment		SKM Recommended	
			2013-14	2014-15	2013-14	2014-15	2013-14	2014-15
Brisbane Sewer Reticulation System Renewals Program	BWWCAA01	Project considered prudent, but not efficient. Reduction to reflect error in calculation of costs and high PM costs	4,530	7,528	-395	-2,769	4,135	4,759

Project Name	Project Number	Comment	Queensland Urban Utilities Proposed		Proposed Adjustment		SKM Recommended	
			2013-14	2014-15	2013-14	2014-15	2013-14	2014-15
Brisbane Water Meter Renewals Program	BDWDAA06	Project considered prudent, but not efficient. Reduction to reflect actual unit rates. Also application of 5% saving as there may be an opportunity to negotiate bulk supply contracts	7,767	6,224	-697	-410	7,070	5,814
Brisbane Woolloongabba Sewer Catchment Augmentation	BWWCAA21	Project considered prudent and efficient.	33,346	0	0	0	33,346	0
Brisbane Bartleys Hill/Wellers Hill Zone connection Including Twin River Crossing	BDWDAA30	Project considered prudent, but not efficient as it is anticipated that the works will not be completed and commissioned within the 2013-15 review period.	3,000	19,131	-3,000	-19,131	0	0
Brisbane Flood Resilience Program Sewage Treatment Plants	BFSPAA01	Project considered prudent. Minor adjustments for efficiency regarding the resale value of existing assets.	11,362	7,277	-319	0	11,044	7,277
Ipswich Bundamba Creek Trunk Gravity Main Implementation Stage 1a and 1b	IWWCAA31	Project considered prudent, but not efficient. Reduction to reflect the removal of an excessive contingency allowance.	100	0	0	0	0	0
Totals			**60,105**	**40,160**	**-4,911**	**-22,310**	**55,694**	**17,850**

Note: Figures are “as incurred” expenditure and exclude any allowance for capital overhead or borrowing (interest) costs.

Appendix A. BWWCAA01 Brisbane Sewer Reticulation System Renewals Program

A.1 Project description

The Sewer Reticulation Renewals Program is aimed at managing the risk associated with the ongoing deterioration of reticulation sewer assets within each of the sewerage networks operated and maintained by Queensland Urban Utilities. Reticulation sewers are those with a diameter smaller than 300 mm. The program aims to achieve the reliable and safe transportation of sewage from the sewerage reticulation networks to sewage treatment plants without negative impacts on the community and the environment.

The program covers the rehabilitation or replacement of the reticulation sewer networks. The reticulation sewer mains renewals programs covers all Queensland Urban Utilities regions, however the Brisbane region has been selected for review by the Authority due to the size of the program.

The program, for the Brisbane region, for 2012-13, at a high level, includes:

- Replacement of sewer main line segments
- Structural relining
- Economic relining
- Rehabilitation of maintenance holes
- Relocation of a sewer main

The program, for the Brisbane region, for 2013-14, at a high level, includes:

- Structural relining
- Economic relining

The programs for 2012-13 and 2013-14 are being reviewed as the works are commissioned the year after incurred, ie the 2012-13 works will be commissioned and capitalised in 2013-14. This means that the focus for SKM's review of this program is on the works undertaken in 2012-13 and 2013-14.

As the sewer network continues to age, discrete sections of reticulation sewers deteriorate with time and become subject to repeated patterns of failure. Funding is required annually to enable sewers in poor condition to be relined or replaced, as required.

A.2 Proposed capital expenditure

Table 74 shows the proposed cost of the BWWCAA01 Brisbane Sewer Reticulation System Renewals Program within the 2013-14 and 2014-15 budgets.

Table 74 : BWWCAA01 Brisbane Sewer Reticulation System Renewals Program proposed capital expenditure ($'000s)

Source	2013-14 (2012-13 Program) ($'000)	2014-15 (2013-14 Program) ($'000)	Subsequent years ($'000)	Total ($'000)
Commissioning Model1	4,530	7,528	-	
Project Summary2	-	7,528	Rolling Program	Rolling Program

[1] *Commissioning Model 5yr Summary 2014.xls,* (Queensland Urban Utilities, 2013)

[2] *Project Summary - Sewer Reticulation System Renewals Program*, (Queensland Urban Utilities, 03 January 2013)

Note: Figures are "as incurred" expenditure and exclude any allowance for capital overhead or borrowing (interest) costs.

For the period under review (2013-15) the expenditure outlined in the Commissioning Model, $12,058,000, and that outlined in the Project Summary, $12,058,000, are identical.

Subsequent to the issue of SKM's Draft Report, Queensland Urban Utilities stated:

> *"In reviewing the budget estimate for 2013/14, it became apparent that an error occurred in the use of the database costing tool. Further investigation identified the error to be related to the application of the flow control and traffic control costs in the database. Queensland Urban Utilities subsequently reviewed the budget estimate provided for the 13/14 program of works. The following table presents the results of a recalculation of the budget using the existing database costing tool correctly.*

Item (includes contingency and overheads)	*Economic Rehabilitation*	*Structural Rehabilitation*
150 mm	*$2,716,852*	*$1,187,118*
225 mm	*$670,570*	*$627,591*
300 mm	*$11,704*	*$0*
Total	*$3,399,106*	*$1,814,709*

> *As can be seen from the above table the total budget estimate should have been $ 5,213,815 compared to the actual budget figure of $7,525,844 a difference of approximately $ 2,312,029.*
>
> *Queensland Urban Utilities is able to confirm that the above problem did not occur with the budget estimate for the 2012/13 package of works and does not impact on the forecast expenditure for 2012/13 – which is the commissioned value in 2013/14 and therefore the first year of the review for SKM.*
>
> *As outlined above, 2014/15 is outside of this review for SKM. Queensland Urban Utilities will also review the 14/15 budget estimate and adjust this if necessary to reflect correct use of the database costing tool."*

A.3 Documentation reviewed

Key reference documents used for this review are:

- *Commissioning Model 5yr Summary 2014.xls* (Queensland Urban Utilities, 2013)
- *Project Summary - Sewer Reticulation System Renewals Program* (Queensland Urban Utilities, 03 January 2013)
- *Asset Class Reticulation Sewer Renewals Program - Program List 2013-14* (Queensland Urban Utilities, 1 November 2011)
- *Asset Class Reticulation Sewer Renewals Program - Program List 2012-13* (Queensland Urban Utilities, 1 September 2012)
- *Asset Class Reticulation Sewer Renewals Program - Program List 2011-12* (Queensland Urban Utilities, 14 February 2011)
- *Part B Specifications - SOA for Sewer Rehabilitation and Associated Works C1112-010* (Queensland Urban Utilities, No date)
- *Appendix C to Specifications: Technical Specification Contract No. C1112-010* (Queensland Urban Utilities, 19 April 2012)
- *NPV LS34651.xls* (Queensland Urban Utilities, 11 August 2008)
- *Post-Market Submission - Standing Offer Arrangement for Sewer Rehabilitation and Associated Works* (Queensland Urban Utilities, 27 August 2012)
- *Response to RFI 054-065* (Queensland Urban Utilities, 17 July 2013)
- *Sewer Retic Rates* (Queensland Urban Utilities, No date)

- *Structural Reline in Reticulation System – LS131258 Ashgrove Ave* (Queensland Urban Utilities, 30 April 2012)
- *System Performance Rehabilitation - Various Sites* (Queensland Urban Utilities, 24 April 2012)
- *System Performance Rehabilitation - Various Sites* (Queensland Urban Utilities, 8 March 2011)
- *Submission - Proposed Rehabilitation of Reticulation Sewer LS160247* (Queensland Urban Utilities, 12 January 2009)
- *Structural Reline of Exposed Sewer Creek Crossing - Gowan Rd, Sunnybank* (Queensland Urban Utilities, 19 September 2012)
- *Structural Rehabilitation of Maintenance Holes in Reticulation* (Queensland Urban Utilities, 27 October 2011)
- *Minor Capital Project Submission* (Queensland Urban Utilities, 25 September 2006)
- *Structural Relines in Reticulation System - Various Sites* (Queensland Urban Utilities, 19 November 2011)
- *Structural Relines in Reticulation System - Various Sites* (Queensland Urban Utilities, 28 September 2012)
- *System Performance Rehabilitation - Various Sites* (Queensland Urban Utilities, 6 December 2011)
- *Replacement of LS 161544 between 258 Logan Rd and 264 Logan Rd in Greenslopes under Norman Creek* (Queensland Urban Utilities, 29 March 2011)
- *Metroplex Avenue Syphon Rehabilitation* (Queensland Urban Utilities, 3 November 2011)
- *Attachment - Brisbane Sewer Reticulation Renewals Program* (Queensland Urban Utilities, 22 August 2013)

A.4 Key drivers

The nominated driver for this program is renewal. This is a rolling program to rehabilitate underperforming sewer reticulation. Projects are identified and prioritised based on customer service reliability standards, history of failure, condition of assets and risk assessment. In some cases, sewers identified for rehabilitation may also require upsizing to service population growth.

SKM believes that renewal is the appropriate driver for the scope of work.

A.5 The scope of works

A.5.1 Solutions development

Sewer reticulation mains are operated on a “run to rehabilitation” basis. This means that for a main to be included with the renewals program it first has to be identified as having an issue.

One method by which assets are included in the program is by being placed on the cyclic sewer cleaning program after a failure on the asset has occurred. The frequency of the corrective maintenance on the assets is determined to minimise future failures. The effectiveness of the cyclic cleaning program is reviewed on a continual basis with adjustments being made to the maintenance frequency depending on the following:

- Repeat failures on assets
- Amount of debris, fat and tree roots removed from the sewer during maintenance work
- Adherence to schedule
- Length of the line segment
- Location of the line segment
- Tree coverage
- Failure consequence

These adjustments in the cleaning frequency make it necessary to periodically review the cyclic cleaning program to ensure that cleaning the segments on the program continues to be the most economic method of managing the condition of these assets.

Annual reviews of the cyclic cleaning program identify line segments that should be added to the reticulation sewer rehabilitation program as the most economic method of managing these assets.

The economic analysis, Net Present Value (NPV), for each line segment is conducted over a 50 year period in which, the NPV of the annual maintenance costs is compared to the cost of relining each of the segment.

SKM has reviewed an example of the economic analysis undertaken and agrees that as the frequency of cyclic cleaning increases, to a return interval of approximately 1.5 to 2 years (depending on the discount rate applied); it becomes more economically viable to reline the line segment than continue the cyclic cleaning.

Another method is via inspection of an asset after a failure has occurred in the past. CCTV inspection is used to identify sewer which potentially require structural relining. The contractor evaluates and scores the condition of the asset based on two criteria; the structural condition and the serviceability condition of the asset, with the structural condition the main criteria. The CCTV is added to the database from Queensland Urban Utilities staff extract a report of assets identified by the contractor as requiring attention for review. If Queensland Urban Utilities staff agrees with the contractor's assessment, the line segment is prioritised and added to the program.

When a line segment is added to the program, a cross check is undertaken to determine if there is a replacement or augmentation proposed. Depending on the timing of the proposed works, low risk renewal works may be removed from the program. This is generally applicable to economic relining rather than structural relining and is determined on a risk basis

SKM is satisfied that renewal projects are identified through an appropriate process and added to the program subsequent to evaluation of alternatives and concurrent activities.

A.5.2 Project delivery

The program for 2012-13 is intended to occur over the entire period with commissioning in 2013-14 and the program for 2013-14 to occur over the entire period with commissioning in 2014-15.

The program, for the Brisbane region, for 2012-13 includes:

- 65% of the program is comprised of economic relining of 397 sewer main line segments (18,608 m) using standard reline technology
- 11% of the program is comprised of structural relining of 32 sewer main line segments (1,562 m) using standard reline technology
- The remained of the program is comprised of the replacement of short line segments and the rehabilitation of structures (Queensland Urban Utilities, 1 September 2012)

The program, for the Brisbane region, for 2013-14 includes:

- 68% of the program is comprised of economic relining of 345 sewer main line segments (approximately 16,384 m) using standard reline technology
- 30% of the program is comprised of structural relining of 99 sewer main line segments (approximately 4,686 m) using standard reline technology
- The remained of the program is comprised of minor structural relining works (Queensland Urban Utilities, 1 November 2011)

The anticipated expenditure for 2012-13 and 2013-14 are significantly higher than that delivered in previous years as outlined in Table 75.

Table 75 : Historical and proposed capital expenditure ($'000s)

Historical expenditure		Proposed expenditure		
2010-11 ($'000)	2011-12 ($'000)	2012-13 ($'000)	2013-14 ($'000)	2014-15 ($'000)
1,008	1,668	4,530	7,528	4,332

Source: *Commissioning Model 5yr Summary 2014.xls* (Queensland Urban Utilities, 2013)

Queensland Urban Utilities stated that the reason for this increase was due to:

> *"a large backlog of economic relines (system performance) to be delivered over the 2012-13 to 2013-14 period as available funding was limited in previous years due to higher priority projects being delivered.*
>
> *The work had been identified over a number of years due to increased sewer reticulation performance issues related to tree root intrusion. Ongoing maintenance is required to maintain the sewer capacity and to prevent blockages. The cost of the ongoing maintenance compared to the capital investment cost over a 50 year period has confirmed that the capital investment is the more economical solution for Queensland Urban Utilities."*

When SKM sought confirmation of the capacity of Queensland Urban Utilities to deliver this volume of work, it was stated:

> *"Delivery of sewer rehabilitation is undertaken by contractors on Queensland Urban Utilities' behalf. Queensland Urban Utilities' involvement in the delivery of this work is minor as this work is undertaken in small reticulation sewers which do not require large scale flow control measures to complete the work. Queensland Urban Utilities has no concerns over the ability of the market to deliver this volume of work. The market has demonstrated that the volume of work proposed by Queensland Urban Utilities can be delivered. The market consists of large international companies such as Veolia and Insituform and other mid-sized and smaller companies that provide specialist services."*

SKM accepts that the majority of the program will be delivered by contractors with minimal involvement from Queensland Urban Utilities staff and therefore agree that the increased program can be delivered within the proposed timeframes.

A.6 Standards of service

Renewal work is completed in accordance with the *Standing Offer Arrangement for Sewer Rehabilitation and Associated Works, Appendix C to Specifications: Technical Specification, Contract No. C1112-010, Sewer Systems Rehabilitation Technical Specification* (Queensland Urban Utilities, 19 April 2012). This includes reference to numerous standards for the rehabilitation of sewers including the following British and American standards:

- EN 13566 Part 1-7 Plastic piping systems for renovation of underground non-pressure drainage & sewerage networks (British standard)
- ASTM F1741 - 08 - Standard practice for installation of machine spiral wound poly (Vinyl Chloride) (PVC) liner pipe for rehabilitation of existing sewers and conduits (American standard).
- ASTM F1216 - 09 - Standard practice for rehabilitation of existing pipelines and conduits by the inversion and curing of a resin-impregnated tube (American standard).
- ASTM F1743 - 08 - Standard practice for rehabilitation of existing pipelines and conduits by pulled-in-place installation of cured-in-place thermosetting resin pipe (CIPP) (American standard).
- ASTM F2019 - 11 - Standard practice for rehabilitation of existing pipelines and conduits by the pulled in place installation of glass reinforced plastic (GRP) cured-in-place thermosetting resin pipe (CIPP) (American standard).

There is no specific Australian standard for sewer rehabilitation. SKM considers that the standards used for this project are appropriate.

A.7 Project cost

Queensland Urban Utilities utilises a cost estimation database for the development of cost estimates for rehabilitation submissions which is based on work completed in previous years and unit rates developed in 2007 by an independent consultant. Queensland Urban Utilities advises that the 2007 unit rates have been internally reviewed number of times with the actual project spend for this work since being developed. Increased competition and the increase in overall contract values offered by Queensland Urban Utilities has kept the relining cost steady or reduced slightly over the years, with the high currency exchange rate also contributing to contain cost increases.

In addition the programs of work are delivered through a Standing Offer Arrangement of approved rehabilitation contractors. The Standing Offer Arrangement for Sewer Rehabilitation and Associated Works was appointed in 2012 after an open tender. The Standing Offer Arrangement covers both small and large diameter sewer rehabilitation works.

A Request for Offer was released to the market in May 2012. At the close of tenders 15 offers had been received. The tenders were evaluated on both price and non-price criteria. The criteria and there weighting were:

- Past performance – 30%
- Capability to provide goods/services – 30%
- Environmental, quality and safety – 25%
- Suitability of Schedule of Rates pricing – 15%

From the evaluation it was recommended that all tenders be appointed to the Standing Offer Arrangement, with some only for large or small diameter mains and with some limitations. The term of the arrangement is 3 years with the opportunity for Queensland Urban Utilities to extend 1 year then another year if they are satisfied with the performance of the contractors.

All work under the program is undertaken through the Standing Offer Arrangement. This process involves:

- Queensland Urban Utilities undertaking a concept design for the work
- Queensland Urban Utilities issuing a Request for Quotation (RFQ) to contractors in the Standing Offer Arrangement with capability to deliver the work
- The contractors submitting a lump sum fixed price for the work
- Queensland Urban Utilities assessing the quotations and select a preferred tenderer
- Queensland Urban Utilities negotiating any outstanding issues
- The order is signed by the parties for the work

The quotations received are assessed on design and prices and evaluated to determine the best value for money.

A cost estimation database is used to estimate costs for future programs. SKM considers that the use of a cost estimation database which is periodically reviewed and updated to reflect changes in market conditions is a satisfactory method of determining costs estimates. The competitive tendering of suitable packages of work within the program will ensure the costs are consistent with prevailing market conditions.

Queensland Urban Utilities provided SKM with the tender submission documents received for the Rehabilitation of Reticulated Sewers Package N, Contract No. C1213-003, in September 2012. From the tender prices from five individual companies, SKM has calculated the minimum, average and maximum unit rate for the relining of a 150 mm diameter and a 225 mm diameter sewer main.

The costs from Nuflow Technologies 2000 P/L were excluded as there tendered price was significantly higher than the other rates received, a total of $11.8 million as compared to the range of $1.9 million to $3.4 million for the remaining four companies. The calculated minimum, average and maximum rates for the four remaining companies are shown below.

Table 76 : SKM calculated unit rates from tender submissions

Diameter Main (mm)	Parameter	Units	Maximum	Average	Minimum
150	Cost per meter	$/m	147.00	121.80	90.60
225	Cost per meter	$/m	167.60	131.30	101.80

The rates adopted by SKM for costing of the program were $147.00/m for 150 mm diameter sewer mains, $167.60/m for 225 mm diameter sewer mains. A rate of $200.80/m has been adopted for 300mm diameter sewer mains based on the maximum value from the provided schedule of rates.

In the 2013-14 Sewer Renewals Program - Program List 2013-14 (Queensland Urban Utilities, 1 November 2011) the two main packages to be completed were the Structural Relines in Reticulation System - Various Sites (Queensland Urban Utilities, 28 September 2012) and the System Performance Rehabilitation - Various Sites Brisbane Region (Queensland Urban Utilities, 24 April 2012; Queensland Urban Utilities, 19 September 2012).

From SKM's review of the documents for the submission of the works to the rolling program SKM identified that the structural relining works comprised 2,853 m of 150 mm sewer mains and 1,833 m of 225 mm sewer main, while the system performance rehabilitation works comprised 14,040 m of 150 mm sewer main, 2,307 m of 225 mm sewer main and 36 m of 300 mm sewer main.

Using the maximum calculated values from Table 76, SKM has calculated the cost of the two main packages to (the Structural Relines in Reticulation System - Various Sites and the System Performance Rehabilitation - Various Sites Brisbane Region, as shown in Table 77.

Table 77 : SKM cost estimate build up

Diameter Main (mm)	Parameter	Units	Structural Relines in Reticulation System - Various Sites	System Performance Rehabilitation - Various Sites Brisbane Region
150	Length	m	2,853	14,040
	Cost per meter	$/m	147	147
	Total cost	**$**	**419,391**	**2,063,880**
225	Length	m	1,833	2,307
	Cost per meter	$/m	168	168
	Total cost	**$**	**307,211**	**386,609**
300	Length	m	-	36
	Cost per meter	$/m	201	201
	Total cost	**$**	**-**	7,309
Sub-Total		**$**	**726,602**	**2,457,798**
Project Management (15% of direct costs)			108,990	368,670
Contingency (10% of direct costs)		$	72,656	245,786
Total		**$**	**908,197**	**3,072,329**

A comparison of Queensland Urban Utilities' with SKM's cost estimates is presented in Table 78.

Table 78 : Cost estimate comparison

	Structural Relines in Reticulation System – Various Sites	System Performance Rehabilitation – Various Sites Brisbane Region	Total
QUU Estimated Cost (Original)	$2,232,040	$5,145,537	$7,377,577
QUU Estimated Cost (Revised)	$1,814,709	$3,399,106	$5,213,815
SKM Estimated Cost	$908,197	$3,072,329	$3,980,526
Difference between QUU Estimated Cost (Revised) and SKM Estimated Cost ($)	**$906,512**	**$326,777**	**$1,233,289**
Difference (%)	-50%	-10%	-24%

There is a difference of approximately $0.9 million between Queensland Urban Utilities' and SKM's cost estimates for the Structural Relines in Reticulation System - Various Sites; and a difference of approximately $0.3 million between Queensland Urban Utilities' and SKM's cost estimates for the System Performance Rehabilitation - Various Sites Brisbane Region.

SKM accepts that there would be site or project specific variables which would influence the cost of the works, and that an allowance should be made for traffic control and flow control.

In response to SKM's Draft Report, Queensland Urban Utilities provided additional information relating to the process used to develop cost estimates for the Sewer Reticulation Renewal Program. In relation to the Costing Database, Queensland Urban Utilities states:

> *"The database has eleven (11) different base rates for 150 mm sewers that range from $125 /metre to $230/meter. The rates applied during the cost estimation process are dependent on sewer depth, access to maintenance holes and sewer length. Shorter lengths are proportionally more expensive because of site set up costs.*
>
> *The database has ten (10) different base rates for 225 mm sewer that range from $ 130/metre to $ 220/metre. The rates applied during the cost estimation process are dependent on sewer depth, access to maintenance holes and sewer length. Shorter lengths are more expensive because of site set up costs.*
>
> *The database has four (4) rates for traffic control that range from $ 2700 per line segment when the line segment is in a residential street to $ 9000 for a line segment that is located in an arterial Road. These rates are only applied when one of the maintenance hole is identified as being located in the relevant road type.*
>
> *The database has one rate for flow control which is $ 4700 and is only applied to 225 and 300 mm sewers.*
>
> *The database allows the following additional costs for delivery of the works*
>
> | | |
> |---|---|
> | *Contingency for short lines < 10 metres long* | *40%* |
> | *Contingency for lines between 10 metres and 25 metres long* | *20%* |
> | *Contingency for long lines > 25 metres long* | *10%* |
> | *Project Management* | *8.5%* |
> | *Construction Management* | *3.5%* |
> | *Project Preparation (Design, geotech, documentation and tendering)* | *10%* |
> | *Queensland Urban Utilities Overheads* | *4%* |

Contingency is required to cover the following items that would be paid as variations under the contract

1. *Some of the economic reline program does not have CCTV therefore the first CCTV inspection is carried out just prior to rehabilitation. It is possible that the asset may require repair prior to rehabilitation.*

2. *In some circumstances there can be up to 3-5 years between CCTV inspection and actual reline of the asset. It is possible that further deterioration of the asset has occurred since CCTV inspection*

3. *60 per-cent of maintenance holes are located in private property and access to all maintenance holes (access to four maintenance holes (MH) is required for rehabilitation of one line segment i.e. the downstream MH, upstream MH, one MH upstream of the line segment for plugging and one upstream of the plug maintenance hole for tankering if required) is required to rehabilitate the line may be restricted by private infrastructure including pools sheds etc. In some cases the maintenance holes may be buried and may require excavation to allow the line to be rehabilitated.*

4. *In some circumstances what is marked as a maintenance hole on Queensland Urban Utilities as constructed information may in fact be a lamp hole (a smaller diameter maintenance hole either 150 mm, 225 mm, 300 mm 450 mm or 600 mm diameter shaft from surface level to sewer invert level) that requires replacement to enable the line to be rehabilitated*

5. *In some circumstances the lines end in a dead end and these assets need to be dug up to facilitate the rehabilitation of the line segment.*

6. *In some circumstances flow control works are required which are above the standard plug and release methodology for reticulation sewers.*

7. *There is a need to manage the whole portfolio of assets and some of the contingency amount is used to cover any emergent works that are identified during the financial year in question. The availability of this funding allows for the risks associated with emergent issues to be managed appropriately.*

8. *The level of work required to access maintenance holes on private property has increased because of the introduction of the Water Supply Safety and Reliability Act 2008.*

The other additional allowances are in line with or below the standard set of values used in Queensland Urban Utilities' standard cost estimation template." (Queensland Urban Utilities, 22 August 2013)

SKM has not been provided with Queensland Urban Utilities' standard cost estimation template and therefore cannot verify that the additional allowances are in line with or below the standard set of values.

Queensland Urban Utilities further states:

"The budget estimates for the 2012/13 and 2013/14 financial year were developed in October 2011 and October 2012 respectively. The rates within the Queensland Urban Utilities database applicable to these budget submissions were the rates available in April 2011 and April 2012 respectively.

Using the same methodology as proposed by SKM the tenders that could be used to compare the accuracy of the estimates for work that was let to the market in 2012/13 and 2013/14 have been reviewed and are presented in the table below

Estimate for Year	12/13 Package costs available at March 2011	13/14 Package costs available at March 2012
Package	K	L
Year signed	April 09	October 11
Year Delivered	09/10	11/12
150 mm cost	$139.70	$127.35

Estimate for Year	12/13 Package costs available at March 2011	13/14 Package costs available at March 2012
225 mm cost	$337.00	$170.72
300 mm cost	0	$179.00
Total Variations	$148,600	$48,000
Percentage of Variations	22.6%	4.3%
Total Internal Costs	Not available	$299,686
Percentage of Internal costs		27%

Queensland Urban Utilities believe that the historical levels of contingency and overheads are more appropriate to use than the percentage figures proposed by SKM. Historical figures actually indicate how much the budget can be impacted by variations and indicate the level of internal works actually required to deliver the scope of works.

Queensland Urban Utilities' practice is to apply the overheads to both the construction and contingency costs. This practice is followed as the possible variations outlined above are all scope contingencies and it is Queensland Urban Utilities policy to apply overheads to all work delivered." (Queensland Urban Utilities, 22 August 2013)

SKM is satisfied that the unit rates outlined by Queensland Urban Utilities in the table above are generally in line with the costs calculated by SKM. The reason for the significant difference in 225 mm lining ($337 vs. $170) has not been explained.

SKM initially adopted a contingency allowance of 10% of direct costs and a project management allowance of 15% of direct costs.

SKM notes that of the program for 2013-14 approximately 94% of the lines are greater than 25 m long and therefore only require a 10% contingency allowance according to Queensland Urban Utilities' internal guidelines. Subsequently a 10% contingency allowance is recommended.

SKM considers that the allowances for project management, construction management, project preparation (design, geotech, documentation and tendering), and Queensland Urban Utilities overheads, totalling to 26% is excessive. SKM has applied a 15% allowance for project management costs.

SKM notes that Queensland Urban Utilities also states that:

"It should be noted that the unit rates used by SKM are exclusive of GST, however the overall program costs put forward by Queensland Urban Utilities include GST. SKM's analysis should be adjusted to reflect this." (Queensland Urban Utilities, 22 August 2013)

SKM has not incorporated GST into the cost build up as the inclusion of GST has not been considered in any other review and SKM does not consider that it is appropriate to incorporate it into this review only.

Table 79 : Extrapolation to remaining program

Source	2013-14 (2012-13 Program) ($'000)	2014-15 (2013-14 Program) ($'000)
QUU Estimated Cost	4,530	7,528
QUU Estimated Cost (Revised)	4,530	5,214
Reduction to 15% PM (from 26%)	395	455
SKM Estimated Cost	4,135	4,759
Overall reduction	395	2,769

A.8 Efficiency gains

The replacement, structural relining, economic relining or rehabilitation of sewer main line segments and maintenance holes extends the life and reliable performance of the asset.

A.9 Implications for operating expenditure

For reticulation sewer assets which are renewed the operating expenditure on them is reduced however as new mains are continually being identified as requiring renewal the overall operating expenditure is unlikely to change.

A.10 Policies and procedures

Table 80 below identifies how the project has complied with the appropriate policies and procedures.

Table 80 : BWWCAA01 Brisbane Sewer Reticulation System Renewals Program compliance with the Authority's criteria

Initiative	Achievement (Yes/No/Partial)	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole-of-entity and whole-of-sector) perspective	Yes	The program covers the whole of the Brisbane region, with similar programs covering the other regions. Consideration is giving to other proposed works and its timing prior to inclusion in the program.
Consideration of alternative investments, the substitution possibilities between operating costs and capital expenditure, and non-network alternatives such as demand management.	Yes	Economic relining projects are only added to the program once it is determined that is more economical to relining the line segment than for it to continue on the cyclic cleaning program.
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	SKM understands that for major projects (over $5 M) an independent cost estimate is required, and a spreadsheet template, available on the intranet, is to be used. For this, and other rolling projects, SKM considers that the use of historical costs as a basis to develop the capital budget is an appropriate process. Queensland Urban Utilities states that *"allowances are in line with or below the standard set of values used in QUU's standard cost estimation template".* However as the template has not been provided this cannot be confirmed.
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	Yes	Project Summary - Sewer Reticulation System Renewals Program (Queensland Urban Utilities, 03 January 2013)
An implementation strategy to be developed for each major project	Yes	No specific Implementation Strategy has been developed for the program however the "Rehabilitation Submission for Rolling Program" developed for each project includes the delivery mechanism proposed.
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	No	No documentation relating to gateway reviews has been provided.
Information on the compatibility with existing and adjacent infrastructure and consideration of modern engineering equivalents and technologies.	Yes	A Standing Offer Arrangement is in place for the provision of relining services. The techniques used are selected by the contractor based on consideration of available technology and existing and adjacent infrastructure.

Initiative	Achievement (Yes/No/Partial)	Comment
Includes only commissioned capital expenditure from 1 July 2010 in the regulatory asset base (RAB) and therefore prices	Yes	Expenditure incurred and commissioned within one year are included in the RAB within the following year, ie the 2012-13 works will be commissioned and capitalised in 2013-14.

Although SKM has assessed that this project has not followed the standardised approach to cost estimation or the 'toll gate' or 'gateway' review process, SKM does not consider that this is indicative of deficiencies in Queensland Urban Utilities overall policies or capital delivery procedures.

SKM considers that the use of historical costs as a basis to develop the capital budget is an appropriate process for a rolling program as these costs will be the most relevant. In terms of the contingency and project management, Queensland Urban Utilities states that they *"are in line with or below the standard set of values used in QUU's standard cost estimation template"*, however as the template has not been provided this cannot be confirmed.

Queensland Urban Utilities' Capital Planning and Delivery Process contains the following guidance "*a project is considered "major" if it has an estimated value over $5 million or it is a complex or potentially high risk project. Projects not classed as "major" are classed as "minor".*" SKM notes that whilst the proposed expenditure originally submitted for delivery in 2013-14 exceeded $5 M, the revised expenditure for 2013-14 and proposed expenditure for 2012-13 and 2014-15 were below the $5 million threshold and therefore the classification as a minor project was appropriate. SKM note that gateway reviews are not required for minor projects.

SKM notes that Queensland Urban Utilities policies and procedures do not currently include a benefits realisation review once a project has been completed and the benefits have been, or are being, realised and measured against a baseline. As such there are potentially opportunities for the program to become more efficient over time which are currently not being realised.

A.11 Prudency and efficiency

The renewal of reticulation sewer assets is required to ensure the continued service of aging assets. SKM believes that renewal is the appropriate driver for the scope of work. SKM is satisfied that renewal projects are identified through an appropriate process and added to the program subsequent to evaluation of alternatives and concurrent activities.

The project is prudent as the primary driver of renewal has been demonstrated through the supporting documentation provided.

SKM accepts that the majority of the program will be delivered by contractors with minimal involvement from Queensland Urban Utilities staff and therefore agree that the increase program can be delivered within the proposed timeframes.

SKM considers that the standards used for this project are appropriate.

The tendering of projects, within the program, through the Standing Offer Arrangement ensures the costs are consistent with prevailing market conditions.

The use of a cost estimation database which is periodically reviewed and updated to reflect changes in market conditions is a satisfactory method of determining costs estimates. However, the project is not efficient as there was an error in the original calculation of the program cost and the project management costs allowances are excessive. SKM recommends a reduction in project costs of $3.16 million from the original budget costs.

A.12 Assessment of reported expenditure

Table 81 below identifies the proposed capital expenditure for BWWCAA01 Brisbane Sewer Reticulation System Renewals Program.

Table 81 : BWWCAA01 Brisbane Sewer Reticulation System Renewals Program proposed capital expenditure

Project	2013-14 (2012-13 Program) ($'000)	2014-15 (2013-14 Program) ($'000)
BWWCAA01 Brisbane Sewer Reticulation System Renewals Program (Original)	4,530	7,528
BWWCAA01 Brisbane Sewer Reticulation System Renewals Program (Revised)	4,530	5,214
SKM proposed value	4,135	4,759
Variation	-395	-2,769

A.13 Extrapolation to other projects

It is considered by SKM that the findings from this project can be extrapolated to other similar projects, being Ipswich, Lockyer Valley, Scenic Rim and Somerset Sewer Reticulation System Renewals Programs. This is based on the assumption that Queensland Urban Utilities have applied the same methodology for determining assets to be included in the program, and for costing and tendering the works through the Standing Offer Arrangement.

Table 82 : Sewer Reticulation System Renewals Programs proposed capital expenditure ($'000s)

Source	2013-14 ($'000)	2014-15 ($'000)	Total ($'000)
IWWCAA01 Ipswich Sewer Reticulation System Renewals Program			
Submitted	318	517	835
SKM proposed value	290	472	762
Variation	-28	-45	-73
LWWCAA01 Lockyer Valley Sewer Reticulation System Renewals Program			
Submitted	130		130
SKM proposed value	119		119
Variation	-11		-11
SWWCAA01 Somerset Sewer Reticulation System Renewals Program			
Submitted	153	-	153
SKM proposed value	140		140
Variation	-13		-13

Note: Figures are “as incurred” expenditure and exclude any allowance for capital overhead or borrowing (interest) costs.

Appendix B. BDWDAA06 Brisbane Water Meters Renewals Program

B.1 Project description

Queensland Urban Utilities owns and maintains a total of over 418,000 domestic and non-domestic meters used for billing purposes. The Brisbane Water Meters Renewals Program scope incorporates the replacement and rehabilitation of water meters as required.

The long term plan for Brisbane and Ipswich (as outlined in the Asset Management Plan) is to progressively reduce the number of meters over 15 years old. The long term plan for the Lockyer Valley, Scenic Rim and Somerset regions is to replace all meters requiring replacement as per AS3565.4.

The majority of the water meters included in the water meter renewal program is 20 mm meters used for billing domestic properties. The average age of 20 mm meter fleet is 10.1 years. The meter fleet can be separated into Queensland Urban Utilities East (former Brisbane Water) and Queensland Urban Utilities West (former Ipswich, Scenic Rim, Somerset and Lockyer Valley Councils). The major difference between the East and West meter fleets is that the thread on the meter connection is different. The other difference is that the majority of meters in Brisbane are concentric type meters (manifolds) whereas all the meters in West are inline type meters. The meter replacement/rehabilitation methodologies also vary from region to region.

The water meters renewals program covers all Queensland Urban Utilities regions. The project selected for review by the Authority is the Brisbane Water Meters Renewals Program.

This review focuses on the program of works undertaken in 2012-13 and 2013-14 as the works are commissioned the year after incurred, ie the 2012-13 works will be commissioned and capitalised in 2013-14.

B.2 Proposed capital expenditure

Table 83 shows the proposed cost of the Water Meters Renewals Program within the 2013-14 and 2014-15 budgets.

Table 83 : Water Meters Renewals Program proposed as incurred capital expenditure ($'000s)

Source	Previous years ($'000s)	2012-13 ($'000s)	2013-14 ($'000s)	2014-15 ($'000s)	2012-14 Total ($'000s)
Commissioning Model[1]	8,695	7,767	6,224	4,040	13,991
Project Summary[2]	-	7,767	6,224	-	13,991
Program Listing[3]	-	5,767	6,224	-	11,991

[1] *Commissioning Model 5yr Summary 2014.xls* (Queensland Urban Utilities, 2013)

[2] *Water Meter Renewals Program Project Summary* (Queensland Urban Utilities, 3 January 2013)

[3] *Water Meters Renewals Program – Financial Year 2012-13 Program List* (Queensland Urban Utilities, September 2012) *& Water Meters Renewals Program – Financial Year 2013-14 Program List* (Queensland Urban Utilities, September 2012)

Note: Figures are “as incurred” expenditure and exclude any allowance for capital overhead or borrowing (interest) costs.

For the period under review (2013-15) the total expenditure outlined in the Commissioning Model for Brisbane, $13.99 M, is comparable with that outlined in the Water Meter Renewals Program Project Summary for Brisbane, $13.99 M. The Program Listings for 2012-13 and 2013-14 contains a lower value, $11.99 M, as it does not include the $2 million of “Total Bring Forward Opportunities” identified in the 2012-13 Program List.

B.3 Documentation reviewed

Key reference documents used for this review are:

- *Commissioning Model 5yr Summary 2014.xls* (Queensland Urban Utilities, 2013)

- *Water Meter Renewals Program Project Summary* (Queensland Urban Utilities, 3 January 2013)
- *SEQ Water and Wastewater Price Monitoring 2012-13 Queensland Urban Utilities* (Halcrow, January 2013)
- *Water Meters Renewals Program – Financial Year 2012-13 Program List* (Queensland Urban Utilities, September 2012)
- *Water Meters Renewals Program – Financial Year 2013-14 Program List* (Queensland Urban Utilities, September 2012)
- *Meter Replacement Schedule of Rates* (Skilltech, 6 June 2013)
- *Business Case for Rolling Programs Domestic and Non-Domestic Meter Rehabilitation/Replacement Program 2011-14* (Queensland Urban Utilities, 26 June 2012)
- *Project Management Monthly Report - Brisbane Water Meter Renewals Program* (Queensland Urban Utilities, June 2013)
- *RFI QUU 025-03,* (Queensland Urban Utilities, 15 July 2013)
- *Post-Market Submission - Provision of Water Meter Reading, Replacement and Associated Maintenance* (Queensland Urban Utilities, 1 March 2012)
- *AGAZ water meter testing report from NATA laboratory.xls* (Queensland Urban Utilities, No date)
- *Response to RFI QUU 092-098* (Queensland Urban Utilities, 23 July 2013)
- *Significant Procurement Plan - Provision of Water Meter Reading, Replacement and Associated Maintenance* (Queensland Urban Utilities, 1 March 2012)
- *Meteorological Performance Certificate*3 (Skilltech QLD, 14 February 2013)
- *The average cost of meter replacement.xls* (Queensland Urban Utilities, No date)
- *The testing program and replacement prioritisation.xls* (Queensland Urban Utilities, No date)

B.4 Key drivers

The driver identified by Queensland Urban Utilities in the *Water Meter Renewals Program Project Summary* (Queensland Urban Utilities, 3 January 2013) is renewals. Queensland Urban Utilities identified the major drivers for the program to be compliance with AS3565.4, potential loss of revenue to the organisation and customer charge inequality caused by incorrect meter registration (Queensland Urban Utilities, 26 June 2012).

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

- The program involves the direct replacement of water meters
- This program aligns with the Asset Management Plan of Queensland Urban Utilities
- Meter accuracy degrades over time and this degradation is characterised by an increase in measurement error. Water meters are predominately mechanical devices with limited life due to wear mechanisms. Small meters (20 mm to 40 mm) are generally not repairable. The age of the meter and usage are the two main factors which determine the need for replacement. The average age of the 20 mm meter fleet is 10.1 years, where the typical asset life is 15 years. (Queensland Urban Utilities, 26 June 2012)

SKM has identified compliance as a secondary driver. The conclusion that this project is also driven by compliance is supported by the following:

- The *National Measurement Act 1960* details a legal obligation which requires that utility meters used for trade must be verified in terms of accuracy of measurements in accordance with relevant standards:

  Australian Standards 3565.1 - 2010: Meters for cold and heated drinking and non-drinking water supplies - Technical requirements

  Australian Standards 3564.4 - 2007: Meters for water supply - In-service compliance testing

- Specifically, the *Australian Standard 3565.4 - 2007: Meters for water supply - In-service compliance testing* sets out the criteria for testing 20 mm water mains. The standard came into effect in 2007 and deemed all meters to have initial compliance testing of 1,920 kL or 8 years from the date they were installed. (Queensland Urban Utilities, 26 June 2012)

SKM has reviewed the provided information and assessed renewals and compliance as the appropriate drivers for this program.

B.5 The scope of works

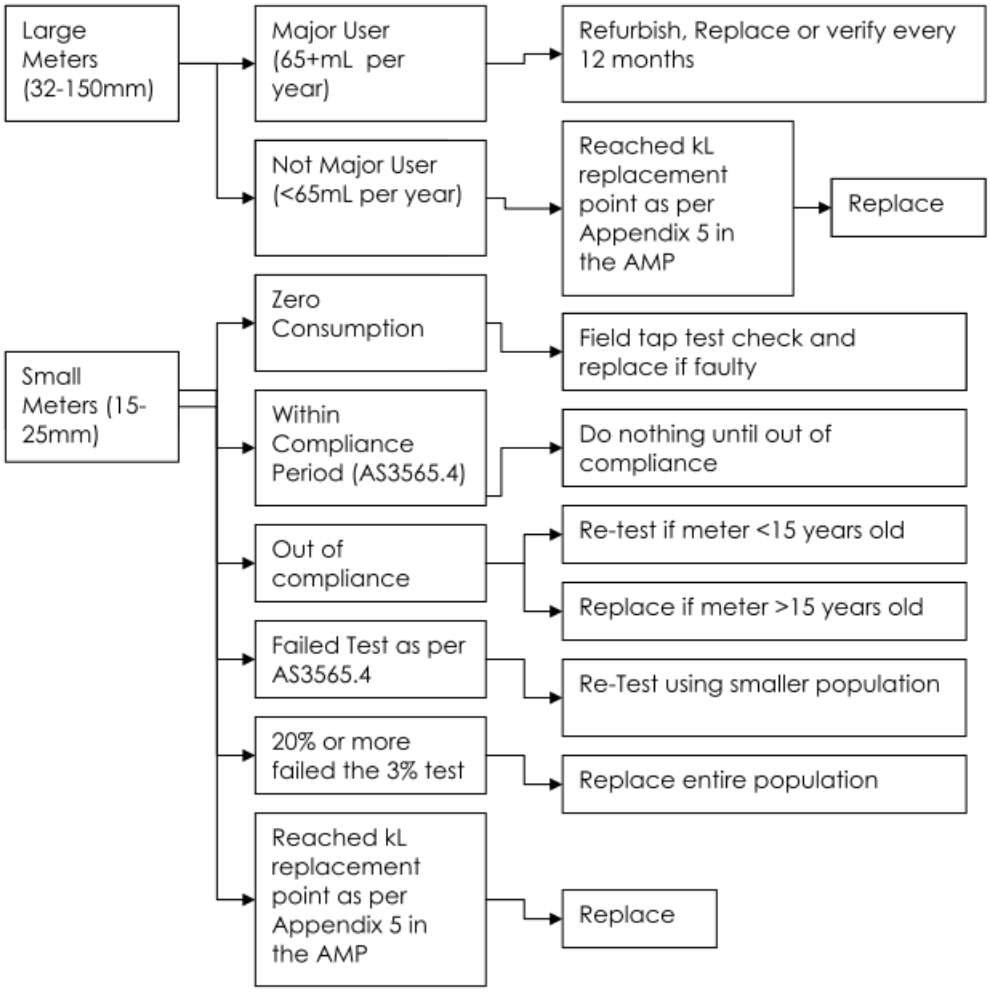
B.5.1 Solutions development

Meters to be included in the renewals program are determined based on a number of potential issues:

- Results of meter compliance testing
- Attrition statistics
- Zero consumption statistics
- Kilolitre replacement points
- Age based replacement points
- Economic modelling
- Improvement opportunities
- Small scale new technology trials
- Data management and database improvement opportunities

A flowchart has been developed by Queensland Urban Utilities to assist with the identification meters for replacement.

Figure 6-1 : Flowchart for meters replacement identification (Queensland Urban Utilities, 26 June 2012)



The decision whether to replace or refurbish a meter is dependent on meter size, type and refurbishment cost compared to purchase cost. As a general rule, meters in sizes 20 to 40 mm are replaced with new meters. For larger meters 40-150 mm replacement is also a more economically viable option than refurbishment. The only meters which are economic to refurbished are high consumption meters (65 mL+ per year). These are removed on a more regular basis (at least once per year). (Queensland Urban Utilities, 26 June 2012).

The major drivers for testing and replacement of billing meters are the potential for revenue loss and customer charge inequality due to meters not registering correctly. Secondary drivers include meters with old technology, meters without check valves and meters which are failing due to bad design or poor quality. (Queensland Urban Utilities, 26 June 2012).

The highest priority for replacement is given to meters with the highest potential for loss of revenue. The potential for loss of revenue is largely based on the consumption figures for the meter in question. This means that meters with higher consumption will be given priority over meters with lower consumption. The priority for replacement is given to meters that have stopped (zero read meters) compared to meters that are identified as a part of the meter testing program, kilolitre based replacement (total flow registered) or age based replacement. (Queensland Urban Utilities, 26 June 2012).

The meter replacement program includes replacement of all existing ‘George Stack’ manifold bases due to repeated failure of the isolation valve. Currently Queensland Urban Utilities is the only organisation using ‘George Stack’ manifold bases hence the replacement bases are being produced solely for Queensland Urban Utilities. According to Queensland Urban Utilities, due to the sole supplier and purchaser situation, the cost to

purchase these bases is increasing. Ultimately it is planned that the complete Brisbane meter fleet is converted to inline meters. The initiative will provide Brisbane with a more economical replacement option in the future, as well as bringing Brisbane into line with the rest of South East Queensland and the majority of major cities. It will also allow Brisbane to easier adapt to the future meter types such as composite body meters and smart meters. (Queensland Urban Utilities, 26 June 2012).

SKM has reviewed Queensland Urban Utilities reasoning for the conversion to inline meters and considers that conversion to inline meters is an appropriate course of action. The repeated failure of the isolation valve in the 'George Stack' manifold bases and the increasing costs associated with their purchase support this action.

Queensland Urban Utilities incorporated the following improvement opportunities into the program:

- Economic replacement points
- Screamers and plodders
- High-end water consumers
- Difficult to access meters
- Ipswich, Scenic Rim, Somerset and Lockyer Valley meter replacement data
- Zero flow data gathering
- Sub-metering and AMR issues (Queensland Urban Utilities, 26 June 2012)

The meters to be replaced through the Water Meters Renewals Program in 2012-13 and 2013-14 are outlined in Table 84.

Table 84 : 2012-13 and 2013-14 Water Meters Renewals Program

Description	2012-13	2013-14	Priority
20 mm meters	Replacement AG – 22,352 all 15-20yo Total – 22,352	Replacement AE and AF 1,000 units, AZ – older than 15 years & 20 ML Total – 21,000 units	1
20 mm meters backlog	Replacement of backlog meters Various – 6,700	Replacement of backlog meters Various – 5,000	1
25 mm-150 mm meters	Replacement/Rehabilitation including the purchase of new technology meters	Replacement/Rehabilitation including the purchase of new technology meters	1
25 mm-150 mm meters	Testing	Testing	1
Plodders and screamers	Data extraction	Data extraction	3
Trials of new technology	Trials/Testing	Trials/Testing	3
Meter database	Cleansing/Update	Cleansing/Update	4

For the 2012-13 program, the majority of meters to be replaced are 20 mm AG meters. These were subject to laboratory testing in 2010-11 and failed the AS3565.4 test. For the 2012-13 program the majority of meters to be replaced are 20 mm AZ meters. These were subject to laboratory testing in 2011-12 and failed the AS3565.4 test. In addition to failing the AS3565.4 test they are also all over 15 years old and have recorded more than 20 ML of flow through them. The 2012-13 program also includes the replacement of a number of AE and AF 20 mm meters to be replaced based on age without testing.

SKM is satisfied that water meters requiring renewal are identified through an appropriate process and are prioritised appropriately.

B.5.2 Project delivery

This project is being delivered under a three-year contract which was awarded in the 2010-11 financial year. The contract has been in place for less than two years of its three-year term; Queensland Urban Utilities has an option to extend the contract term by one year then a further one year (ie 3+1+1). (Halcrow, January 2013)

A Request for Offer was released to the market in December 2011 for the Provision of Water Meter Reading, Replacement and Associated Maintenance. At the close of the tender four submissions had been received. The tenders were reviewed by Queensland Urban Utilities and a Probity Audit was undertaken by BDO. The tenders were assessed on technical worth/effectiveness and price. Skilltech received the highest score for both criteria. Corporate ScoreCard was engaged to prepare an independent financial and procurement report for each tenderer. It is noted that only two tenderers proceeded to the Corporate ScoreCard review due to one organisation submitting a non-compliant offer and the other having a poor track record and uncompetitive pricing. Corporate ScoreCard only assessed Skilltech as the other organisation failed to respond the numerous information requests. The outcome of the assessment process was the recommendation that Skilltech be engaged the Provision of Water Meter Reading, Replacement and Associated Maintenance. (Queensland Urban Utilities, 1 March 2012).

Although the final independent was review only being conducted on one tender, SKM is satisfied that a competitive tender process occurred and a robust tender evaluation process was undertaken.

In the review completed for the 2012-13 period, it was noted that Halcrow was *"not clear why the contractor maintains such a high control over meter selection even if cost savings are passed through to QUU. It is also not clear whether with in-line meter installation it is easy to interchange meter type. Given there is a preference for two (2) small meter types (of the five (5) types currently in operation), there may be an opportunity to formalise the preference for two or three proven meter types (and a range of test meters) through the negotiation of formal bulk supply contracts. This would drive cost savings from a supply perspective, and lead to the achievement of further efficiencies."* (Halcrow, January 2013).

In response to this Queensland Urban Utilities stated that it has a list of approved meter suppliers from which any new meter must come from in order to satisfy their required standards. Queensland Urban Utilities noted that "*Skilltech is one of the largest providers of meter installation services in Australia, and provides similar services to other water utility businesses in Australia."* As such Queensland Urban Utilities "*does not consider it appropriate to direct Skilltech on how it procures the meters it needs to install, so long as the meters meet our standards and the schedule of rates that QUU has established with Skilltech provides the best value for money."* In addition, due to the size of Skilltech's business, Queensland Urban Utilities notes that the "*volumes of meters installations undertaken by Skilltech allow for it to negotiate a competitive price for the meters."* (Queensland Urban Utilities, 15 July 2013).

Queensland Urban Utilities state that Skilltech has a greater purchasing power due to the size of Skilltech's business.

Queensland Urban Utilities states: "*Skilltech installs and replaces over 300,000 meters per annum (both water and electricity) in Australia. This is significantly more meters per annum compared to Queensland Urban Utilities' water meters renewals program for 2013-14 of 20,000 meters. This is an indicator of the purchasing power Skilltech holds relative to Queensland Urban Utilities. As such, Queensland Urban Utilities believes that the arrangement it has in place with Skilltech provides value for money, as Skilltech is able to leverage its position in the market to procure meters at highly competitive rates. If Queensland Urban Utilities were to purchase meters through a bulk supply contract it would also be responsible for warehousing and stock control costs. Based on this information, Queensland Urban Utilities considers that the approach of using Skilltech as the sole provider of water meter contracting and replacement services for Queensland Urban Utilities provides the most efficient solution".*

However, Queensland Urban Utilities has not demonstrated that this assumption is correct this through market testing. As such, for consistency, SKM has adopted the findings of the Authority's 2011-12 review that annual savings of 5% could be realised through Queensland Urban Utilities negotiating bulk supply contracts.

The 2012-13 period review also identified *"a procurement risk resulting to the closing down of the Banya Street Water Meter workshop. Market research and selection of a new NATA laboratory for testing is yet to be completed, however, a forward approach has been planned."* (Halcrow, January 2013).

In response to a query from SKM in relation to laboratory testing Queensland Urban Utilities stated:

> *"Prior to the formation of QUU, the Brisbane City Council NATA certified laboratory was part of Brisbane Water, after the formation of QUU this laboratory remained under Brisbane City Council control and meter testing services were provided to QUU under the existing terms, conditions and pricing. In 2012 Brisbane City Council decided to sell its NATA certified laboratory to Veolia and QUU engaged the market for a new contract. QUU signed a contract with Barwon Water to provide water meter testing services in early 2013."*

In response to a query on its approach to the market and its selection and evaluation process, Queensland Urban Utilities stated:

> *"A temporary solution was needed to continue delivering this program after the closure of Brisbane City Council laboratory. Queensland Urban Utilities engaged the market and evaluated the services and prices of three laboratories. Following this process QUU awarded the contract to Skilltech for the provision of this service by using Barwon Water laboratory facilities."*

SKM accepts that the majority of the program will be delivered by contractors with minimal involvement from Queensland Urban Utilities staff and therefore considers that the program can be delivered within the proposed timeframes.

B.6 Standards of service

The *National Measurement Act 1960* requires that utility meters used for trade must be verified in terms of accurate measurement. Australian Standards have been developed for implementation purposes, with the current documents being:

- *AS 3565.1-2010 : Meters for cold and heated drinking and non-drinking water supplies - Technical requirements* (which supersedes AS3565.1 – 2004: Meters for water supply – cold water meters)
- *AS3565.4 – 2007: Meters for water supply – part 4 In-service compliance testing*

The *South-East Queensland Water (Distribution and Retail Restructuring) Act 2009* includes the following requirements:

- s99AG

  Each SEQ service provider must take reasonable steps to ensure each meter recording each of its customers' water consumption is read at least once each year.

In addition to the *National Measurement Act 1960*, the Australian Standards and the *South-East Queensland Water (Distribution and Retail Restructuring) Act 2009*, Queensland Urban Utilities' Customer Charter includes a commitment to "Ensuring our meter readings are accurate and that our customers are charged correctly." (Queensland Urban Utilities, 2012).

SKM considers that the standards used for this project are appropriate.

B.7 Project cost

The Business Case for Rolling Programs Domestic and Non-Domestic Meter Rehabilitation/Replacement Program 2011-14 (Queensland Urban Utilities, 26 June 2012) was developed using a budgeted cost of $170 per meter as per the Skilltech Schedule of Rates for 2010-11 financial year. This rate per meter was applied over the 2011 to 2014 period as per the business case. It is noted that the Water Meters Renewals Program – Financial Year 2012-13 Program List (Queensland Urban Utilities, September 2012) used a budgeted cost of

$150 per meter and the Water Meters Renewals Program – Financial Year 2013-14 Program List (Queensland Urban Utilities, September 2012) used a budgeted cost of $200 per meter.

Queensland Urban Utilities has advised that the cost for the water meter renewals program is developed based on the actual cost from previous years. Table 85 presents an overview of the average actual cost for replacement of meters in the 2009-10 and 2011-12 programs and the estimated cost for replacement of meters in the 2012-13 and 2013-14 programs.

Table 85 : Actual and estimated replacement cost per meter (Queensland Urban Utilties, 17 July 2013)

Description	Average actual cost for 2009-10	Estimated cost for 2012-13 Program List	Average actual cost for 2011-12	Estimated cost for 2013-14 Program List
20 mm meters	$152/meter	$150/meter	$196/meter	$200/meter

Queensland Urban Utilities state that the rate of $150 per meter was used for the development of the 2012-13 program as it was thought to be reflective of the program of works planned for implementation, consisting mainly of replacement of 20 mm AG meters.

SKM understands that Queensland Urban Utilities determined the cost per meter based on the actual meter replaced and their cost from the 2011-12 program; Table 86.

Table 86 : Actual meter replacement costs for 2011-12 (Queensland Urban Utilties, 17 July 2013)

Description	No. of meters	Value ($)	Average ($/meter)
20 mm meters	18,001	$3,529,048	$196

SKM agree with the methodology used by Queensland Urban Utilities to determine the average actual cost for meter replacement and agree with the use of $196 per meter for cost estimation. As such, SKM suggests that $196 per meter should have been used for the development of the 2013-14 Program.

The budget proposed by SKM is outlined in Table 87. This budget has been developed based on a cost $150 per 20 mm meter for 2012-13 and $196 per meter for 2013-14 and a reduction of 5% on the overall expenditure for both periods.

Table 87 : 2012-13 and 2013-14 water meters renewals program budget

Description	2012-13			2013-14		
	Description	Program Cost ($)	SKM Proposed ($)	Description	Program Cost ($)	SKM Proposed ($)
20 mm meters	22,352 meters	3,688,000	3,352,800	21,000 meters	4,200,000	4,116,000
20 mm meters backlog	20,100 meters	3,005,000	3,015,000	5,000 meters	1,000,000	980,000
25 mm - 150 mm meters	Replacement/rehabilitation	700,000	700,000	Replacement/rehabilitation	700,000	700,000
25 mm - 150 mm meters	Testing	50,000	50,000	Testing	20,000	20,000
Plodders and screamers	Data extraction	20,000	20,000	Data extraction	20,000	20,000
Trials of new technology	Trials/Testing	50,000	50,000	Trials/Testing	50,000	50,000
Meter database	Cleansing/Update	40,000	40,000	Cleansing/Update	20,000	20,000

Description	2012-13			2013-14		
	Description	Program Cost ($)	SKM Proposed ($)	Description	Program Cost ($)	SKM Proposed ($)
Project Management	Project Management	214,000	214,000	Project Management	214,000	214,000
	Total	**7,767,000**	**7,441,800**	**Total**	**6,224,000**	**6,120,000**
	5% reduction	**-**	**372,090**	**5% reduction**	**-**	**306,000**
	Revised Total	**-**	**7,069,710**	**Revised Total**	**-**	**5,814,000**

At the meeting on the 18th July 2013, Queensland Urban Utilities advised that cost to replace meters has increased as the meters now being replaced are harder to access, and hence more expensive to replace than meters replaced earlier in the program. To this is added the higher associated with conversion to inline meters over costs for simple replacement.

Based on the current Skilltech rates, assuming that incidental and ancillary costs add 40% to the basic meter replacement price, Table 88 presents an estimation of the current cost of meter replacement.

Table 88 : Cost build up from Skilltech rates (Skilltech, 6 June 2013)

Description	Skilltech rate	Incidental and ancillary costs @ 40%	Total
Inline Conversion ADB	$162.58	$65.03	$227.61
Procurement and Installation of Conventional Meter 20mm	$53.35	$21.34	$74.69
Procurement and Installation of Manifold Meter 20mm	$55.54	$22.22	$77.76
Manifold Base Replacement	$94.25	$37.70	$131.95
Manifold Base Replacement with Line Freeze	$144.04	$57.62	$201.66

The Business Case (Queensland Urban Utilities, 26 June 2012) states that the *"cost of replacing a manifold base with a new manifold base is near identical to the cost of replacing a manifold setup with an inline meter setup"* and that the "*conversion will have no budgetary impacts due to the price for inline installations being near identical to the price of manifold base replacements"*. As can be seen in Table 88 the cost associated with a Manifold Base Replacement with Line Freeze is comparable to an Inline Conversion ADB.

The use of a cost estimation database which is updated to reflect changes in contract rates and supply arrangements is a satisfactory method of determining costs estimates. SKM has adopted a unit rate of $196 per meter for the 2013-14 program as this reflects the average actual cost for meters.

The delivery of the program through a contractor selected through a tender process is appropriate. However, the procurement of meters through Skilltech has not been demonstrated as the least cost procurement method. As such SKM has assumed that an annual savings of 5% could be realised through Queensland Urban Utilities negotiating bulk supply contracts.

B.8 Efficiency gains

The replacement of faulty or old meters with new meters extends the useful life of the asset.

B.9 Implications for operating expenditure

The replacement of faulty or old meters with new meters reduces the loss of revenue arising from inaccurate readings. However, the resultant reduction in this loss this has not been quantified. In addition, it is expected that that maintenance costs of a new meter will be lower than an old meter; again this has not been quantified. Queensland Urban Utilities state that:

"Queensland Urban Utilities replaces meters as and when they become non-compliant with the Australian Standards AS3565.4. Queensland Urban Utilities does not currently quantify the revenue losses stemming from non-compliant water meters. QUU is looking towards quantifying this amount in future as part of its Enterprise Excellence Program."

B.10 Policies and procedures

Table 89 below identifies how the project has complied with the appropriate policies and procedures.

Table 89 : BDWDAA06 Brisbane Water Meters Renewals Program compliance with the Authority's criteria

Initiative	Achievement (Yes/No/Partial)	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole-of-entity and whole-of-sector) perspective	Yes	The replacement of all existing 'George Stack' manifold bases to inline meters brings Brisbane into line with the rest of South East Queensland and the vast majority of Australian capital cities. It will also allow Brisbane to easier adapt to the future meter types such as composite body meters and smart meters.
Consideration of alternative investments, the substitution possibilities between operating costs and capital expenditure, and non-network alternatives such as demand management.	N/A	Alternative investments such as the substitution between operating costs and capital expenditure are not applicable to this program
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	N/A	For major projects an independent cost estimate is required, and a spread sheet template, available on the intranet, is to be used. For this project SKM considers that the use of historical costs as a basis to develop the capital budget is an appropriate process.
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	Yes	Water Meter Renewals Program Project Summary (Queensland Urban Utilities, 3 January 2013)
An implementation strategy to be developed for each major project	Yes	A significant Procurement Plan (Queensland Urban Utilities, 1 March 2012) was developed for the program
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	No	No evidence has been provided of gateway reviews. Queensland Urban Utilities states that *"Gateway reviews are not undertaken for minor capital projects and programs. However, they still go through the standard capital planning and budgeting governance frameworks at QUU."* Queensland Urban Utilities' Capital Planning and Delivery Process states that *"a project is considered "major" if it has an estimated value over $5 million or it is a complex or potentially high risk project. Projects not classed as "major" are classed as "minor"."* Given that the forecast expenditure for 2013-14 is $7.77 million and for 2014-15 it is $6.22 M, SKM considers the Water Meters Renewal Program to be a major project for which all requirements of a major project should be undertaken.

Initiative	Achievement (Yes/No/Partial)	Comment
Information on the compatibility with existing and adjacent infrastructure and consideration of modern engineering equivalents and technologies.	Yes	Documented in the Business Case for Rolling Programs Domestic and Non-Domestic Meter Rehabilitation/Replacement Program 2011/14 (Queensland Urban Utilities, 26 June 2012)
Includes only commissioned capital expenditure from 1 July 2010 in the regulatory asset base (RAB) and therefore prices	Yes	Expenditure commissioned the year after incurred, ie the 2012-13 works will be commissioned and capitalised in 2013-14.

Although SKM has assessed that this project has not taken into consideration of alternative investments, followed the standardised approach to cost estimation or followed the 'toll gate' or 'gateway' review process, SKM does not consider that this is indicative of deficiencies in Queensland Urban Utilities overall policies or capital delivery procedures.

SKM considers that the alternative investments, such as the substitution between operating costs and capital expenditure, are not applicable to this program.

SKM considers that the use of historical costs as a basis to develop the capital budget is an appropriate process for a rolling program as these costs will be the most relevant.

Queensland Urban Utilities states that "Gateway reviews are not undertaken for minor capital projects and programs. However, they still go through the standard capital planning and budgeting governance frameworks at QUU." Queensland Urban Utilities' Capital Planning and Delivery Process contains the following guidance "*a project is considered "major" if it has an estimated value over $5 million or it is a complex or potentially high risk project. Projects not classed as "major" are classed as "minor".*" Given the forecast expenditure for 2013-14 is $7.77 million and for 2014-15 it is $6.22 M, SKM considers the Water Meters Renewal Program to be a major project for which all requirements of a major project should be undertaken and therefore classification as a minor project not appropriate.

SKM notes that Queensland Urban Utilities policies and procedures do not currently include a benefits realisation review once a project has been completed and the benefits have been, or are being, realised and measured against a baseline. As such there are potentially opportunities for the program to become more efficient over time which are currently not being realised.

B.11 Prudency and efficiency

The Water Meter Renewals Program is a program that runs across the whole of Queensland Urban Utilities' service area which replaces existing water meters to ensure the accurate recording of water consumption. The Brisbane Water Meter Renewals Program was selected for review by the Authority.

The project has been assessed as prudent. The primary driver of renewal has been demonstrated. The replacement of non-operational and malfunctioning water meter is required to provide accurate billing to customers and for revenue protection.

SKM understands that the majority of the program will be delivered by contractors with minimal involvement from Queensland Urban Utilities staff and therefore considers that the program can be delivered within the proposed timeframes.

SKM considers that the standards used for this project are appropriate.

SKM has reviewed Queensland Urban Utilities' reasoning for the conversion to inline meters and believes that this is an appropriate course of action. The repeated failure of the isolation valve in the 'George Stack' manifold bases and the increasing costs associated with their purchase support this action. SKM is satisfied that water meters requiring renewal have been identified through an appropriate process. In addition, there has been

sufficient and appropriate analysis of the option of replacement over refurbishment. SKM is satisfied that a competitive tender process occurred and a robust tender evaluation process was undertaken.

SKM agrees with the methodology used by Queensland Urban Utilities to determine the average actual cost for meter replacement and agrees with the application of $196 per meter for cost estimation. The use of a cost estimation database which is updated to reflect changes in contract rates and supply arrangements is a satisfactory method of determining costs estimates. SKM has adopted a unit rate of $196 per meter for the 2013-14 program as this reflects the average actual cost for meters. The delivery of the program through a contractor selected through a tender process is appropriate. From analysis of the information provided, SKM concludes that the proposed revised costs are efficient.

Queensland Urban Utilities state that Skilltech has a greater purchasing power due to the size of Skilltech's business. However, Queensland Urban Utilities has not demonstrated that this assumption is correct through market testing. As such, for consistency, SKM has adopted the findings of the Authority's 2011-12 review that annual savings of 5% could be realised through Queensland Urban Utilities negotiating bulk supply contracts.

B.12 Assessment of reported expenditure

Table 90 below identifies the proposed capital expenditure for BDWDAA06 Brisbane Water Meters Renewals Program.

Table 90 : BDWDAA06 Brisbane Water Meters Renewals Program proposed capital expenditure as incurred for year of commissioning

Project	2012-13 ($'000)	2013-14 ($'000)	Total
BDWDAA06 Brisbane Water Meters Renewals Program	7,767	6,224	13,991
SKM proposed value	7,070	5,814	12,884
Variation	-697	-410	-1,107

Note: Figures are "as incurred" expenditure and exclude any allowance for capital overhead or borrowing (interest) costs.

B.13 Extrapolation to other projects

It is considered by SKM that the findings from this project can be extrapolated to other similar projects, being Ipswich, Lockyer Valley, Scenic Rim and Somerset Water Meters Renewals Programs.

This is based on the assumption that Queensland Urban Utilities has applied the same methodology for determining assets to be included in the program for these other regions as it has for the Brisbane Region, as well as the same method for costing and delivering the program. SKM notes that the cost per meter adopted for the other regions are different from that used for Brisbane, as outlined in Table 91.

Table 91 : Cost per water meters

Project	2012-13 ($/meter)	2013-14 ($/meter)
Ipswich	130	130
Lockyer Valley	150	150
Scenic Rim	150	150
Somerset	150	150

Queensland Urban Utilities states that the reason for the different in water meter costs across the different regions is that "*Water meters in the western regions of Queensland Urban Utilities' service area are generally located above ground and therefore easy to access for replacement and installation purposes. As such costs are lower than in Brisbane where replacement and installation work sometimes involve further work in and around the location of water meters which are located in boxes beneath the ground level.*" SKM considers this

to be reasonable. To be consistent with the findings of the previous Authority review, the assumption of 5% annual savings has been applied.

Table 92 : Water Meters Renewals Programs proposed capital expenditure as incurred for year of commissioning ($'000s)

Source	2013-14 ($'000)	2014-15 ($'000)	Total ($'000)
IDWDAA06 Ipswich Water Meters Renewals Program			
Submitted	598	1,105	1,703
SKM proposed value	568	1,050	1,618
Variation	-30	-55	-85
LDWDAA06 Lockyer Valley Water Meters Renewals Program			
Submitted	175	158	333
SKM proposed value	166	150	316
Variation	-9	-8	-17
RDWDAA06 Scenic Rim Water Meters Renewals Program			
Submitted	117	109	226
SKM proposed value	111	104	215
Variation	-6	-5	-11
SDWDAA06 Somerset Water Meters Renewals Program			
Submitted	171	79	250
SKM proposed value	162	75	238
Variation	-9	-4	-13

Note: Figures are “as incurred” expenditure and exclude any allowance for capital overhead or borrowing (interest) costs.

Appendix C. BWWCAA21 Brisbane Woolloongabba Sewer Catchment Augmentation

C.1 Project description

The Woolloongabba Sewerage Catchment lies in Brisbane's inner southern suburbs of Woolloongabba, Stones Corner, Buranda and East Brisbane.

The S1 South Sewerage Catchment Master Planning Study - Review 2006 identified that the Woolloongabba Sewerage Catchment suffered from major capacity issues requiring immediate attention.

The Queensland Government and Brisbane City Council have nominated Woolloongabba and Buranda as priority urban renewal areas to meet regional growth targets.

In late 2007 it was considered prudent to conduct a new feasibility study to review previous works and develop a revised set of sewerage augmentations to optimally serve the Woolloongabba catchment through to ultimate development. This new study was completed in January 2009 with the preferred option being a gravity sewer augmentation of the existing system comprising 6,898 m of new 250 mm to 1,200 mm diameter gravity sewers.

The urgent need to upgrade the sewers is to allow the new developments of the Boggo Road Precinct, PA Hospital and Pharmacy School to come online. The current sewerage system does not have the capacity to accept these additional flows once these developments are fully commissioned.

The project was spilt into two parts to ease delivery of the project during the transitional period (in which Queensland Urban Utilities was formed):

- Part A of the augmentation, the design and construction of Lines 3 and 4 was completed in March 2011, and involved the delivery of an inceptor sewer along O'Keefe Street to the Norman Creek trunk sewer with 500 mm to 1,000 mm with a total length of 1,100 m.
- The scope of Part B, the remainder of the proposed new sewer lines (1,2,5,6,8 and 9) involved:

  The design and construction of an augmentation of the existing Woolloongabba Sewerage system comprising approximately 5,350 m of new 300 mm to 1350 mm diameter gravity sewers

  Approximately 14 connections to existing sewers at various locations (Brisbane City Council, 28 February 2012)

Line 7 was identified within the 2009 Feasibility Study. Following further investigations, this line was found not to be required and as such was removed from the scope of works early in the project.

C.2 Proposed capital expenditure

Table 93 shows the proposed Brisbane Woolloongabba Sewer Catchment Augmentation Project within the 2013-15 budget.

Table 93 : Woolloongabba Sewer Catchment Augmentation Project proposed capital expenditure ($'000s)

Source	Previous Years ($'000)	2013-14 ($'000s)	2014-15 ($'000s)	Subsequent Years ($'000s)	Total ($'000s)
Commissioning Model[1]	46,223	33,346	-	-	**79,569**
Project Summary[2]	47,506	33,374	5,027	-	**85,907**

Note: Figures are "as incurred" expenditure and exclude any allowance for capital overhead or borrowing (interest) costs.

[1] *Commissioning Model 5yr Summary 2014.xls* (Queensland Urban Utilities, 2014) –Projects tab, Row 128 - the project on an as incurred basis for both Part A and B

[2] *Brisbane Woolloongabba Sewer Catchment Augmentation Project Summary*, Date unknown (Queensland Urban Utilities) – includes investment prior to establishment of Queensland Urban Utilities

Queensland Urban Utilities has stated that the latest estimate for the project for Parts A and B is $85.907 million including investment prior to the establishment of Queensland Urban Utilities. The variation of $6.338 million between the Commissioning Model 5yr Summary 2014, and the Woolloongabba Sewer Catchment Augmentation Project Summary is for the expenditure prior to the establishment of Queensland Urban Utilities. The total variation of $0.532 million between the Project Summary ($85.907 M) and the Post Market Document ($86.439 M) is due to values for previous financial years having been updated for actual expenditure.

During the drafting of the Project Summary, it was anticipated that Part B of the project would be commissioned during the 2014-15 financial year. However, due to significant progress on the delivery of the project, this expenditure is now scheduled for commissioning during the 2013-14 year.

C.3 Documentation reviewed

Key reference documents used for this review are:

- *Commissioning Model 5yr Summary 2014.xls,* Queensland Urban Utilities, 2014 (Queensland Urban Utilities, 2014)
- *Brisbane Woolloongabba Sewer Catchment Augmentation Project Summary*, Queensland Urban Utilities, Date unknown (Queensland Urban Utilities)
- *Woolloongabba Sewer Catchment Augmentation WWP62 - Feasibility Report*, Brisbane City Council, 13 March 2009 (Brisbane City Council, 13 March 2009)
- *QUU 2011 Proposed Capital Works Review Part B – Review of Capital Projects,* Beca, 8 August 2011 (Beca Pty Ltd, August 2011)
- *Post Market Approval for the design, construction and commission of the Woolloongabba Sewer Augmentation Stages 2 & 3 Part,* Queensland Urban Utilities, 19 March 2012 (Queensland Urban Utilities, 19 March 2012)
- *Amendment to Post-Mark submission for the design, construction and commissioning of the Woolloongabba Sewer Augmentation Stage 2 and 3 Part B*, Queensland Urban Utilities, 4 January 2013 (Queensland Urban Utilities, 4 January 2013)
- *Project Management Plan - Woolloonga Sewer Catchment Augmentation Stage 2 & 3 - Part B*, Queensland Urban Utilities, 17 January 2013 (Queensland Urban Utilities, 17 January 2013)
- Internal Management Costs.xls, Queensland Urban Utilities, Date unknown (Queensland Urban Utilities)
- *Gate 2 - Delivery Strategy Gateway Review Pre-Market Business Case*, Brisbane City Council, 1 February 2010 (Brisbane City Council, 1 February 2010)
- *Wolloongabba Trunk Sewer Upgrade Stages 2 & 3 Tender Evaluation Report*, Jason Consultants Ltd, October 2001 (Jason Consultants Ltd, October 2011)
- *Memo: Amendments to final sizing due to amended Kangaroo Point South Neighbourhood Plan*, Queensland Urban Utilities, 21 September 2011 (Queensland Urban Utilities, 21 September 2011)
- *Response to RFI QUU019-024 and 076-081*, Queensland Urban Utilities, 23 July 2013 (Queensland Urban Utilities, 23 July 2013)
- *Significant Procurement Activity Plan*, Queensland Urban Utilities, 28 January 2010 (Queensland Urban Utilities, 28 January 2010)
- *Project Initiation Plan V2*, Queensland Urban Utilities, 14 January 2010 (Queensland Urban Utilities, 14 January 2010)
- *Gate 3 - Investment Decision Post-Market Submission Project Management Plan,* Brisbane City Council, 28 February 2012 (Brisbane City Council, 28 February 2012)

C.4 Key drivers

The cost driver nominated by Queensland Urban Utilities in the *Brisbane Woolloongabba Sewer Catchment Augmentation Project Summary* (Queensland Urban Utilities, undated) is growth.

The S1 South Sewerage Catchment Master Planning Study - Review 2006 identified that the Woolloongabba Sewerage Catchment suffered from major capacity issues requiring immediate attention.

The 2009 Feasibility Report states that population projections for the Woolloongabba Sewerage Catchment are predicted to increase from approximately 64,000 Equivalent Persons (EP) in 2006 to 106,000 EPs in 2016 and 140,000 EPs for the Ultimate Planning Horizon (Brisbane City Council, 13 March 2009).

Construction was originally planned to commence early in 2009-10, however the design phase has extended considerably longer than initially planned due to changes in population forecasts and other key parameters.

Revised population figures were documented in the August 2011 Beca review of the Woolloongabba Sewer Catchment Augmentation – Part B Project. The Beca report quoted a latest forecast for an ultimate population of 165,000 EP. The increase in population was partially attributed to the residential hubs that were planned at Stones Corner as well as the trend towards higher density accommodation in the area. (Beca Pty Ltd, August 2011).

The projected growth places additional stress on the already overloaded system and results in uncontrolled overflows occurring within the Woolloongabba Sewerage Catchment at Peak Dry Weather Flow (i.e. daily morning peak) for the 2016 Planning Horizon. This highlights the requirement for immediate action to address deficiencies as well as to cater for future growth. (Brisbane City Council, 13 March 2009).

Queensland Urban Utilities has estimated that the lines identified for upgrading only have capacity to handle 1.8 to 2 times average dry weather flow (ADWF) compared with the regulatory requirement of five times ADWF. The existing sewers were constructed in 1981 to 2001 and it is predicted that up to 80% of the existing sewer pipes are over their theoretical asset life (50 to 80 years). Based on the adopted population projections the Woolloongabba Sewerage Catchment is currently under capacity and is in need of upgrade to meet current and future population projections. SKM has reviewed the project information and agrees that the project driver is growth.

C.5 The scope of works

C.5.1 Solutions development

The 2009 Feasibility Report selected a recommended augmentation option to address the hydraulic incapacities within the Woolloongabba Sewerage Catchment on the basis of a Multi-Criteria Analysis of each option, as well as stakeholder input.

A number of alternative options for servicing the Woolloongabba Sewer Catchment were considered, including the following augmentation strategies:

- Do nothing
- Storage
- Integrated water management
- Reduce inflow and infiltration
- Flow diversion
- High level relief sewers
- Augmentation at grade
- Replacement

Brisbane Water determined that the “Do nothing” option would not address the project drivers and thus was discounted prior to detailed options assessment.

The augmentation strategies which were considered appropriate for the Woolloongabba Sewerage Catchment and which had the potential to meet the objectives and drivers for the project were “Augmentation at grade” and “Replacement”. These two augmentation strategies are both conveyance strategies which increase hydraulic capacity of trunk sewers within the area of interest to reduce surcharge and overflows. Augmentation options were subsequently developed for these two strategies.

As part of the initial option assessment it was identified that there were a number of locations within the study area where non-lineal upgrades (ie altering existing flow paths within the catchment) had the potential to improve project outcomes in terms of costs, environmental, social and community impacts, and operational advantages. There were three key locations where non-lineal upgrades were possible. Each of the non-lineal upgrade options had different impacts on capacity in different sections of the downstream network and thus rather than adopting a local segmental approach towards assessing upgrades, a more holistic approach was adopted to address the deficiencies within the core area of the network.

The various combinations of non-lineal upgrades identified resulted in the development of eleven solutions to address deficiencies within the core area of the Woolloongabba sewerage catchment. These core solutions addressed the majority of deficiencies within the catchment however there were still four areas where deficiencies could be addressed on a localised segmental basis, although these local area solutions were dependent upon the core solutions. On the basis of the above it was identified that the most appropriate method of developing augmentation options for the Woolloongabba Sewerage Catchment was to assess the core area of the network prior to addressing the four local solutions areas.

A constructability assessment of various trenched and trenchless construction methods was undertaken and a recommended construction method was identified for each element of each option.

In all instances micro-tunnelling was selected as the preferred option.

The multi-criteria analysis used to assess the options took account of the following technical assessments completed as part of the feasibility study:

- Hydraulic sewer modelling
- Constructability review, including selection of the appropriate construction methodologies for each area and identification of key constraints
- Geotechnical assessment
- Environmental considerations and impacts
- Community and social considerations and impacts
- Construction cost estimates
- Risk assessment

Table 94 below gives a summary of the eleven core options and their multi-criteria analysis weighted scores, with a higher number in the multi-criteria analysis weighted scores representing a more favourable option.

Table 94 : Summary of Multi-Criteria Analysis Weighted Scores and Capital Cost Estimates – Core Solutions

Option Reference	Option Description	Multi-Criteria Analysis Weighted Score	Project Capital Cost ($'000s exl. GST)
Core Option 1	S1S-GM12 - upgrade along existing/parallel alignments along Ipswich Road and Qualtrough Streets through to Logan Road. S1S-GM15 –upgrade along Logan Road and Deshon Street. S1S-GM17/18 – Upgrade parallel to the existing trunk sewers adjacent to Norman Creek.	289	42,054
Core Option 2	S1S-GM12 - upgrade along existing/parallel alignments along Ipswich Road and Qualtrough Streets through to Logan Road. S1S-GM15 –upgrade along Logan Road and Deshon Street. S1S-GM17/18 – Interceptor along Digger Street and Railway Street to Deshon Street and then parallel to existing trunk sewers adjacent to Norman Creek.	287	43,137
Core Option 3	S1S-GM12 - Upgrade along Ipswich Road to a new interceptor sewer constructed on Stanley Street. S1S-GM15 – Interceptor along Stanley Street to Caswell Street. S1S-GM17/18 – Interceptor along Digger Street, Railway Street and Norman Street, connecting into the Stanley Street interceptor.	303	41,342
Core Option 4	S1S-GM12 - Upgrade along Ipswich Road to a new interceptor sewer constructed on Stanley Street. S1S-GM15 – Interceptor along Stanley Street to Caswell Street. S1S-GM17/18 – Interceptor along Digger Street and Railway Street to Deshon Street and then parallel to existing trunk sewers adjacent to Norman Creek.	293	43,550
Core Option 5	S1S-GM12 – O'Keefe Street diversion to Norman Creek Trunk Sewer. S1S-GM15 – Interceptor along Stanley Street to Caswell Street. S1S-GM17/18 – Upgrade parallel to the existing trunk sewers adjacent to Norman Creek.	308	39,562
Core Option 6	S1S-GM12 – O'Keefe Street diversion to Norman Creek Trunk Sewer. S1S-GM15 – Interceptor along Stanley Street to Caswell Street. S1S-GM17/18 – Interceptor along Digger Street, Railway Street and Norman Street, connecting into the Stanley Street interceptor.	333	35,969
Core Option 7	S1S-GM12 – O'Keefe Street diversion to Norman Creek Trunk Sewer. S1S-GM15 –upgrade along Logan Road and Deshon Street. S1S-GM17/18 – Interceptor along Digger Street and Railway Street to Deshon Street and then parallel to existing trunk sewers adjacent to Norman Creek.	304	39,912
Core Option 8	S1S-GM12 – O'Keefe Street diversion to Norman Creek Trunk Sewer. S1S-GM15 –upgrade along Logan Road and Deshon Street. S1S-GM17/18 – Upgrade parallel to the existing trunk sewers adjacent to Norman Creek.	315	36,538

Option Reference	Option Description	Multi-Criteria Analysis Weighted Score	Project Capital Cost ($'000s exl. GST)
Core Option 9	S1S-GM12 - upgrade along existing/parallel alignments along Ipswich Road and Balaclava Streets through to Logan Road. S1S-GM15 – Upgrade along Logan Road and following the route recommended as part of the previous Stage 2 route. S1S-GM17/18 – Upgrade parallel to the existing trunk sewers adjacent to Norman Creek.	286	41,760
Core Option 10	S1S-GM12 – O'Keefe Street diversion to Norman Creek Trunk Sewer. S1S-GM15 – Upgrade along Logan Road and following the route recommended as part of the previous Stage 2 route. S1S-GM17/18 – Upgrade parallel to the existing trunk sewers adjacent to Norman Creek.	305	37,228
Core Option11	Replace existing trunk sewers in core area.	260	47,298

Following the development of the above scoring, it was identified that all core solutions scored reasonably similarly and thus other key differentiators between the options were discussed. Subsequently, core option 5 and core option 6 were decided as the two most suitable options. Following further detailed analysis of the remaining two options, the technical reference group agreed that core option 6 be taken forward as the preferred option, as it:

- Was the highest scoring option in the multi-criteria analysis
- Had the lowest cost estimate
- Avoids majority of Norman Creek
- Has reduced risk profile compared to core option 5 and thus reduces potential for cost changes during detailed design
- Delivers the best overall project outcomes in terms of reduced costs, environmental, social and community impacts and operational advantages

Following selection of the preferred solution for the core area, options were assessed for each of the four local solution areas. The weighted scores from the multi-criteria analysis process and capital cost estimates for each of the local area solutions are presented in Table 95 below:

Table 95 : Summary of Multi-Criteria Analysis Weighted Scores and Capital Cost Estimates – Local Area Solutions

Option Reference	Option Description	Option A		Option B		Option C	
		Multi-Criteria Analysis Weighted Score	Capital Cost ($'000s exl. GST)	Multi-Criteria Analysis Weighted Score	Capital Cost ($'000s exl. GST)	Multi-Criteria Analysis Weighted Score	Capital Cost ($'000s exl. GST)
S1SGM7-18 (Upstream)	Stones Corner	394	6,220	328	9,439	333	9,210

Option Reference	Option Description	Option A		Option B		Option C	
		Multi-Criteria Analysis Weighted Score	Capital Cost ($'000s exl. GST)	Multi-Criteria Analysis Weighted Score	Capital Cost ($'000s exl. GST)	Multi-Criteria Analysis Weighted Score	Capital Cost ($'000s exl. GST)
S1SGM12A,B &C	Princess Alexandra Hospital	321	6,027	357	5,278		
S1SGM13B	Baines Street and Wellington Road	325	3,523	335	3,337	351	3,032
S1SGM15D,E, F	Mater Hospital and Stanley Street West	334	6,704	338	6,650		

Selection of the preferred solution for each of the local area solutions was agreed by the technical reference group and in all instances the lowest cost/highest scoring option was selected as the preferred option.

The overall preferred strategy is a gravity sewer augmentation option where core deficiencies are addressed by three strategic interceptor sewers which significantly alter the existing flow paths within the study area and the remainder of the deficiencies are addressed by localised upgrades.

SKM is satisfied that an appropriate range of options was selected and adequately reviewed, that the most efficient option has been selected and that the scope of works is appropriate to meet the project need.

C.5.2 Project delivery

A “Strategic Delivery Risk Assessment Workshop” was held in February 2009 and was attended by key internal stakeholders. The workshop assessed the pre-construction phase in detail and construction phase at a high level. The result of this assessment highlighted three key risks and opportunities that impacted on the selection of the best delivery strategy. These were:

- Timeliness in rectification of system deficiencies
- Constructability opportunities
- Stakeholder management

A Procurement Initiation Plan was prepared in early January 2010, the purpose of which was to define the method and schedule for the procurement of the Woolloongabba Part B project and to seek approval to commence developing a Significant Procurement Activity Plan and tender evaluation plan, as well as seeking approval for Queensland Urban Utilities Commercial Services to develop the market engagement documents. The names and positions of a tender evaluation panel were decided and a project schedule developed. (Queensland Urban Utilities, 14 January 2010).

Following the development of a delivery strategy “suitability matrix”, five delivery options were considered to deliver the preferred option.

- Design and Construct (D&C)
- Construct to Design using Council’s Infrastructure Consultancy Panel
- Construct to Design using in-house resources
- Split the procurement into two stages. Expression of Interest followed by a RFP for D&C
- Alliance Agreement

Queensland Urban Utilities states that a D&C was chosen as the preferred option as:

- It minimises unnecessary contract risks transferring D&C risks to the contractor
- It defines the costs of the contract upfront and thereby providing certainty on budget requirements and cash phasings as well as quantifying contingency
- It provides the project with certainty for a definite start and completion date
- There is sufficient interest in the market to respond to an RFP to achieve competition and good value for money outcomes
- The scope of the works is well defined and a concept design had been prepared to be issued with the RFP and form part of the contract specifications

A risk assessment was conducted, with the key risks identified being unable to meet stakeholder requirements, local action groups, delayed program, approval and construction issues and infrastructure. In order to mitigate these risks Queensland Urban Utilities completed a large proportion of the design in house, despite the selected D&C contract.

SKM considers this a reasonable method of managing the considerable project risks identified.

Survey level of key critical points along the alignment work was completed and proved the viability of the concept design of the preferred option.

Stakeholders were broken down into the following three tiers:

- Tier 1 – Major Stakeholders
- Tier 2 – Businesses
- Tier 3 – Residential

Analysis and engagement of Tier 1 stakeholders along the route was undertaken. The “Stakeholder Analysis Report” identified 20 key stakeholders that will be impacted along the proposed pipeline routes. Each was interviewed and canvassed for their issues relating to the construction in relation to customer impact and timing. This information was issued with the Request for Price (RFP) allowing these considerations to be taken into account by prospective tenderers in developing their construction schedules. Tier 2 and 3 stakeholder engagement was to be undertaken following the award of the contract when a delivery schedule and construction timeline were in place.

SKM believes that consultation with key stakeholders is in line with good industry practice.

Preliminary geotechnical investigations were completed with 45 boreholes being drilled and analysed along the route. The preliminary geotechnical investigation reports were issued with the RFP. Further geotechnical investigations were recommended to better define the rock and alluvial interfaces, aimed to allow the tenderers to be able to better price the construction works.

SKM considers that undertaking geotechnical investigations is a sensible method to prevent the risk of unknown ground conditions being included within tender prices.

On June 2011 approval was given for a decision paper seeking approval for a forward commitment of funds and to publicly advertise a RFP on the Queensland Government Market Place e-Tendering Website in July 2011. Subsequently, the RFP was advertised on 1 July 2011.

On 23 September 2011 seven offers were received from five tenderers, consisting of five conforming offers and two alternative offers. Offers received on 23 September indicated a preference for larger pipe diameters enabling substantially longer distances to be constructed between maintenance holes. This prompted Major Projects and Commercial Services to instigate an internal review of the concept design in relation to maintenance hole spacing and pipe diameter.

A classification notice was issued to all tenderers on 30 November 2011 stating that offers could be amended to propose a larger pipe diameter and longer distances between maintenance holes. The offers were evaluated on this revised concept. (Queensland Urban Utilities, 19 March 2012)

One tenderer was not taken forward for further review. Given the high costs of this tender, SKM considers this to be appropriate.

Jason Consultants was retained on behalf of Queensland Urban Utilities and undertook a review of constructability and tenders submitted for the Woolloongabba Sewer Augmentation Project Stage 2 & 3. The review was limited to those aspects covering the trenchless works of microtunnelling and its associated elements. The report stated that

> *"As all four tender prices are relatively closely aligned we recommend that further review effort be focused upon the commercial terms and the management of risk. With a few minor noted exceptions we consider all four tenderers technically capable of completing the project though it is clear the level of attention given by each tenderer to the RFP varies considerably. Time might therefore be focused on selecting the contractor who is in the best position to manage design and construction risk and where the ownership of risk between the parties can be clearly established and contractually agreed prior to award."* (Jason Consultants Ltd, October 2011)

The non-price evaluation criteria and weightings used in assessing the offers are listed in **Table 96** below:

Table 96 : Non-price evaluation criteria

Non-price evaluation criteria	Weighting (%)
Methodology and Delivery Requirements	40
Capacity	25
Demonstrated Experience with similar projects	15
Environmental, Quality and Safety	10
Financial Viability	10
Total	**100**

A value for money (VFM) index was calculated for each shortlisted offer by dividing the Normalised Offered price into the sum of the non-price evaluation criteria.

Queensland Urban Utilities undertook a three step tender evaluation procedure incorporating the VFM index score, further interviews with contractors and final negotiations.

John Holland was subsequently ranked the highest VFM Index Rating with a contract sum of $56,991,111. (Queensland Urban Utilities, 19 March 2012)

However, this value was incorrectly transposed from the evaluation report documents. An amendment to post-market submission was consequently made in January 2013 which led to the following changes:

- A revised contract value of $57,284,577 representing an additional contract value of $293,446
- The additional contract value was subtracted from the originally approved contract contingency resulting in a revised contract contingency of $4,806,534 (Queensland Urban Utilities, 4 January 2013)

This resulted in a 5% reduction in contract contingency. SKM is satisfied that this was an appropriate method to cover the increase in contract value.

SKM is satisfied that a robust tender and selection process was followed for the D&C contract of the Woolloongabba Sewer Catchment Augmentation Part B project, including consideration of cost and non-cost criteria.

Queensland Urban Utilities states that due to significant progress on the delivery of the project, the capital is now scheduled for commissioning during the 2013-14 financial year. (Queensland Urban Utilities, 23 July 2013).

C.6 Standards of service

Design criteria applied in the feasibility report were as follows:

- Sewer systems shall be sized to cater for a design peak wet weather flow (PWWF) of 1,200 L/EP/d – for a trunk sewer serving populations < 100,000 EP
- Sewer systems shall be sized to cater for a design peak wet weather flow (PWWF) of 1,000 L/EP/d – for a trunk sewer serving populations > 100,000 EP
- The Average Dry Weather Flow (ADWF) shall be taken as 250 L/EP/d (unless more accurate information is available)
- The Peak Dry Weather Flow (PDWF) is to be taken as 1.8 x ADWF
- Maximum sewer capacity shall be taken as that of the sewer flowing full with no surcharge at Design PWWF (Brisbane City Council, 13 March 2009)

Key criteria recorded in the 2011 Beca review are as follows:

- ADWF = 210 L/EP/day
- PWWF = 5 x ADWF (Beca Pty Ltd, August 2011)

The Beca report does not specify the source of these values. No documentation relating to design parameters used by the D&C contractor John Holland has been provided by Queensland Urban Utilities for this review.

The unit loading rate of 210 L/EP/day is higher than the current ADWF loading rate specified for Queensland Urban Utilities in the SEQ Water and Sewerage Planning Guidelines (Version 1, May 2012), which specifies a loading rate of 180 L/EP/d. However, at the commencement of design the SEQ Water and Sewerage Planning Guidelines were not in place. As such, SKM considers that the use of the guidelines in place at the time was appropriate.

C.7 Project cost

The project budget outlined for the Woolloongabba Sewer Catchment Augmentation project is understood to be as given in Table 97 below:

Table 97 : Woolloongabba Sewer Catchment Augmentation Allocated Budget (Source: Increase Contract Expenditure Authority)

Financial Year	Project Cost ($'000)
Prior Years	56,967
2013-14	28,939
Total Budget	85,907

Following a robust tendering process, the Woolloongabba Sewer Catchment Augmentation Stages 2 & 3 Part B design, construction and commissioning works was awarded to John Holland for a contract value of $57,284,577 with an approved contingency of $4,806,534 (Queensland Urban Utilities, 4 January 2013). SKM is satisfied with the tendering process used for the procurement of the D&C contract for Part B of the overall project.

Queensland Urban Utilities obtained two independent cost estimates for Part B in April and May 2011 following direction from the Chief Operating Officer. The two estimates came back with a revised contract cost in the order of $67 million (Queensland Urban Utilities, 17 January 2013). It is noted that this value is in line with the prices provided by the three lead tenderers.

Queensland Urban Utilities has provided internal their internal management costs for Part A and Part B to 30 June 2013 and future forecast costs as below:

Table 98 : Queensland Urban Utilities Internal Management Costs (Queensland Urban Utilities)

Item	Total Internal Costs ($'000)	% of Direct Costs1
Detailed design and specifications	1,474	3
Contract Documents	55	0
Tender assessment and approvals	351	1
Contract execution	2,026	4
Forecast future costs	1,600	3
Total	**5,506**	**10**

[1]Note direct costs refer to construction contract for Part B only. The value of Part A delivered by Queensland Urban Utilities has not been provided.

SKM is satisfied that Queensland Urban Utilities' costs are within expected percentages based on industry experience.

A comparison of the contingency allowances against direct costs is shown below. SKM notes that the contract contingency was reduced from $5.1 million to correct an administrative error in the contract documents.

Table 99 : Contingency costs as a percentage of total costs

Item	Total Costs ($)	% of Direct Costs[1]
Part B Contract Contingency	4,806,534	8
Project Contingency	3,900,000	7
Contingency (Part B only)	**8,706,534**	**15**

[1]Note direct costs refer to construction contract for Part B only.

Table 12 of the Post Market Submission outlines the contingencies for the project. A number of the identified risks may have now been resolved, and hence the contingency allowance will have either been required, or could be removed.

Subsequently Queensland Urban Utilities has provided further information regarding contingencies in the Increase Contract Expenditure Authority (Queensland Urban Utilities, July 2013). SKM understands that the tunnelling is 60% complete and that the tunnelling can be held up at any stage of the tunnelling. In addition, SKM understands that there are still some ongoing negotiations with land owners.

The Increase Contract Expenditure Authority (Queensland Urban Utilities, July 2013) provides the following revised breakdown for the project contingency, which reflects some of the problems experienced to date (eg flow control).

Table 100 : Contingency costs as a percentage of total costs

Item	Total Costs ($)	% of Direct Costs[1]
Part B Contract Contingency	5,611,550	10
Project Contingency	2,295,000	4
Contingency (Part B only)	**7,906,550**	**14**

The project was split in two parts (A and B) for "ease of project delivery during the transitional period" (Queensland Urban Utilities, undated). Queensland Urban Utilities has documented that a value of $6.3 million is for expenditure prior to establishment of Queensland Urban Utilities (Queensland Urban Utilities, 23 July

2013). SKM also understands that an additional amount of $7.0 million was incurred by Queensland Urban Utilities in 2012 for the remaining section of Part A. The total costs for Part A is $13.4 million.

The Increase Contract Expenditure Authority provides details of variations totalling $3.7 million. The cause of the variations has been documented, including additional costs for flow control and a pile of the Eastern Busway in a different location than documented.

The Queensland Urban Utilities' total budget for Part A and Part B is $85.9 million as shown in Table 101.

Table 101 : Calculated total costs of overall project

Item	Total Costs ($)
Part A	13,461,716
Part B Contract (Revised)	60,940,908
Part B Contract Contingency	5,611,550
Project Contingency	2,295,000
Queensland Urban Utilities Internal Costs	3,597,826
Total Calculated Project Costs (Part A and Part B)	**85,907,000**

Queensland Urban Utilities stated in response to RFI19 that the latest estimated for the project for both Parts A and B is $85,907,000 (Queensland Urban Utilities, 23 July 2013), which is within the project budget provided in the Project Management Plan.

SKM finds the costs to be efficient.

C.8 Efficiency gains

The tendering process for the D&C of Part B resulted in a reduction in the winning tenderer's contract price from the original $60.0 million to the final contract value of $57.3 M. This produced a reduction of approximately $2.7 M.

C.9 Implications on operating expenditure

The implications of the project on future operating expenditure are not quantified in the documentation provided however it is anticipated that the sewer catchment augmentation will result in a reduction in the risk of fines and the clean-up of cost sewer overflows will reduce. BCC states that neither of these costs are realistically measureable. (Brisbane City Council, 13 March 2009).

The following direct non-financial benefits may be realised through the implementation of this project:

- Rehabilitation of existing trunk sewers should result in a reduction in infiltration along these sewer lengths
- The frequency, duration and volume of wet weather sewage overflows will be significantly reduced
- Dry weather overflows caused by hydraulic incapacities within the sewer network will be eliminated
- Adverse water quality and public health issues associated with sewage overflows will be reduced
- Augmented system satisfies statutory requirements and licence conditions
- Capacity will be available within the system to cater for predicted population growth
- Enhanced operational and maintenance flexibility provided by interceptor system

SKM concurs with this analysis and that the above non-financial benefits will be realised on completion of the project.

C.10 Policies and procedures

Table 102 below identifies how the project has complied with the appropriate policies and procedures.

Table 102 : BWWCAA21 Woolloongabba Sewer Catchment Augmentation compliance with the Authority's criteria

Initiative	Achievement (Yes/No/Partial)	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole-of-entity and whole-of-sector) perspective	Yes	A number of options were considered which considered optimisation of the network from a whole-of-catchment perspective. No viable transfer options are considered available.
Consideration of alternative investments, the substitution possibilities between operating costs and capital expenditure, and non-network alternatives such as demand management.	Yes	A number of options have been considered that take into account alternate strategies such as integrated water management and reduction of inflow/infiltration.
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	For major projects an independent cost estimate is required, and a spreadsheet template on the intranet is to be used. Two independent cost estimates were produced.
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	Yes	Project Summary – Brisbane Woolloongabba Catchment Augmentation (Queensland Urban Utilities, undated).
An implementation strategy to be developed for each major project	Yes	Project Management Plan for the Woolloongabba Sewer Catchment Augmentation Stage 2&3 - Part B.
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	Yes	Gate 1: Prior to Queensland Urban Utilities Gate 2: Gate 2 - Delivery Strategy Gateway Review Pre-Market Business Case (Brisbane City Council, 1 February 2010) Gate 3: Gate 3 - Investment Decision Post-Market Submission Project Management Plan (Brisbane City Council, 28 February 2012)
Information on the compatibility with existing and adjacent infrastructure and consideration of modern engineering equivalents and technologies.	Yes	Designed to integrate with existing infrastructure
Includes only commissioned capital expenditure from 1 July 2010 in the regulatory asset base (RAB) and therefore prices	Yes	

The documentation reviewed for this project is in line with Queensland Urban Utilities' capital delivery processes (eg Beca's third party assessment, Project Management Plan). This project has demonstrated no deficiency in Queensland Urban Utilities overall policies and procedures.

C.11 Prudency and efficiency summary

Based on the adopted population projections the Woolloongabba Sewerage Catchment is currently under capacity and is in need of upgrade to meet current and future population projections.

SKM is satisfied that a range of options were adequately selected and reviewed and that the scope of works is appropriate to meet the project need.

As detailed information on the scope of works completed and yet to be completed has not been provided by Queensland Urban Utilities for this review, SKM is unable to determine whether Queensland Urban Utilities' schedule to commission in 2013-14 is realistic and achievable.

SKM is satisfied that the tendering process used for the procurement of the D&C contract for Part B of the overall project is robust and will have resulted in a market price based on a VFM assessment.

Overall, SKM finds the project to be prudent and efficient.

C.12 Assessment of reported expenditure

Table 103 below identifies the proposed capital expenditure for the BWWCAA21 Woolloongabba Sewer Catchment Augmentation project.

Table 103 : BWWCAA21 Woolloongabba Sewer Catchment Augmentation proposed capital expenditure

Project	2013-14 ($'000)	2014-15 ($'000)	Total ($'000)
BWWCAA21 Woolloongabba Sewer Catchment Augmentation	79,569	0	79,569
SKM proposed value	79,569	0	79,569

Note: Figures are "as incurred" expenditure and exclude any allowance for capital overhead or borrowing (interest) costs.

C.13 Extrapolation to other projects

SKM does not consider that the findings form this report can be extrapolated to other projects as the above findings are specific to the Woolloongabba Sewer Catchment Augmentation project.

Appendix D. BWWCAA21 Brisbane Bartleys Hill/Wellers Hill Zone Connection Including Twin River Crossing

D.1 Project description

The Bartleys Hill water supply zone (WSZ) is bounded by the northern rail corridor in the west, Schultz Canal in the north, the Brisbane River to the south and extends from Albion out to Pinkenba and Luggage Point to the east. The zone includes a mix of residential, commercial and industrial customers including the prestige suburbs of Ascot, Hamilton and Clayfield, Brisbane Airport and Eagle Farm industrial and refinery precincts. (Queensland Urban Utilities, October 2011).

The zone is supplied from Bartleys Hill Reservoir in Ascot, comprises of two reservoirs with a combined capacity of 19.8 ML. This is less than the 2011 peak day demand storage requirement of 24.2 ML under SEQ Water Supply and Sewerage Design and Construction Code.

Actual peak day demand in the Bartleys Hill WSZ is approaching the total storage capacity and provides no residual capacity to support planned growth within the zone. Since January 2011 there have been 13 major residential development applications within the zone. Customer EP is predicted to grow from approximately 51,000 EP in 2011 to 103,000 EP when all planned development has taken place (assumed to be 2031). The lack of reservoir storage is a risk to the security of supply to customers within the zone, especially when planned or emergency maintenance is undertaken on the trunk mains which supply the reservoir. (Queensland Urban Utilities, October 2011).

Bartleys Hill reservoir is supplied by a DN1050/DN900 trunk main from Green Hill Reservoir via Eildon Hill Reservoir, and has a reduced capacity DN600 backup supply from Brisbane CBD. Distribution in the Bartleys Hill WSZ is via a single DN750/DN600 trunk main from Ascot to Pinkenba, with contingency supply only via the local reticulation system that does not have the capacity to maintain the pressure and flows required to meet standards of service. (Queensland Urban Utilities, 22 July 2013).

The Wellers Hill WSZ lies to the east of Brisbane on the south side of the Brisbane River. The zone supplies the suburbs of Bulimba through to Wynnum West and from Murarrie south to Mansfield and Mackenzie. The Wellers Hill WSZ has additional storage capacity. (Queensland Urban Utilities, 22 July 2013).

Following a major water supply incident in September 2011 where both supply trunk mains to Bartleys Hill reservoir failed causing the reservoir to run dry and affecting 12,000 customers, a feasibility report was commissioned to evaluate and propose solutions to the issue of water supply reliability and security to the zone, and address water supply requirements to facilitate growth development in the area. (Queensland Urban Utilities, 22 July 2013).

The feasibility study recommended that a new trunk main be constructed to link the Wellers Hill WSZ to the Bartleys Hill WSZ, and that the Bartleys Hill Reservoir WSZ is reduced in size and population served, by approximately 60%, with the remainder of the supply zone permanently transferred to an expanded Wellers Hill WSZ (Queensland Urban Utilities, 22 July 2013).

D.2 Proposed capital expenditure

Table 104 shows the proposed cost of the Bartleys Hill/Wellers Hill Zone Connection Project within the 2013-15 budget.

Table 104 : Bartleys Hill/Wellers Hill Zone Connection proposed capital expenditure ($'000s)

Source	Previous years ($'000s)	2013-14 ($'000s)	2014-15 ($'000s)	Subsequent years ($'000s)	Total 2013-15 ($'000s)
Commissioning Model[1]	500	3,000	19,131	-	22,131

Source	Previous years ($'000s)	2013-14 ($'000s)	2014-15 ($'000s)	Subsequent years ($'000s)	Total 2013-15 ($'000s)
Project Summary[2]	500	3,000		19,131	22,131

Note: Figures are "as incurred" expenditure and exclude any allowance for capital overhead or borrowing (interest) costs.

[1] *Commissioning Model 5yr Summary 2014.xls* (Queensland Urban Utilities, 2013)

[2] *Brisbane Bartleys Hill/Wellers Hill Zone Connection Including Twin River Crossing*, Project Summary, Date unknown (Queensland Urban Utilities, No date)

For the period under review (2013-15) the expenditure outlined in the Commissioning Model, $23,131,000, and that outlined in the Project Summary, $22,131,000 are the same.

D.3 Documentation reviewed

The key reference documents used for this review are:

- *Commissioning Model 5yr Summary 2014.xls* (Queensland Urban Utilities, 2013)
- *Project Summary - Brisbane Bartleys Hill/Wellers Hill Zone Connection Including Twin River Crossing*, (Queensland Urban Utilities, No date)
- *Brisbane Bartleys Hill/Wellers Hill Zone Connection Including Twin River Crossing Feasibility Report Volume 1 and 2* (Queensland Urban Utilities, October 2011)
- *Bartleys Hill/Wellers Hill Zone Connection Indicative Construction Cost Estimate* (WT Partnership, February 2013)
- *SEQ Water Supply and Sewerage Design and Construction Code* (Allconnex Water, Queensland Urban Utilities and Unitywater, 1 July 2013)
- *QUU 2013/2014 Proposed Capital Works Review - Review of Capital Projects* (Beca Pty Ltd, 27 March 2013)
- *Response to RFI QUU 009-013* (Queensland Urban Utilities, 12 July 2013)
- *Project Schedule - WQKH Bartleys Hill/Wellers Hill Zone Connection - BDWDAA30* (Queensland Urban Utilities, 22 July 2013)
- *Procurement Strategy Analysis - WQKH - Bartleys Hill - Wellers Hill Water Supply Zone Connection Project* (Queensland Urban Utilities, 22 July 2013)
- *Response to RFI QUU 085* (Queensland Urban Utilities, 31 July 2013)
- *Response to RFI QUU 011-115* (Queensland Urban Utilities, 31 July 2013)
- *Drawing – Bartleys Hill/Wellers Hill Connection* (Queensland Urban Utilties, 31 July 2013)

D.4 Key drivers

The primary driver nominated by Queensland Urban Utilities for this project is growth. This project is required as there is currently insufficient storage within the Bartleys Hill WSZ. The existing Bartleys Hill Reservoirs do not satisfy the SEQ Water Supply and Sewerage Design and Construction Code requirement for storage (Allconnex Water, Queensland Urban Utilities and Unitywater, 1 July 2013). According to the SEQ Water Supply and Sewerage Design and Construction Code ground level reservoirs should have a reservoir storage or operational capacity as determined by the equation included as item number A6 in Table 4.1 (Water Network Planning Parameters – Single Supply (Drinking Water Only) Network) of the code.

$$Resevoir\ Storage = Usable\ volume\ of\ 1\ x\ Peak\ Day\ (ML) + 0.5\ ML\ fire\ fighting\ storage$$

SKM notes that Queensland Urban Utilities has a Water and Wastewater Network Planning Guidelines (2011) which was used for the development of the Feasibility Report. The SEQ Water Supply and Sewerage Design

and Construction Code supersede the Queensland Urban Utilities however the design criteria used in the Feasibility Report are in line with those in the code.

A secondary driver identified is improvement. The project will improve supply reliability to and within the Bartleys Hill WSZ and allow future development in Bartleys Hill WSZ catchment.

The existing reservoir capacities of the Bartleys Hill and Wellers Hill reservoirs are provided in **Table 105**.

Table 105 : Existing Bartleys Hill and Wellers Hill reservoir details (Queensland Urban Utilities, October 2011)

	Bartleys Hill			Wellers Hill		
	Reservoir No. 1	**Reservoir No. 2**	**Total**	**Reservoir No. 1**	**Reservoir No. 2**	**Total**
Volume (ML)	8.2	11.6	**19.8**	66	86	**152**

The population projects adopted and the required storage calculated using the equation outlined above are included in **Table 106**.

Table 106 : Bartleys Hill and Wellers Hill WSZs population projections

Year	Bartleys Hill			Wellers Hill		
	WSZ Population (EPs)[1]	**Required Storage (ML)[2]**	**Surplus/Deficit on Current Capacity**	**WSZ Population (EPs)[1]**	**Required Storage (ML)[2]**	**Surplus/Deficit on Current Capacity**
2011	51,461	24.2	-4.4	170,340	78.9	73.1
2016	61,531	28.8	-9.0	181,184	83.8	68.2
2021	71,411	33.3	-13.5	190,134	88.0	64.0
2026	102,231	47.5	-27.7	191,729	88.7	63.3
Ultimate	102,928	47.8	-28.0	207,017	95.7	56.3

[1] Brisbane Bartleys Hill/Wellers Hill Zone Connection Including Twin River Crossing Feasibility Report Volume 1 and 2 (Queensland Urban Utilities, October 2011, p. 58)

[2] Required Storage calculated using equation A6 of Table 4.1 in SEQ Water Supply and Sewerage Design and Construction Code (Allconnex Water, Queensland Urban Utilities and Unitywater, 1 July 2013), 230 L/EP/day Average Day Demand and Peaking Factor of 2.0 from Brisbane Bartleys Hill/Wellers Hill Zone Connection Including Twin River Crossing Feasibility Report Volume 1 and 2, (Queensland Urban Utilities, October 2011, p. 43)

SKM considers that the existing combined capacity of the Bartleys Hill Reservoirs, of 19.8 ML, is not sufficient for the 2011 WSZ population which requires a capacity of approximately 24.2 ML or future population growth. As a result, SKM agrees with Queensland Urban Utilities assessment in that additional water supply capacity is required and that the primary driver for the project is growth.

In addition SKM acknowledges that there is currently spare capacity within the Wellers Hill Reservoirs that could be better utilised to meet this growth in demand.

D.5 The scope of works

D.5.1 Solutions development

A number of alternative options for serving the Bartleys Hill WSZ were considered. These initial options were assessed against the project drivers of:

- Improve supply reliability to Bartleys Hill WSZ
- Improve supply reliability within Bartleys Hill WSZ

- Complies with SEQ Water Supply and Sewerage Design and Construction Code

The summary of initial options assessment is presented in Table 107.

Table 107 : Summary of Initial Option Assessment (Queensland Urban Utilities, October 2011, p. 83)

No	Option	Project Drivers		
		Improve supply reliability to Bartleys Hill WSZ	**Improve supply reliability within Bartleys Hill WSZ**	**Complies with SEQ Water Supply and Sewerage Design and Construction Code**
1	Do Nothing	✗	✗	✗
2	Duplication of trunk mains from Green Hill Reservoir to Bartleys Hill Reservoir	✓	✗	✗
3	Upgrade of Lloyd Street Pump Station	✓	✗	✗
4	Construction of an extra reservoir to service the Bartleys Hill WSZ	✗	✓	✓
5	Establishment of purified recycled water scheme to service the Bartleys Hill WSZ	✓	✓	✗
6	Cross River connection between Bartleys Hill WSZ and Wellers Hill WSZ	✓	✓	✓

SKM has reviewed the initial options investigated and agrees with Queensland Urban Utilities assessment in that the Option 6 is the only option which meets all three drivers.

A number of different methods to cross the river were investigated. These included submarine pipelines and attaching the pipelines to the Gateway Bridges. Following consultation with Queensland Motorways, the option to attach the pipeline the bridges was discounted due to the following reasons:

- The inability of the bridges' design to cater for additional loads of this type particular if supported under the cantilevers with access to the bridge chambers is not possible
- Durability impacts on the structure. Drilling for any supporting structures on the concrete faces will not be permitted
- Impacts on maintenance arrangement and future access for maintenance

As a result, the cross river connection can only be achieved with a submarine pipeline.

Three river crossing alignments were investigated using a multi criteria assessment (MCA) process; this included hydraulic modelling, constructability review, geotechnical assessment, environmental considerations and impacts, community and social considerations and impacts, construction cost estimates and risk assessment. Cost estimates were also developed for each alignment. These are summarised in Table 108.

Table 108 : Summary of multi criteria options evaluation and cost estimates (Queensland Urban Utilities, October 2011)

Option	Pipeline Length (km)	MCA Weighted Scores	NPV ($M Excluding GST)
Alignment 1	4.1	368	25.78
Alignment 2	2.0	410	18.49
Alignment 3	3.9	359	23.56

Alignment 2 scored the highest in the MCA and exhibits the lowest cost. SKM has reviewed the information and concurs with the selected preferred alignment option.

The Alignment 2 pipeline route included a section through private property, the Royal Queensland Golf Club (RQGC). An alternative pipeline route, Alignment 2A, was developed in the event that an agreement was not achieved with the property owner. In addition to the two potential alignments, two construction methodologies were considered: pipe jacking and horizontal directional drilling.

Subsequent to the development of Alignment 2 and Alignment 2A, stakeholder consultation was undertaken with The RQGC, Tangalooma Ferries and Sibelco due to the potential impact of the selected alignment.

Key outcomes consultation process identified that:

- The RQGC:

  Strongly objected Alignment 2 and the installation of any infrastructure across the property

  Would strenuously oppose any attempt to install such infrastructure
- Tangalooma Ferries:

  Strongly objected Alignment 2A
- Sibelco:

  Were most impacted by Alignment 2A (Queensland Urban Utilities, No date)

  Consideration has been given to the following issues:
- The geotechnical investigations have provided no reason to prefer one route over another
- Alignment 2 will result in strenuous opposition from the RQGC, with associated expense and delays in overcoming this opposition. However, the impact on the RQGC could largely be eliminated by avoiding conventional trenched construction within the property, and using trenchless techniques below the golf course all the way to Holt Street
- The impact on Tangalooma Ferries from Alignment 2A is twofold:

  Both the receival shaft and the trenched component of the pipeline impact on the car-park and terminal access. This could be overcome by moving the alignment out of the property

  The trenchless component impacts on the marina development and there is no evident means of mitigating this impact. It is considered that pursuing this alignment may involve delays due to appeals by the company, and also may require some compensation for the impact on the approved development
- Alignment 2 has least impact on Sibelco
- Alignment 2 is the shorter route (Queensland Urban Utilities, No date)

As a result of the stakeholder engagement, a new alignment, Alignment 2B, was developed. The route is similar to Alignment 2 but with the trenchless component terminating at Holt Street. Queensland Urban Utilities state that consultation with tunnelling and drilling consultants has confirmed that the additional drive length to Holt Street can be achieved without the need for any additional shaft to be constructed. Queensland Urban Utilities state that Alignment 2B has some additional cost, but this will be outweighed by the elimination of delays and of the costs associated with likely legal action. (Queensland Urban Utilities, No date)

Alignment 2B has been adopted as the preferred alignment (Queensland Urban Utilities, No date).

An independent estimate was developed by WT Partnership Pty Ltd for Alignment 2 and Alignment 2A, discussed in more detail in Section D.7. As can be seen by in Table 109, Alignment 2 is at least $1.3 million less than Alignment 2A, depending on the construction methodology.

Table 109 : Independent cost review summary of preferred options (WT Partnership, February 2013)

Option	Alignment 2	Alignment 2A	Difference
Pipe Jacking	$21,153	$22,631	$1,478
Horizontal Directional Drilling	$19,733	$21,096	$1,363

The proposed scope for this project comprises of:

- Installation of a DN1650 concrete tunnel under the Brisbane River to accommodate twin DN710 PE100 PN 16 pipes
- Installation of DN900 PE100 PN16 on Holt Street
- Installation of valve pits northern and southern sides of the river
- Installation of back feeding bypass (including isolation valves)
- Installation pressure regulating valve pit and flow monitor valve pit
- Testing and Commissioning of new infrastructure

The installation of new pipe and supporting infrastructure is required to connect the Bartleys Hill and Wellers WSZs, allow suitable operation of the new pipeline and monitor the boundary conditions of the WSZs.

The scope of the works (the construction of twin trunk main to link the Wellers Hill WSZ to the Bartleys Hill WSZ and the subsequent rezoning of Bartleys Hill and Wellers WSZs) is assessed by SKM as appropriate. SKM considers the nominated pipe sizes and material to be appropriate and the decision to have twin water mains as prudent.

D.5.2 Project delivery

The proposed procurement and delivery method for the project was evaluated by Queensland Urban Utilities staff. From this process, it was determined that the works should be delivered through a 'two stage' Design and Construct, consisting of an Expression of Interest stage, followed by a select Request for Offer stage. It was also recommended that the number of Proponents is restricted to two or three for the select Request for Offer stage, depending on the outcomes from the Expression of Interest stage. (Queensland Urban Utilities, 22 July 2013)

The project has two distinct delivery components:

- Trenchless construction of the trunk main under the Brisbane River
- Open trenched construction of the trunk main along Holt St to Kingsford Smith Drive, and Paringa Rd to the start of the trenchless construction pipe

Expressions of Interest are to be called in August 2013 with subsequent Requests for Offers called in October 2013. The project schedule indicates that the contract is will be awarded in May 2014 with commissioning and handover to be completed by April 2016 (Queensland Urban Utilities, 22 July 2013).

The Procurement Strategy Analysis states that construction of the new trunk main will be complete by April 2016 (Queensland Urban Utilities, 22 July 2013). This also aligns with the project schedule provided. As this date is outside the review period SKM recommends that the entire costs for this project are removed from the Authority's cost model.

D.6 Standards of service

The design criteria adopted for this project were:

- Demand
  - Average Day Demand – 230 L/EP/day

  - Non-Revenue Water – 50 L/EP/day
  - Peaking Factor - Peak Day/Average Day = 2.0
- Pipeline Capacity
  - Minimum Pressure - 21 m
  - Maximum Pressure – 60 m
  - Peak Pipe Velocity - Desirable 2 m/s
- Reservoir Capacity
  - Ground Level Reservoir Storage - Peak Day
- Simulation
  - Extended Period Simulation (EPS) Duration - 3 Consecutive Peak Days (Queensland Urban Utilities, October 2011)

These design criteria are consistent with those outlined in the SEQ Water Supply and Sewerage Design and Construction Code (Allconnex Water, Queensland Urban Utilities and Unitywater, 1 July 2013).

SKM considers that the standards used for this project are appropriate.

D.7 Project cost

The project budget was developed based on an independent estimate produced by WT Partnership Pty Ltd in February 2013, based on the pipe alignments as detailed in the Feasibility Report. Cost estimates were developed for Alignment 2 and Alignment 2A with both pipe jacking and horizontal directional drilling considered. (WT Partnership, February 2013).

The following methodology was used to calculate the Indicative Construction Cost Estimates:

- Review documentation provided and identify key construction items
- Develop assumed construction scope from concept drawings
- Independent measure of design from concept drawings and sections
- Calculate materials costs using a combination of market feedback and historical data
- Calculate installation costs using a combination of market feedback and historical data
- Calculate scope contingency, construction contingency, design management, project management, contract management using the percentages provided
- Calculate measured preliminaries and apply to estimate as a percentage
- Calculate design costs as 5% of the total construction costs including preliminaries and contingency

The cost estimates are presented below in Table 110.

Table 110 : Independent cost review summary of preferred options (WT Partnership, February 2013)

Option	Construction Method	Adopted Pipeline Details	Total Project Costs ($'000s) (Excl GST)
Alignment 2	Pipe Jacking	Twin DN710 PE100 PN16	21,153
	Horizontal Directional Drilling	Twin DN710 PE100 PN16	19,733
Alignment 2A	Pipe Jacking	Twin DN710 PE100 PN16	22,631
	Horizontal Directional Drilling	Twin DN710 PE100 PN16	21,096

Key assumptions made in the compilation of the estimates included:

- Works will be competitively tendered on a full design package, developed in a value managed environment, to a minimum of three contractors
- Excavation in other than rock, an allowance of $800,000 was included for additional extra over excavation in rock where required
- Pipe jacking in rock up to 60 MPA
- Allowances have been made for out of hours works as required
- No allowance for stainless steel reinforcement in any concrete components of the project
- A suitable site yard/lay down area will be made available at no cost
- Movable cover plates to excavation to maintain landowner access to premises along Holt Avenue during trenching works

The above assumptions are reasonable.

The contingency costs were calculated as a percentage of the construction costs for:

- Scope contingency – 5%
- Construction contingency – 25%
- Preliminaries – 10%

The design, management and overhead costs were calculated as a percentage of construction costs plus the total contingency costs for:

- Design cost (excluding Geotech and Hydraulic work) – 5%
- Design management (Labour costs) – 4%
- Project management – 5%
- Contract management – 6%

The allowances, and percentages used for the determination of design, management and overhead are appropriate. The value of 40% for contingencies is towards the high end of expected range, however, is reflective of the early stage of the project and considerable unknowns at this stage.

The cost estimate of $22.6 million for Alignment 2A - Pipe Jacking was included in the budget, as it was the highest estimated price. The difference between the cost estimates for the two alignments range between approximately $1.4 and $1.5 M. Queensland Urban Utilities state that the cost associated with Alignment 2B are not anticipated to vary materially from those estimated for Alignment 2A.

Queensland Urban Utilities states that the construction methodology will be determined by the market when it goes to the market, and the exact alignment will be finalised by the Contractor in consultation with the Queensland Urban Utilities. SKM considers that the use of the independent cost estimate is a satisfactory method of determining costs to be included in the budget and that the value be revised once market responses have been received.

Expressions of Interest for the project are to be called for in August 2013, with subsequent Requests for Offers s called in October 2013. The completion of the tendering process, in accordance with Queensland Urban Utilities' Procurement Policy and Guidelines, should result in a competitively tendered, and hence market tested, cost.

D.8 Efficiency gains

The connection of the Bartleys Hill WSZ with the Wellers Hill WSZ, and the subsequent reduction in the size of the Bartleys Hill WSZ, will significantly extend the life of the infrastructure in the Bartleys Hill WSZ.

The utilisation of the spare storage capacity within Wellers Hill WSZ eliminates the need for upgrading the extensive of trunk mains systems from Greenhill and Eildon Hill WSZs and avoids the necessity to upgrade Bartleys Hill Reservoirs.

D.9 Implications for operating expenditure

Whilst the impact on operating expenditure is not directly quantified, Queensland Urban Utilities anticipates that the new water transmission mains can be expected to have minimal maintenance costs (Queensland Urban Utilities, October 2011). SKM expects that the delivery of the overall project may result in additional operational expenditure associated with the provision of more than 2 km of new infrastructure. However this may be offset by a reduction in operating expenditure resulting from the reduction in size of the current Bartleys Hills WSZ and reduced infrastructure servicing requirements.

The provision of infrastructure in order to service potential developments within the WSZ will generate additional income for Queensland Urban Utilities through potential developer contributions.

D.10 Policies and procedures

Table 111 below identifies if the project has complied with the appropriate policies and procedures.

Table 111 : Bartleys Hill/Wellers Hill Zone compliance with the Authority's criteria

Initiative	Achievement (Yes/No/Partial)	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole-of-entity and whole-of-sector) perspective	Yes	A number of options were considered which considered optimisation of the network from a whole-of-region perspective
Consideration of alternative investments, the substitution possibilities between operating costs and capital expenditure, and non-network alternatives such as demand management.	Yes	A number of options were considered which considered optimisation of the network and offsetting potential significant capital expenditure to build new reservoirs with reduced capital expenditure but potentially higher operating expenditure
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	SKM understands that a standard cost estimation template is used by Queensland Urban Utilities. As the standard cost estimation template has not been provided SKM cannot determine if it has been applied. Queensland Urban Utilities states that *"Given the complex nature of this project, Queensland Urban Utilities did not utilise a standardised cost estimate template to determine the costs. For this project Queensland Urban Utilities engaged a consultant to provide an independent cost estimate."*
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	Yes	Project Summary - Brisbane Bartleys Hill/Wellers Hill Zone Connection Including Twin River Crossing, (Queensland Urban Utilities, No date)
An implementation strategy to be developed for each major project	Yes	A draft Project Management Plan for the Bartleys Hill/Wellers Hill Water Supply Zone Connection has been developed (Queensland Urban Utilities, 22 July 2013)

Initiative	Achievement (Yes/No/Partial)	Comment
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	No	No formal gateway reviews (past Gateway 1 Project Creation) have been undertaken to date on this project but one is scheduled for to occur prior to the issue of the EOI documents. Queensland Urban Utilities states that *"This project will be submitted to an independent Gateway review (Gate 2) in late August."*
Information on the compatibility with existing and adjacent infrastructure and consideration of modern engineering equivalents and technologies.	Yes	The Feasibility Report considers adjacent infrastructure and compatibility (Queensland Urban Utilities, October 2011)
Includes only commissioned capital expenditure from 1 July 2010 in the regulatory asset base (RAB) and therefore prices	Yes	

Although SKM has assessed that this project has followed the standardised approach to cost estimation or followed the 'toll gate' or 'gateway' review process, SKM does not consider that this is indicative of deficiencies in Queensland Urban Utilities overall policies or capital delivery procedures.

Queensland Urban Utilities states that *"Given the complex nature of this project, Queensland Urban Utilities did not utilise a standardised cost estimate template to determine the costs. For this project Queensland Urban Utilities engaged a consultant to provide an independent cost estimate."* SKM considers that the use of an independent cost estimate is appropriate however the allowances for project management and contingency should be in line with Queensland Urban Utilities cost estimation template. As the template has not been provided SKM cannot determine if these allowances have been applied.

The documentation reviewed for this project is in line with Queensland Urban Utilities' capital delivery processes (eg Feasibility Report, Beca's third party assessment, draft Project Management Plan). SKM notes that no Project Justification Report has yet been produced but presumes this will occur prior to the issue of the EOI documents. Queensland Urban Utilities states that *"this project will be submitted to an independent Gateway review (Gate 2) in late August*."

D.11 Prudency and efficiency conclusions

The Bartleys Hill/Wellers Hill Water Supply Zone Connection project involves the construction of a new trunk main to link the two zones.

SKM accepts that the existing combined capacity of the Bartleys Hill Reservoirs, of 19.8 ML, is not sufficient for the 2011 WSZ population which requires a capacity of approximately 24.2 ML or future population growth. As a result, SKM considers that additional water supply capacity is required the project is therefore prudent. The primary driver for the project is growth.

The scope of the works (the construction of twin trunk main to link the Wellers Hill WSZ to the Bartleys Hill WSZ and the subsequent rezoning of Bartleys Hill and Wellers WSZs) is assessed as appropriate. SKM considers the nominated pipe sizes and material to be appropriate and the decision to have twin water mains as prudent.

SKM considers that the use of the independent cost estimate is a satisfactory method of determining costs to be included in the budget and that the value be revised once market responses have been received.

As the project will be complete in April 2016, SKM recommends that all costs should be deferred and only be added to the RAB once commissioned in 2015-16.

D.12 Assessment of reported expenditure

Table 112 below identifies the proposed capital expenditure for BDWDAA30 Bartleys Hill/Wellers Hill Zone Connection.

Table 112 : BDWDAA30 Bartleys Hill/Wellers Hill Zone Connection proposed capital expenditure

Project	2012-13 ($'000s)	2013-14 ($'000)	2014-15 ($'000)	Total ($'000)
BDWDAA30 Bartleys Hill/Wellers Hill Zone Connection	500	3,000	19,131	22,131
SKM proposed value	0	0	0	0
Variation	-500	-3,000	-19,131	-22,131

Note: Figures are “as incurred” expenditure and exclude any allowance for capital overhead or borrowing (interest) costs.

D.13 Extrapolation to other projects

SKM does not consider that the findings from this project can be extrapolated to other projects.

Appendix E. BFSPAA01 Brisbane Flood Resilience Program Sewage Treatment Plants

E.1 Project description

During the January 2011 flood event in Brisbane many of Queensland Urban Utilities' sewerage pump stations and sewage treatment plants (STPs) were inundated by flood waters. The result was significant loss in electrical and control infrastructure for many of Queensland Urban Utilities' sewerage assets. A subsequent study titled "QUU Flood Resilience Study" identified at-risk STPs and 20 of the most critical sewerage pump station sites for further investigation. (Queensland Urban Utilities, No date)

These failures resulted in environmental harm, public health risks and the need to mobilise scarce resources in a time of disaster (Queensland Urban Utilities, No date).

The main driver for this project is improvement to achieve environmental compliance that is to ensure that the affected assets in these flood prone areas do not undergo the same level of failure as occurred in the 2011 flood and that the infrastructure can be brought back into service quickly. (Queensland Urban Utilities, No date)

The Brisbane Flood Resilience Program covers the Oxley, Fairfield and Karana Downs STP. This review primarily focuses on the expenditure proposed for the Oxley STP as it comprises the majority of the expenditure, approximately 80%, as outlined in Table 113. The extrapolation of the findings of this report to the other sites is discussed in Section E.13.

Table 113 : Brisbane Flood Resilience Program proposed capital expenditure by STP ($'000s)

Plant	2013-14 ($'000)	2014-15 ($'000)	Total ($'000)	Percent of total expenditure (%)
Oxley STP[1]	10,318	3,300	**13,618**	78
Karana Downs STP[2]	1,118	-	**1,118**	6
Fairfield STP[3]	-	2,714	**2,714**	16
Total	**11,436**	**6,014**	**17,450**	-

Note: Figures are “as incurred” expenditure and exclude any allowance for capital overhead or borrowing (interest) costs.

[1] Oxley Sewage Treatment Plant Short Term Flood Resilience Program – Minor Capital Project Submission (Queensland Urban Utilities, 31 October 2012),

[2] Fairfield Sewage Treatment Plant Short Term Flood Resilience Program – Minor Capital Project Submission (Queensland Urban Utilities, 31 October 2013)

[3] Karana Sewage Treatment Plant Short Term Flood Resilience Program – Minor Capital Project Submission (Queensland Urban Utilities, 31 October 2013)

The Oxley STP work involves the raising, relocating or fixing selected equipment to the agreed flood protection level.

E.2 Proposed capital expenditure

Table 114 shows the proposed cost of the Brisbane Flood Resilience Program Project within the 2013-15 budget.

Table 114 : Brisbane Flood Resilience Program proposed capital expenditure as incurred ($'000s)

Source	Previous Years ($'000)	2013-14 ($'000)	2014-15 ($'000)	Subsequent years ($'000)	2013-15 Total ($'000)
Commissioning Model[1]	-	11,362	7,277	-	18,639
Project Summary[2]	-	11,781	9,556	-	21,337

Source	Previous Years ($'000)	2013-14 ($'000)	2014-15 ($'000)	Subsequent years ($'000)	2013-15 Total ($'000)
Minor Capital Project Submission[3]	750	11,436	6,014	-	18,200

[1] *Commissioning Model 5yr Summary 2014.xls* (Queensland Urban Utilities, 2013) – 'Projects ' tab

[2] *Flood Resilience Program - Project Summary* (Queensland Urban Utilities, No date)

[3] Oxley Sewage Treatment Plant Short Term Flood Resilience Program – Minor Capital Project Submission (Queensland Urban Utilities, 31 October 2012), Fairfield Sewage Treatment Plant Short Term Flood Resilience Program – Minor Capital Project Submission (Queensland Urban Utilities, 31 October 2013) and Karana Sewage Treatment Plant Short Term Flood Resilience Program – Minor Capital Project Submission (Queensland Urban Utilities, 31 October 2013)

Note: Figures are "as incurred" expenditure and exclude any allowance for capital overhead or borrowing (interest) costs.

The variation of $2.1 million between the Commissioning Model ($18.6 M) and the Flood Resilience Program Project Summary ($21.3 M) is due to is due to the Program Summary for Brisbane including investment on sewer pump stations.

The variation of $439,000 between the Commissioned Model ($18.6 M) and the Minor Capital Program Submissions ($18.2 M) is due to the application of a construction index of 2.4%.

E.3 Documentation reviewed

The key reference documents used for this review are:

- *Commissioning Model 5yr Summary 2014.xls* (Queensland Urban Utilities, 2013)
- *Flood Resilience Program - Project Summary* (Queensland Urban Utilities, No date)
- *Oxley Sewage Treatment Plant Short Term Flood Resilience Program – Minor Capital Project Submission* (Queensland Urban Utilities, 31 October 2012)
- *Fairfield Sewage Treatment Plant Short Term Flood Resilience Program – Minor Capital Project Submission* (Queensland Urban Utilities, 31 October 2013)
- *Karana Sewage Treatment Plant Short Term Flood Resilience Program – Minor Capital Project Submission* (Queensland Urban Utilities, 31 October 2013)
- *STP Flood Immunity Investigation Report* (Parsons Brinckerhoff, July 2012)
- *Brisbane City Plan 2000 - Volume 1 - Chapter 3 - General Assessment* (Brisbane City Council, 1 January 2006)
- *QUU Flood Resilience Study* (Queensland Urban Utilities, 25 January 2012)
- *Email: Info re Insurance NPV* (Averdyn Pty Ltd, 19 October 2012)
- *Response to RFI QUU 066-07*5 (Queensland Urban Utilities, 17 July 2013)
- *Temporary Local Planning Instrument 01-12 - Brisbane Interim Flood Response, Brisbane City Counci*l (Brisbane City Council, No date)

E.4 Key drivers

Queensland Urban Utilities has identified the drivers for this project as improvement and renewal.

The January 2011 flood event in South East Queensland caused substantial damage to key Queensland Urban Utilities infrastructure. The Oxley STP was rendered inoperable for a period of several months and required an investment of $25.65 million to resume operation. Having the plant offline for such a period of time severely impacted services to the community and resulted in a lengthy period of environmental noncompliance. (Queensland Urban Utilities, 31 October 2012).

The work at the Oxley STP is aimed at improving the plant's flood resilience in the short term. Although it may not be feasible to completely flood proof the treatment plant, modification to a key number of electrical and mechanical assets will improve its resilience and minimise down time in the event of another flood of the same magnitude as experienced in 2011. The level of flood waters around the plant infrastructure varied from no flood water to 3 m above ground level due to the undulating nature of the land. (Queensland Urban Utilities, 31 October 2012).

Queensland Urban Utilities has noted that the key driver for this project was the need to protect critical assets to provide resiliency against potential future floods to ensure that Queensland Urban Utilities services were able to recover sooner to provide services to the community and lessen any potential damage to the environment. Ie. The driver for this project was improvement of critical infrastructure based on the need to protect critical infrastructure.

Given the recent works at Oxley STP following the 2011 flood, SKM considers that improvement is the sole driver for the scope of work.

E.5 The scope of works

E.5.1 Solutions development

A number of options were assessed for the improvement of flood resilience at the site. These were:

- Option 1: Do nothing – leave all equipment in its current location and accept the future cost of damage and time offline
- Option 2: Raise, relocate or fix selected equipment to agreed flood protection level
- Option 3: Raise, relocate or fix selected equipment to agreed flood protection level, including relocation of the entire Cambi and Cogeneration facility (Queensland Urban Utilities, 31 October 2012)

SKM notes that the option of the replacement of assets as they reach the end of their useful life with the new asset installed at the agreed flood protection level has not been considered by Queensland Urban Utilities. For example, if a switchboard which was replaced following the 2011 flood, with an asset life of approximately 15 years, it would be replaced in approximately 2026 at the agreed flood protection level. During the period between assets being upgraded, Queensland Urban Utilities would incur higher insurance premiums as discussed later in the review.

Queensland Urban Utilities state that "*for the purposes of the Minor Capital Project Submission, this was a deliberate worst case assumption made by Queensland Urban Utilities, as it was not intended to conduct a condition assessment of every affected switchboard (in particular) as part of the process of developing the options. Condition assessment of the switchboards was always intended to be carried out during the concept design process, as this is the appropriate avenue to further refine and de-risk the scope of the project*".

SKM recommends that this condition assessment is undertaken as stated.

The agreed flood protection level was determined through review of the Brisbane City Council – Temporary Local Planning Instruments (Brisbane City Council, No date), review of the 1974 flood level and consultation with site operators.

The Brisbane City Council – Temporary Local Planning Instruments described a new adopted flood level for the Brisbane City area. This level was the higher of:

- The 2011 flood level plus a freeboard amount varying with the property usage class, for industrial sites such as Oxley STP freeboard amount was 300 mm or
- A flood of RL3.8 m at the Brisbane City gauge plus 300 mm (Brisbane City Council, No date)

The flood markers at Oxley indicated that the 1974 flood level was up to 1.8 m higher than either of the above later flood peak measurements, but it was considered to be impractical and prohibitively expensive to elevate

most of the affected equipment to these levels. At many sites entire new buildings would have been required for large parts of the site. (Queensland Urban Utilities, 31 October 2012).

SKM notes that subsequent to the 1974 flood, additional fold protection measures were built including the Wivenhoe Dam and as such flood levels comparable to the 1974 flood are unlikely to be experienced.

A flood level of the 2011 flood height plus 300 mm was adopted for all sites. The assessment is based on flood levels as indicated by the site operators. (Queensland Urban Utilities, 31 October 2012).

SKM finds that the flood level selected is appropriate and in line with industry good practice.

Each of the three options listed above were assessed on:

- Technical assessment – capacity to solve the problem
- Environmental impact
- Social/community impact
- Risks (both during construction and in-service)
- Constructability
- Health and safety
- Costs (capital and ongoing O&M)
- Financial assessment (if required)
- Potential upstream/downstream impacts
- Other issues that may impact the decision making process, eg land tenure, interface with other projects or existing infrastructure (Queensland Urban Utilities, 31 October 2012).

A comparison of the costs associated with each option is outlined in **Table 115**.

Table 115 : Options comparison (Queensland Urban Utilities, 31 October 2012)

Option	Capital ($ M)	Operating Costs ($ M)	NPV ($ M)
Option 1	Nil	13.91	13.91
Option 2	14.34	5.36	19.66
Option 3	22.90	5.29	28.19

The operating cost have been estimated from insurance costs of repair of site after 2011 flood repeated at 35 year intervals for 3 intervals (ie 104 years). (Queensland Urban Utilities, 31 October 2012).

SKM has reviewed this assumption and find that this assumption is conservative, ie that flooding is less likely to occur than assumed by Queensland Urban Utilities. Work is currently ongoing to determine the reoccurrence interval for the 2011 flood, but it is thought to be in the approximate range of 1 in 100 to 1 in 200 year event. Whilst SKM is not recommending assuming no flooding to occur within the next 100 years, a prediction of two floods within this period would be more appropriate than Queensland Urban Utilities' assessment of 3 floods in a 100 year period.

For Option 1 it has been estimated that the post flood cost would be $25.7 million (Queensland Urban Utilities, 31 October 2012).

SKM notes that the Flood Resilience Study quotes a lower value for the post flood cost for Oxley STP, ie $15.8 million compared to $25.7 M. This study was completed a year following the floods.

Queensland Urban Utilities state that "*The figure of $15.7M … was an earlier estimate of the cost to recover at Oxley. At the time of finalising the Minor Capital Project Submission together (October 2012) the flood recovery*

cost (including an estimate of work yet to be completed) at Oxley was $25.65M. This was a more up to date figure compared with the Jan 2012 figure. Queensland Urban Utilities used the more up to date figure of $25.65M for the Minor Capital Project Submission."

Table 116 : 2011 cost to repair (Queensland Urban Utilities, 25 January 2012, p. Table 1)

Site	Treat description	2011 cost to repair ($M)
Oxley Creek STP	Bioreactors, buildings, new construction, electrical works etc.(EP 250,000)	15.75
Fairfield STP	Administration building replacement, general cleanup works (EP 14,000)	1.00
Karana Downs STP	Damaged plant, Administration building (EP 2,500)	0.55
Total		**17.31**

Option 2 it has been estimated that the post flood cost would be $9.8 million (Queensland Urban Utilities, 31 October 2012).

Option 3 was rejected because it requires significantly greater capital expenditure than Option 2 and does not offer substantially improved flood resilience for the plant.

Options 1 and 2 were evaluated using Queensland Urban Utilities standard Multi-Criteria Options Evaluation (MCOE) Tool. Variants of Option 2 were also evaluated, being Option 2a Relocate/protect Area 1 Assets, Option 2b Relocate/protect Area 1-3 Assets and Option 2c Relocate/protect Area 1-5 Assets.

The MCOE criteria and weightings adopted were:

- Meets objective/drivers – 5%
- Technical risk in construction – 5%
- Technical risk in service – 10%
- Risk of damage from extreme weather events, or man-made events, durability/flexibility of asset to adapt to changing requirements – 5%
- Environmental risk in construction – 5%
- Environmental risk in service – 10%
- Risks (community/social impact) in construction – 5%
- In service long term risks for community – 10%
- Operations & maintenance impacts (based on assessed regularity of maintenance resources committed and potential degree of difficulty) – 10%
- Capital cost – 20%
- Lifecycle NPV cost – 15% (four options)

SKM notes that financial scoring only represents 35% of the MCOE. However, given that this program involves work on brownfield sites whilst maintaining treatment parameters, consideration of the significant technical and environmental risks as a higher overall priority to cost is appropriate.

A comparison of the weighted MCOE scores (including financial) associated with each option is outlined in Table 117.

Table 117 : Weighted MCOE Score (including financial) (Queensland Urban Utilities, 31 October 2012)

Scenario	Option 1	Option 2a	Option 2b	Option 2c
Next flood in 2017 (ignoring insurance)	278	216	252	**300**
Next flood in 2022 (ignoring insurance)	285	221	254	**300**
Next flood in 2047 (ignoring insurance)	**285**	212	234	271
Next flood in 2047 (allowing for insurance)	238	182	232	**300**

If insurance is ignored, Option 2c, scores highest for 2017 and 2022 flood scenarios but not for 2047 flood. Option 2c strongly favoured for all scenarios allowing for insurance implications.

SKM notes that weighted MCOE scores were not carried out for higher flooding intervals.

An NPV of the cost associated with the insurance associated with each option was also undertaken, as outlined in Table 118.

Table 118 : NPV options summary – inlcuding insurance costs (Queensland Urban Utilities, 31 October 2012)

Option	NPV ($ M)	Capital Expenditure ($ M)	Operating Expenditure ($ M)
Option 1	190.01	-	190.01
Option 2a	167.41	6.70	160.70
Option 2b	128.26	19.40	108.86
Option 2c	70.95	22.80	48.15

The same process as above was used to estimate the operating cost. (Queensland Urban Utilities, 31 October 2012)

The following insurance premiums and excess were used in NPV analysis, as outlined in Table 119.

Table 119 : NPV assumptions (Queensland Urban Utilities, 31 October 2012)

Option	Option 1	Option 2a	Option 2b	Option 2c
Insurance premium ($ million per annum)	4.80	4.06	2.74	1.20
Excess ($ M)	4.00	3.59	2.86	2.00

This NPV analysis strongly favoured Option 2c.

Option 1 was rejected as it provides "Unacceptable Service" against four of the MCOE Criteria: Drivers; Asset Resilience & Longevity; Environment and Community/Social impact. (Queensland Urban Utilities, 31 October 2012).

Option 2c was selected as the preferred for the project. This selection is based on the documented assumptions, raising, relocating or fixing selected equipment to the agreed flood protection level provides the most effective method of significantly improving flood resilience for lowest capital expenditure.

Queensland Urban Utilities have provided further supporting evidence for undertaking these works, including the Flood Enquiry Report. The Queensland Floods Commission of Inquiry was formed following the 2011 floods. This Commission formulated the Flood Enquiry Report which made recommendations in regards to flood resilience/flood protection. In particular Recommendation10.3 states that:

> *"Authorities responsible for the management of sewerage infrastructure should conduct a review of their existing infrastructure to identify electrical infrastructure that may be vulnerable to inundation and perform risk and cost/benefit assessments to determine if it should be relocated to a higher level."*

SKM notes that Queensland Urban Utilities has undertaken a risk and cost/benefit analysis as recommended.

SKM notes that this risk and cost/benefit analysis includes consideration of insurance costs.

Queensland Urban Utilities is required under its operating licence to have in place an appropriate level of insurance.

The insurance premium and excess amounts utilised in the NPV analysis undertaken by Averyn and PB in the Minor Capital Project Submission were based upon information provided by Queensland Urban Utilities' Insurance Manager. The assumptions to develop costs include:

- The premium rises 50% after each event and the excess rises 50% after each event
- The do nothing premium rises start at $4.8 million with $2 million excesses after each event
- Option 2c premium is $1.2 million with $1 million excesses after each event

The above assumptions are based on cost projections from an underwriter pricing model.

Queensland Urban Utilities has provided a letter from Roger Baweja, Queensland Urban Utilities Insurance and Claims Manager. This letter outlines how in order to secure appropriate insurance; Queensland Urban Utilities was required to demonstrate a future flood mitigation commitment. Queensland Urban Utilities independent Industrial Special Risks flood insurance placements were accepted by five panel insurers on the commitment that Queensland Urban Utilities will invest an additional $22.8 million to reduce its expected flood exposure. This was only possible by raising the critical electrical elements of the existing infrastructure (based on the expert advice from hydrologists/local councils) to secure and maintain appropriate flood insurance.

As such, SKM determines that the project is prudent.

The scope of work under Option 2 is:

- Area 1 Pump Station and Inlet Works
  - Install 500 mm pipe with a valve and Camlock tree for wet well dewatering (with manual operation from top floor)
  - The existing 4 off dry mounted submersible pumps to be wired with submersible cable
  - Flood pump/s and riser pipes to be installed in dry well
  - Pumps Switchboards and VSD drive; Main Switchboards, and Data Rack raised by 300mm to meet new criteria
  - Replace and raise Ring Main Unit to meet new criteria
  - Raise critical electrical switch boards in 11 kV Switch room into new building above new criteria
- Area 2 Biological Treatment (Stage 5 and 6 only)
  - Raise transformers onto platform to meet new criteria
  - Construction of new biological treatment systems switch room, elevated construction with new switchboards and data rack
  - Raise aeration blowers on to steel platform
  - Construct raised platform to elevate junction boxes for RAS pump stations
  - Construct raised platform to elevate junction boxes for WAS pump stations
- Area 3 Dewatering and Sludge Treatment
  - Construction of new dewatering switch room, elevated construction over roadway with new switchboards
  - Construct raised platform to elevate dewatering transformers above flood line

  - Raise Digestion Blowers on platform above new criteria
- Area 4 Services and Disinfection
  - Raise switchboards for Chlorine Dosing, UV and Service Water Pumps to new building
  - Raise compressors with elevated switchboards and generator
  - Construction of new structure to raise switchboards and transformer
- Area 5 Cambi and Cogeneration
  - Raise compressors and electrical switchboards of Cambi
  - Raise the Co-Generator and boilers

E.5.2 Project delivery

The Oxley Sewage Treatment Plant Short Term Flood Resilience Program –Minor Capital Project Submission (Queensland Urban Utilities, 31 October 2012) states that the project is to be delivered via a Design and Construct contract. However, a tender was recently awarded for the 'Detailed Design for Oxley Creek, Bundamba, Fairfield, Karana Downs and Esk Sewage Treatment Plants Short Term Flood Resilience Project'. It is understood that the work will cover both concept and detailed design.

Request for offer documents were sent to eight companies on the existing Queensland Urban Utilities Standing Offer Arrangement for the Provision of Infrastructure Consulting Services. The scope of work to be covered was a concept review and scope confirmation phase and a detailed design phase. The detailed design services were offered as three separable portions:

- Separable Portion A – Oxley Creek STP
- Separable Portion B – Bundamba STP
- Separable Portion C – Fairfield, Karana Downs and Esk STP's (Queensland Urban Utilities, 19 June 2013)

Six submissions were received at the close of offers. Of the offers received, four were deemed non-compliant as they had not allowed for the detailed design of electrical works in their offers. Queensland Urban Utilities state that:

> *"Given that two of the Panel Participants had fully priced the requirement for the detailed design (particular electrical works), the Evaluation Panel deemed it inappropriate to invite the offerors whose offers were deemed non-conforming to resubmit their offers as this would have given an unfair advantage to the non-conforming offerors."* (Queensland Urban Utilities, 19 June 2013)

SKM notes that the full tender evaluation documentation was not provided and as such the criteria used and the weighting applied cannot be assessed. In addition, SKM finds the number of non-conforming tenders (60%) surprising. This suggests either a lack of clarity in the scope documents or that the tender included a level of risk that the majority of the market was unwilling to accept. SKM does not understand how going back to all tenderers (including the conforming tenderers) with a time extension and a clarification to price electrical works, would disadvantage the conforming tenderers.

The two remaining submissions were evaluated. The assessment concluded that Cardno achieved the highest total weighted score, the best value-for-money outcome and could deliver the quality and performance outcomes required. For Separable Portions A and C, it was determined that the offer submitted by Cardno was the most advantageous to Queensland Urban Utilities and hence that the contract should be awarded to Cardno. (Queensland Urban Utilities, 19 June 2013).

SKM requested clarification of how the project was to be delivered. In response Queensland Urban Utilities stated:

> *"Contract for concept and detailed design has been awarded. The tender evaluation for this procurement process has been completed. QUU will conduct a gateway review when concept design has been*

developed. Gateway review will give approval, or not, to proceed to construction stage via Design and Construct OR Construct only contract" (Queensland Urban Utilities, 17 July 2013)

Further clarification was provided as below:

"Part of the Terms of Reference for the engagement of the Design consultant for the development of the concept and detailed design for the project was to produce a specification for a Construct only contract. This is still the recommended delivery option. The comment made about Design and Construct OR Construct only was meant to demonstrate that if circumstances changed, Queensland Urban Utilities was flexible enough to adopt a different strategy if deemed appropriate."

At the interview held on the 17th July 2013, Queensland Urban Utilities verbally informed SKM that the project management plan had not been completed (at that time) and was in its draft form.

Given the 18 week delivery timeframe for the detailed design it is anticipated that the design will be completed before the end of December 2013. This leaves approximately 18 months for the completion of the tendering and completion of construction and to deal with any other issues along the way. SKM considers that the works are capable of being delivered within the proposed timeframe.

Risks to the delivery of the project, identified by Queensland Urban Utilities include:

- The Oxley STP is typically classified as a brown field site which can result in unforeseeable construction issues that may impact on the final design and construction costs
- HV power lines traverse the site therefore care must be taken to ensure compliance with Energex guidelines when working near the power lines
- A visual inspection only was conducted of the site therefore a more detailed investigation of the site to locate services will be required prior to commencing a tender design
- Geotechnical assessment of the site is required in the locations of any proposed construction
- Provision should be made for the possibility of contaminated land and the removal of soil off site
- Risk of exposure to asbestos in some plant areas

SKM does not believe that these risks will prevent the delivery of the project by the end of 2014-15, unless additional, more extensive issues are identified as the project progresses.

E.6 Standards of service

As the concept and detailed designs are currently being developed for works, the exact standards that the work will conform to have not been determined.

Queensland Urban Utilities has its own set of Standard Technical Specifications for components of the plant, such as for Metal Clad Switchboards and Enclosures, to which the work will conform. These Standard Technical Specifications are developed based on relevant Australian Standards, Regulations and Standard Specifications.

For example, the Standard Technical Specifications for Metal Clad Switchboards and Enclosures is based on:

- Numerous Australian Standards including AS 1023 Part 2, Thermal Overload Protective Devices, AS 1029 Part 1, Low Voltage Contactors (Up To and Including 1000 V AC), AS 1202 Part 1, DOL Motor Starters Part 5, Semiconductor Starters, AS 1284 Electricity Meters, AS 1675 Current Transformers for Measurement and Protection and AS 3000 SAA Wiring Rules
- Queensland Electricity Act (1994)
- Queensland Electricity Regulations (1994)
- Supply Authority Conditions of Supply and Consumer Metering
- Queensland Workplace Health and Safety Regulations (1995)

- Electrical Safety Act 2002 and its latest amendments
- TMS62 Preferred Equipment List – Electrical

The Standard Technical Specifications for Metal Clad Switchboards and Enclosures states:

> *"All equipment and workmanship shall conform to the most recent requirements of the relevant statutory Local, State and Commonwealth Authorities and current applicable Australian Standards. Alternatively, where no Australian Standard exists, work shall conform to the most current and applicable British standard.*
>
> *Where conflict exists between different Codes, Standards or Regulations, the higher requirement shall apply.*
>
> *The Contractor shall not deviate from the provisions of the relevant standard without first obtaining agreement in writing from the Superintendent."*

In SKM's opinion the Standard Technical Specifications for Metal Clad Switchboards and Enclosures describes industry standard equipment for which standard pricing would be expected to apply and does not include anything indicative of unusual or expensive componentry.

SKM considers that although the exact standards that the work will conform to have not been determined, if the Standard Technical Specifications developed by Queensland Urban Utilities are used for this project they will be appropriate.

The Oxley Sewage Treatment Plant Short Term Flood Resilience Program Minor Capital Project Submission states that *"operational issues will be managed by construction and installation of new assets followed by staged changeovers of equipment."* When SKM sought clarification of what would happen to existing assets that will become redundant following the changeover, but are still within their useful asset life, Queensland Urban Utilities stated that:

> *"Redundant assets with some useful life will be salvaged to:*
>
> - *be kept as a spare unit for use elsewhere (may need to be refurbished)*
> - *be used for spare parts*
> - *be sold as is, or refurbished and sold, in accordance with QUU policy on disposal of assets"* (Queensland Urban Utilities, 17 July 2013)

SKM would expect cost savings to be made as a result of this process, in the order of 10% of the equipment costs. Given that new value of new mechanical and electrical equipment for the project is approximately $3 M, SKM would expect a saving of approximately $300,000. SKM considers the plan for redundant assets to be the best approach for managing the situation.

E.7 Project cost

The project budget for the whole Brisbane Flood Wastewater Treatment Recovery program is outlined below in Table 120.

Table 120 : Budget for the whole Brisbane Flood Wastewater Treatment Recovery (Queensland Urban Utilities, 19 June 2013)

Item number	Funding Details	Value
Project Funding		
A	Current approved funding 2012-2013	$Nil
B	Current approved funding 2013-2014	$11,362,000
C	Current approved funding 2014-2014	$7,277,000

Item number	Funding Details	Value
Project Funding		
D=A+B+C	Total Project Funding	$18,639,000
Proposed Contract Funding		
E	Value of proposed design consultancy contract	$922,536
F	Estimated contract contingency (including Provisional Items) for the design consultancy	$301,394
G	Proposed 2012-2013 budget (to be brought forward from approved 2013-2012 budget)	$125,000
H=E+F-G	Proposed 2013-2014 budget commitment to the proposed consultancy	$1,098,930
Project Costs		
I	Project contingency (including contract contingency for future construction contract-s, based on information contained in the approved MCPS's)	$2,506,000
J	Internal, project and contract management, and operational support costs	$2,017,000
K	Other proposed commitments for this project (comprising manufacture and installation contract works and ancillary activities)	$12,892,070
Project Forecast (contract funding + project costs)		
L=E+F+I+J+K	Project Forecast	**$18,639,000**

From the Minor Capital Project Submission (MCPS) for Oxley, Fairfield and Karana Downs STPs the project costs were calculated, as outlined below in Table 121. SKM understands that these costs were developed by Queensland Urban Utilities based on build up estimates and quotes from suppliers.

Table 121 : Budget for the whole Brisbane Flood Wastewater Treatment Recovery (Queensland Urban Utilities, 31 October 2012)

Component	Oxley Creek		Fairfield		Karana Downs		Total	
	Expenditure	% of total	Expenditure	% of total	Expenditure	% of total	Expenditure	% of total
Construction	$7,326,000	51	$1,520,000	56	$664,000	59	**$9,510,000**	**52**
Contingency	$2,931,000	20	$496,000	18	$191,000	17	**$3,618,000**	**20**
Design, Management, Overhead	$4,111,000	29	$698,000	26	$263,000	24	**$5,072,000**	**28**
Total	**$14,368,000**	100	**$2,714,000**	100	**$1,118,000**	100	**$18,200,000**	**100**

Key assumptions made in the compilation of this estimate include:

- Construction costs are based on a single site staging cost with multiple structures. The costing for individual small structures may be significantly higher if they are designed and constructed as separate projects
- Costing does not take into account locating existing services and investigations
- Minimum requirements for footings have been assumed
- Full geotechnical investigation required for proposed work on sites
- Costs include supply, install, test and commission unless otherwise excluded assumed to be day rates

The above assumptions are reasonable for this project.

Construction contingency included is expected to cover:

- Underground services relocations (pending detailed design)
- Any construction considerations associated with overhead lines
- Additional overheads associated with night works

The contingency costs were calculated as a percentage of the construction costs for:

- Scope Contingency – 10%
- Construction Contingency – 20%
- Preliminaries – 10%

The overall contingency of 40% for contingencies is higher than SKM would expect for a project of this type. However, it is reflective of the early stage of the project and considerable unknowns at this stage.

The Design, Management and Overhead costs were calculated as a percentage of construction costs plus the total contingency costs for:

- Design Cost (excluding Geotech and Hydraulic work) – 15%
- Design Management (Labour costs) – 10%
- Project Management – 7%
- Contract Management – 5%

The percentages used for the design cost and design management are high, comprising over a third of the project costs.

As the project has not been tendered and hence market tested, SKM has developed bottom up cost estimates for components of the detailed cost estimate developed by Queensland Urban Utilities. These estimates were developed based on the information provided by Queensland Urban Utilities, and SKM's knowledge from past projects and of the current market.

The components selected for review included major civil structures, switchboards and the control system. SKM has reviewed approximately $3.5 million or 47% of the total construction costs, as outlined in Table 122.

Table 122 : Value of expenditure reviewed by SKM

Component	Total Value ($)	Value of reviewed by SKM ($)	Percentage of Value (%)
Civil	$2,169,000	$600,000	28
Mechanical/Electrical	$5,053,000	$2,765,000	55
Control System	$104,000	$104,000	100
Total Construction Costs	**$7,326,000**	**$3,469,000**	**47**

The cost estimates developed by SKM are compared with the Queensland Urban Utilities estimates below in Table 123.

Table 123 : Comparison of the Queensland Urban Utilities and SKM estimated costs

Component	Element		QUU estimated value ($)	SKM estimated value ($)	Difference (%)
Civil	New 2.5 m high structure for new cogeneration unit		$400,000	$200,000	-50
	New 2.5 m high structure for package boiler & heat exchange		$200,000	100,000	-50
Mechanical/Electrical	Area 1	11 kV Switchboard and platform	$585,000	$550,000	-6

Component	Element		QUU estimated value ($)	SKM estimated value ($)	Difference (%)
	Area 2 - Stage 5, 6 S/R	New Switchboard MCC-001-01	$440,000	$450,000	2
		New switchboard MCC-006-01	$660,000	$650,000	-2
	Area 3	New Switchboard x 2	$1,000,000	$1,140,000	14
	Area 4	New Switchboard chemical dosing	$80,000	$100,000	25
Control System	Control System		$104,000	$100,000	-4
Total			**$3,469,000**	**$3,290,000**	**-5**

For the cogeneration structure it can be seen that there is a significant variation between Queensland Urban Utilities' estimate and SKM's estimate, approximately 50%. This cost estimate was developed using the information provided by Queensland Urban Utilities and rates from the Rawlinsons Australian Construction Handbook (Rawlinsons Australian Construction Handbook, 31st Edition, 2013). The large variance may be attributed to the whole scope of work not being provided to SKM. Insufficient information was provided for the boiler and heat exchange structure to allow SKM to develop a cost estimate. Therefore, SKM has assumed that the costs for this component are likely to have been overstated by a similar order of magnitude.

From the comparison of the cost estimates for the mechanical/electrical component it can be seen that there is some variation between Queensland Urban Utilities estimate and SKM's estimate. However it is within ± 30% for all elements. In addition, SKM acknowledges that Nilsen is a reputable switchboard manufacturer and the quotations received by Queensland Urban Utilities are considered reasonable and within the range expected by SKM. SKM is satisfied that the costs used for budgetary purposes are appropriate.

From the comparison of the cost estimates for the control system component it can be seen that there is only a minor difference between Queensland Urban Utilities estimate and SKM's estimate, approximately 4%. SKM is satisfied that the costs used for budgetary purposes are appropriate.

Overall, SKM is satisfied that the costs used for budgetary purposes have been developed appropriately and are in line with SKM's cost estimates. The determination of actual costs through a market tendering process is appropriate.

E.8 Efficiency gains

The capital expenditure on new assets will result in an extension of asset life with the relocation of assets to higher levels the result in reduced recovery costs in the event of a flood.

E.9 Implications for operating expenditure

It is not anticipated that there will be a reduction in operating expenditure as the project generally involves the relocation of existing assets or replacement of assets with "like" assets.

SKM would expect a reduction in the operating costs associated with spares or a reduction in capital expenditure on other projects as a result of the Queensland Urban Utilities plan for redundant assets from this project.

E.10 Policies and procedures

Table 124 below identifies how the project has complied with the appropriate policies and procedures.

Table 124 : BFSPAA01 Brisbane Flood Resilience Program compliance with the Authority's criteria

Initiative	Achievement (Yes/No/Partial)	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole-of-entity and whole-of-sector) perspective	No	This aspect was not considered, but limited opportunities available. This would require a review of all flooded STPs to see if savings would be made.
Consideration of alternative investments, the substitution possibilities between operating costs and capital expenditure, and non-network alternatives such as demand management.	N/A	No opportunity for solving flooding via operating or alternative networks solutions.
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 standard cost estimation template is used by Queensland urban Utilities. However from the projects reviewed it appears that the percentages used for contingencies are selected by the user.
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	Yes	Flood Resilience Program - Project Summary (Queensland Urban Utilities, No date)
An implementation strategy to be developed for each major project	No	No Project Management Plan or Procurement Strategy has been developed to date due to the early stage of the project.
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	No	Minor project. No gateway reviews undertaken to date due to the early stage of the project.
Information on the compatibility with existing and adjacent infrastructure and consideration of modern engineering equivalents and technologies.	Yes	Existing and adjacent infrastructure was considered in the MCPS.
Includes only commissioned capital expenditure from 1 July 2010 in the regulatory asset base (RAB) and therefore prices	Yes	The *Commissioning Model 5yr Summary 2014.xls 10Yr-Workings tab, cell M125* (Queensland Urban Utilities, 2013) indicates that commissioning is annual. $11.362 million is commissioned in 2014-15.

The three STPs upgrades have been classified as minor projects. Queensland Urban Utilities' Capital Planning and Delivery Process contains the following guidance "*a project is considered "major" if it has an estimated value over $5 million or it is a complex or potentially high risk project. Projects not classed as "major" are classed as "minor".*" SKM notes that whilst Fairfield and Karana Downs STPs meet this description, Oxley STP does not. However, the original costs for this element of works from the Flood Resilience Study are within this value ($3 million for short term works) and would have dictated the initial decision regarding classification. Therefore the classification as a minor project was appropriate.

The documentation provided is in line with Queensland Urban Utilities' policies for a minor project. A Minor Capital Project Submission (MCPS) is used for all "minor" enhancement projects and renewals projects if an options analysis is required or there are likely to be significant social or environmental issues to be resolved. A MCPS has been provided for all three STPs. There is no separate Gate 2 decision process formally applied to Minor Projects. The approval of the MCPS or Rehabilitation Submission acts as Gate 2 for minor projects. SKM is unsure as to whether this project will subsequently be elevated to a major project.

A PMP is required for all projects or programs with a budget estimate greater than $250,000 or to the discretion of the Manager Project Management Services. This should be substantially complete before a Design Brief is prepared or design is 50% complete. SKM recommends that a PMP be produced shortly. This should clearly identify the transition from concept to detailed design.

This project has demonstrated no deficiencies in Queensland Urban Utilities overall policies and procedures.

E.11 Prudency and efficiency

The Oxley STP Flood Resilience work involves the raising, relocating or fixing selected equipment to the agreed flood protection level. SKM's review focused on this plant as it comprised approximately 80% of the total expenditure proposed for the overall Brisbane Flood Resilience Program.

SKM believes that improvement is the primary driver for the scope of work as the work is aimed at improving the plant's flood resilience in the event of another event similar to the January 2011 flood.

The decision to undertake the works is based on a risk and cost/benefit analysis as recommended by the Flood Enquiry Report. This analysis is underpinned by assumptions on insurance cost increases. Queensland Urban Utilities has provided supporting information regarding the proposed increases in insurance costs. As such, SKM determines that the project is prudent.

The project was to originally be delivered via a D&C contract. However, it is now intended to deliver this as a Design only then Construct only contract.

Given the 18 week delivery timeframe for the detailed design it is anticipated that the design will be completed before the end of December 2013. This leaves approximately 18 months for the completion of the tendering and completion of construction and to deal with any other issues along the way. SKM accepts that the works can be delivered within the proposed timeframe.

In SKM's opinion the Standard Technical Specifications for Metal Clad Switchboards and Enclosures describes industry standard equipment for which standard pricing would be expected to apply and does not include anything indicative of unusual or expensive componentry. SKM considers that although the exact standards that the work will conform to have not been determined; if the Standard Technical Specifications developed by Queensland Urban Utilities are used for this project they will be appropriate.

SKM considers the plan for redundant assets to be the best approach for managing the situation. SKM would expect cost savings to be made as a result of this process, in the order of 10% of the new equipment costs, approximately $293,500.

SKM is satisfied that the costs used for budgetary purposes have been developed appropriately and are in line with SKM's cost estimates. The determination of actual costs through a market tendering process is appropriate.

For the flood resilience work at the Fairfield and Karana Downs STP: the key driver for the works is that same as for Oxley STP; it appears that the a similar process was followed for the solution development; the project delivery will be the same as for Oxley STP as the concept and detailed design have been awarded as a package for all three plants; the standards of service to be used are the same; and a similar process appears to has been used for the development of costs for the budget and the costs will be subsequently market tested. Applying a similar 10% reduction in costs to manage redundant equipment, SKM would recommend reducing costs by $10,000 at Fairfield and $15,000 at Karana Downs STP.

E.12 Assessment of reported expenditure

Table 125 below identifies the proposed capital expenditure for BFSPAA01 Brisbane Flood Resilience Program.

Table 125 : BFSPAA01 Brisbane Flood Resilience Program proposed capital expenditure

Project	2013-14 ($'000)	2014-15 ($'000)	Total ($'000)
BFSPAA01 Brisbane Flood Resilience Program	11,362	7,277	18,639
SKM proposed value	11,044	7,277	18,321
Variation	-319	0	-319

Note: Figures are "as incurred" expenditure and exclude any allowance for capital overhead or borrowing (interest) costs.

E.13 Extrapolation to other projects

It is considered by SKM that the findings from this project can be extrapolated to other similar projects, being the Ipswich and Somerset Flood Resilience Programs.

On the assumption that a similar 2.8% reduction is possible, the extrapolation to other projects is as follows.

Table 126 : Extrapolation to other projects

Project	2013-14 ($'000)	2014-15 ($'000)	Total ($'000)
IFSPAA01 Ipswich Flood Resilience Program Sewage Treatment Plants			
Submitted	539	3,569	21,377
SKM proposed value	524	3,469	21,262
Variation	-15	-100	-115
SFSPAA01 Somerset Flood Resilience Program			
Submitted	312		312
SKM proposed value	304		304
Variation	-9		-9

Appendix F. IWWCAA31 Ipswich Bundamba Creek Trunk Gravity Main Implementation Stage 1a and 1b

F.1 Project description

The Bundamba Sewerage catchment services the areas of Booval, North Booval, Silkstone, Eastern Heights, Raceview and adjoining areas.

The system is required to service significant growth (4% p.a. over 36 years) in the future due to planned development in the Deebing Creek and Ripley Valley areas, which are located at the upstream end of the catchment. The ultimate equivalent population of the catchment is expected to increase from approximately 50,000 EP to approximately 200,000 EP. (Queensland Urban Utilities, No date).

A major capacity upgrade is required to transfer future flows to the Bundamba Wastewater Treatment Plant (WWTP). A Master Plan review concludes that Stage 1 (this project) be implemented immediately to address current wet weather flow capacity bottlenecks. Further modelling and investigations are to be undertaken to identify more staged upgrades from 2016 and beyond to match the development of the catchments.

Stage 1 of the Bundamba Creek Trunk Gravity Main Implementation has been selected for review by the Authority.

Due to the current system being under capacity and taking into account the planned development in the Deebing Creek and Ripley Valley areas and the associated increase in population and demand, Queensland Urban Utilities is planning to increase the size of the wastewater network main near Bundamba Creek (Queensland Urban Utilities, September 2012).

The project has two stages, 1a and 1b, with stage 1a relating to the upstream line portion and stage 1b relating to the downstream line portion of the proposed connection point for the Ripley Valley Trunk Sewer. Both project stages involve the duplication of two lengths of existing gravity sewer, in order to address existing bottlenecks.

The two sections of existing trunk main to be augmented involve the following proposed works:

- Section 1a – 1,900 m of 750/900 mm DN sewer located at Raceview Street to Robertson Road
- Section 1b – 1,200 m of 825 or 1350 mm DN sewer located at Macartney Street to Gledson Street

The project was approved in March of 2010.

Section 1a was advertised for registration of interest proposals and four contractors were subsequently selected to tender for the project at the end of June 2011. Tunnelcorp was awarded the Design & Construction phase contract for Section 1a. The contract allowed for the chosen contractor to be awarded Stage 1b as a variation subject to the contractor's performance on Stage 1a. Tunnelcorp was subsequently awarded Stage1b in September of 2012. (Queensland Urban Utilities, September 2012).

F.2 Proposed capital expenditure

Table 104 shows the proposed cost of the Bundamba Creek Trunk Gravity Main Implementation Stage 1a and 1b Project within the 2013-15 budget.

Table 127 : Bundamba Creek Gravity Main Implementation "as incurred" capital expenditure ($'000s)

Source	Previous years ($'000)	2013-2014 ($'000)	2014-2015 ($'000)	Subsequent years ($'000)	Total ($'000)
Commissioning Model	14,002	100	0	0	14,102

Source	Previous years ($'000)	2013-2014 ($'000)	2014-2015 ($'000)	Subsequent years ($'000)	Total ($'000)
Project Summary	15,235	100	-	-	15,335
Increase Contract Expenditure Authority	13,393	-	-	-	13,393
Corvu Cost Summary	Costs have not been broken down by year				14,790

[1] *Commissioning Model 5yr Summary 2014.xls* (Queensland Urban Utilities, 2014) – "Projects" Tab

[2] *Ipswich Bundamba Creek Trunk Gravity Main Implementation – Stage 1a and 1b - Project Summary*, Date unknown (Queensland Urban Utilities, No date)

[3] *Increase Contract Expenditure Authority Submission*, Queensland Urban Utilities, September 2012 (Queensland Urban Utilities, September 2012)

[4] *Corvu Report June 2013 – For Presentation*, Queensland Urban Utilities, June 2013 (Queensland Urban Utilities, June 2013)

Note: Figures are "as incurred" expenditure and exclude any allowance for capital overhead or borrowing (interest) costs.

The difference in total costs values varies from source to source. SKM understands that the Corvu Cost Summary represents the latest and hence most accurate project costs.

F.3 Documentation reviewed

The key reference documents used for this review are:

- *Commissioning Model 5yr Summary 2014.xls* (Queensland Urban Utilities, 2014)
- *Ipswich Bundamba Creek Trunk Gravity Main Implementation – Stage 1a and 1b - Project Summary*, Queensland Urban Utilities, Date unknown (Queensland Urban Utilities, No date)
- *Feasibility Study Bundamba Trunk Sewer Ipswich Water*, Aurecon, May 2010 (Aurecon, 2010)
- *Increase Contract Expenditure Authority Submission*, Queensland Urban Utilities, September 2012 (Queensland Urban Utilities, September 2012)
- *Queensland Urban Utilities 2011 Proposed Capital Works Review Part B – Review of Capital Projects*, Beca, August 2011 (Beca, 2011)
- *RFI Queensland Urban Utilities 086-091 Response*, Queensland Urban Utilities, 23 July 2013 (Queensland Urban Utilities, July 2013)
- *Bundamba Creek Trunk Main Stages 1a & 1b – Budget Summary and Financial Analysis*, Corvu, June 2013 (Queensland Urban Utilities, June 2013)
- *Queensland Urban Utilities Briefing Note – Summary of Savings*, Queensland Urban Utilities, 8 April 2013 (Queensland Urban Utilities, April 2013)
- *Bundamba 1a Alignment*, Queensland Urban Utilities, 16 April 2012 (Queensland Urban Utilities, April 2012)
- *Bundamba 1b Alignment*, Queensland Urban Utilities, 3 April 2013 (Queensland Urban Utilities, April 2013)
- *Bundamba Creek Trunk Gravity Main Stage 1a – Design Report – Section 1a*, Hyder, 27 January 2012 (Tunnelcorp, January 2012)
- *Bundamba Trunk Sewer Stage 1 Concept Design – Design Basis Report – Section 1b*, aurecon, 19 November 2012 (Aurecon, November 2012)
- *Bundamba Section 1b Agreed Schedule of Rates*, Queensland Urban Utilities, December 2012 (Queensland Urban Utilities, December 2012)

F.4 Key drivers

The primary driver nominated by Queensland Urban Utilities for this project is growth. This project was required to provide capacity to transfer sewer flows from Bundamba catchments as per level of service standards. The existing sewerage system will be required to service growth and subsequent increase in demand due to planned development in the Deebing Creek and Ripley Valley areas.

SKM agrees with Queensland Urban Utilities in growth being the correct driver for this project.

The existing and predicted population and flow rates for Deebing Creek and Ripley Valley areas used in the feasibility study are provided in Table 128 below.

Table 128 : Current and Growth Equivalent Population and Sewerage Flows (Aurecon, 2010)

	Current (2010)	Deebing Creek Growth	Ripley Valley Growth	Ultimate (2046)
Equivalent Population[78]	50,000	44,000	105,000	199,000
ADWF[79] (L/s)	130	120	280	530
PWWF (L/s)	650	160	1400	2,650

The sources of growth projections used in the feasibility study are outlined below:

- Ripley Valley – Growth projections based on email provided by Ipswich Water (IW) dated the 5/12/2008 and further refined in an email dated 24/4/2009
- Deebing Creek – growth projections are calculated from the Bundamba & Tivoli Sewerage Masterplan Planning report dated April 2007. These estimates correspond with the ultimate growth projections calculated in the Deebing Creek Trunk Sewer Detailed Planning Report dated June 2008
- SP16 Flows – additional growth contributing to SP16 has been summarised based on the Bundamba & Tivoli Sewerage Masterplan Planning report dated April 2007
- SP4 & SP11 – growth contributing to the SP4 and SP11 catchments are based on the Bundamba & Tivoli Sewerage Masterplan Planning report dated April 2007

Modelling of the existing system undertaken for the 2007 Sewerage Masterplan Report indicated that the main sewer was approaching full capacity along some sections of the main Bundamba trunk. (Aurecon, 2010)

Hydraulic limitations were identified in the McCartney Street and Cascade Street sewer sections. Queensland Urban Utilities has advised that the network has a history of overflows during wet weather events including popped manholes, and overflow into nearby properties including a nearby school playing field. (Beca, 2011).

This project will address the current hydraulic limitations of the sewer, with the upgraded sewers designed to service the ultimate population.

SKM considers that, based on the proposed growth in the network, the current hydraulic limitations of the sewer and the history of overflow events during wet weather events this project is prudent.

F.5 The scope of works

F.5.1 Solutions development

The development and assessment of options was considered for the two separate sections of interest of the Bundamba Creek gravity main; upstream and downstream of the proposed connection point for the Ripley Valley Trunk Sewer.

[78] Data supplied by Ipswich Water (Aurecon, 2010)
[79] Based on an ADWF of 230 L/EP/day (Beca, 2011)

Stage 1a: Cascade Street Sewer:

The Cascade Street Sewer refers to the section which transfers flows from pump station SP16 and services the local gravity system upstream of South Station Road. The base case or conventional solution for this upgrade is a duplicate gravity sewer using primarily open cut construction (sizes 750 mm to 1050 DN), commencing from the discharge point of SP16 rising mains in Cascade Street. The conventional option of open cut sewer duplication was compared against the alternate deep sewer duplication. A range of pipe alignments were also considered, as shown below:

- Option 1 - Retain SP16 and upgrade the Cascade Street mains and upstream rising mains and pump station SP16 as required to meet the ultimate loads
- Option 2 - Decommission SP16 and install a deep tunnel sewer section (defer due to immediate work outlined above) with downstream connection to the Bundamba Trunk Sewer
- Option 3 - Staging of above option works ie:

Stage 1 Retain SP16 and duplicate the sewer mains as required to provide adequate capacity for 15 years notionally

Stage 2 - Install a deep tunnel sewer & decommission SP16

Stage 1b: Bundamba Trunk Sewer

Duplication of the existing sewer was compared with deep tunnelling options. The corresponding utilisation of SP322 was considered for each option, as well as the most appropriate route alignment. The preferred option was further assessed based on a number of staging scenarios and hybrid options:

- Option 1 - Duplication of the existing trunk main to SP03 and new pump station at SP03 (this option is dependent upon a shallow connection level from the Ripley Valley trunk main)
- Option 2 - A deep tunnel sewer to SP03 and new pump station at SP03
- Option 3 - A pump station further upstream in the system and pressure mains transferring directly to BWWC. A number of alternative pump station locations and pipeline alignments were considered for this option.
- Option 4 - A deep tunnel sewer directly to BWWC with an inlet/lift pump station at BWWC. A number of alternative tunnelling options and staging were considered for this option.

A multi-criteria assessment of the options was undertaken in a joint workshop with key Ipswich Water stakeholders (the entity under which the feasibility study was undertaken). Table 129 below summarises the assessment criteria and weightings.

Table 129 : Feasibility Study Options Assessment Multi-criteria and Weightings

Criteria	Criteria Weighting Total
Flexibility for changes	16
Constructability	27
Environmental	10
Social/cultural	12
Health and safety/security issues	5
Economic/financial	30

SKM has reviewed the criteria weighting. Whilst economic/financial criteria has only been 30% of the score, given the technical challenges of integration with existing and future proposed infrastructure, the high constructability weighting is considered appropriate.

The feasibility study recommended Option 3 involving retention of SP16 and duplication of the sewer mains downstream of Cascade St as the first stage, with replacement by deep tunnel sewer at Stage 2 notionally after 15 years, to form the long term strategy. For Bundamba Trunk Sewer, the feasibility study recommended Option 4.6 - comprising approximately 3.1 km of sewer at the upstream end (with 1 km in tunnel) and 2.1 km of deep tunnel for the downstream section, with a pump station at BWWC.

The Stage 1a works include the duplication of the existing gravity sewer from Raceview St at the upstream end, to Robertson Road on the downstream end. The new line will include 1,100 m of 750 mm DN sewer, and 800 m of 900 mm DN sewer. The design ultimate capacity of the new sewer will be a PWWF of 600 L/s (5 x ADWF). The work will also include the replacement of one manhole length with 900 mm DN pipework. The new sewer will traverse the undeveloped land to the north of Cascade Street, and run alongside the stormwater channel to the east of Wildey Street. The alignment was selected based on due consideration of cost, disruption to traffic, connection requirements, and the location of existing sewers which form key constraints.

The Stage 1b works include the duplication of the existing gravity sewer from Macartney Street at the upstream end, to Gledson Street and the downstream end. The new line will be approximately 1,200 m of 825 mm to 1350 mm DN sewer extending from Macartney Street to just north of Creek Street. (Aurecon, 2010).

SKM is satisfied that an appropriate range of options were selected and adequately reviewed and that the scope of works is appropriate to meet the project need. The scope of works selected has taken into account future proposed work for this catchment.

F.5.2 Project delivery

This project originated in IW. The project was originally part of a Critical Portfolio Works Contract (CPWC) with Thiess Pty Ltd, which was a cost reimbursable contract with a gain share arrangement. Initially the contract consisted of 10 facilities, however after the contract was transferred to Queensland Urban Utilities a review was carried out to confirm the procurement method that would provide the best value to Queensland Urban Utilities. The result was that a number of facilities (projects) have not gone ahead and a few were removed from the CPWC contract as a more conventional procurement method was considered more appropriate. The Bundamba Trunk Main Stage 1 project was one of the projects removed from the CPWC scope and was subsequently procured through a conventional design and construct contract. (Queensland Urban Utilities, April 2013)

The proposed procurement and delivery method for the project was evaluated by Queensland Urban Utilities staff. From this process, it was determined that the design and construction of Section 1a would process to tender with Section 1b as a separable portion to be delivered by the Section 1a contractor pending the Contractor's performance in the Section 1a deliver. (Queensland Urban Utilities, September 2012)

Queensland Urban Utilities states that a key reason for not awarding Stage 1b initially was to create an incentive for the contractor to perform well so as to be awarded Stage 1b on merit.

Queensland Urban Utilities' project team assessed that the contractor Tunnelcorp had the resources, plant and equipment with the necessary skills to provide value for money for Stage 1b and this was demonstrated during the execution of Stage 1a. (Queensland Urban Utilities, July 2013)

Whilst no documentation has been provided to SKM regarding the performance of Tunnelcorp on Stage 1a, no significant variations have been noted for this project.

Section 1a was advertised for registration of interest proposals and four contractors were subsequently selected to tender for the project at the end of June 2011. Tunnelcorp was awarded the Design & Construction phase contract for Section 1a.

It is expected that the project will be finalised and addressing defects liability period issues during the 2013-14 financial year. (Queensland Urban Utilities, No date)

No barriers to the deliverability of this project have been identified.

F.6 Standards of service

Queensland Urban Utilities states that all works have been designed based on section 2.4.5 of the 'Design and Construct Specification' and the 'Queensland Urban Utilities Water & Sewerage Planning Guidelines (2010)'.

The feasibility study was based on an ADWF of 230 L/EP/day. The BECA review states that a revised value of 210 L/EP/day has been used for the concept designs. This is supported by the following assumptions for flows documented in the November 2012 Aurecon Design Report for Stage 1b:

- The catchment size of 200,000 EP
- A unit loading rate of 210 L/EP/d
- A peaking factor of 5 ADWF, as this is considered likely to be the flowrate discharged to the sewer by pumping stations upstream under peak dry weather periods

The November 2012 Aurecon design report of Stage 1b states that the above parameters were discussed and agreed at the VM Workshop. Details of this workshop have not been provided for this review. (Aurecon, November 2012)

The unit loading rate of 210 L/EP/day is higher than the ADWF loading rate specified for Queensland Urban Utilities in the SEQ Water and Sewerage Planning Guidelines (Version 1, May 2012), which specifies a loading rate of 180 L/EP/d. This creates a difference of approximately 350 L/s in the calculated peak flow for the sewer.

SKM notes that the approval for Stage 1a was approved in October 2011. At the time of the commencement of design the SEQ Water and Sewerage Planning Guidelines were not in place. As such, SKM agrees with Queensland Utilities in that the use of the guidelines in place at the time was appropriate.

F.7 Project cost

The latest project costs as provided by Queensland Urban Utilities are summarised in Table 130 below:

Table 130 : Budget Summary (Queensland Urban Utilities, June 2013)

	Original Budget In July 2010 ($)	Approved Budget And Actual Costs For 2012-13 ($)	Forecast Project Completion Expenditure Less Contingency ($)	Forecast Project Completion Expenditure Including Contingency ($)
Actual Costs Prior To Queensland Urban Utilities	1,310,425	1,310,425	1,310,425	1,310,425
Financial Year 2010-11	1,200,000	859,829	859,829	859,829
Financial Year 2011-12	9,800,000	3,133,276	3,133,276	3,133,276
Financial Year 2012-13	9,900,000	10,009,000	6,104,156	6,104,156
Financial Year 2013-14	100,000	100,000	1,800,000	3,396,000
Total Budget and Costs	**22,310,425**	**15,412,530**	**13,207,686**	**14,803,686**
Forecast Saving Against Original Budget		**6,897,895**	**9,102,739**	**7,506,739**

As can be seen in Table 130, the original budgets from July 2010 and the approved budget and actual costs for 2013-14 were estimated to be $100,000. However, the delay of expenditure from financial year 2012-13 to 2013-14 has increased the expected expenditure of financial year 2013-14 to $1,800,000, excluding contingency. A contingency of $1,596,000 has been allowed for financial year 2013-14, taking the total forecast

project completion expenditure to $3,396,000. (Queensland Urban Utilities, June 2013). The project is currently tracking ahead of budget.

Table 130 also highlights the savings achieved by Queensland Urban Utilities through the removal of the Bundamba Trunk Main Stage 1 project from the original Thiess CPWC contract and subsequent procurement through design and construction tender.

Queensland Urban Utilities attributes a large portion of the savings to not having to pay construction management fees to Thiess and allocating risk for best benefit to Queensland Urban Utilities. The scope of the project essentially did not change. (Queensland Urban Utilities, April 2013).

A financial analysis of cost breakdown as provided by Queensland Urban Utilities can be found in Table 131 below:

Table 131 : Corvu Financial Analysis June 2013 (Queensland Urban Utilities, June 2013)

	Queensland Urban Utilities Internal Costs	External Contractor or Consultant Costs	Total Costs
Physical Works Contract - With Tunnelcorp			
Costs From July 2010 To June 2013			
Stage 1a		3,856,143	3,856,143
Stage 1b		3,621,930	3,621,930
Total TunnelCorp Costs		7,478,073	7,478,073
Forecast Costs To Completion For 2013-14			
Stages 1a & 1b		1,600,000	1,600,000
Contingency		1,596,000	1,596,000
Total TunnelCorp Costs		10,674,073	10,674,073
Queensland Urban Utilities Internal & Other Costs			
Costs From July 2010 To June 2013			
Concept Planning, Pre-tender Investigations & Document Preparation	315	476,831	477,146
Land Access & Easement costs	216,421	147,363	363,784
Communications	14,939	30,039	44,978
Project & Contract Management including Probity Auditors	691,100	104,449	795,549
Queensland Urban Utilities Operations - Commissioning Assistance	675		675
Design Costs	1,504	922,177	923,681
Total Queensland Urban Utilities & Other Costs	924,954	1,680,858	2,605,812
Forecast Costs To Completion For 2013-14			
Stages 1a & 1b	100,000	100,000	200,000
Total Project Costs From July 2010	**1,024,954**	**12,454,932**	**13,479,885**
Actual Costs Prior To Queensland Urban Utilities			1,310,425
Total Project Costs			14,790,310

SKM draws attention to the significant contingency allowed for in the total 2013-14 forecast project completion expenditure, comprising over 10% of the total project costs. Given the late stage of the project, this contingency

allowance appears excessive. A further breakdown of this contingency cost was not provided. As such, SKM is unable to make further comment on this contingency allowance. Until further justification is provided, SKM recommends a reduction in this contingency of 50%.

Table 132 : Forecast Project Completion - Revised Contingency

	Forecast Project Completion Expenditure Less Contingency	Forecast Project Completion Expenditure Including Contingency	Forecast Project Completion using SKM Revised Contingency
Actual Costs Prior To QUU	1,310,425	1,310,425	1,310,425
Financial Year 2010-11	859,829	859,829	859,829
Financial Year 2011-12	3,133,276	3,133,276	3,133,276
Financial Year 2012-13	6,104,156	6,104,156	6,104,156
Financial Year 2013-14	1,800,000	3,396,000	2,598,000
Total Budget and Costs	**13,207,686**	**14,803,686**	**14,005,686**
Total Budget and Costs – Excl. Costs Prior To QUU	**11,897,261**	**13,493,261**	**12,695,261**

Queensland Urban Utilities has stated that they are comfortable with the reduction of project contingencies of $798,000.

Table 133 : Comparison of indirect costs to total budget costs

Item	Cost	Percentage of Total Project Costs	Percentage of Direct Costs
Queensland Urban Utilities PM & CM Costs	691,100	4.7	7.6
Design Costs	923,681	6.2	10.2
Total Queensland Urban Utilities Internal Costs	924,954	6.3	10.2

SKM considers that the Queensland Urban Utilities internal costs as percentages of total costs to be reasonable. That is, 7.6% for Queensland Urban Utilities Project Management costs and 10.2% for Queensland Urban Utilities Design Costs.

Queensland Urban Utilities has confirmed that the costs incurred prior to Queensland Urban Utilities have already been taken into account in the 2008 RAB, and capital expenditure from 1 July 2008 to 30 June 2010 has already been rolled into the RAB (as incurred). Queensland Urban Utilities has verified that the only costs incurred from July 2010 are to be commissioned and subsequently added to the RAB.

F.8 Efficiency gains

The decision by Queensland Urban Utilities to remove the Bundamba Trunk Main Stage 1 project from the Thiess CPWC contract and competitively tender this work resulted in material project savings of $7,500,000 and is considered by SKM to represent good cost management.

F.9 Implications for operating expenditure

The implications of the project for operating expenditure are not directly quantified in documentation provided however it is anticipated that the increase in sewer capacities will result in fewer overflows during wet weather events and a subsequent reduction in operating expenditure.

F.10 Policies and procedures

Table 111 below identifies how the project has complied with the appropriate policies and procedures.

Table 134 : IWWCAA31 Bundamba Creek Trunk Gravity Main Implementation – Stage 1a and 1b compliance with the Authority's criteria

Initiative	Achievement (Yes/No/Partial)	Comment
Consideration of prudency and efficiency of capital expenditure from a regional (whole-of-entity and whole-of-sector) perspective	Yes	The project considered long term and short term options for the whole catchment.
Consideration of alternative investments, the substitution possibilities between operating costs and capital expenditure, and non-network alternatives such as demand management.	Yes	A number of options have been considered that take into account alternate strategies, including options to delay and decommission infrastructure.
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	SKM understands that a standard cost estimation template is used by Queensland Urban Utilities. As the standard cost estimation template has not been provided SKM cannot determine if it has been applied.
A summary document to be prepared for identified major projects so as to facilitate standardised reporting	Yes	Project Summary – Ipswich Bundamba Creek Trunk Gravity Main Implementation – Stage 1a and 1b (Queensland Urban Utilities, No date)
An implementation strategy to be developed for each major project	No	No Project Management Plan or similar implementation plan provided. SKM has been informed that the hard copy and electronic copy of the Project Management Plan were destroyed in the January 2011 floods.
A 'toll gate' or 'gateway' review process to be implemented so that appropriate reviews are undertaken at milestone stages for selected projects	No	This project originated within Ipswich Water, where gateway reviews were not standard. No gateway reviews subsequent to being transferred to Queensland Urban Utilities
Information on the compatibility with existing and adjacent infrastructure and consideration of modern engineering equivalents and technologies.	Yes	The design considered compatibility with existing and adjacent infrastructure.
Includes only commissioned capital expenditure from 1 July 2010 in the regulatory asset base (RAB) and therefore prices	No	To be confirmed by Queensland Urban Utilities

The documentation reviewed for this project is partly in line with Queensland Urban Utilities' capital delivery processes (eg Feasibility Report, Beca's third party assessment). SKM has been informed that the hard copy and electronic copy of the Project Management Plan were destroyed in the January 2011 floods.

The findings of prudency and efficiency in this report do not indicate a systemic issue in the projects inherited from Ipswich Water.

F.11 Prudency and efficiency summary

SKM considers that, based on the proposed growth in the network, the current hydraulic limitations of the sewer and the history of overflow events during wet weather events this project is prudent.

SKM is satisfied that an appropriate range of options were elected and adequately reviewed and that the scope of works is appropriate to meet the project need.

No barriers to the deliverability of this project have been identified.

The loading rate of 210 L/EP/day is higher than the ADWF loading rate of 180 L/EP/d specified by the SEQ Water and Sewerage Planning Guidelines (Version 1, May 2012). However, at commencement of the detailed design process, the SEQ Water and Sewerage Planning Guidelines were not in place. As such, SKM agrees with Queensland Urban Utilities in that the use of the guidelines in place at the time was appropriate.

The decision by Queensland Urban Utilities to remove the Bundamba Trunk Main Stage 1 project from the Thiess CPWC contract resulted in significant project savings, demonstrating project cost efficiency.

Given the late stage of the project and the significant proportion of total expenditure attributed to contingency (47%), SKM believes that a reduction in contingency will be prudent. SKM recommends a reduction in this contingency of 50% ($798,000) from the Forecast Project Completion Expenditure ($14.8 M).

F.12 Assessment of reported expenditure

Table 135 : IWWCAA31 Bundamba Creek Trunk Gravity Main Implementation – Stage 1a and 1b proposed capital expenditure

Project	Expenditure to 2013-14 ($'000)	2014-15 ($'000)	Total
IWWCAA31 Bundamba Creek Trunk Gravity Main Implementation – Stage 1a and 1b	14,102	0	14,102
SKM proposed value	13,304	0	13,304
Variation	-798	0	-798

Note: Figures are “as incurred” expenditure and exclude any allowance for capital overhead or borrowing (interest) costs.

F.13 Extrapolation to other projects

SKM does not consider that the findings from this project can be extrapolated to other projects.

Appendix G. Terms of Reference

Terms of Reference

2013-15 SEQ Price Monitoring

Assessment of Operating and Capital Costs

1. Project Background

1.1 Queensland Competition Authority

The Queensland Competition Authority (the Authority) is an independent statutory body responsible for assisting with the implementation of competition policy for government owned business entities in Queensland.

1.2 Retail Water Price Monitoring in South-East Queensland

The monopoly distribution and retail water and wastewater activities of Unitywater, Queensland Urban Utilities (QUU), Logan City Council, Redland City Council and Gold Coast City Council (the entities) have been referred to the Authority for a price monitoring investigation for the two-year period 1 July 2013 to 30 June 2015. A copy of the Ministers' Referral Notice (the Notice) is available on the Authority's website.[1]

The price monitoring investigation for 2013-15 follows and must build on three years of annual interim price monitoring from 2010-13.

The Authority has identified the information requirements for 2013-15 and issued each of the entities with information templates that indicate the form and nature of information required for price monitoring.

2. Purpose of Consultancy

The purpose of this consultancy is to assist the Authority to assess operating and capital expenditure of each entity based on the following approach:

(a) assess the existence of robust policies and procedures having regard to good industry practice, as well as compliance, using a sample of capital expenditure projects and operating expenditure categories;

(b) assess the robustness of the operating and capital expenditure program planning and delivery processes in an overall sense and identify any areas for improvement; and

(c) form a view on the prudency and efficiency of capital and operating expenditure, focussing on any areas of significant cost increase and identifying the reasons why.

The consultancy shall consist of two components.

2.1 Component 1 – Sample Selection

The consultancy must be based on each entity's policies and procedures, and planning and delivery processes, and a detailed review of a sample of capital projects and operating costs.

[1] The Ministers' Referral Notice is accessible at http://www.qca.org.au/water/SEQRetailPriceMon201315/.

Operating Expenditure

The sample operating expenditure categories for detailed review are employee expenses (including contractors), electricity, other materials and services, and corporate overheads. The consultant must identify the areas of significant cost increase within these categories.

Capital Expenditure

The Authority will select the capital expenditure sample for review in consultation with the consultant. As per the Notice, the capital expenditure sample will include six projects per entity (30 in total).

The actual sample size may differ, depending on each entity's submission (see worksheet 5.6.2 of the information template). To this end, the consultant is required to provide an indicative unit rate per additional forecast project and a unit rate per previously reviewed project.

2.2 Component 2 - Prudency and Efficiency of Costs

The consultant must assess whether each of the entities' operating and capital expenditure from 1 July 2013 is prudent and efficient.

Operating Expenditure

The consultant must assess whether each of the entities' operating costs from 1 July 2013 are prudent and efficient. In doing so, the consultant must:

(a) assess whether the entities' policies and procedures for operating expenditure are robust having regard to good industry practice, as well as compliance, for the four sampled expenditure categories;

(b) assess whether the operating program planning and delivery processes is robust and identify any areas for improvement; identify any efficiencies sought or achieved by the entities;

(c) report on the entities' progress against the savings targets set by the Authority in its previous interim price monitoring reports. For councils, the most recent relevant report is for 2011-12 in relation to Allconnex Water;

(d) for the sample of operating expenditures identified in Component 1 above:

  (i) describe the drivers of significant increases in 2013-15 operating expenditure relative to 2012-13 and 2011-12 including whether the expenditure is driven by legal obligations, new growth (see (d) 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) assess whether the unit rates and indexes used to escalate costs are consistent with prevailing market conditions and historical trends;

  (iii) assess whether each of the sampled cost items are prudent and efficient. Operating expenditure is prudent if it is required to meet the entities' requirements relating to its legal and regulatory obligations or its contracts with customers. 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. The relevant benchmarks are to be agreed with the Authority; and

(iv) identify the value of any expenditure considered not to be prudent or efficient;

(e) where relevant, liaise with the Authority and its consultants appointed for the review of demand to ensure that consistent advice is provided to the Authority; and

(f) identify the value of any further savings that could be made, including from recent Government initiatives intended to relieve cost pressures on the entities.

Capital Expenditure

The consultant must follow the process and criteria set out in section 4.7 of the Final Report – SEQ Interim Price Monitoring Framework (April 2010)[2], and:

(a) assess whether the entities' policies and procedures for capital expenditure are robust having regard to good industry practice, as well as compliance, using the six sampled projects per entity. In particular, the policies and procedures should reflect strategic development plans, integrate risk and asset management planning, corporate directives, regional priorities, be consistent with external drivers, and incorporate robust procurement practices;

(b) the review of policies and procedures should also report on whether the entity:

(i) considers the prudency and efficiency of expenditure from a regional perspective;

(ii) includes only commissioned capital expenditure from 1 July 2010 in the regulatory asset base (RAB) and therefore prices;

(iii) applies a standardised approach to cost estimating, including for items such as indexation, contingency, preliminary and general items, design fees and contractor margins;

(iv) prepares a summary document and implementation strategy for major projects and programs; and

(v) includes a 'toll gate' or 'gateway' review process at relevant milestone stages;

(c) assess the robustness of each entity's capital expenditure program and delivery processes in an overall sense and identify any areas for improvement;

(d) form a view on the prudency and efficiency of sampled capital expenditure, focussing on areas of significant cost increase and identifying the reasons why.

Capital expenditure is:

(i) prudent if it is required as a result of a legal obligation, new growth, 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 best means of achieving the desired outcomes after

[2] Available for download at http://www.qca.org.au/water/SEQinterim-price/finalreports.php.

having regard to the options available, including more cost-effective regional solutions, the substitution possibilities between capital and operational expenditure and non-network alternatives such as demand management;

– the standard of the works conforms with 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. Compliance with regulatory obligations (e.g. water netserv plans[3]) is likely to be highly relevant; and

– the cost of the defined scope and standard of 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;

(e) identify the value of any sampled expenditure considered not to be prudent or efficient and whether the savings can be extrapolated;

(f) liaise with the Authority and its consultants appointed for the review of demand to ensure that consistent advice is provided to the Authority;

(g) identify any efficiency gains or economies of scale sought or achieved by the entities, and identify a prudent and efficient level of future gains with reference to appropriate benchmarks; and

(h) 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.

3. Resources/Data Provided

The consultant will be required to source information from the entities' information returns in the first instance, and will be required to liaise with the entities, the Authority and other stakeholders as appropriate to source further information.

To facilitate the flow of information, the consultant should consider:

(a) setting up a secure online portal for the provision of large documents from the entities;

(b) allowing for a number of days on site with each entity to ask follow up questions;

(c) keeping a weekly record of outstanding information for the entities and the Authority.

The Authority expects that the consultant will be familiar with:

(a) previous submissions and Authority price monitoring reports in 2010-13;

(b) SEQ Price Monitoring Information Requirements for 2013-15;

[3] Refer to the *South-East Queensland Water (Distribution and Retail Restructuring) Act 2009* (Qld).

(c) the Authority's SEQ Interim Price Monitoring Framework (April 2010); and

(d) the assessment of prudency and efficiency in other water reviews (including in other jurisdictions) and relevant approaches and benchmarks from these reviews.

4. Project Time Frame

4.1 Submissions and sample selection

As per the Notice, submissions from:

(a) Unitywater and QUU are due by 30 June 2013;

(b) Logan, Redland and Gold Coast City Councils are due by 30 September 2013.

Submissions will be provided to the consultant following appointment.

The consultant will be required to report on Component 1 within three business days of receiving the information returns.

4.2 Deliverables and report timeframes

The primary deliverables include:

(a) a report for each entity, one week after the consultant's visit, outlining preliminary findings for at least one sampled capital expenditure project and one sample operating expenditure category;

(b) staged delivery of the remaining items within the scope of the consultancy, culminating in a draft report by:

(i) Friday 2 August 2013 for Unitywater and QUU; and

(ii) Friday 1 November 2013 for Logan, Redland and Gold Coast City Councils.

(c) consultation with stakeholders following the release of the draft report (one week following the due dates of the preliminary draft report) which provides the last opportunity for stakeholders to provide further information; and

(d) a final report that addresses the views of stakeholders arising from consultation, by

(i) Friday 16 August 2013 for Unitywater and QUU; and

(ii) Friday 15 November 2013 for Logan, Redland and Gold Coast City Councils.

The consultant may also be required to provide further advice following the receipt of submissions on the Authority's Draft Report. The extent and scope of this work will depend on the nature of submissions. If required, this work will form a separate item under the contract (with separate terms of reference) to be charged at the agreed hourly rates.

5. Proposal Specifications and Fees

The proposal should:

- include the name, address and legal status of the tenderer;

- provide the proposed methods and approach to be applied;
- provide a fixed price quote for the provision of the services detailed herein; and
- nominate the key personnel who will be engaged on the assignment together with the following information:
  - name;
  - professional qualifications;
  - general experience and experience which is directly relevant to this assignment;
  - expected time each consultant will work on the project; and
  - standard fee rates for any contract variations.

The fixed price quoted is to be inclusive of all expenses and disbursements. A full breakdown of consultancy costs is required with staff costs reconciled to the consultancy work plan.

The consultant should invoice the lower of the fixed price quote or a time and materials cost.

A progress payment of 50% of the expected total payment can be made within 28 days of receiving an invoice following the Authority's acceptance of a satisfactory Draft Report. Total payment will be made within 28 days of receiving an invoice at the conclusion of the consultancy.

6. Contractual Arrangements

This consultancy will **only** be offered in accordance with the Authority's standard contractual agreement.

This agreement can be viewed at http://www.qca.org.au/about/consultancyagreement.php

7. Reporting

The consultant must provide its assessment in a clear and comprehensive manner to allow for ease of use in Authority reports.

The Authority requires reasoned and substantiated assessments, inclusion the provision of a high standard of detailed information. The Authority expects the consultant to substantiate and justify its conclusions with reference to relevant benchmarks and information sources.

The consultant should advise at earliest opportunity any critical issues that may impede progress of the consultancy, particularly issues that impact on the successful delivery of the Purpose of Consultancy outlined in Section 2 above.

The consultant may be required to provide the Authority with a formal presentation to all Authority staff on the findings of the draft and final reports. An electronic version of the final report is required, saved in Microsoft© Word with any numeric data in Microsoft© Excel.

8. Confidentiality

Under no circumstance is the selected consultant to divulge any information obtained from The Entities or the Authority for the purposes of this consultancy to any party other than with the express permission of the Entity and the Authority.

9. Conflicts of Interest

For the purpose of this consultancy, the consultant is required to affirm that there is no, and will not be any, conflict of interest as a result of this consultancy.

10. Authority Assessment of Proposal

The proposal will be assessed against the following criteria:

(a) understanding of the project;

(b) skills and experience of the firm and team;

(c) the proposed methods and approach;

(d) capacity to fulfil the project's timing requirements; and

(e) value for money.

In making its assessment against the criteria, the Authority will place most weight on relevant experience of the team members involved and the proposed method for the completion of the task.

11. Insurance

The consultant must hold all necessary work cover and professional indemnity insurance.

12. Quality Assurance

The consultant is required to include details of quality assurance procedures to be applied to all information and outputs provided to the Authority.

13. Grievances

If during the course of your engagement you wish to raise any grievances or make a complaint, please contact Mrs Robyn Farley-Sutton, Director Corporate Services, on (07) 3222 0505 or robyn.farley-sutton@qca.org.au

14. Lodgement of Proposals

Proposals are to be lodged with the Authority by **Monday 17 June 2013**.

For further information concerning this consultancy, please contact Shannon Murphy on (07) 3222 0592 or shannon.murphy@qca.org.au.

Proposals should be submitted to:

Director Water
Queensland Competition Authority

GPO Box 2257
Brisbane Qld 4001

Phone: (07) 3222 0555
Fax: (07) 3222 0599
Email: seqwater@qca.org.au