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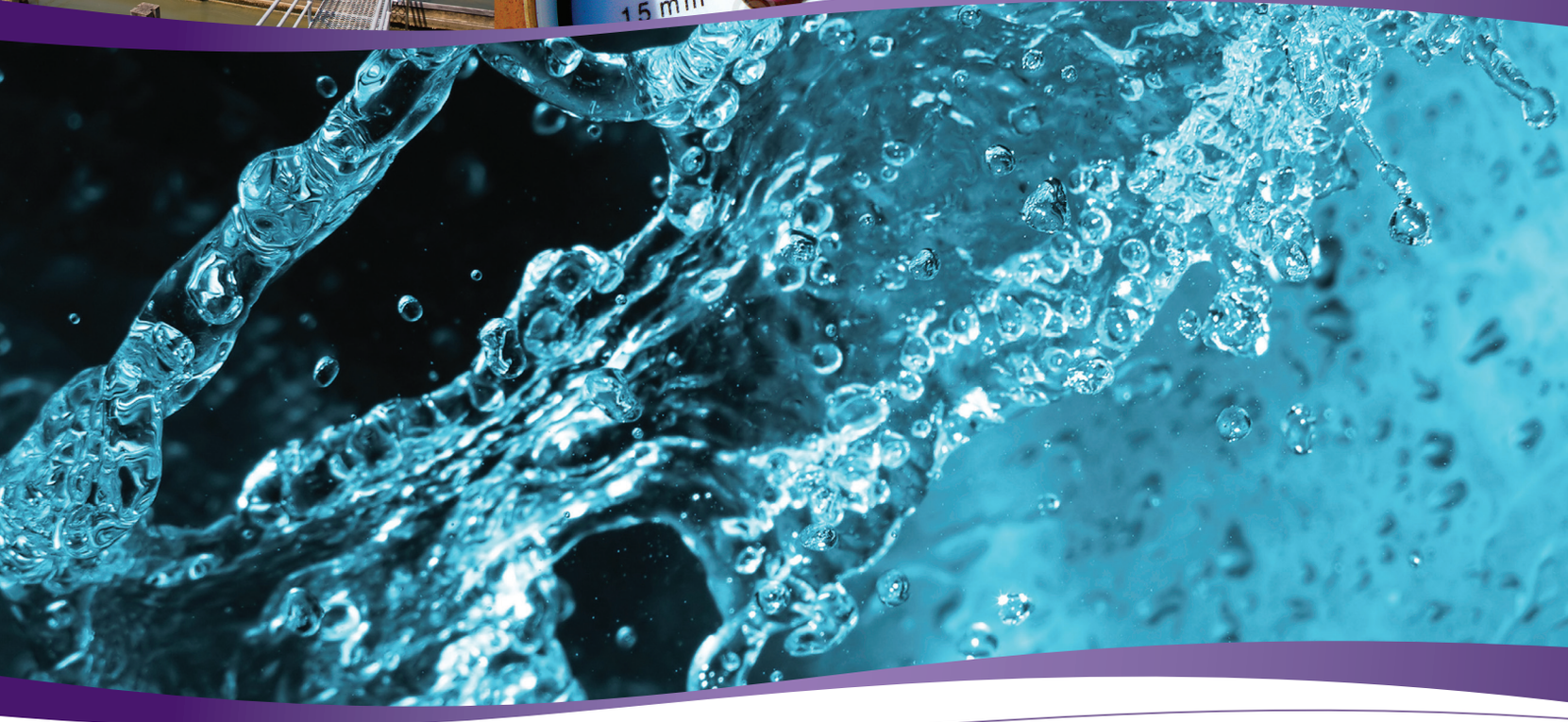
Grid Service Charges 2012-2013:

Phase 2 - Assessment of Capital and Operating Expenditure

Grid Service Provider: LinkWater

June 2012



Grid Service Charges 2012/2013

PHASE 2 – ASSESSMENT OF PRUDENCY AND EFFICIENCY OF OPERATING AND CAPITAL COSTS – LINKWATER

- Rev 3
- Final
- 28 June 2012

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

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

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

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

1. Executive summary

The Queensland Competition Authority (the Authority) commissioned Sinclair Knight Merz Pty Ltd (SKM) to review the prudency and efficiency of capital expenditure and operating expenditure of the two Grid Service Providers (GSPs) – Seqwater and LinkWater. This review is part of the Authority's process to recommend the Grid Service Charges to be applied in 2012/13. The Grid Service Charges represent the amount payable by the South East Queensland (SEQ) Water Grid Manager to the two GSPs for declared water services.

SKM has produced a report for each of the GSPs. This report pertains to the prudency and efficiency of the operating costs and capital expenditure for LinkWater.

1.1. Introduction and background

To inform the recommendations on the 2012/13 Grid Service Charges, the Authority requires the adequacy of the available information and the prudency and efficiency of the capital and operating expenditure proposed by each of the GSPs for the 2012/13 financial year to be assessed against relevant service standards and industry best practice.

The Authority appointed SKM to review the capital and operating expenditure forecasts for declared services from July 2012 to June 2013. Declared water services include the storage, production, treatment and transport of water to grid customers, including retailer-distributor entities.

1.2. Information adequacy

LinkWater has supplied comprehensive supporting information to enable SKM to undertake an assessment of the prudency and efficiency for a sample of fifteen operating expenditure costs and five capital expenditure costs. Various obstacles to reporting were encountered, these included:

- Information format and adequacy
- Timeframe of review
- Location of this review in the project delivery journey

It is acknowledged that there is a short timeframe in which to provide the required information, however the information should be available as a result of good practice. LinkWater staff cooperated extensively and worked beyond normal business hours to respond to requests and queries. This commitment is appreciated.

1.3. Policy and procedure review

SKM has reviewed LinkWater's capitalisation policy, budget formation, strategic development plans, risk and asset management planning, corporate directives, external drivers, procurement and cost allocation. A short summary of SKM's findings is presented below:

- **Capitalisation policy** – LinkWater capitalises the cost incurred in acquiring property, plant and equipment upon the initial purchase or construction thereof. The purchase price includes the cost for import duties and other taxes

- **Strategic development plans** – LinkWater has not developed strategic development plans as no direction has been given by the SEQ Water Grid Manager. At present LinkWater relies on the plans and frameworks developed as part of the asset management system
- **Risk and asset management planning** – LinkWater has made significant progress in developing robust and mature asset management processes and procedures. SKM notes that there are still some deficiencies in LinkWater's masset performance and condition assessment, LinkWater has initiated a robust process to obtain a better understanding of its assets and their conditions as well as a management system to develop asset performance standards that meet good industry standards
- **Corporate directives** – The Strategic Plan summarises LinkWater's vision, values, goals, business drivers and key corporate expectations
- **External drivers** – LinkWater does not have clearly defined levels of service. LinkWater has undertaken a study to identify appropriate parameters to measure against in regard to level of service
- **Procurement** – The procurement policies of LinkWater conform to good industry practices with one exception. SKM recommends that LinkWater adjust their procurement policy to require a minimum of three quotes for goods and services valued between $20,000 and $100,000 instead of the current two required
- **Cost allocation** – SKM suggest that there may be merit in the Authority agreeing with both LinkWater and Seqwater, the data to be captured and mechanism for apportionment of cost to allow assessment of cost allocation in the future

1.4. Operational expenditure

Table 1 below presents a summary of the prudency and efficiency reviews of LinkWater's operating expenditure. From the review undertaken by SKM all but one operating expenditure project reviewed was determined to be prudent and efficient. **Table 1** below presents the revised operating expenditure.

- **Table 1 Summary of revised operating costs ($000s)**

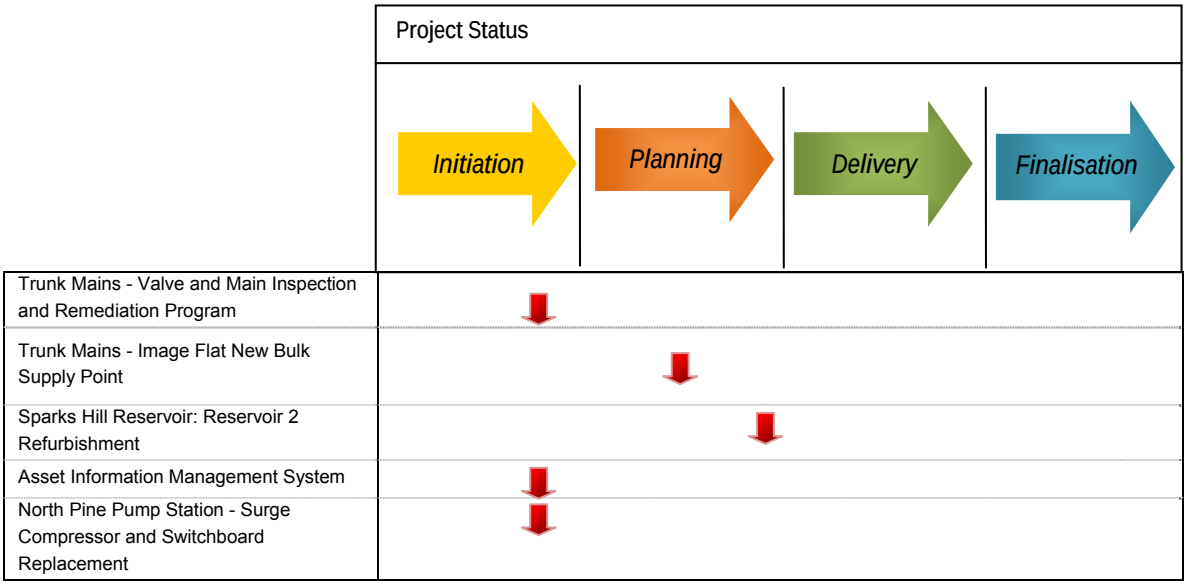
	Operating Expenditure item	Value ($000s)	Prudent	Efficient	Revised Value ($000s)
1	Maintenance & Operations – Planned Reservoir	2,515	Prudent	Efficient	2,515
2	Maintenance & Operations – Planned Balance Tanks	202	Prudent	Efficient	202
3	Maintenance & Operations – Variable Operational	1,167	Prudent	Efficient	1,167
4	Chemical Cost	533	Prudent	Efficient	506
5	Operational Activities – System Modelling & Network Information	1,005	Prudent	Efficient	1,005
6	Operational Activities – GIS	851	Prudent	Efficient	851
7	Operational Activities – Service Delivery	1,167	Prudent	Efficient	1,167
8	Operational Activities – Network Asset Ops	1,426	Prudent	Insufficient information to assess all expenditure as efficient	1,185

	Operating Expenditure item	Value ($000s)	Prudent	Efficient	Revised Value ($000s)
9	Operational Activities – Water Laboratory Testing	1,660	Prudent	Efficient	1,660
10	Property Leasing	1,509	Prudent	Efficient	1,509
11	IT & Knowledge Management	3,084	Prudent	Efficient	3,084
12	Corporate Services	2,435	Prudent	Efficient	2,435

1.5. Capital expenditure 2012/13

A sample of five projects were identified and assessed as a representative sample of the capital expenditure program for 2012/13 for LinkWater. We have assessed these projects against the Authority's definitions of prudency in particular the relevant driver and the decision making process and efficiency, including the standards of works, scope of work, timeliness of delivery and the costs.

The status of the five projects relative to the LinkWater Delivery Framework is illustrated in **Figure 1.**



- **Figure 1 Status of projects within the LinkWater Delivery Framework**

The capital expenditure of all five projects was assessed as both prudent and efficient. For the Trunk Mains - Valve and Main Inspection and Remediation Program only the proposed 2012/13 expenditure was assessed as efficient and for the North Pine Pump Station - Surge Compressor and Switchboard Replacement the expenditure excluding the building was assessed as efficient.

Table 2 provides an overview of the final assessment made for each project of the project sample chosen for assessment of prudency and efficiency

- **Table 2 2012/13 sample project summary - revised capital expenditure profile ($000s)**

Project	Cost 2012/13 ($000s)	Prudent	Efficient	Revised Cost 2012/13 ($000s)
Trunk Mains - Valve and Main Inspection and Remediation Program	2,107	Prudent	Efficient (based on additional information) Note: Insufficient information to assess expenditure beyond 2012/13 as efficient	2,105
Trunk Mains - Image Flat New Bulk Supply Point	2,073	Prudent	Efficient	2,073
Sparks Hill Reservoir: Reservoir 2 Refurbishment	1,305	Prudent	Efficient	1,305
Asset Information Management System	632	Prudent	Efficient	632
North Pine Pump Station - Surge Compressor and Switchboard Replacement	516	Prudent	Efficient excluding building	204

Table 3 summarises the adequacy of information for the five projects.

- **Table 3 LinkWater capital expenditure review 2012/13**

Project	Trunk Mains - Valve and Main Inspection and Remediation Program	Trunk Mains - Image Flat New Bulk Supply Point	Sparks Hill Reservoir: Reservoir 2 Refurbishment	Asset Information Management System	North Pine Pump Station - Surge Compressor and Switchboard
Project description					
Provided documentation					
Prudency					
Cost driver					
Decision making process					
Efficiency					
Scope of works					
Standards of work					
Project cost					
Policy and procedures					
Timing and deliverability					
Efficiency gains					
Allocation of overhead costs					

Comparing the project status, prudency and efficiency assessment and adequacy of information illustrates that projects further along the implementation journey are more likely to have more adequate information and be assessed as prudent and efficient. It is noted that this assessment is at a specific point in time, and that the purpose of this review is to determine the validity of entry of costs into the RAB.

Information requirement to enable the completion of the review are indicated in **Section 7**.

1.6. Capital expenditure 2011/12

A sample of four projects of the capital expenditure program for 2011/12 were identified as requiring additional review due to unexpected increases in actual estimated costs compared with approved budget and assessed. We have assessed these projects 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.

Two of the four projects have been assessed as both prudent and efficient**. Table 4** provides an overview of the final assessment made for each project of the project sample chosen for assessment of prudency and efficiency.

- **Table 4 2011/12 sample project summary - revised capital expenditure profile ($000s)**

Project	Cost 2011/12 ($000s)	Prudent	Efficient	Revised Cost 2011/12 ($000s)
Kuraby Reservoir Concrete Refurbishment	912	Prudent	Revised cost based on LinkWater advice assessed as efficient	853
Bundamba PS Flood Mitigation Work	1,267	Prudent	Efficient	1,267
Reservoir Access Hatch Alarms (Various sites)	217	Prudent	Efficient	217
Supply & Install Mixers (Various sites)	971	Prudent	Efficient when purchase cost staged with construction period	503

The adequacy of information supplied is summarised in **Table 5**.

- **Table 5 LinkWater capital expenditure review 2011/12**

Project	Kuraby Reservoir Concrete Refurbishment	Bundamba PS Flood Mitigation Work	Reservoir Access Hatch Alarms (Various sites)	Supply & Install Mixers (Various sites)
Project description				
Provided documentation				
Prudency				
Cost driver				
Decision making process				
Efficiency				
Scope of works				
Standards of work				
Project cost				
Policy and procedures				
Timing and deliverability				
Efficiency gains				
Allocation of overhead costs				

Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

Comparison of the efficiency assessment and the adequacy of information table illustrates that documentation regarding allocation of overhead costs is a common issues.

2. Introduction

The Queensland Competition Authority (the Authority) is required to recommend the Grid Service Charges (GSCs) to be applied in 2012/13. GSCs represent the amount payable by the South East Queensland Water Grid Manager (SEQ Water Grid Manager) to the two separate Grid Service Providers (GSPs): Seqwater and LinkWater; for declared water services.

To assist it in this process, the Authority has appointed SKM to:

- Conduct a review of available information on operating cost categories for functional and corporate cost centres and for specific asset operation and maintenance, benchmark costs using benchmark metrics such as $/ML storage against similar entities with similar assets, investigate for any duplication of effort and investigate for any potential efficiencies
- Conduct a review available information, undertake sample selection, organise and attend a project review meeting with Authority, undertake a gap analyses, conduct interviews with the GSPs, prepare information requests, undertake a review policy and procedures and standards of service, undertake assessments of prudency and efficiency and conduct a review allocation of overhead costs
- Conduct a review of available information, complete project identification, organise and attend a project review meeting with Authority, undertake a gap analyses, conduct interviews with the GSPs, undertake a review supporting documentation, undertake assessments of prudency and efficiency
- Conduct a review of available information, undertake sample selection, organise and attend a project review meeting with Authority, undertake a gap analyses, conduct interviews with the GSPs, undertake a review supporting documentation, undertake a review policy and procedures, undertake assessments of prudency and efficiency, conduct a review allocation of overhead costs, undertake a review of the capital and operating expenditure forecasts for declared services over the period from July 2012 - June 2013, undertake a review of non-drought capital expenditure for the period between July 2011- June 2012 and undertake a review of fixed and variable operating expenditure for the period between July 2011 and June 2012

The consultancy consists of two phases:

- Phase 1:
  - Fixed and variable OPEX review – Review available information on operating cost categories for functional and corporate cost centres and for specific asset operation and maintenance, benchmark costs using benchmark metrics such as $/ML storage against similar entities with similar assets, investigate for any duplication of effort, investigate for any potential efficiencies
- Phase 2:
  - Component 1: Operational Expenditure – Review available information, sample selection, project review meeting with authority, gap analyses, GSP interviews, information request,

policy and procedures review, standards of service review, assessment of prudency, assessment of efficiency, allocation of overhead costs

- Component 2: 2011/2012 Estimated Actual Capital Expenditure – Review available information, project identification, project review meeting with authority, gap analyses, GSP interviews, review of supporting documentation, assessment of prudency, assessment of efficiency
- Component 3: 2012/2013 Forecast Operational Expenditure – Review available information, sample selection, project review meeting with authority, gap analyses, GSP interviews, review of supporting documentation, policy and procedures review, assessment of prudency, assessment of efficiency, allocation of overhead costs

This report addresses Phase 2 in respect to the review of the capital and operating expenditure for LinkWater.

2.1. Terms of reference

The full terms of reference are included in **10.1.**

2.1.1. Scope exclusions

The following items are outside of the scope of SKM's review:

- Discussion of the allowable operation costs (including the Queensland Water Commission and the Authority's charges, finance charges, treatment of depreciation, working capital, asset valuation methodology)
- Review of capital expenditure beyond 2012/13. Review of any capital expenditure within 2012/13 will be reviewed, but for projects spanning multiple years, this review is not include an assessment of prudency and efficiency for future years
- Review of capital costs for 2011/12 where the project was being reviewed for the 2012/13 costs
- Discussion of irrigation schemes and associated costs
- Discussion of potential efficiencies associated with the merger of Seqwater and WaterSecure

2.2. Report overview

This report addresses the benchmarking review and duplication of effort review for LinkWater. The capital and operating expenditure review for Seqwater is contained in a separate report[1].

[1] SKM Seqwater report citation

This report is structured as follows:

- Background
- Information adequacy
- Policy and procedure review
- Operational expenditure
- Capital expenditure
- Proposed revised templates
- Conclusions and overall recommendations

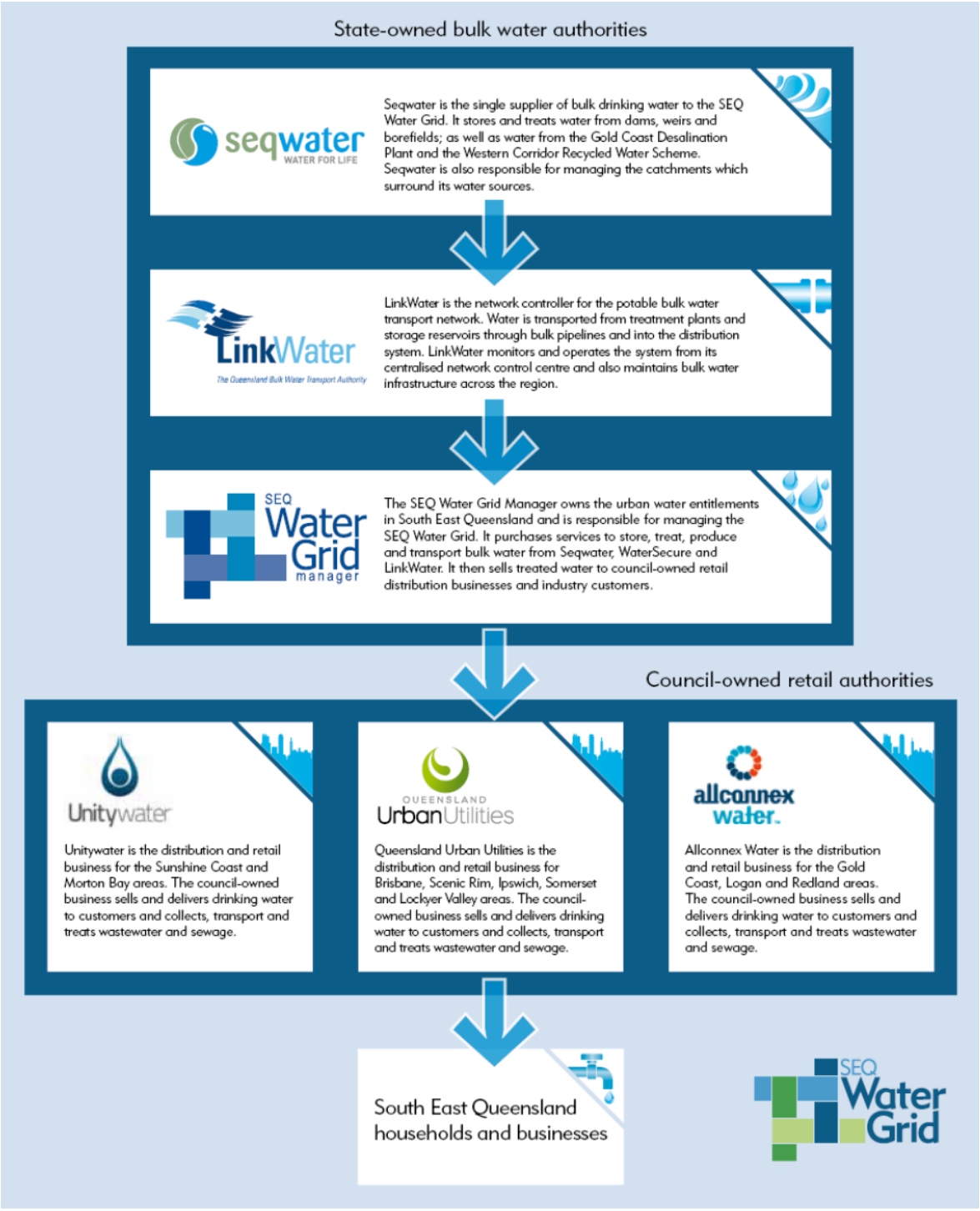
3. Background

3.1. Water Reform and Grid Entities

On 1 July 2008, the Queensland Government implemented a series of reforms in the SEQ water industry by establishing new bulk water entities that own and operate the SEQ Water Grid. Seqwater owns all dams, groundwater infrastructure and water treatment plants in SEQ while WaterSecure owned the desalination plant at the Gold Coast and the Western Corridor Recycled Water Scheme.

On 1 July 2011 Seqwater and WaterSecure merged with Seqwater to form a single bulk water supply authority. The bulk water transmission system is owned by LinkWater. The SEQ Water Grid Manager is responsible for directing the physical operation of the SEQ Water Grid and provides a mechanism to share the costs of the SEQ Water Grid, by acting as the single buyer of bulk water services and the single seller of bulk water for urban purposes. It sells a wholesale 'pool' product, reflecting the portfolio cost of supplying retailers with a defined security and quality of supply at a defined bulk supply node.

In addition to the bulk water entities, 10 regional council water utilities were amalgamated into three larger retail distribution entities. These entities now own the water and sewerage distribution infrastructure and sell water and sewage disposal services to customers in their respective areas.



3.2. The role of the Authority

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

Under the South East Queensland Water Market Rules (the Market Rules), the Authority is required to recommend the GSCs for the period from 1 July 2012 until 30 June 2013. The Authority is required

to provide a report to the Price Regulator setting out its recommendations on GSCs and such information as is reasonably required, to support its recommendations, by no later than 30 June 2012.

GSCs are paid by the SEQ Water Grid Manager to the two GSPs, for the provision of declared water services. Declared water services relate to the storage, production, treatment and transport of water to retailer-distributors and other Grid Customers, such as power stations and irrigators in South East Queensland. A single GSC is applied for each GSP.

3.3. Role of the SEQ Water Grid Manager

The SEQ Water Grid Manager is responsible for directing the short-term operation of the SEQ Water Grid and, by acting as the single buyer of bulk water services and as the single seller of bulk water for urban purposes, provides a mechanism to share the costs of the SEQ Water Grid. It sells a wholesale "pool" product, which reflects the portfolio cost of supplying retailers with a defined security and quality of supply at a defined bulk supply node.

The SEQ Water Grid Manager sells potable water to the three council-owned retail-distributors at a price determined under the SEQ Bulk Water Price Path. A 10-year price path has been projected for bulk water prices, based on assumed interest rates and consumption patterns by the Queensland Government. The Bulk Water Price Path is intended to reach full cost recovery by 2017/18. The bulk water prices are different from the grid service charges payable by the SEQ Water Grid Manager.

3.4. Prudency and Efficiency

The Market Rules do not establish the definition or test to be applied when considering the reasonableness or prudent nature of the proposed expenditure. The *Draft Investigation Plan – SEQ Bulk Water Grid Service Charges for 2011/2012* (Queensland Competition Authority, 2010) defines the Authority's approach to its assessment of reasonableness and prudency. The Authority proposes to adopt the definitions of prudency and efficiency that were approved by the Minister for Natural Resources Mines and Energy and the Minister for Trade for the interim price monitoring of the SEQ retail distributors.

For the purposes of this consultancy, SKM has adopted the following definitions:

- ***Operating expenditure*** is ***prudent*** if it is required to meet the GSP's requirements relating to:
  a) its Grid Contract
  b) the South East Queensland System Operating Plan
  c) production forecasts for the regulatory period are to consistent with the grid instructions forecast in the Operating Strategy (or any successor documents) and any relevant information provided to the GSPs in accordance with the system operating plan the South East Queensland System Operating Plan
- ***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. In assessing efficiency, the consultant must have regard to the conditions prevailing in relevant markets, historical trends in operating expenditure and the potential for efficiency gains or economies of scale

- ***Capital expenditure*** is ***prudent*** if it is required as a result of a legal obligation, growth in demand, renewal of existing infrastructure that is currently used and useful, or it achieves an increase in the reliability or the quality of supply that is explicitly endorsed or desired by the SEQ Water Grid Manager
- ***Capital expenditure*** is ***efficient*** if:
  a) 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 the substitution possibilities between capex and opex and non-drought network alternatives such as demand management;
  b) 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; and
  c) 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 it view with references to relevant interstate and international benchmarks and information sources. For example, the source of comparable units 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
- SKM must also assess:
  a) whether the entities' policies and procedures for operational and capital expenditure represent good industry practice. In particular, the policies and procedures must reflect strategic development plans, integrate risk and asset management planning, corporate directives, be consistent with external drivers, and incorporated robust procurement practices
  b) the standards of service adopted by each GSP and whether these standards have been approved by external agencies
  c) assess the appropriateness of any allocation methodology of overhead operating costs

4. Overview of information adequacy

4.1. Summary of information received

LinkWater included the following documents in its submission to the Authority:

- *Regulatory Submission to the Authority for 2012/2013 Grid Services Charges*, LinkWater, February 2012
- Attachment A – *QCA Data Template*, LinkWater, February 2012
- Attachment A – *Third Party Transactions*, LinkWater, February 2012
- Attachment B – *Compliance Guide Volume 1 – Legislative Obligations*, LinkWater, February 2012
- Attachment C – *2012/2013 Capex Program by Project*, LinkWater, February 2012

LinkWater provided additional supporting documents for each operational expenditure item and capital expenditure project assessed.

4.2. Operational expenditure

For the assessment of prudency and efficiency of operating expenditure, a sample of costs was selected. Further RFIs were issued to LinkWater to provide detailed information on the fifteen operating expenditure cost items selected for further review. The information requested included the following:

a) how the operating expenditure is required to meet the GSPs requirements relating to either
   i. Its Grid Contract
   ii. The SEQ System Operating Plan
   iii. Forecast required supply under the Water Grid Managers Operating Strategy
   iv. Its Standard of Service

b) detailed breakdown of how each of the costs has been derived, including:
   i. Method of calculation (ie top down or bottom up)
   ii. Details of any indices or escalations that have been applied
   iii. Baseline data to which the indices have been applied
   iv. Source of any unit rates used in the calculation
   v. Source data for quantities used in the calculation (eg a maintenance plan, asset management plan)
   vi. Allocation methodology used
   vii. Any other assumptions used in the cost calculation

c) Details to identify the:
   i. Disaggregation of costs for work completed in-house and work that is contracted to external parties
   ii. Where external parties are contracted:

- Evidence of how this service was procured (eg open tender, selected tender, alliance)
- Duration of the engagement
- Evidence of the basis of payment for these services (time and expense, indexed, lump sum, unit rates)
- Internal discussions/rationale behind contracting this service (eg need for specialist personnel)

iii. Where services are completed in house:

- Number of FTE's directly involved in the service (where appropriate)
- Reasons why this service is completed in-house (eg practicability, commercially sensitive information)

iv. Evidence of considering alternative methods for delivering this service

v. Details of where the GSP has forecast cost efficiencies or synergies or economies of scale

d) For overhead costs, details of the methodology by which overhead operating costs have been allocated

LinkWater provided initial additional information to meet our requests. This was followed by a meeting with SKM and LinkWater staff to discuss the information provided. Additional requests for information were subsequently sent to LinkWater with regard to details and specific issues that SKM identified and required clarification on. These are further discussed in the Operating Expenditure section of this report (refer to **Section 6** of this report).

4.3. Capital expenditure

The initial submission of capital expenditure information was not in the spreadsheet format requested by the Authority. This resulted in difficulty in identifying an appropriate sample, primarily for the review of 2011/12 projects.

For the assessment of prudency and efficiency of 2012/13 capital expenditure, a sample of projects were selected (refer to **Section 7.3** of this report). Requests for information were issued to LinkWater to provide detailed information on the items within the sample. The information requested included standard policies and procedures and specific project details regarding the need for the project, the scope of works and details of how the project had been developed.

A number requests for information were forwarded. Responses to the vast majority were received within a timeframe that allowed them to be addressed. In addition an interview was conducted to facilitate the provision of the specific required information. This was particularly useful for the 2012/13 sample projects. **Table 6** and **Table 7** illustrates this.

Table 6 LinkWater capital expenditure 2012/13 information adequacy

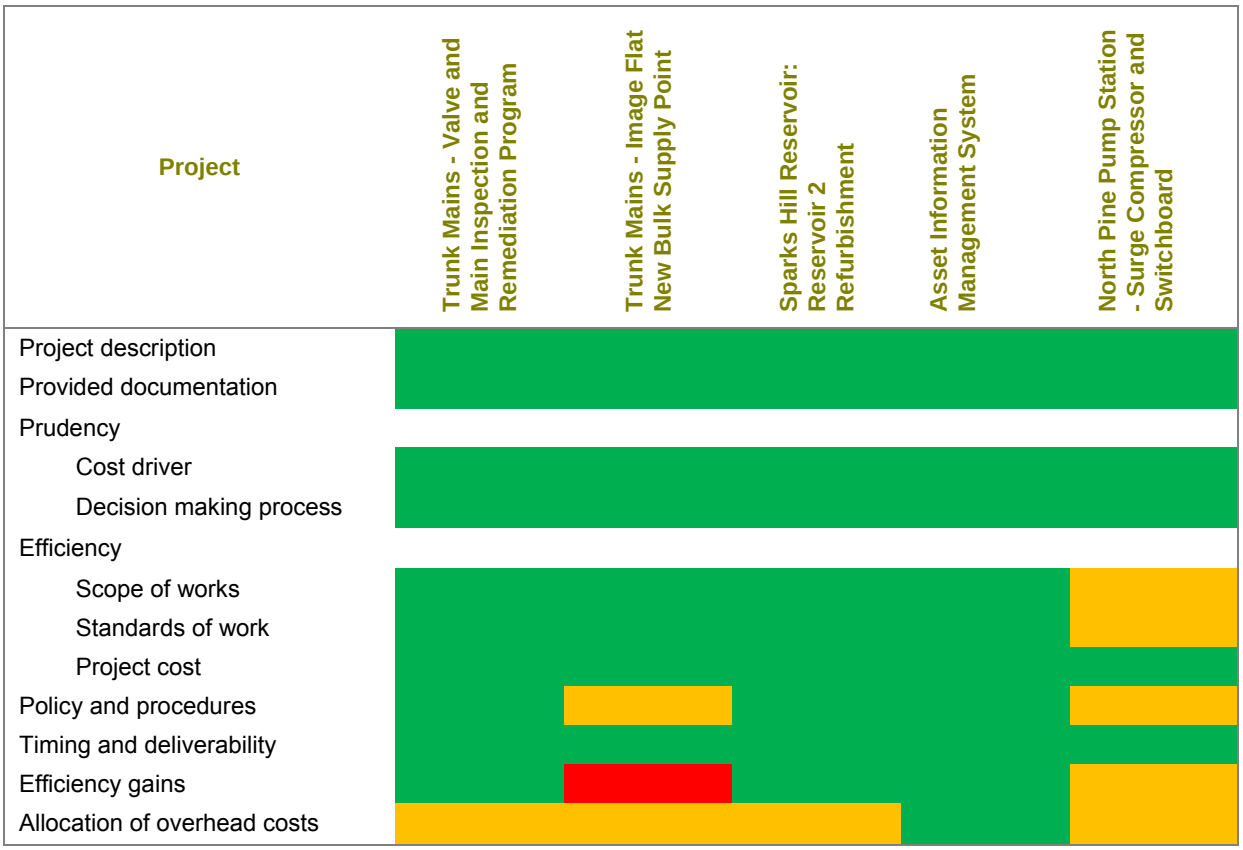
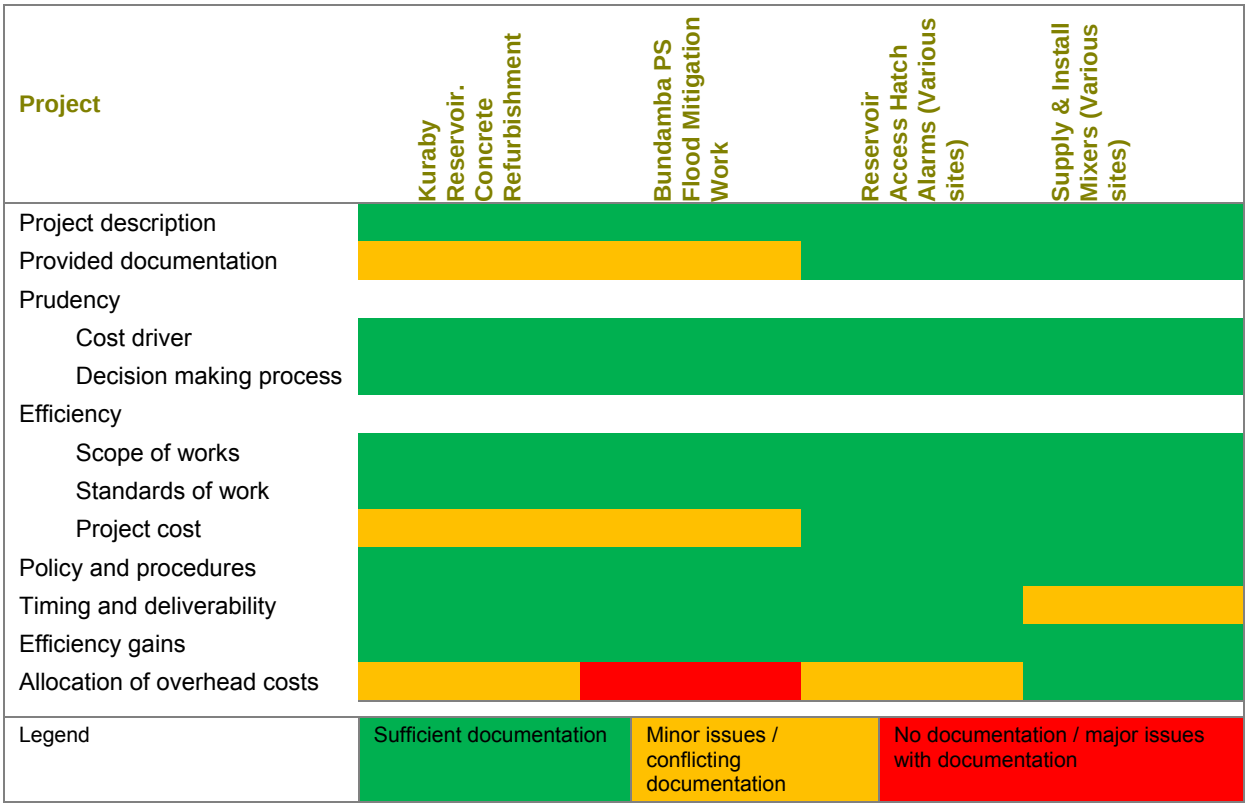


Table 7 LinkWater capital expenditure 2011/12 information adequacy

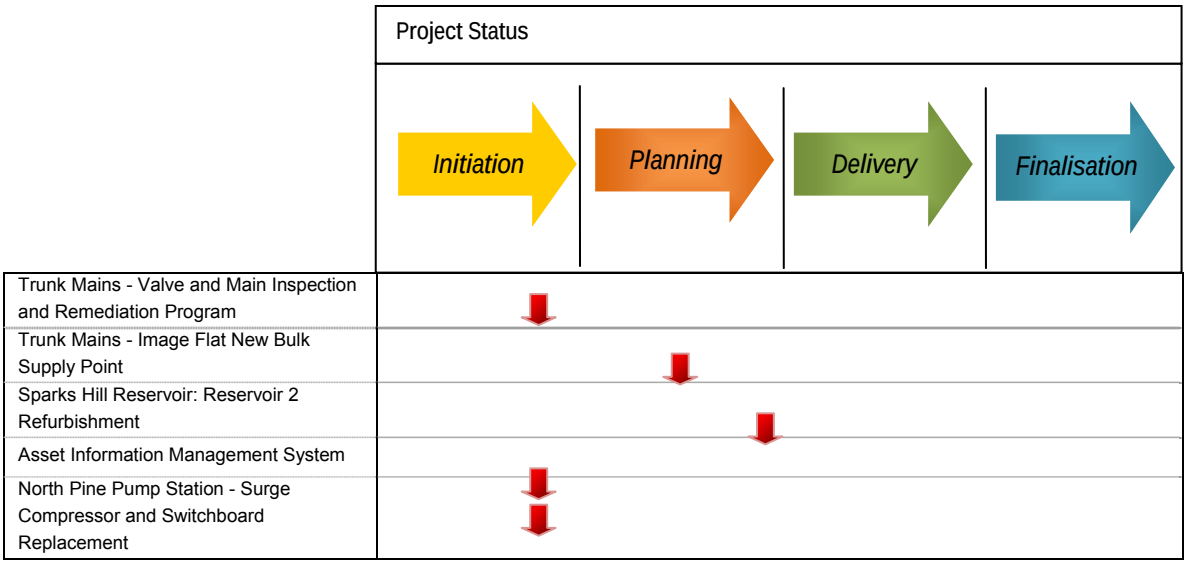


It is acknowledged that there is a short timeframe in which to provide the required information, however the information should be available as a result of good practice. LinkWater staff cooperated extensively and worked beyond normal business hours to respond to requests and queries. This commitment is appreciated.

4.4. Obstacles to reporting

Various obstacles to reporting were encountered, these included:

- Information format and adequacy – refer above
- Timeframe of review – the timeframe of the review is short, which when successive requests for information are required to elicit all necessary information compounds the shortness of time. This affects both the provision of information and the review able to be completed
- Location of this review in the project delivery journey. **Figure 2**, below, illustrates the location of the project in the projects delivery framework



- **Figure 2 Status of 2012/13 projects within the LinkWater Delivery Framework**

Comparing the project status to the information adequacy illustrates that projects further along the implementation journey are more likely to have more adequate information and be assessed as prudent and efficient. It is noted that this assessment is at a specific point in time, and that the purpose of this reviews to determine the validity of entry of costs into the RAB

Consequently there is a situation whereby this review is unable to confirm the prudency or efficiency due to its position in the implementation journey, whilst good practice requires an allowance to be made in LinkWater's forward budget

Where prudency and/or efficiency cannot be established, this does not solely mean that the project is inappropriate, it may mean that the status of the project is not sufficiently progressed to enable confirmation of entry of all costs into the RAB.

To facilitate a uniform understanding of the status of the project it is suggested that LinkWater advise their perspective of the status of the project with the submission of sample info.

4.5. Conclusions

The provision of information was adequate. Initially the review of some projects could not be completed due to insufficient information however additional information was subsequently provided and the reviews finalised.

5. Policy and procedure review

5.1. Capitalisation Policy

As part of this assignment, SKM was requested to review the LinkWater's policy on how it decides when a cost item is capitalised and when it is expensed. LinkWater provided a document titled "*Management Policy, Asset Accounting, Document number: MGT-092*". Section 7 of this document details LinkWater's policy regarding *Capital Versus Current Expenditure*.

5.1.1. Capitalisation

LinkWater capitalises the cost incurred in acquiring property, plant and equipment upon initial purchase or construction. The purchase price including import duties and other taxes are recognised, as are any direct costs incurred to bring the asset to the location and condition necessary for it to operate as intended. These costs (net of any incidental revenue, discounts or rebates) include:

- Any borrowing costs
- Costs of employees directly related to the construction or acquisition (salaries and wages, allowances, bonuses, leave)
- Site preparation costs
- Installation and assembly cost
- Professional fees
- Testing costs
- Provision for demolition and restoration costs where there is a legal or constructive obligation to restore or rectify the site to its original condition prior to construction

During the development phase of a project, an intangible asset may be created (eg intellectual property, designs, models). Costs incurred in developing the intangible asset shall only be capitalised if LinkWater can demonstrate that the technical feasibility of the intangible asset will be available for use or sale and there is an intention to complete the intangible asset for use or sale and LinkWater is able to use of sell the intangible asset. It must also demonstrate that the intangible asset will generate probable future economic benefits and that LinkWater has adequate available technical, financial and other resources to complete the development of the project and to use or sell the intangible asset. LinkWater must also be able to measure reliably the expenditure attributable to the intangible asset's development. Internally generation intangible assets (trademarks, patents) are prohibited from being recognised as an asset and thus costs incurred are not to be capitalised.

Capital project costs begin to be capitalised when a formal decision to proceed with the capital project is taken or when there is a high probability that the project will proceed. Once a formal decision to proceed with the capital project is taken, any research, design and appraisal costs incurred in implementing the project will be capitalised. Where research, design and appraisal costs are incurred to develop a tangible asset and the probability that the project will be completed is high, those costs may be capitalised.

Capitalisation of costs ceases when the asset is at the location and condition necessary for it to be operating in the intended manner.

Subsequent costs incurred in enhancing or refurbishing the asset is capitalised when the costs incurred improves the condition of the asset beyond its originally assessed standard of performance or capacity. This may occur if the annual service potential of the asset improves or if its useful life is increased or if its current and residual value is increased. Similarly, where the service potential and/or useful life of an asset is increases as a result of the replacement of component parts, the associated cost the replacement will be capitalised.

5.1.2. Expense

As capitalisation of costs ceases when the asset is at the location and condition necessary for it to be operating in the intended manner, daily operating costs are expensed. These include enhancements and refurbishments that do not increase the service potential and/or useful life of the asset. The replacement of component parts are also usually treated as maintenance expenses unless the service potential and/or useful life of the asset is increased as a direct result of the replacement of the component. Where this replacement is to repair the asset and does not increase the life of the asset but allows it to operate or continue in its normal capacity, the costs incurred are expensed. Any minor repairs and maintenance costs that do not increase the life of the asset but allows it to operate in its normal capacity in an efficient manner throughout its useful life are considered to be of a recurrent nature and will be expensed.

Expenditure on general research activities is expensed. These activities include those:

- Aimed at obtaining new knowledge
- Searching for, evaluating and final selection of, application of research findings or other knowledge
- Searching for alternative materials, devices, products, processes and systems or services
- Formulation, design evaluation and final selection of possible alternatives for new or improved material, devices, products, processes, systems or services

5.2. Budget formation

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

5.2.1. LinkWater's budgeting process

The Business Planning Framework provides a documented and structured process to be followed by each business group.

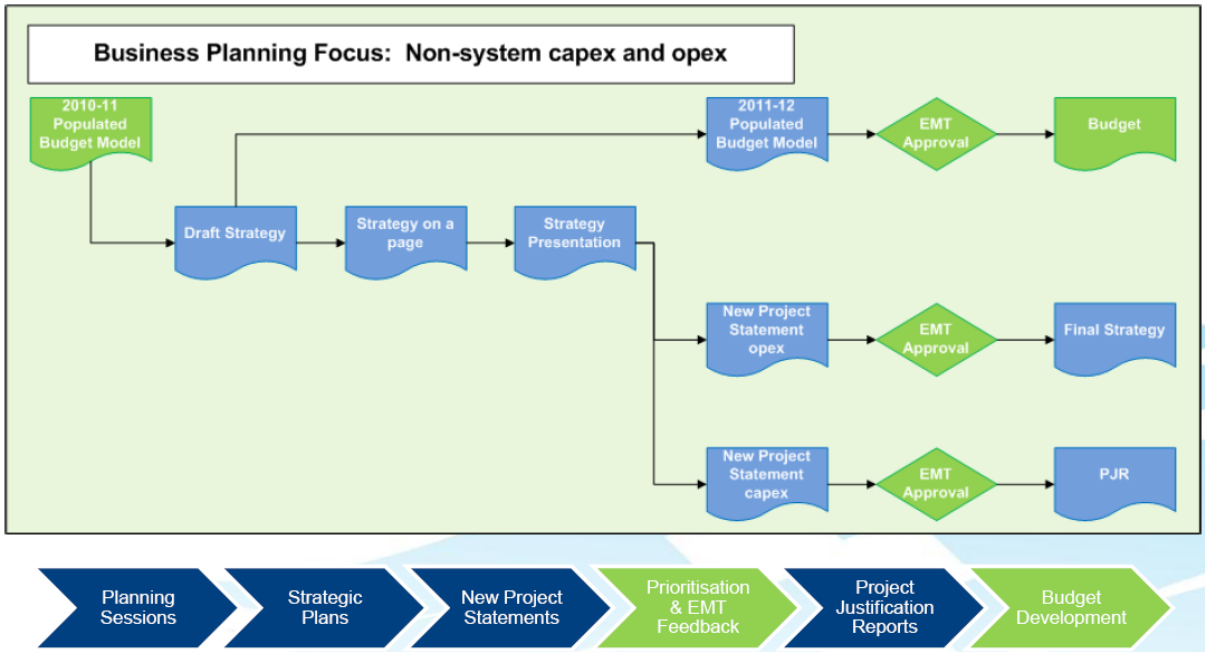
The process requires each business group to prepare an annual strategy document identifying all planned activities necessary to support the delivery of the capital and maintenance programs of work generated by the Asset Management Framework (AMF) and to meet other objectives arising from the Strategic Plan. The business group strategies identify the need for the proposed activity and the associated cost. Additionally, all of the proposed activities in the business group strategies are assessed against the corporate risk framework to ensure risks are adequately identified, analysed and managed.

Following the completion of all business group strategy documents, the Executive Management Team (EMT) undertakes a review to ensure that each strategy is aligned with the AMF and/or the Strategic Plan. Where a proposed activity cannot demonstrate this relationship, it is removed from that business group's strategy document.

Once EMT has determined the acceptable activities proposed by the different business groups, it undertakes a moderation and prioritisation process according to need, risk and any direction established by the Board.

Following the prioritisation phase, the remaining activities form the annual corporate and operations program of work. This program of work informs the content of the Operational Plan, annual budget and the Regulatory Submission.

Figure 3 below presents an overview of the process used by LinkWater.



- **Figure 3 Budget planning process**

Within its submission LinkWater states that it has developed thier operating budget using a bottom up approach - where zero base budgets have been developed to estimate costs for the 2012/13 financial year.

Good industry practice for a water utility's policy and procedure would require, where appropriate:

- Demonstration of clear linkages with the organisation's corporate strategic plan, policy and objectives (eg in relation to water supply provision, demand forecasting, asset management etc)
- The use of master planning of its water system, including trunk infrastructure planning, preliminary infrastructure sizing, modelling and forward costing
- The use of a defined asset management system based on condition assessments and/ or risk profiles
- The consideration of relevant legislation and state-wide planning directions
- Clear strategic framework spelt out (strategic/tactical/operational objectives) for a particular issue of activity. For example, management of "critical water mains" to prevent failure.
- Definition and specification of the necessary and sufficient information requirements to assess asset/system performance against those objectives
- Asset/system performance assessment process
- Gaps identification (ie shortfalls in performance)
- Risk assessment framework defined
- Decision-making framework and prioritisation process specified, including "appetite for risk" (this should cover the asset class and/or classes being considered, but also be in context of how decisions are made in a broader organisational context)
- Options identification and evaluation process, including how the preferred option is selected (economic, triple bottom line/multiple criteria assessment, stakeholder input, other). Options assessments should consider the "do nothing" base case. Within the context of a water utility, the "do nothing" base case should describe the impact and consequences of not taking action. A multiple criteria assessment to ensure a triple bottom line approach for determining the recommended solutions should also be used. Using a standardised process to conduct this assessment will facilitate justification and prioritisation of a project over another
- How the works and related expenditure projects and programs are determined from the options identification and evaluation process
- The identification of cost drivers to determine whether a project is adequately justified and therefore prudent
- The documentation of the project/program selection and prioritisation, through close-out reports and approvals gateways
- Specification of performance evaluation measures for the project on implementation
- Feedback loops
- The production of adequate documentation and reporting for each process, approvals within a project management and delivery framework

A good governance process should address and document:

- The identification of specific project drivers
- Options likely to address the drivers
- How the recommended option was selected
- The approved project cost and its basis
- The evaluation of economic, technical, environmental and regulatory tests
- Risks and how they are to be managed
- Critical success factors for the project
- The approval process
- The implementation process
- The project performance and evaluation – what went well, what can be learned from the performance, and whether the critical success factors were addressed
- The comparison of the actual, as-built cost with the original estimate upon which approval was sought and how that would have impacted the merit order of options considered

5.2.2. Good industry practice for capital budgeting

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

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

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

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

Capital project budgeting

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

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

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

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

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

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

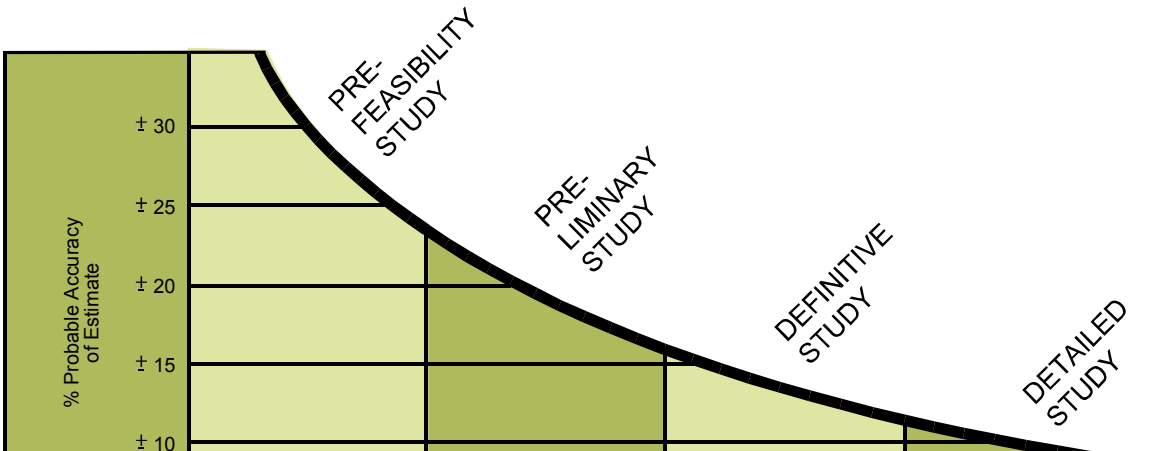
- A phased process, starting with a project outline, through to defined requirements for business cases and final approvals
- A tiered structure, with differentiated requirements and degrees of documentation and review for projects depending on their cost
- Fully supported capital expenditure approval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

For historic projects, the process should address:

- How the project was implemented
- How the project performed – successes and lessons learned
- How the project addressed the original need
- How the project addressed the critical success factors
- How the as-built cost compared with the original estimate

- If the as-built cost of the project changed the order of merit of the options considered at the options analysis stage

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



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

- **Figure 4 Typical estimation accuracies and expected documentation**

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

Operational expenditure budgeting

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

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

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

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

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

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

- A stable and transparent commercial environment which does not discriminate between users
- The same market outcomes as would be achieved if the market for its regulated services was contestable
- Competition in the provision of its regulated services wherever practicable
- The commercial viability of the regulated utility, through the recovery of efficient costs associated with the regulated services, and a reasonable return on the utilities approved capital invested in its regulated assets and business systems
- Recovery of only those costs related to the provision of the regulated services

- Fairness in the charges made for the regulated services, including the progressive removal of cross-subsidies
- Maintenance of service delivery levels subsisting at the beginning of a regulatory period and an improvement of service delivery levels during the period contemplated by a regulator's final decision
- Maintenance of the regulated assets such that, at the end of regulatory period, the regulated assets are able to continue to provide regulated service delivery without above-average expenditure on upgrades or critical maintenance and continue the service delivery levels previously achieved

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

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

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

This reasonably efficient level of expenditure should then be escalated forward through each year of the regulatory period under review, on the basis of its sensitivity to changes in the key drivers of an expenditure category and recognising material changes in the asset base in future years. For example, the key driver of meter-reading costs is likely to be customer numbers, since meter reading costs will increase as the number of customer accounts increase[2].

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 industries operational expenditure.

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[2] 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.

5.2.3. Comparison of LinkWater's budgeting process with good industry practice

The intent of LinkWater's budgetary process is similar to good industry practice, however there are opportunities for improvement. The development of concise sections within the standard reports that address the basic questions of need and cost driver, options assessment and cost estimates with standardised accuracy envelopes and contingency, relevant to the phase of the project. This is anticipated to be of interest to the Board and regulator.

In addition, after the receipt of strategic grid directions the development of a plan that informs prioritisation of works would be useful.

5.3. Strategic development plans

LinkWater have not developed strategic development plans as no direction has been given by the SEQ Water Grid Manager. LinkWater relies on the plans and frameworks developed as part of the asset management system.

5.4. Risk and asset management planning

LinkWater's understanding of its asset performance and condition has improved substantially in the period since the last review. Previously LinkWater had limited information on the condition of its assets and no formal policy or procedure documents. LinkWater has review and revised its Asset Management Framework and completed condition based assessments of most of its reservoirs, pumping stations, water qualities facilities and building.

LinkWater has made significant progress in enhancing its asset management capability to a standard commensurate with good operating practise, there remains considerable work to acquire a robust understanding of the condition of all of its inherited assets and integrate condition assessments into its AIMS.

Integration of all asset condition information into the capital and maintenance planning cycles is a key activity as it underpins LinkWater's ability to meet required levels of reliability and the consistent delivery of water which meets the standard set out in the Australian Drinking Water Guidelines 2004.

5.4.1. Asset management approach

LinkWater's asset management approach focuses on ensuring the network is capable of delivering the required level of service while optimising the whole-of-life costs of its assets. The whole-of-life approach encompasses the strategy development, performance assessment, planning, creation, operation, maintenance, refurbishment and replacement of long-lived assets.

LinkWater has established an asset register for all its assets, which will be maintained in its asset management system. This asset register contains the majority of the asset management functions. LinkWater's Maintenance Management Plan sets out guidelines to assess:

- Asset condition
- Performance capability

- Reliability and availability

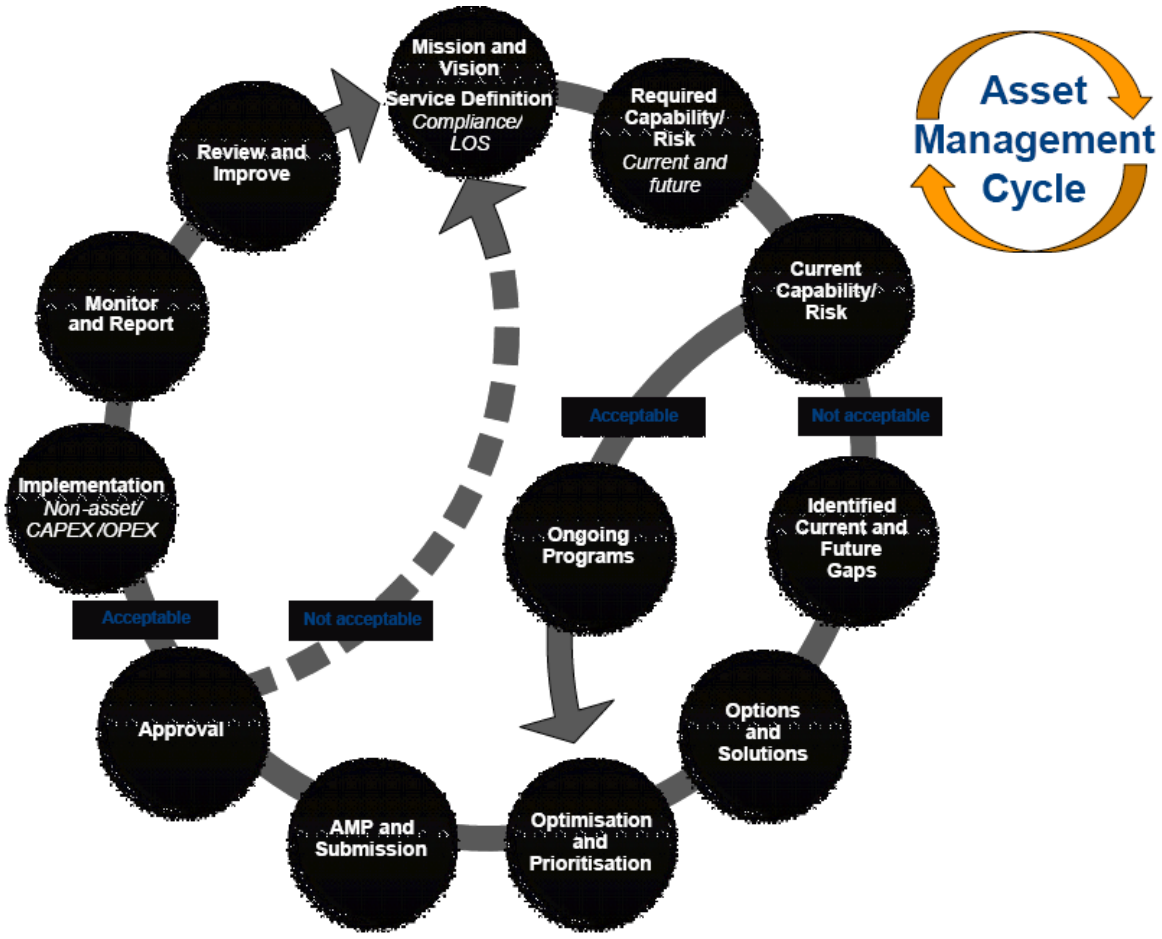
LinkWater's asset condition management focuses on assessing the condition and rate of deterioration of its assets and implementing appropriate works to maximise their life and serviceability. A particular focus is on minimising corrosion of the mainly metallic pipelines used by LinkWater; this applies to cathodic protection and maintaining coating integrity. Without such tracking and protection, the assets would suffer premature failure, which would lead to service losses and increased costs. This function also addresses the risk to pipeline workers from electrical faults conveyed by the metallic pipes.

LinkWater did not inherit asset management frameworks, data, systems or staff following the transfer of assets to it. A third of LinkWater's assets were inherited from the former council water businesses. However, LinkWater advises that these assets were transferred to LinkWater with incomplete asset condition details and maintenance history.

During 2011, LinkWater completed condition based assessments of most of its reservoirs, pumping stations, water quality facilities and buildings. A detailed desktop study of pipeline assets was completed and will be complemented with condition information to be collected over 2012. Following the condition assessments, a Reservoir Management Program documenting a justified and efficient 20 year program for inspection, maintenance and capital repair/renewal for all of its reservoir assets was developed. Similar Management Programs have commenced for LinkWater's trunk mains and these will form the basis of future capital and maintenance works programs to be submitted to the Authority. Collectively this information provides a very robust basis to identify the works necessary in the short to medium term and provides a longer term view of future works.

5.4.2. Asset management framework

LinkWater has an asset management planning framework (AMF) which establishes a capital and maintenance program to meet Strategic and Operational Plans and service obligations. LinkWater's approach to asset management is based on asset management cycle, as outlined below.



LinkWater engaged an external expert to review its AMF. Key outcomes from this review were:

- The enhancement of processes and tools such as New Project Statements (NPS) and Project Justification Reports (PJR) to ensure a consistent approach to operational and capital project proposals. These are supported by Guidelines, the Risk Management Framework, prioritisation procedures and cost estimation guidelines
- A substantial review of the asset management functionality within the SAP system was undertaken to develop a 'best practice' system
- A study was undertaken to define parameters to be used for LinkWater's levels of service and key performance indicators
- The development of LinkWater's' Infrastructure Planning Strategy
- The development of a Maintenance Management Plan which outlines a gradual evolution from a regular scheduled maintenance approach to a more risk based approach
- The development of a Strategic Asset Management Plan, as required by legislation, which describes and links together LinkWater's strategic asset management framework. This process covers development of LinkWater's mission and vision, determining capabilities required, establishing current capability, identifying gaps, developing options and solutions, developing ongoing programs, optimisation and prioritisation of programs and projects, and approval process

The asset management planning cycle covers:

- Capital Planning – the identification of the level of performance required from the network to achieve LinkWater's service obligations within an acceptable level of risk; the determination of the current and projected capacity of the network to achieve those service obligations; the development of projects and programs that will sustain current performance, and enhance it where required; monitoring and reporting of outcomes and ongoing improvement
- Maintenance Planning – the Maintenance Management Plan (MMP) outlines a gradual evolution from a regular scheduled maintenance approach to a more risk based approach and is major input into the AMF
- Routine Maintenance - designed according to either manufacturer's recommendations or on an evidence based maintenance cycle. All maintenance activities are carried out according to pre-defined chronological, usage, condition or performance criteria
- Risk-based Maintenance - risk-based maintenance according to a Reliability Centred Maintenance (RCM) process which includes conducting a criticality analysis, determining failure modes and then determining maintenance tasks.

5.4.3. SKM's assessment

LinkWater has made significant progress in developing robust and mature asset management processes and procedures for comprehensive asset information. While there are still some deficiencies in LinkWater's asset performance and condition assessment, LinkWater has initiated a robust process to obtain a better understanding of its assets and their conditions as well as a management system to develop asset performance standards that meet good industry standards.

5.5. Corporate directives

The Strategic Plan summarises LinkWater's vision, values, goals, business drivers and key corporate expectations. LinkWater vision is to be a leader in the planning, development and transport of bulk water and related services. Their mission is to move water to where it's needed. Their employees value excellence through teamwork and professionalism. Team members should demonstrate LinkWater's values through:

- a safe, healthy and happy approach to work
- a professional, adaptive and united approach to work outcomes
- a commitment to innovation and sustainability
- integrity
- high performance and celebration of our successes
- open, honest, appropriate and timely communication
- respect for others and acceptance of diversity in their workplace
- supportive behaviour to all colleagues

5.6. External drivers

5.6.1. Demand forecasting

Under the Market Rules, as part of the grid instruction process, each distribution service provider provides a monthly demand forecast to the SEQ Water Grid Manager, detailing the projected monthly water demands for the following 12 months.

The SEQ Water Grid Manager references the System Operating Plan (SOP) to determine the appropriate source allocation to supply this demand and instructs the water grid service participants (GSPs) (LinkWater and Seqwater) accordingly. LinkWater and other GSPs must submit their expected capacity to supply or transport using their respective water infrastructure on a monthly basis. The SEQ Water Grid Manager then analyses demand trends, focusing on seasonal variation and peaking factors, and issues monthly grid instructions that specify the volumes of water to be released, the sources of release and the volumes to be delivered to specific demand zones.

While the Market Rules require LinkWater's best endeavours to comply with a grid instruction, unanticipated changes in actual monthly demand, water quality issues or unplanned maintenance may not always make this possible. When/if this occurs, LinkWater is required to advise the SEQ Water Grid Manager as soon as possible that it is unable to comply in whole or part with a grid instruction.

LinkWater's variable operating costs are largely driven by the assets required to meet the grid instructions to meet demand. When operating in drought mode, greater reliance is placed on LinkWater's interconnecting pipes. This requires greater capacity to pump water from one region to another, resulting in higher energy costs. When the water grid is not operating in drought mode, the requirement for pumping is reduced and regional water supply is used to meet demand instead of the interconnected pipes.

Meeting demand by gravity feed rather than pumping minimises electricity costs. However, demand cannot always be met via gravity feed due to the hydraulic limitations of the network and demand in terms of volume, flow and pressure. In these instances, LinkWater uses its pumping capability to ensure that water is delivered to meet grid instructions.

LinkWater's forecast capital expenditure is based on the SEQ Water Grid Manager's proposed forecast demand volumes and a costed program of work to meet the requirements of its performance obligations.

5.6.1.1. SKM's Assessment

LinkWater does not have nor does it require a demand forecasting policy or process. The forecast capital expenditure is based on the demand forecast provided to it by the SEQ Water Grid Manager, which is based on the demand forecast provided by the water distribution/retail businesses. Given the market rules and arrangements, the process through which LinkWater uses the demand forecast provided to it by the SEQ Water Grid Manager appears reasonable.

In the absence of strategic grid wide direction, LinkWater is not able to develop strategic development plans and as such has had to identify and prioritise capital expenditure as it has assessed the need against it own risk and procedures. This may have resulted in more projects being actioned as LinkWater attempts to meet its obligations for all contingencies within the various timeframes as appropriate to grid wide agreed contingencies in specific timeframes.

It is understood that strategic grid wide direction is being developed by other entities.

5.6.2. Standards of service review

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

- *Water Act 2000*
- *Water Supply (Safety and Reliability) Act 2008*
- *South-East Queensland Water (Restructuring) Act 2007*
- The Market Rules: SEQ Water Market
- SEQ Water Grid Quality Management Plan
- South East Queensland Water Grid: Grid Contract Document
- South East Queensland System Operating Plan (SOP)
- Grid Instructions
- Regulatory licences

LinkWater's current broad operating obligations under are to:

- Maintain its infrastructure to ensure compliance with the SOP, Market Rules, Grid Contract Document and Operating Protocols
- Make available water which meets water quality specifications set out in its Drinking Water Quality Management Plan
- Fulfil its governance and compliance obligations as required under the State Water Authorities Governance Framework

Within its submission, LinkWater identifies its operating obligations to be:

- Develop an annual Water Supply Asset Plan (WSAP) consistent with the requirements of the SOP
- Ensure that LinkWater's infrastructure is:
  - Operated and maintained in accordance with good operating practice
  - At all times able to comply with Grid Instructions, Operating Protocols and Operating Instructions
- Meter and estimate water volumes at bulk supply points in accordance with the Market Rules
- Fulfil its governance and compliance obligations as required under the State Water Authorities Governance Framework

- Make available water which meets water quality specifications set out in its Drinking Water Quality Management Plan (DWQMP), any applicable Grid Contract Document and Operating ProtocolsLevels of service that define the parameters of the service that LinkWater provides are a fundamental requirement for any detailed design and operational planning. They are also useful as organisational Key Performance Indicators (KPIs). Detailed levels of service for LinkWater have not been defined. LinkWater has undertaken a study to define parameters that would provide appropriate outcomes. Wider acceptance of these is expected to occur through consultation processes arising out of the amended SOP during the 2012 calendar year

5.6.3. SKM's assessment

As outlined above, LinkWater does not have clearly defined levels of service. However, LinkWater has undertaken a study to identify appropriate parameters. It is recommended that LinkWater continue to seek clarification on these and develop appropriate, well defined levels of service.

5.7. Procurement

In response to a request for its procurement policies and practices, LinkWater provided two documents – Management Policy, Procurement, MGT-078 and Management Procedure, Procurement, MGT-095. These document LinkWater's formal policy and procedures for procurement.

5.7.1. Procurement policy

LinkWater seeks to comply with the fundamental requirements of the Queensland Government's State Procurement Policy (SPP) and the Local Industry Policy (LIP). The policy has four objectives:

- Advance government priorities
- Achieve value for money
- Ensure probity and accountability for outcomes
- Ensure sustainability

LinkWater's procurement policy seeks to advance the priorities of the government of the day and aims to achieve this by:

- Contributing to a competitive local market
- Contributing to a sustainable future
- Supporting fairness and equity in employee conditions
- Contributing to improved workforce skills and training among procurement professionals

It includes a commitment to achieving value-for-money outcomes and recognises the need to assess procurement activities by considering both cost factors (eg whole-of-life costs, transaction costs) and non-cost factors (eg fitness for purpose, quality and sustainability). This procedure incorporates competitive procurement processes, consistent with the SPP guidelines, to ensure LinkWater's program of works is delivered cost effectively. As a result of this process, LinkWater obtains a market-tested price for the delivery of its programs. In addition to the aim of achieving value for

money, LinkWater's procurement policy seeks to achieve sustainability and minimise the impact on the environment and human health. To achieve this, LinkWater's suppliers must be ethical and socially responsible, and provide environmentally sustainable goods and services.

The policy also commits LinkWater to conducting their procurement processes ethically and transparently and with probity and accountability. This is to ensure that all procurement processes:

- Are fair and impartial
- Are transparent
- Maintain the confidentiality and security of information and materials
- Effectively manage conflicts of interest

5.7.2. Procurement procedure

LinkWater's procurement procedure provides guidelines for obtaining goods, services and assets. It provides thresholds in approaching the market for procurement of goods and service where contracts with values:

- Less than $5,000 may be obtained from one supplier
- Between $5,000 and $20,000 must have evidence of contestability with two prices or quotes
- Between $20,000 and $100,000 require a formal process of seeking two or more written quotes
- Between $100,000 and $250,000 need a minimum of three tenders, proposals or quotes through a formal invitation to those with special expertise
- Between $250,000 and $100 million must have a public request for tender
- For major works of greater than $100 million, an expression of interest must be sought, and based on experience and capability, three to five short-listed suppliers be invited to tender.

Approval to use a sole source may be permitted in circumstances where only one supplier has the capability to meet the need or there is genuine urgency. Justification to proceed with a sole supplier, under either circumstance, requires documented justification and approval by the Chief Executive Officer (CEO).

The procedures require that, before procurement, justification for the procuring good, services or capital works be approved and funds made available. Justification needs to detail:

- Why the procurement is required, including the drivers
- The likely cost
- Potential risks
- Resourcing
- Bundling and program of works
- Procurement strategy
- Stakeholder management

Where funds have been allocated for initial investigations, a feasibility study (to obtain further information and scoping) may be required to develop a business case which may be used to support the justification.

The procedures outline the steps LinkWater uses in the tender evaluation process, how the contract will be awarded, executed and delivered, and how payments are made to the successful vendor. This is a means of keeping official records and enables accountability.

5.7.3. SKM's assessment

Based on our review of LinkWater's procurement policy and procedure, we conclude that it is operating in accordance with good industry practice, with one exception. We recommend that for procuring goods and services between $20,000 to $100,000, at least three quotes are obtained instead of two. We recognise that while LinkWater's current procedure is in line with Queensland Government recommended guidelines, it is not necessarily consistent with good water industry practice. LinkWater identified a vigorous procurement methodology, including tender assessment and triple bottom line assessments to ensure sustainable outcomes.

LinkWater could improve its procurement processes by embedding a review process in its policies and procedures to ensure that any issues are recorded and lessons for future procurement documented. This may include identifying what went well or what did not, how the vendor performed, how well the project addressed critical success criteria, and how the actual cost compared with the original estimate upon which approval was obtained.

5.8. Cost allocation

LinkWater reports organisational overheads separately and has not allocated overhead costs. All overhead costs are incurred to provide regulated bulk water supply services. As LinkWater does not engage in any other activity whether regulated or non-regulated, the approach taken to treat all overhead cost as a separate operating expenditure item is appropriate.

LinkWater does not currently have a comprehensive cost allocation method by which to allocate FTEs to assets or corporate costs to assets and as such was unable to provide this information. LinkWater indicated that:

> *"This is largely a result of the requirement of the Water Market Rules to report cost information according to Fixed; Variable and Capital. Within this format the Fixed Costs represent LinkWater's corporate, operational and maintenance costs. Historically these costs have been reported discretely with no subsequent allocation to asset or activity. LinkWater has continued this approach in 2011-12 and 2012-13."*

LinkWater discussed the issue of cost allocation in its 2011/12 Grid Service Charges Submission[3]. LinkWater suggested that consultation would need to occur with the Authority to develop a cost allocation methodology.

5.8.1. SKM's assessment

SKM suggest that there would be merit in the Authority agreeing with LinkWater, and Seqwater, the data to be captured and mechanism for apportionment of costs to allow assessment of cost allocation in the future.

[3] LinkWater Regulatory Submission to the Queensland Competition Authority, 31 March 2011

6. Operational expenditure

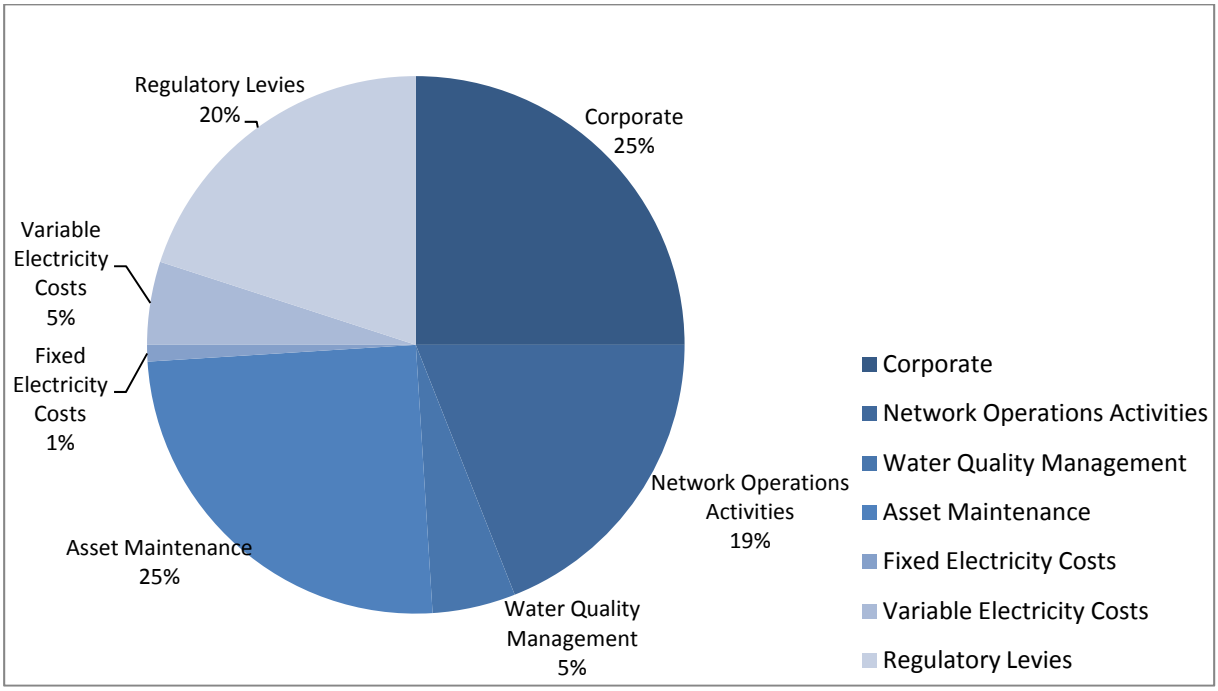
This section contains the review of the prudency and efficiency of LinkWater's operating expenditure. The section is structured as follows:

- Overview of LinkWater's operating costs for 2021/13
- SKM's sample selection process
- Overview of prudency and efficiency reviews of LinkWater's operating expenditure
- Detailed prudency and efficiency reviews of the selected sample
- Summary and recommendations

6.1. Overview of operating expenditure

LinkWater's proposed operating costs for 2012/13 comprises fixed operating costs of $43 million and $2.8 million in variable operating costs. In addition, regulatory fees and levies (the Authority and Queensland Water Commission (QWC)) amount to some $11.3 million. This fixed operating cost comprises of $14.4 million in corporate, $10.9 million for network operations, $3.0 million for water quality management, $13.9 million for asset maintenance and $0.8 million for electricity. Variable operating costs include $2.3 million for energy required to operate the water pumping facilities and $0.5 million for chemical dosing to meet water quality standards. Payments to QWC are expected to amount to some $10.6 million while the Authority levy is forecast to amount to $0.7 million in 2012/13.

The proportionate breakdown of the cost categories are shown in **Figure 5**. It can be seen that for LinkWater, most of the costs incurred are classified in the fixed operating cost category with variable cost accounting for only about 5% of its operating expenditure.



- **Figure 5 LinkWater – 2012/2013 operating expenditure**

As can be seen in **Table 8**, LinkWater's overall operating expenditure is forecast to remain stable in 2012/13 relatively to 2011/12. An expected nominal increase of just 0.3% is expected, amounting to less than $160,000. Expected (significant) cost increases in corporate costs, network operations, fixed electricity cost and chemical dosing, are balanced by reductions in asset maintenance costs and variable electricity costs. Internal operating costs are expected to decrease and the increase in costs is due to the expected increases in regulatory levies.

- **Table 8 LinkWater – operating expenditure profile**

Source	2011/12 ($)	2012/13 ($)	% increase
Fixed Operating Cost			
Corporate	13,067.5	14,407.7	10.3%
Network Operations Activities	9,609.9	10,864.7	13.1%
Water Quality Management	2,967.8	2,998.1	1.0%
Asset Maintenance	16,976.2	13,935.6	-17.9%
Electricity costs	386.1	777.4	101.3%
Total Fixed Operating Cost	43,007.5	42,983.5	-0.1%
Variable Operating Cost			
Electricity	2,580.0	2,320.1	-10.1%
Chemical Dosing	386.1	532.9	38.0%
Total Variable Operating Cost	2,966.1	2,853.0	-3.8%
Regulatory Levies			
Queensland Water Commission	10,329.0	10,587.2	2.5%
Queensland Competition Authority	646.0	683.5	5.8%
Total Regulatory Levies	10,975.0	11,270.7	2.7%
Total Operating Cost	**56,948.6**	**57,107.2**	**0.3%**

LinkWater operating costs are driven by either defined legislated obligations or the requirement to:

- Maintain its infrastructure in accordance with good operating practice
- Ensure that its infrastructure is at all times able to comply with grid instructions and operating instructions
- Make available water which meets water quality specifications set out in its Drinking Water Quality Management Plan, any applicable Grid Contract Document and Operating Protocols
- Deliver potable water in a manner that meets quality assurance under its Grid Contract Document

6.1.1. Sample selection

In this review, SKM in conjunction with the Authority has identified a number of operating expenditure items for closer scrutiny. A total of 12 operating expenditure items were identified accounting for $17.6 million, 30.8% of LinkWater's total operating expenditure. **Table 9** shows the selected operating expenditure items and their values.

- **Table 9 LinkWater Sample Selection**

	Operating Expenditure item	Asset	Value $(2012/13)
1	Maintenance & Operations – Planned Reservoir	Pipes, reservoirs, pump stations	2,515,144
2	Maintenance & Operations – Planned Balance Tanks	Pipes, reservoirs, pump stations	201,937
3	Maintenance & Operations – Variable Operational	Pipes, reservoirs, pump stations	1,166,785
4	Chemical Cost	Dosing (chemical) cost	532,863
5	Operational Activities – System Modelling & Network Information	Pipes, reservoirs, pump stations	1,004,937
6	Operational Activities – GIS	Pipes, reservoirs, pump stations	850,905
7	Operational Activities – Service Delivery	Pipes, reservoirs, pump stations	1,166,630
8	Operational Activities – Network Asset Ops	Pipes, reservoirs, pump stations	1,426,295
9	Operational Activities – Water Laboratory Testing	Pipes, reservoirs, pump stations	1,660,008
10	Property Leasing	Overheads	1,509,348
11	IT & Knowledge Management	Overheads	3,083,837
12	Corporate Services	Overheads	2,434,981

Note: Operating expenditure item 1, 2 and 3 have been assessed together

6.2. Overview of prudency and efficiency

Table 10 shows an overview of the final assessment made for each project of the 2012/13 expenditure items chosen for assessment of prudency and efficiency. A full summary with recommendations for each project can be found in the following sections of this report.

- **Table 10 Overview of prudency and efficiency of operational expenditure sample selection**

	Operating Expenditure item	Value ($)	Prudent	Efficient
1	Maintenance & Operations – Planned Reservoir	2,515,144	Prudent	Efficient
2	Maintenance & Operations – Planned Balance Tanks	201,937	Prudent	Efficient
3	Maintenance & Operations – Variable Operational	1,166,785	Prudent	Efficient
4	Chemical Cost	532,863	Prudent	Efficient
5	Operational Activities – System Modelling & Network Information	1,004,937	Prudent	Efficient
6	Operational Activities – GIS	850,905	Prudent	Efficient
7	Operational Activities – Service Delivery	1,166,630	Prudent	Efficient
8	Operational Activities – Network Asset Ops	1,426,295	Prudent	Insufficient information to assess all expenditure as efficient
9	Operational Activities – Water Laboratory Testing	1,660,008	Prudent	Efficient
10	Property Leasing	1,509,348	Prudent	Efficient
11	IT & Knowledge Management	3,083,837	Prudent	Efficient
12	Corporate Services	2,434,981	Prudent	Efficient

6.3. Maintenance and Operations - Planned Reservoir, Planned Balance Tanks and Variable Operational

6.3.1. Overview of operating expenditure

The items discussed here are for Maintenance and Operations, as shown below in **Table 11**:

- Planned activities - Reservoirs - $2,515,144
- Planned activities - Balance tanks - $201,937
- Variable Operations - $1,166,785

The activities are for general maintenance/inspection service undertaking planned checks and maintenance at agreed intervals on the reservoirs and balance tanks. The variable operational work is associated with reactive work not allocated to structural, mechanical or electrical asset categories. The majority of this work will be on the pipe network. Reactive works are repairs over and above the agreed routine maintenance activities provided under the maintenance services contract.

- **Table 11 Maintenance and Operations Planned**

Submission to Authority	Cost ($000)		
	2011/12	2012/13	% change
Reservoirs and Balance Tanks	2,620	2,717	+3.7%
Variable Operations	948	1,167	+23.1%
Total	3,568	3,884	+8.9%

6.3.2. Provided documentation

The key reference documents used for this review are:

- *Regulatory Submission to the Queensland Competition Authority*, LinkWater, March 2011
- *Regulatory Submission to the QCA – 2012-13 Grid Service Charges*, LinkWater, February 2012
- *Minutes - SKM/QCA Request for Information Follow-up Meeting*, LinkWater, 13th March 2012
- *Maintenance Management Plan – Final Draft*, LinkWater, March 2012
- *Optimized Asset Operations and Maintenance: Maximizing Asset Performance*, SAP, no date
- *Operations and Maintenance Deed*, LinkWater, 2010

6.3.3. Prudency

The items discussed here are for Maintenance and Operations, Planned activities for:

- Reservoirs ($2,515,144) and Balance tanks ($201,937) - $2,717,000. The activities are for agreed general maintenance and inspections on the reservoirs and balance tanks. The following facilities are listed as areas where tasks are allocated (**Table 12**)
- Variable Operations ($1,166,785) costs are associated with unplanned maintenance activities (excluding the unplanned asset categories of mechanical, electrical and structural) generally associated with the pipe network

Table 12 Asset list for Reservoirs and Balance Tanks

Asset	Asset type
Alex Hills 1	Reservoir
Alex Hills 2	Reservoir
Alex Hills 3	Reservoir
Alex Hills 4	Reservoir
Alex Hills 5	Reservoir
Alex Hills Elevated Tower	Reservoir
Aspley	Reservoir
Green Hill 1	Reservoir
Green Hill 2	Reservoir
Heinemann Rd 1	Reservoir
Heinemann Rd 2	Reservoir
Heinemann Rd 3	Reservoir
Kimberley Pk	Reservoir
Kimberley Pk BOH Tank	Reservoir
Kuraby	Reservoir
Mt Cotton	Reservoir
Narangba 1	Reservoir
Narangba 2	Reservoir
Narangba 3	Reservoir

Asset	Asset type
Robina (Clover Hill)	Reservoir
Robina Mixing	Reservoir
Sparkes Hill 1	Reservoir
Sparkes Hill 2	Reservoir
Wellers Hill 1	Reservoir
Wellers Hill 2	Reservoir
Molendina	Balance tank
North Beaudesert 1	Balance tank
Stapylton	Balance tank

For the planned activities each of the facilities is allocated a number of maintenance plans with allocated staff numbers, duration and frequency. Please refer to **Table 13** for an example.

The majority of activities are classified as requiring one person with a limited number requiring two people. The activities are allocated time between one and three hours and a frequency of monthly, bimonthly, quarterly, half yearly and yearly.

The staff hours, allocated time and frequency are within expectations for a time based management plan. These are routine inspection and maintenance tasks for the reservoirs and balance tanks covering the structures, equipment, and grounds.

The tasks are prudent activities to maintain facilities associated with the delivery of bulk water.

- **Table 13 Example of maintenance plan allocation to an asset**

Maintenance Plan	Maintenance / Item / Text	Description	Number of Staff	Duration	Frequency	Annual hrs per task
WATER-10	External Reservoir Inspection	Alexandra Hills Elevated Tower	1	1.0	6	6
WATER-14	Alexander Hills Tower Service Inspection	Alexandra Hills Elevated Tower	1	1.0	6	6
WATER-09	Ext Reservoir Ins- Alexander Hills Res1	Alexandra Hills Reservoir 1	1	1.0	6	6
WATER-14	Alexander Hill Res 1 Service Inspection	Alexandra Hills Reservoir 1	1	1.0	6	6
WATER-09	Ext Reservoir Ins- Alexander Hills Res2	Alexandra Hills Reservoir 2	1	1.0	6	6
WATER-14	Alexander Hill Res 2 Service Inspection	Alexandra Hills Reservoir 2	1	1.0	6	6
WATER-09	Ext Reservoir Ins- Alexander Hills Res3	Alexandra Hills Reservoir 3	1	1.0	6	6
WATER-14	Alexander Hill Res 3 Service Inspection	Alexandra Hills Reservoir 3	1	1.0	6	6
WATER-09	Ext Reservoir Ins- Alexander Hills Res4	Alexandra Hills Reservoir 4	1	1.0	3	3
WATER-14	Alexander Hill Res 4 Service Inspection	Alexandra Hills Reservoir 4	1	1.0	3	3
WATER-09	Ext Reservoir Ins- Alexander Hills Res5	Alexandra Hills Reservoir 5	1	1.0	6	6
WATER-14	Alexander Hill Res 5 Service Inspection	Alexandra Hills Reservoir 5	1	1.0	6	6
WATER-07	External Reservoir Ins. Aspley Res	Aspley Reservoir	2	2.0	6	24
WATER-14	Aspley Reservoir Service Inspection	Aspley Reservoir	2	2.0	6	24
WATER-08	External Reservoir Ins-Green Hill	Green Hill Reservoir 1	2	2.0	12	48
WATER-14	Green Hill Service Reservoir Inspection	Green Hill Reservoir 1	1	1.0	12	12
WATER-08	External Reservoir Ins-Green Hill Res 2	Green Hill Reservoir 2	2	2.0	12	48
WATER-14	Service Reservoir External Inspection	Green Hill Reservoir 2	1	1.0	6	6
WATER-09	Ext Reservoir Ins- Heinemann Rd Res 1	Heinemann Rd Reservoir 1	1	1.0	6	6
WATER-14	Heinemann Rd Res 1 Service Inspection	Heinemann Rd Reservoir 1	1	1.0	6	6
WATER-09	Ext Reservoir Ins- Heinemann Rd Res 2	Heinemann Rd Reservoir 2	1	1.0	6	6
WATER-14	Heinemann Rd Res 2 Service Inspection	Heinemann Rd Reservoir 2	1	1.0	6	6
WATER-09	Ext Reservoir Ins- Heinemann Rd Res 3	Heinemann Rd Reservoir 3	1	1.0	6	6
WATER-14	Heinemann Rd Res 3 Service Inspection	Heinemann Rd Reservoir 3	1	1.0	6	6

6.3.4. Efficiency

Calculation of costs

A review of the 2011/2012 figures shows that the average hourly rate for work on reservoirs and balance tanks is $340/hour, the hourly rate for trade work from **Table 14** is approximately $300/hour, for operational work not associated with trade skills is $356/hour. The hourly unit rates were established from the existing Alliance arrangement (which was competitively tendered).

- **Table 14 2011/12 rates for planed activities on Reservoirs and Balance Tanks**

Operations & Maintenance per Asset Category	Hours	2011/12	Calculated hourly rate $/hr
Planned Reservoir (total)	5,403	1,889,608	350
Mechanical	454	139,213	306
Electrical	225	66,855	297
Other	249	88,849	356
Operational	4,474	1,594,691	356
Planned Balance Tank (total)	258	85,169	330
Mechanical	96	29,300	306
Electrical	34	10,065	297
Other	15	5,490	356
Operational	113	40,314	356

The average cost for a trade qualified activity including vehicle and an assistant is between $150 and $200/hour excluding travel time. There are a number of items that can be included in the cost framework eg travel time can be included in the hourly rate for at site work. The inclusion of these costs can inflate the hourly rate.

The data provided does not allow for a complete analysis and comparison against current market rates.

The expenditure is recurrent and future improvements in reliability and cost will be dependent on the successful completion of the asset management information project.

Delivery of service

The Operations and Maintenance services provided by the Service Contractor are a maintenance/inspection service undertaking planned checks and maintenance at agreed intervals. LinkWater advise there is only a minor allowance for repairs.

The strategies for planned maintenance regime are driven by the Drinking Water Quality Management Plan and the Asset Operations Strategy resulting in the Maintenance Management Plan.

This plan is delivered through the Service contract. The Service Contract has transitioned from an Alliance arrangement to a service delivery model per the deed of arrangement. This did not go to open tender due to risk of compensation given that at the time there was three years to run under the contract. Unit rates for the service delivery model were established from the existing Alliance arrangement deed (which was competitively tendered).

By the next Regulatory Submission LinkWater will have competitively tendered for the Service Contractor services in a purchaser provider model. LinkWater are moving to a smart purchaser model for the provision of maintenance activities and will be tendering for the provider side of the model in the 2012/2013 financial year.

Market conditions

With the mining industry competing to attract people for significant benefits, the ability to attract and retain staff to fill positions within the service contract model will become increasingly difficult and more expensive.

Efficiencies and economies of scale

The provision of maintenance services has been market tested with the implementation of the current deed. LinkWater have advised that the maintenances services will be market tested in the 2012/2013 financial year moving to a purchaser – provider model.

The maintenance for all (including the reservoirs and balance tanks) of the assets is done through one service provider making best use of the economies of scale.

Benchmarking

The costs drivers for this service provision are:

- Service contract rates and the required hours to complete the activities (fixed under the service contract)
- Asset condition resulting in increased inspection and repair requirements
- Interval between inspection are independent of asset usage
- Unplanned maintenance activities
- There is insufficient benchmarking data available to make a direct comparison however the following observation can be made
- Under the maintenance management plan the staff allocated, frequency of activity and time allocated for the performance of the activity are comparable with time based management plans.
- The hourly unit rates for the 2011/2012 year would appear to be high when compared with basic trade hourly rates. There is insufficient information to compare the hourly rates based on knowing what costs are contained in the hourly rate under the LinkWater maintenance deed
- LinkWater have stated that the service contract will be competitively tendered in the 2012/2013 financial year

The variable operating costs are approximately 10% of the total maintenance budget. General industry would regard 70% planned and 30% unplanned to be best practice. LinkWater's variable operating cost of 10% of total maintenance cost would be considered to be very good. This could be attributed to the age of assets and significant number of assets that are piping and structural. An in-depth study would be required to establish the characteristics of the asset portfolio that have resulted in this figure.

6.3.5. Summary

The planed Operations and Maintenance activities for the reservoirs and balance tanks are prudent as they are required to maintain these facilities to support the Drinking Water Quality Management plans. The costs for these activities are efficient given the derivation of the costs by the implementation of a time based maintenance activity plan and the costs contained in the current contract that was competitively tendered. LinkWater will be competitively tendering for this service in the 2012/2013 financial year and will be investing in improvements to their SAP based maintenance information system. The proportion for unplanned operational activities (10% of Total Maintenance Costs) is lower than that used by general industry number (30%), as can be seen below in **Table 15**.

- **Table 15 Overview of Maintenance Costs**

Operations & Maintenance per Asset Category	2011/12			2012/13			Calculated hourly rate from 2011/2012 data
	Hours	$	% of total	Calculated hours	$	% of total	
Planned Reservoir	**5,403**	**1,889,608**	**14%**	**7,191**	**2,515,143**	**21%**	**350**
Mechanical	454	139,213					306
Electrical	225	66,855					297
Other	249	88,849					356
Operational	4,474	1,594,691					356
Planned Balance Tank	**258**	**85,169**	**1%**	**612**	**201,937**	**2%**	**330**
Mechanical	96	29,300					306
Electrical	34	10,065					297
Other	15	5,490					356
Operational	113	40,314					356
Planned Pump Station	**9,043**	**2,935,955**	**21%**	**7,478**	**2,428,001**	**20%**	**325**
Mechanical	4,579	1,402,859					306
Electrical	975	289,410					297
Other	1,850	659,378					356
Operational	1,639	584,308					356
Planned Water Quality	**9,884**	**3,474,634**	**25%**	**6,871**	**2,415,440**	**20%**	**352**
Mechanical	854	261,687					306
Electrical	100	29,541					297
Other	90	32,080					356
Operational	8,841	3,151,326					356
Planned Trunk Mains	**1,013**	**344,323**	**2%**	**1,117**	**379,355**	**3%**	**340**
Mechanical	0	0					
Electrical	284	84,243					297

Operations & Maintenance per Asset Category	2011/12			2012/13			Calculated hourly rate from 2011/2012 data
	Hours	$	% of total	Calculated hours	$	% of total	
Other	122	43,532					357
Operational	608	216,548					356
Planned Land							
Planned Building							
Planned SCADA							
Condition Based	**5,798**	**1,826,938**	**13%**	**6,852**	**2,159,089**	**18%**	**315**
Mechanical	1,823	558,464					306
Electrical	2,492	739,773					297
Other	0	0					
Operational	1,483	528,701					356
Unplanned	**1,700**	**4,323,260**	**31%**	**3,000**	**1,825,036**	**15%**	**608**
Mechanical	833	1,581,677		**756**	427,012		565
Electrical	782	1,793,663		**423**	231,239		547
Other	0	0					
Operational	85	947,920	**8%**	**105**	1,166,785	**10%**	11,152
Other Controllable							
Mechanical		0					
Electrical		0					
Other		0					
Operational		0					
TOTAL	**30,398**	**13,935,083**		**30,839**	**11,924,001**	**86%**	

6.4. Dosing Chemical Costs

6.4.1. Overview of operating expenditure

Chemical costs are expected to amount to $533,000 in 2012/2013. As shown in **Table 16**, this is an 86% increase from that budgeted in 2011/2012. The operational expenditure relates to the Drinking Water Quality Management Plan and is for the provision of disinfection chemicals listed below:

- Sodium hypochlorite
- Aqueous ammonia
- Sodium hydroxide
- Sulphuric acid
- Gaseous chlorine 1 – 920 kg cylinders, 2 – 70 kg cylinders

Table 16 Chemical cost

Submission to Authority	Cost ($000)		
	2011/12	2012/13	% change
Chemical Costs	386	533	38.1%

This category examines the prices and quantities for disinfection chemical used at the sites shown in **Table 17**.

Table 17 Location of disinfection chemical dosing

Site Description	Transport Infrastructure	Site Address / UBD Reference
Landsborough WQF	NPI south	Caloundra Street, Landsborough UBD: 96 L17
Chambers Flat WQF	SRWP North	Chambers Flat Road, Chambers Flat UBD: 281 J15
Gramzow Road PS & WQF	EPI West	Gramzow Road, Mt Cotton UBD: 244 N10
Staypleton Balance Tank	NPI2	Vennor Drive, Luscombe UBD: 304 R7
Alexandra Hills Res & PS	Capalaba WTP to Alexandra hills reservoir	Alexandra Circuit, Alexandra Hills UBD: 204 Q4
Heinemann Road Res & PS	Stradbroke Island WTP to Heinemann Rd reservoir	Heinemann Road, Mount Cotton UBD: 245 H3

6.4.2. Provided documentation

The key reference documents used for this review are:

- *Regulatory Submission to the QCA – 2012-13 Grid Service Charges*, LinkWater, February 2012
- *Email Re: Tender Notification Summary for LINKWA-426487, LinkWater, 28/07/09*

- *Request for Tender - Provision of Supply and Delivery of Water Treatment Chemicals*, LinkWater, June 2011
- *Tables Supporting Fin/PRC/19*, LinkWater, no date
- *Pricing Schedule Provision of Water Treatment Chemicals FIN/PRC/19 - Template*, LinkWater, no date
- *TERMS OF ENGAGEMENT OF CONTRACTOR – SPECIALISED SERVICES: Contract No. 441980 - FIN/PRC/19 – Provision of Supply and Delivery of Water Treatment Chemicals*, LinkWater, no date
- *Pricing Schedule Provision of Water Treatment Chemicals FIN/PRC/19 - Redox Submission*, LinkWater, no date
- *Part F - Tenderers Response Schedule*, Redox, no date
- *Provision of Supply and Delivery of Water Treatment Chemicals*, Orica Chemicals, no date
- *Procurement and Evaluation Plan - Provision of Supply and Delivery of Water Treatment Chemicals*, LinkWater, July 2011
- *Tender Evaluation Score sheet –* [redacted] LinkWater, no date
- *Tender Evaluation Score sheet –* [redacted] LinkWater, no date
- *Tender Evaluation Score sheet –* [redacted] LinkWater, no date
- *LinkWater FIN/PRC/19 Submission 1, Orica Chemicals*, September 2011
- *Memorandum: Bulk Water Transport - Chemical Budget 2012-13*, LinkWater, December 2011
- *Project Management - Tender Process Standard Opertaing Procedure*, LinkWater, May 2010
- *Tender Evaluation Score sheet –* [redacted] LinkWater, no date

6.4.3. Prudency

The chemicals are used for the disinfection of water. With the physical nature of the water grid and distances involved in transporting water, the disinfection provided at the water treatment plant decays to below acceptable standards when in the network.

It should be noted that because consumers are also provided water with in close proximity to the water treatment plants the water treatment plants are also restricted to a maximum dosing rate.

LinkWater is required to maintain the levels of disinfection chemicals by reference to the Drinking Water Quality Management Plan and are required at points within the network to “top up” this level to maintain a safe drinking water supply.

Some of the factors that affect the consumption of disinfection chemicals are

- The volume of water to be pumped
- The distance the water is to travel
- The quality of the source water as compared to the quality required to be delivered
- Temperature of the water

The process associated with chemical disinfection is prudent given the characteristics of the water grid and the need to provide water of a quality to meet the water grid contracts and the Australian Drinking Water guidelines. It is also prudent to ensure the quantity and quality of the supply of chemicals being used for the disinfection of water supply to the South East Queensland community

6.4.4. Efficiency

Calculation of costs

Table 18 to **Table 25** are extracts from Calculation of costs (TRIM 501406) for the 2012/2013 budget provided by LinkWater to SKM in response to our request for information.

The calculation is built on a bottom up approach with estimates for quantity of water to be treated based on projected water flow (from the *Draft Operating Strategy*, November 2011), chemical dosing rates and chemical unit rates from the Orica contract costs plus a 5% escalation rate to account for probable annual inflation. It is noted that with in the calculation there is no allowance for variation in flow and that a factor is allowed for in the calculation of projected flows.

- **Table 18 Chemical unit rates 2012/13**

Chemical	Unit Price		
	2011/12	2012/13	% change
Sodium Hypochlorite	$0.18	$0.30	166%
Aqueous Ammonia	$1.08	$0.71	65%
Sodium Hydroxide	$0.25	$0.70	280%
Sulphuric Acid	$0.38	$0.50	131%
Gaseous chlorine 1 – 920 kg cylinders		$2.52	
Gaseous chlorine 2 – 70 kg cylinders		$5.15	

- **Table 19 LinkWater chemical rates comparison 2011/12 ($/L)**

Chemical	LinkWater unit rate	SKM unit rate	Seqwater
Sodium Hypochlorite	0.18	0.1802	$0.18
Aqueous Ammonia	1.08	0.98	
Sodium Hydroxide	0.25	0.15	

- **Table 20 Estimated costs for chemical dosing using hypochlorite**

	Litres of chemical per ML of water	Chemical Unit Price ($/L)	Dosing Cost (chemical $/ML of water)
Chambers Flat WQMF			
Sodium Hypochlorite	36.22	$0.30	$11.03
Aqueous Ammonia	4.54	$0.71	$3.24
Sodium Hydroxide	3.86	$0.70	$2.71
Sulphuric Acid	0	$0.50	$0.00
TOTAL			**$16.98**
Gramzow Road WQMF			

	Litres of chemical per ML of water	Chemical Unit Price ($/L)	Dosing Cost (chemical $/ML of water)
Sodium Hypochlorite	34.77	$0.30	$10.59
Aqueous Ammonia	7.52	$0.71	$5.36
Sodium Hydroxide	5.66	$0.70	$3.97
TOTAL			**$19.92**
Caloundra Street WQMF			
Sodium Hypochlorite	26.52	$0.30	$8.08
Aqueous Ammonia	9.24	$0.71	$6.58
Sodium Hydroxide	5.31	$0.70	$3.73
TOTAL			**$18.39**
Ferntree WQMF			
Sodium Hypochlorite	30	$0.30	$9.14
Aqueous Ammonia	0	$0.71	$0.00
Sodium Hydroxide	0	$0.70	$0.00
TOTAL			**$9.14**
Stapylton WQMF	No allocation has been made for this facility as the draft operating strategy has forecast nil southerly flow for the 2012/2013 year		

- **Table 21 Unit rate for gaseous chlorine**

WQMF Site	kg Cl2/ML of water	Chemical Unit Price ($/kg)	Dosing Cost ($/ML of H2O)	Rental ($/day)
Alexandra Hill – gaseous chlorine1 (920 kg cylinders)	1.28	$2.52	$3.23	$9.77
Heinemann Road – gaseous chlorine 2 (70 kg cylinders)	0.21	$5.15	$1.08	$7.18

- **Table 22 Monthly transport volumes for hypochlorite systems (ML/month)**

Month	NPI - South	NPI 2 - North	SRWP - North	EPI - West
Jul-12	868	155	961	124
Aug-12	868	155	961	124
Sep-12	900	150	930	120
Oct-12	930	155	961	124
Nov-12	900	150	930	120
Dec-12	992	155	2015	124
Jan-13	992	155	2015	124
Feb-13	896	140	1820	112
Mar-13	992	155	1705	124
Apr-13	900	150	930	120
May-13	868	155	961	124
Jun-13	840	150	930	120
TOTAL (ML/yr)	**10,946**	**1,825**	**15,119**	**1,460**

- **Table 23 Monthly cost for hypochlorite systems ($/month)**

Month	NPI - South	NPI 2 - North	SRWP - North	EPI - West	TOTAL
Jul-12	$15,960	$1,416	$16,315	$2,470	$36,161
Aug-12	$15,960	$1,416	$16,315	$2,470	$36,161
Sep-12	$16,549	$1,370	$15,788	$2,391	$36,098
Oct-12	$17,100	$1,416	$16,315	$2,470	$37,301
Nov-12	$16,549	$1,370	$15,788	$2,391	$36,098
Dec-12	$18,240	$1,416	$34,208	$2,470	$56,334
Jan-13	$18,240	$1,416	$34,208	$2,470	$56,334
Feb-13	$16,475	$1,279	$30,898	$2,231	$50,883
Mar-13	$18,240	$1,416	$28,945	$2,470	$51,072
Apr-13	$16,549	$1,370	$15,788	$2,391	$36,098
May-13	$15,960	$1,416	$16,315	$2,470	$36,161
Jun-13	$15,445	$1,370	$15,788	$2,391	$34,994
TOTAL ($/year)	**$201,269**	**$16,671**	**$256,670**	**$29,085**	**$503,695**

- **Table 24 Monthly transport volumes for gaseous chlorine systems (ML/month)**

Month	Alexandra Hills - from Capalaba WTP	Heinemann Road – from Nth Stradbroke Island WTP
Jul-12	260	806
Aug-12	251	806
Sep-12	235	780
Oct-12	238	806
Nov-12	366	780
Dec-12	357	806
Jan-13	346	806
Feb-13	413	728
Mar-13	352	806
Apr-13	376	780
May-13	367	806
Jun-13	380	780
TOTAL	**3,941**	**9,490**

- **Table 25 Monthly Cost for gaseous chlorine systems ($/month)**

Month	Alexandra Hills - from Capalaba WTP	Heinemann Road - from Nth Stradbroke Island WTP	Rental Costs	TOTAL
Jul-12	$839	$871	$525	$2,235
Aug-12	$810	$871	$525	$2,206
Sep-12	$758	$843	$508	$2,109
Oct-12	$768	$871	$525	$2,164
Nov-12	$1,181	$843	$508	$2,532
Dec-12	$1,152	$871	$525	$2,548
Jan-13	$1,116	$871	$525	$2,512
Feb-13	$1,332	$787	$491	$2,610
Mar-13	$1,135	$871	$525	$2,532
Apr-13	$1,213	$843	$508	$2,564
May-13	$1,184	$871	$525	$2,580
Jun-13	$1,226	$843	$508	$2,577
TOTAL ($/year)	**$12,712**	**$10,253**	**$6,203**	**$29,168**

The outcome of the process in these tables provides an estimate cost of $533,000.

The calculations are based on the expected quantity of water to be treated and unit rates expected to come from the finalisation of the tender process for the supply of chemicals.

Delivery of service

Both the supply and delivery of chemicals is provided by a supply contract. This is currently being finalised by LinkWater after a competitive tender process.

LinkWater have identified a number of risks in the current contract terms and conditions and have sort to reduce these risks where appropriate by seeking new conditions. Some notable conditions are:

- Pre delivery quality checks
- Supplier to provide a digital image to support colour and clarity of chemical
- Analysis of each batch by independent accredited testing authority
- Sample and testing of chemicals that deteriorate no earlier than 24 hours before delivery
- Prevention of cross contamination with other chemicals
- Non conforming product costs to the supplier
- Seven day delivery period from issue of chemical order
- Notification to LinkWater control room 48 hours prior to delivery giving a 4 hour window for delivery time with name and mobile number of delivery driver
- Deliveries only accepted between 7:30 am and 3:00 pm
- LinkWater representative must be present to receive the chemical delivery
- Same day transfer of chemicals the deteriorate during storage

- Specialist technical support

It is prudent to request these improvements in chemical delivery as these improve the management and reduce the risk of inappropriate chemicals being supplied to LinkWater facilities for use in the community's drinking water. It is SKM view that some of these conditions have required the suppliers to increase the price to cover the risk that they are required to take under the contract. It is also the view of SKM that the improvement in service sort is not unreasonable given the importance of water to the health of the South East Queensland community.

Market conditions

The south east Queensland market is supplied by three companies: Orica Chemicals, Elite Chemicals and Redox Chemicals. All have different supply chain characteristics some with manufacturing plants in Australia and some based on importing product into Australia. Organisations such as Seqwater, Allconnex Water, Unitywater and Queensland Urban Utilities are major consumers of the same chemicals as LinkWater. The mining industry demand for these chemicals is also expected to increase.

Efficiencies and economies of scale

The project will realise any economies of scale that are available to LinkWater as all chemical supplies for LinkWater have been bound together and presented to market as a total package.

Benchmarking

The costs will vary in direct proportion to water volume transported and the disinfection residual that is provided to LinkWater by Seqwater. No benchmark costs are available for comparison that are current and are supplied under the same terms and conditions.

The test for efficiency is met due to a competitive tender process being followed to arrive at the unit rates for the supply and delivery of the required chemicals.

6.4.5. Summary

The evaluation panel determined that all three tenders were non-compliant on the basis that they could not meet minimum commercial and product requirements; therefore there was no successful tender from the complying procurement process. Negotiations are continuing with the preferred service provider to establish the terms and conditions for the supply and delivery of chemicals.

The project is prudent because the chemical are required for the delivery of water to a quality standard in line with the grid documents and the ADWG and the conditions sort by the contract seek to reduce the risk of quantity or quality variations which will negatively impact the quality of water supplied and possibly breach water quality requirements of the water grid.

The estimated costs represent an increase of 38% over 2011/12 estimated costs.

As the contract that is being negotiated has been tested in the market and reflects current market condition, SKM vies the estimated cost as generally efficient. However, the allocation of a 5% escalation during the first year of the contract given known unit rates for chemicals and the substantial increase in unit rates proposed under the new contract is inappropriate and should be applied to

subsequent years. An amount of $27,000 would be allocated to this escalation factor. SKM recommends that this amount be removed from the budgeted cost and the revised chemical cost is shown in **Table 26**.

- **Table 26 Chemical Supply and Delivery - revised operating expenditure profile**

Project	2012/13 costs ($000s)
Chemical Supply and delivery	506

6.5. Operational activities – System modelling and Network information

6.5.1. Overview of operating expenditure

The LinkWater hydraulic and water quality model is the primary analysis and optimisation tool for network operations. The model allows LinkWater to continually analyse its network performance which is a pivotal contribution to achieving the optimal approach to asset management. The hydraulic and water quality modelling program has the following objectives:

- Identify inefficiencies and develop strategies to improve operational effectiveness through network operations
- Assist with growth planning and integrating existing infrastructure to achieve the most efficient, effective and resilient SEQ water grid
- Identify potential water quality issues and develop strategies to improve water quality through predictive modelling
- Develop effective and efficient decision support tools that interact with existing business system
- Assist in developing contingency planning for asset failure or other operational events

The proposed expenditure for System modelling & Network information for 2012/13 is $1,004,937, representing $41,331 for administration, $410,185 for consultancies and $553,421 for employee costs.

The budgeted expenditure as outlined in the regulatory submission to the Authority for 2011/12 was $733,607.

Table 27 indicates the proposed operating expenditure for system modelling and network information.

- **Table 27 System modelling and network information**

Submission to the Authority	Cost ($000)		
	2011/12	2012/13	% increase
System modelling and network information	734	1,005	36.9%

6.5.2. Provided documentation

The key reference documents used for this review are:

- *Regulatory Submission to the QCA – 2012-13 Grid Service Charges*, LinkWater, February 2012

- *Operational Services – Network Management Strategy 2012/2013 to 2016/17*, Version 3, LinkWater, March 2012
- *Response to SKM RFI 13*, LinkWater, no date
- *Response to RFI023*, LinkWater, no date
- *Memorandum: RFI IN NO 0024 – QE06556-Link*, LinkWater, 21 March 2012

6.5.3. Prudency

System modelling/network information is an important function of LinkWater which is responsible for ensuring that further developments are optimised and planned to the best of their ability. The relevant obligations in the Grid contract indicate that the service provider must:

Use its best endeavours to manage all water catchment areas for the service provider infrastructure which it owns or controls in accordance with good operating practise:

- Use reasonable endeavours to ensure the appropriate management in accordance with good operating practise by others of catchment areas for the service provider infrastructure which service provider does not own or control
- Store, release, take, deliver, and make available potable water and raw water in accordance with good operating practise

Given that there will always be a need to plan for future works; system modelling/network information is a necessity to ensure that future infrastructure is efficiently selected. Therefore the expenditure related system modelling/ network information is considered to be prudent.

6.5.4. Efficiency

Calculation of costs

The 2012/13 forecast system modelling and network information expenditure is calculated to be $1,004,937.

The costs for this category have been calculated using a bottom-up approach. LinkWater has provided detailed budget models with specific items in the budget and their expected cost.

The cost of items expected to increase in value over time have been adjusted according to the relevant index. The forecast salary rates have been increased by a rate of 4% according to LinkWater's Enterprise Bargaining Agreement. For general items, the default rate of inflation has been taken as 2.5%, representing the midpoint in the inflation range targeted by the Reserve Bank of Australia.

SKM noted that there was a 37% increase in the budget of the 2012/13 regulatory submission. This increase consisted of $271,330 of additional expenses. LinkWater has advised SKM that there a new position exists within the system modelling and network information section for a Planning and Modelling Engineer. This resource is required to meet enhanced planning amendments made to the system operating plan by QWC in November 2011. The resultant additional costs for this new role comprise of $126,000 plus on-costs.

Additionally, for the budget of 2011/12, the position of Infrastructure Planning Engineer was approved and filed. As part of the re-organisation within the infrastructure planning unit, this role was transferred to the system modelling and network information cost centre. The resultant additional costs for this new role comprise of $108,000 plus on costs.

As part of the aforementioned reorganisation, consultancy costs were also moved from the Infrastructure planning to the system modelling cost centre. SKM considers the reallocation of costs to be prudent and in line with the organisational restructure.

Table 28 below shows a cost breakdown for system modelling and network information.

- **Table 28 System Modelling and Network information cost breakdown**

Business Unit	Forecast expenditure
Administration costs	$41,331
Consultancy costs	$410,185
Employee Costs – Direct	$465,678
Employee Costs – Indirect	$87,743
FTE's	4
Total	**$1,004,937**

The expenses outlined for system modelling and network planning are reoccurring as it is necessary to continuously update asset information throughout LinkWater's network.

SKM considers that the expected cost per financial year will continue to increase at a linear rate due to the rate of inflation and constant salary increases outlined in the Enterprise Bargaining Agreement.

Delivery of service

System modelling and network information is a core function of LinkWater, and a significant portion of this work is undertaken in house. For the purpose of obtaining specialist advice or auditing, LinkWater engages external consultancies.

SKM considers the number of personnel employed by the System modelling team to be appropriate for the size of the organisation, based on our knowledge of staffing levels at other utilities.

As shown in **Table 28**, there are four FTE's associated with the system modelling and network information expense. This is contradictory to the information shown in **Table 29** which suggests that there is only 0.35 FTE's required for the 2012/13 financial year. The System modelling and network information program requires the time of the planning and modelling engineer and support from the planning services manager. LinkWater has proposed to reassign existing resources to focus more efforts on the programme such that there is no additional staffing required. This work is provided in house primarily for efficiency.

- **Table 29 Staffing requirements**

Position	FTE's	
	2011/12	2012/13
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
Total	0.3	0.35

SKM considers that the staff included in the system modelling budget are necessary within LinkWater's operations, however they do not align with the regulator submission. **Table 30** shows the inconsistencies between both the regulatory submission and the breakdown of cost expenditure.

- **Table 30 FTE comparisons**

Position	FTE's	
	Network Management Strategy (Oct 2011)	Regulatory Submission (Feb 2012)
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
Total	0.35	4

LinkWater does not currently use activity based costing and therefore does not generally separate employee costs across multiple cost centres, nevertheless; these roles may contribute to the achievement of multiple strategies. The planning and modelling engineer contributes to more than one program, however; costs for this role are captured only in the system modelling cost centre. Thus no double counting of costs occurs.

SKM considers that the use of activity based costing may further increase efficiencies within sub-programmes. The allocation of FTE's is as accurate as it can be under the current costing methods; hence, SKM considers that the allocation of FTE's is efficient.

Efficiencies and economies of scale

No specific efficiency gains have been noted by LinkWater.

Benchmarking

LinkWater is unique in South Ease Queensland, and Australia, in that its only function is the bulk transport of water. Consequently, there is little published information available for direct comparison.

In undertaking this assessment of associated costs, SKM accept that LinkWater is bound by the provisions in the Enterprise Bargaining Agreement (EBA) particularly relating to pay rates from employment categories and annual pay increases.

6.5.5. Summary

The expenditure for system modelling and network information is prudent. The activities undertaken by the system modelling and network information team are necessary for LinkWater to fulfil its obligations in the Grid Contract. SKM considers that the process of system modelling and network information is an essential part of meeting water demand and quality specifications.

The expenditure for system modelling and network information is efficient. Whilst detailed benchmarking information is not available, SKM has examined LinkWater's proposed expenditure and considers this to be reasonable given the size of the network and the importance placed on the infrastructure in the Grid Contract.

6.6. Operating activities – Geographic Information System

6.6.1. Overview of operating expenditure

LinkWater's network operations undertake activities necessary for the operation of LinkWater's network as well as co-ordination with the other participants of the SEQ water grid.

The LinkWater Geographic Information System (GIS) is an important part of the networks operations integrating asset and special data that enables the tracking of physical assets as well as data analysis to inform operational decision making. LinkWater is able to achieve this through the capture and storage of asset data including asset identification, location and condition.

The GIS capability assists LinkWater in its daily operations by providing asset location data, identifying the impacts of proposed maintenance activities, planning and scheduling capital and maintenance activities and analysing environmental issues. The GIS location data is additionally used to inform developers and land owners where they can undertake construction (or other activities) on or near LinkWater assets.

Table 31 provides LinkWater's proposed operating expenditure for system modelling and network information. The proposed expenditure for Geographical Information systems for 2012/13 is $850,905, representing $225,395 for administration and IT, $265,507 for consultancy costs and $360,003 for employee costs. The budgeted expenditure as outlined in the regulatory submission to the Authority for 2011/12 was $413,266.

- **Table 31 Geographic Information System**

Submission to the Authority	Cost ($000)		
	2011/12	2012/13	% increase
Geographic Information System	413	851	106.1%

6.6.2. Provided documentation

The key reference documents used for this review are:

- *Regulatory Submission to the QCA – 2012-13 Grid Service Charges*, LinkWater, February 2012

- *Operational Services - Network Management Strategy 2012/13 to 2016/17*, Version 3, LinkWater, March 2012
- *Response to SKM RFI 13*, LinkWater, no date
- *Memorandum: RFI IN NO 0024 – QE06556-Link*, LinkWater, 21 March 2012

6.6.3. Prudency

The Geographic Information System is part of the network management strategy and aims to ensure that LinkWater is able to maintain its goal of delivering quality water and secure supply. As outlined in the grid contract, the service provider must ensure that the service provider infrastructure is at all times designed, constructed, operated and maintained so as to enable the service provider to comply with all legislative requirements.

Geographic Information System asset location data is critical for corridor management and the protection of network infrastructure. GIS is responsible for holding precise location information which is required when planning operational works and is used to inform developers and land owners where they can undertake construction (or other activities) on or near LinkWater's assets. SKM considers that GIS is important for maintaining network integrity and aiding efficiency towards operational works.

SKM has reviewed the proposed activities for the Geographic Information System and has concluded that it is required to ensure that LinkWater meets the obligation outlined in the Grid Contract with respect to water quality and reliability of supply. SKM therefore considers the proposed expenditure to be prudent.

6.6.4. Efficiency

Calculation of costs

The 2012/13 forecast system modelling and network information expenditure is calculated to be $850,905.

The costs for this category have been calculated using a bottom-up approach. LinkWater has provided detailed budget models with specific items in the budget and their expected cost.

The cost of items expected to increase in value over time have been adjusted according to the relevant index. The forecast salary rates have been increased by a rate of 4% according to LinkWater's Enterprise Bargaining Agreement. For general items, the default rate of inflation has been taken as 2.5%, representing the midpoint in the inflation range targeted by the Reserve Bank of Australia.

SKM noted that there was a 105.9% increase in the budget of the 2012/13 regulatory submission. This increase consisted of $437,639 of additional expenses. LinkWater has advised SKM that this is the result of an update of the Near Map aerial inventory system, acquisition of additional contracted GIS specialists and an allowance for a project labelled CAD long sections. The associated costs for each additional expense are shown in **Table 32** below:

- **Table 32 Additional GIS expenditures**

Additional GIS expenditures	Cost ($000)
Near Map aerial inventory system	150
GIS Specialists	170
Consultancy costs for CAD long sections	100
Total	**420**

SKM consider that need for an update of the Near Map aerial inventory system could be useful to understand the existing infrastructure set, however it should not be considered in future years as a recurring expense. The Near Map aerial system has limited altitude or special accuracy. Costs associated with this service entail monthly map updates which SKM fails to see the value in when compared with older map software as topography is unlikely to change significantly year to year.

The GIS team have a requirement for GIS technical and active support during busy periods. The most cost efficient and effective way of managing this is to hire outside GIS specialists. An average charge out rate between $80 and $100 per hour was assumed which resulted in an allocation of one FTE. SKM considers the allocated $170,000 cost associated with the GIS specialists to be reasonable. SKM considers the duties responsible for the GIS specialist to be achievable within the allocation of one FTE and therefore considers this additional expense to be both prudent and efficient.

An allowance has been made for consultancy costs for a project labelled CAD long sections. It is intended that the mass of both paper and digital data that LinkWater has inherited can be converted into a GIS format. The intention is to provide operations and maintenance with more details on the assets they will encounter to enable better provision for planning before a schedule of works is let. SKM is unable to determine whether the expenditure for CAD long sections is efficient as there is a wide range of variables which comprise the cost. However, SKM considers that the expenditure is prudent.

Table 33 further shows a cost breakdown of the 2012/13 expenditure.

- **Table 33 Geographic Information system cost breakdown**

Business Unit	Forecast expenditure
Administration costs	$225,395
Consultancy costs	$265,507
Employee Costs – Direct	$285,660
Employee Costs – Indirect	$74,343
FTE's	3

The expenses outlined for GIS are reoccurring as it is necessary to continuously update asset information throughout LinkWater's network.

SKM considers that the expected cost per financial year will continue to increase at a linear rate due to the rate of inflation and constant salary increases outlined in the Enterprise Bargaining Agreement.

Delivery of service

The majority of the work involved with the Geographic Information System expenses has been provided in house. For the purpose of obtaining specialist advice or auditing, LinkWater engages external consultancies.

As shown in **Table 34**, LinkWater has outlined the need for three FTE's for operations involving GIS in the 2012/13 financial year. In order to maintain the objectives and goals of the GIS program, LinkWater has suggested that they require the three existing full time staff supplemented by consultancies and contractors as required for immediate or specialised projects.

SKM considers the number of personnel employed in the GIS team to be appropriate for the size of the organisation, based on our knowledge of staffing levels at other utilities.

- **Table 34 – Staffing requirements**

Position	FTE's	
	2011/12	2012/13
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
Total	**3**	**3**

LinkWater has indicated that there will be a requirement for additional GIS data management, mapping and system maintenance activities to be undertaken to maintain the integrity of the GIS system, particularly in the current systems growth environment. This work is provided in house primarily for efficiency.

Efficiencies and economies of scale

As mentioned in the calculation of costs, the large percentage increase in cost associated between the budget estimates for 2011/12 and 2012/13 can be for the most part attributed to the Update of the Near Map aerial inventory system, GIS specialists and additional consultancy costs.

Based on the information presented, SKM considers the increase in expenditure for the Geographic Information System to be prudent.

Benchmarking

LinkWater is unique in SEQ, and Australia, in that its only function is the bulk transport of water. Consequently, there is little published information available for direct comparison.

In undertaking this assessment of associated costs, SKM accept that LinkWater is bound by the provisions in the Enterprise Bargaining Agreement particularly relating to pay rates from employment categories and annual pay increases.

6.6.5. Summary

The expenditure for GIS is prudent. The activities undertaken by the GIS team are necessary for LinkWater to fulfil its obligations in the Grid Contract. An effective and reliable GIS requires continual investment in technology upgrades and insuring it is underpinned by relevant information.

As indicated in the calculation of costs subsection, SKM considers the inclusion of the Near Map inventory system to be prudent for the financial year 2012/13 only further information will need to be supplied from LinkWater justifying the necessary of future reoccurring subscriptions. Additionally, LinkWater needs to supply information detailing if the allocated costs for the project labelled CAD long sections was sufficient or whether more funding is required in the following financial years.

SKM considers that the financial budget for 2012/13 to be generally efficient, however SKM are unable to verify the efficiency of the CAD long section.

6.7. Operational activities – Service delivery

6.7.1. Overview of operating expenditure

LinkWater's network operations undertake activities necessary for the operation of LinkWater's network as well as co-ordination with the other participants of the SEQ water grid.

The service delivery operational expenditure forms part of LinkWater's asset operations strategy. The services delivery sector is responsible for the programming of maintenance activities, monitoring and managing the delivery of the maintenance work program and the relationship.

The budget expenditure as outlined in the regulatory submission to the Authority for 2011/12 was $1,054,038. The proposed expenditure for service delivery for 2012/13 is $1,166,630, representing $37,831 for administration and IT, $456,246 for consultancy costs and $672,554 for employee costs. **Table 35** provides the proposed operating expenditure for system modelling and network information.

- **Table 35 Service delivery**

Submission to the Authority	Cost ($000)		
	2011/12	2012/13	% increase
Service delivery	1,054	1,167	10.7%

6.7.2. Provided documentation

The key reference documents used for this review are:

- *Regulatory Submission to the QCA – 2012-13 Grid Service Charges*, LinkWater, February 2012
- *Operational Services - Asset Operations Strategy 2012013 to 2016/17*, LinkWater, no date
- *Response to SKM RFI 13*, LinkWater, no date

6.7.3. Prudency

Service delivery operations refer to the core function of LinkWater. LinkWater is specifically responsible for the safe, reliable and secure transfer of bulk potable water throughout SEQ within a predetermine level of service.

The operation and maintenance of assets are established through the Strategic Asset Management Plan (SAMP) under the Water Supply (Safety and Reliability) Act. Grid service Providers are required to operate their water supply works in accordance with the Good operating practice under Market Rules Sections 3.7 and 3.13.

The Queensland Water Commission (QWC) requires that LinkWater is specifically responsible for the safe, reliable and secure transfer of bulk potable water throughout SEQ within a predetermined Level of Service. The relevant service delivery obligations of LinkWater are:

- To ensure that LinkWater is able to supply water in accordance with the monthly grid instructions efficiently and economically
- To develop and maintain appropriate organisational capability to meet service delivery requirements through the employment and retention of high quality staff and integration of highly effective fit-for-purpose systems and procedures.
- To ensure that all assets are secured and maintained in accordance with the Asset Management Cycle

LinkWater's core function is the transportation of water from source to the retail/distribution entities. In order for LinkWater to maintain this expected Level of Service, LinkWater is obligated to undertake service delivery operations. SKM therefore considers the proposed expenditure to be prudent.

6.7.4. Efficiency

Calculation of costs

The 2012/13 forecast for service delivery information expenditure is forecast to be $1,116,630.

The costs for this category have been calculated using a bottom-up approach. LinkWater has provided detailed budget models with specific items in the budget and their expected cost.

The cost of items expected to increase in value over time have been adjusted according to the relevant index. The forecast salary rates have been increased by a rate of 4% according to LinkWater's Enterprise Bargaining Agreement. For general items, the default rate of inflation has been taken as 2.5%, representing the midpoint in the inflation range targeted by the Reserve Bank of Australia.

Table 36 below shows a cost breakdown for system modelling and network information.

- **Table 36 Service delivery cost breakdown**

Business Unit	Forecast expenditure
Administration costs	$37,830
Consultancy costs	$456,246
Employee Costs – Direct	$583,551
Employee Costs – Indirect	$89,003
FTE's	3

Service delivery is a necessary reoccurring expense to ensure that maintenance activities are undertaken. Both in-house employees and external contractors are required to ensure this service.

SKM considers that the expected cost per financial year will continue to increase at a linear rate due to the rate of inflation and constant salary increases outlined in the Enterprise Bargaining Agreement.

Delivery of service

Through a competitive tender process, LinkWater entered into an alliance with Transfield services (Australia) Pty Ltd and United Utilities Australia Pty Ltd until 2013. This arrangement involved the provision of strategic asset management and physical maintenance.

In March 2010, LinkWater, Transfield and United Utilities Australia agreed to and entered into a Deed, detailing the provision of operational and asset maintenance services up to 30 June 2013. This Deed took effect on 19 April 2010. Under this Deed, Transfield and United Utilities Australia effectively ceased as alliance partners and became LinkWater's services contractor. The Deed outlines the scope and costs of services to be provided under a fixed or variable fee for service arrangement.

As the original contract was procured through a competitive tender process and the current provision of services under the Deed adhere to the original arrangement, the services are considered to be provided at an efficient price.

Efficiencies and economies of scale

LinkWater has moved from its original alliance arrangement to a contractor arrangement. This is due to LinkWater developing the skills to perform the operational and strategic asset maintenance function of its asset operation and maintenance needs.

LinkWater undertook this as it recognises the strategic importance of performing the operational and strategic asset maintenance function in-house. This restructuring of its contract is intended to lead to efficiency gains in the operation and maintenance of its assets.

SKM recognise that restructuring the contractual arrangements with its former alliance partners are a positive move for LinkWater. The new arrangements give LinkWater more control over the maintenance activities that will be undertaken, and therefore opportunities for LinkWater to identify improvements and drive cost efficiencies.

We consider the expenditure for this category to be efficient based on the following assertions:

- Based on engineering judgement, the maintenance expenditure is reasonable for the number of assets, extent of network and risk of non compliance with water quality requirements
- LinkWater has recognised the limitations of the former alliance agreement. The new contractual arrangements provide opportunities to optimise maintenance and drive cost efficiencies without being reliant on its alliance partners

Benchmarking

LinkWater is unique in SEQ, and Australia, in that its only function is the bulk transport of water. Consequently, there is little published information available for direct comparison. In the absence of extensive benchmarking data SKM has instead examined the method in which the budgets were built up. SKM considers that the choice of LinkWater going to market tender for external contractors to be efficient.

6.7.5. Summary

The expenditure for service delivery is prudent. LinkWater has clear obligations in the Grid Contract to ensure that water transported in its assets meet specific water quality levels. SKM sees the maintenance of its infrastructure as an essential part of meeting water quality demands and quality specifications.

The expenditure for service delivery is efficient. Whilst detailed benchmarking information data is not available, SKM has examined LinkWater's proposed expenditure and considers this to be reasonable based on the extent of the network and the importance placed on water quality in the grid contract.

6.8. Operational activities – Network asset operations

6.8.1. Overview of operating expenditure

LinkWater's network operations undertake activities necessary for the operation of LinkWater's network as well as co-ordination with the other participants of the SEQ water grid.

Network asset operations are primarily focused on the day to day physical operations of the water transport network to ensure that LinkWater meets its water quality assurance and volume requirements under a Grid Contract document, the Drinking Water Quality Management Plan (DWQMP) and the Water Grid Manager (WGM) Grid Instructions. Network asset operations are responsible for:

- Operating the network control centre
- Creating and reviewing maintenance plans
- Conducting security assessments of LinkWater's assets.
- Preparing and maintaining service manuals for reservoir, pumping stations and water quality facilities
- Assessing asset critically audits

To manage its network, LinkWater operates a fully staffed 365 day, 24-hour, continuous, real-time Network Control Centre. The Network Control Centre has the capacity to monitor the entire network

and remotely control certain functions of both inherited and new assets. This can enable, in key network locations, an immediate response to changes in demand or to respond to water quality issues. SKM considers this to represent good practise.

The budgeted expenditure as outlined in the regulatory submission to the Authority for 2011/12 was $1,139,464. The budgeted expenditure for Network asset operations for 2012/13 is $1,426,295, representing $347,097 for administration and IT, and $1,079,198 for employee costs. **Table 37** indicates the proposed operating expenditure for system modelling and network information.

- **Table 37 Network asset operations**

Submission to the Authority	Cost ($000)		
	2011/12	2012/13	% increase
Network asset operation	1,140	1,426	25.1%

6.8.2. Provided documentation

The key reference documents used for this review are:

- Regulatory submission to the Queensland Competition Authority, LinkWater, 28 February 2012
- Operational Services – Asset Operations Strategy
- SKM RFI 13 March meeting Item 5 – breakdown of cost expenditure

6.8.3. Prudency

Network asset operations refer to the core function of LinkWater. LinkWater is specifically responsible for the safe, reliable and secure transfer of bulk potable water throughout SEQ within a predetermine level of service.

The operation and maintenance of assets are established through the Strategic Asset Management Plan (SAMP) under the Water Supply (Safety and Reliability) Act. Grid service Providers are required to operate their water supply works in accordance with the good operating practice under Market Rules Sections 3.7 and 3.13.

The Queensland Water Commission (QWC) requires that LinkWater is specifically responsible for the safe, reliable and secure transfer of bulk potable water throughout SEQ within a predetermined Level of Service. The relevant obligations of LinkWater are:

- To ensure that LinkWater is able to supply water in accordance with the monthly grid instructions efficiently and economically
- To develop and maintain appropriate organisational capability to meet service delivery requirements through the employment and retention of high quality staff and integration of highly effective fit-for-purpose systems and procedures
- To ensure that all assets are secured and maintained in accordance with the Asset Management Cycle

LinkWater's core function is the transportation of water from source to the retail/distribution entities. In order for LinkWater to maintain an expected Level of Service, LinkWater is obligated to undertake network asset operations. SKM therefore considers the proposed expenditure to be prudent.

6.8.4. Efficiency

Calculation of costs

The 2012/13 forecast network asset operations expenditure is calculated to be $1,426,295.

The costs for this category have been calculated using a bottom-up approach. LinkWater has provided detailed budget models with specific items in the budget and their expected cost.

The cost of items expected to increase in value over time have been adjusted according to the relevant index. The forecast salary rates have been increased by a rate of 4% according to LinkWater's Enterprise Bargaining Agreement. For general items, the default rate of inflation has been taken as 2.5%, representing the midpoint in the inflation range targeted by the Reserve Bank of Australia.

Table 38 below shows a cost breakdown for network asset operations.

- **Table 38 Network asset operations cost breakdown**

Business Unit	Forecast expenditure
Administration costs	$347,097
Employee Costs – Direct	$826,403
Employee Costs – Indirect	$252,795
FTE's	10.3

The expenses outlined for network asset operations are reoccurring as it is necessary to continuously monitor the networks demands and infrastructure whilst simultaneously identifying areas with potential issues to ensure the network remains operable.

SKM considers that the expected cost per financial year will continue to increase at a linear rate due to the rate of inflation and constant salary increases outlined in the Enterprise Bargaining Agreement.

Delivery of service

Transferring water from the treatment locations to retail/distribution entities is a core activity for LinkWater. The entirety of the services involved with network asset operations are conducted in house, with LinkWater responsible for the operation of a manned continuous real time Network Control Centre.

As outlined in **Table 39**, LinkWater has outlined the need for 10.3 FTE's for network asset operations in the 2012/13 financial year. SKM considers the number of personnel employed in the network asset operations team to be appropriate for the size of the organisation, based on our knowledge of staffing levels at other utilities. SKM also notes that the 7 FTE's allocated for the control room operators are based on 24 hours per day 7 days per week to ensure that the control room is always monitored.

- **Table 39 Staffing requirements**

Position	FTE's	
	2011/12	2012/13
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
Total	**10.3**	**10.3**

Given the responsibilities of LinkWater regarding the control of their assets throughout the network, SKM considers that network asset operations are best conducted in house.

Efficiencies and economies of scale

No efficiency gains or synergies have been identified for this cost category by LinkWater.

Benchmarking

LinkWater is unique in SEQ, and Australia, in that its only function is the bulk transport of water. Consequently, there is little published information available for direct comparison.

In undertaking this assessment of associated costs, SKM accepts that LinkWater is bound by the provisions in the Enterprise Bargaining Agreement particularly relating to pay rates from employment categories and annual pay increases.

6.8.5. Summary

The expenditure for network asset operations is prudent. The activities undertaken by the network asset operations team are necessary for LinkWater to fulfil its obligations in the Grid Contract. The continuous operation of LinkWater's network assets is imperative for the supply and quality assurance for SEQ.

Insufficient information has been provided to justify whether an increased expenditure on last financial year is efficient. As the Enterprise Bargaining Agreement provides for a 4% increase in hourly rates, SKM recommends that unless further justification is provided, the cost for network asset operations for 2012/13 be set at 4% above the 2011/12 cost. This is shown in **Table 40**.

- **Table 40 Recommended network asset operations cost**

Recommended operating expenditure profile	2012/13
Network asset information	$1,185,042

SKM has not included in our recommendation any costs associated with the NPI – Stage 2 implementation. SKM has not received any detailed cost information specific to this task.

LinkWater have declined the opportunity to provide additional information justifying expenditure beyond the approved amount. Consequently the assessed and reviewed budget as indicated in **Table 40** above is applicable.

6.9. Operational activities – Water laboratory testing

6.9.1. Overview of operating expenditure

Water laboratory testing is essentially focused on ensuring LinkWater's network is consistently delivering high quality drinking water throughout the bulk supply network to ensure compliance with the grid contract and regulatory requirements.

Under the Water Supply (Safety and Reliability) Act 2008 (the Act), Service Providers are required to prepare a Drinking Water Quality Management Plan (DWQMP). LinkWater is classified as a large service provider and as such had until 1 July 2011 to have an approved DWQMP in place, in accordance with transitional provisions. The DWQMP details the approach to be applied to the management of drinking water quality for the South East Queensland (SEQ) bulk water transport network operated by LinkWater. Successful implementation of the Plan will ensure that both LinkWater and stakeholder expectations are met with respect to the delivery of a safe and reliable water supply.

This DWQMP is based primarily on:

- The Water Supply (Safety and Reliability) Act 2008 (QLD) and associated guidance on preparing a DWQMP
- The Framework for the Management of Drinking Water Quality (Figure 1) – Chapter 3 within the Australian Drinking Water Guidelines (ADWG, 2004), that consists of 12 Elements, 32 Components and 76 Actions
- AS ISO 22000-2005 Food Safety Management Systems – requirements for any organisation in the food chain

The Proposed expenditure for the Water laboratory testing for 2012/13 is $1,660,008. This is an increase from the budgeted expenditure outlined in the regulatory submission to the Authority for 2011/12 of $1,500,000.

Table 41 indicates the proposed operating expenditure for system modelling and network information.

- **Table 41 Water laboratory testing**

Submission to the Authority	Cost ($000)		
	2011/12	2012/13	% Increase
Water laboratory testing	1,500	1,660	10.7%

6.9.2. Provided documentation

The key reference documents used for this review are:

- *Regulatory Submission to the QCA – 2012-13 Grid Service Charges*, LinkWater, February 2012
- *South East Queensland Water Grid – Grid Contract document*, Water Act 2000 (QLD), June 2010
- RFT – LW-001 OP: *Provision of Field testing, Sample Collection & Transport and Analytical Laboratory Service*, LinkWater, no date
- *Request for Tender - Provision of Field testing, Sample Collection & Transport and Analytical Laboratory Service*, LinkWater, July 2009

6.9.3. Prudency

Water quality parameters monitored and frequencies for testing are based on the hazards identified within the water quality risk assessment and ADWG. It is a requirement of LinkWater to maintain these obligations under the Grid Contract. The relevant clauses from the Grid Contract with respect to availability of supply and water quality are shown below:

- C9.1(c) The service Provider must test and monitor that Potable Water while it is in the
- Service Providers Infrastructure in accordance with Legislative Requirements and Good
- Operating Practice and report the results of such testing and monitoring to SEQ Water Grid
- Manager

LinkWater has proposed several consultancies to provide the Water Laboratory Testing service. Consultancies include:

- Australian Laboratory Services
- Gold Coast City Council
- Redland City Council
- City Design – Brisbane City Council

SKM has examined the activities proposed for drinking water quality and compliance and are satisfied that these are required in order for LinkWater to meet obligations under the Grid Contract and legislation. SKM therefore considers that this expenditure is prudent.

6.9.4. Efficiency

Calculation of costs

A breakdown of costs was not provided, however documentation indicating requests for tenders was supplied. The Request for Tender documentation was for the provision of field testing, sample collection & transport and analytical laboratory services. There were a total of 11 tender submissions received which were further analysed by link water.

Using a tender evaluation and selection criteria consisting of; Response to Specifications, Corporate Social responsibilities, Health and safety Environment Quality (HSEQ), and Pricing, LinkWater was able to determine the most efficient company to offer a contract of service.

SKM considers the approach taken by LinkWater to be both good practise and efficient.

Delivery of service

Ensuring water quality is a core function of LinkWater. LinkWater has engaged external consultants for service delivery of Water Laboratory testing. SKM considers that this is a reasonable approach given that specialist advice is required.

Under the contract of service, the consultant is required to provision field testing, sample collection and transportation of samples and further conduct analytical laboratory services. As stipulated in the contractual agreement, the contractor is to provide optimal turnaround times for water quality results. Failure to provide results on time will result in monitory penalties.

Efficiencies and economies of scale

No specific efficiency gains have been noted by LinkWater.

Benchmarking

In the absence of extensive benchmarking data SKM has instead examined the method in which the budgets were built up. SKM considers that the choice of going to tender and completing a tender evaluation is efficient.

SKM considers the approach adopted by LinkWater to be both good practise and efficient

6.9.5. Summary

The expenditure for water laboratory testing is prudent. All of the water quality and compliance activities are necessary for LinkWater to fulfil its obligations in the Grid Contract, as well as legislation, specifically in regards to the Drinking Water Quality Management plan.

The expenditure for water laboratory testing is efficient. LinkWater put the contract out to market tender and therefore received competitive tenders which were further analysed through a tender review. SKM is satisfied that LinkWater is delivering this service in a cost effective manner.

6.10. Operating expenditure – Property leasing

6.10.1. Overview of operating expenditure

LinkWater has a lease agreement with Knight Frank for the rent of 200 Creek Street. The lease agreement comprises of two head leases and one sublease for levels four, five and six of the ten level office building. The lease agreement has been effective since the 1December 2008 and expires on the 30th of November 2015. For the duration of the lease, the initial rental value of $550 per square meter is subject to increase at a rate of 5% per annum.

The budgeted expenditure as outlined in the regulatory submission to the QCA for 2011/12 was $1,400,147. The proposed expenditure for property leasing for 2012/13 is $1,509,348. Comprising of both rental costs and associated direct costs from staffing. **Table 42** indicates the proposed operating expenditure for system modelling and network information.

- **Table 42 Operating expenditure – Property leasing**

Submission to the Authority	Cost ($000)		
	2011/12	2012/13	% increase
Operating expenditure – Property leasing	1,400	1,509	7.8%

6.10.2. Provided documentation

The key reference documents used for this review are:

- *Regulatory Submission to the QCA – 2012-13 Grid Service Charges*, LinkWater, February 2012
- Administration Business Plan (Incorporating the General Manager Corporate Services Cost Allocations and Leasing), LinkWater, September 2011
- *Proposal for Amendment to Lease*, Valad, October 20058

6.10.3. Prudency

LinkWater conducts all of its operations from the leased property at 200 Creek street, Brisbane. The office site is responsible for a reception area, control room, general office space and a board room which all form fundamental sections of the business. Given the nature of LinkWater's business and the dependence on available office space, SKM considers the proposed expenditure to be prudent.

6.10.4. Efficiency

Calculation of costs

Costs for this category have been calculated by LinkWater using a bottom-up approach with rent rates increasing at 5% per annum consistent with the lease agreement. Gross floor areas and the lease agreement were made available to SKM upon request. The lease agreement identified that there was to be an initial rent payable of $550 per square meter for the year of 2008 with consecutive years subject to an increase of 5% per annum for the remainder of the contract. Keeping consistent with the annual increase in rent, the current rate per square meter is calculated to be $636.69.

As noted in the Administration business plan, *"Allocation of direct labour costs to capital projects has been undertaken consistent with the objectives of the LinkWater budget and cost allocation procedure"*.

SKM considers that the direct costs due to staff and services, i.e. air-conditioning are also inclusive within the Property leasing budget.

- **Table 43 Property Leasing cost breakdown**

Business Unit	Forecast expenditure
Rental Levels 4/5/6	$832,439
Additional Rental Level 6	$512,295
Increase in Level 4 space	$61,500
Air-conditioning	$144,205
Outgoings	$4,797
Generator space licence fee	$12,398
Lease incentive Amortisation	($58,287)
Total	**$1,509,348**

SKM was able to build up a cost estimate based on the information provided within the lease agreements, Tax invoices and direct costs consistent with market prices. SKM found that the estimated cost was similar to proposed expenditure for the financial year 2012/13, outlined by LinkWater and within allowable limits.

Delivery of service

Property leasing is delivered by an external party, Knight Frank. Currently there is a leasing contract in place for the period 1 December 2008 to 30 November 2015.

Efficiencies and economies of scale

No Specific efficiency gains have been noted by link water.

Benchmarking

SKM investigated the typical cost per square meter around the vicinity of the creek street office space. As seen in **Table 44**, it was found that the average price per square meter of office space fluctuated between $500 and $600.

- **Table 44 Indicative costs per square meter of floor space in Brisbane**

Street	Cost per square meter
Mary street	$565
Adelaide Street	$560
Felix street	$550
Creek street	$500
Queen Street	$550
Waterfront Place	$600

The variations between the cost per square meter of floor space for LinkWater's office building and comparative buildings is within an allowable 30% limit for efficiency, however, given the slow growth in commercial leasing costs post GFC, LinkWater may consider a contract variation to become consistent with the market average.

Based on the contracts available and the proposed expenditure, SKM considers the property leasing to be efficient.

6.10.5. Summary

The expenditure for water property leasing is prudent. LinkWater requires an office space due to the type of business structure and need for a designated control room, reception area, office space and board room.

The expenditure for water Property Leasing is efficient. LinkWater has secured a contract at 2008 market rates with Knight Frank until 30 November 2015. SKM is satisfied that the costs associated with Property leasing are delivered in an effective manner.

6.11. Overheads – IT and knowledge management

6.11.1. Overview of operating expenditure

LinkWater's IT and knowledge management services involve the operation and support of an ICT network that supports both the corporate environment (for business activities) and the control network for linear pipe network monitoring and management (SCADA).

The forecast expenditure for IT and knowledge management overheads for the 2012/13 reporting period is $3,083,837. This is a net value as it excludes $986,595 that has been allocated to capital projects.

The majority of LinkWater's operational budget in this area is comprised of contractual arrangements concerning product and platform support, maintenance and upgrades for the portfolio of information systems, as well as the associated costs of the two off-site data centres.

$2,535,934 was endorsed for this cost category in 2011/12. Note that in last year's submission the category was simply named "IT Support". The estimated actual expenditure for the 2011/12 period is $3,036,751 which corresponds to a 20% increase over last year's forecast for the same period.

The increase in expenditure may be explained by increases in the complexity of the environment and in the number of systems and platforms being supported by LinkWater. Increased replacement program activity and focus on asset management, as well as increasing requirements to upgrade and enhance the environment outside normal business hours has added substantially to existing workloads.

The increase in estimated costs between the 2011/12 and 2012/13 periods (using the most recent forecasts) is less than 2%, as shown in **Table 45**.

- **Table 45 IT and knowledge management**

Submission to the Authority	Cost ($000)		
	2011/12	2012/13	% increase
IT and knowledge management	3,037	3,084	1.5%

6.11.2. Provided documentation

The key reference documents used for this review are:

- *Regulatory Submission to the QCA – 2012-13 Grid Service Charges*, LinkWater, February 2012
- *Corporate Services – Knowledge Management Business Plan*, LinkWater, September 2011
- *Corporate Cost Benchmarking - LinkWater*, KPMG, March 2011
- *QCA Interim Grid Service Charges Assessment Sheet: Overheads*, LinkWater, 2012

6.11.3. Prudency

The scope of LinkWater's IT and knowledge management services includes information and records management, corporate information systems and information and communication technologies. These services help to support other staff to develop and deliver the capital and maintenance programs that ensure the provision of water transport services consistent with LinkWater's service obligations.

Integrating asset data into LinkWater's asset information management systems including SAP and the AMF will help to ensure correct and effective operations and maintenance. This integration will provide connectivity services to aid information transfer between the asset, the Network Control Centre and LinkWater's back-up data centre.

Expenditure on IT and knowledge management is prudent as these services are required for LinkWater to meet its obligations under the Grid Contract and the SEQ System Operating Plan in a timely and cost-effective manner.

6.11.4. Efficiency

Calculation of costs

The majority of LinkWater's IT and knowledge management operational budget is comprised of contractual arrangements concerning product and platform support, maintenance and upgrades for the portfolio of information systems, as well as the associated costs of the two off-site data centres.

Data centre costs are directly derived from commercial agreements currently active and operational. These commercial agreements are the result of a tendering process conducted at business inception, and have been subject to minor growth as the organisation's ICT utilisation has increased with the expansion of the linear pipe network.

Staffing and communication costs have been developed from historical costs using a bottom up calculation. Support and maintenance costs were derived from a zero based budgeting perspective, but have been subsequently reviewed annually from a historical cost perspective.

ICT Equipment costs represent the break/fix component and a replacement program for minor equipment (less than $5,000 per item, hence not capitalised). Its cost has been determined by a combination of historical cost and experience, along with a calculated replacement program based on last acquisition cost.

Up to 200 users is expected to be supported by full-time IT staff and contractors.

SKM has received a categorised budget for IT and knowledge management, but no detailed breakdown of costs. Therefore, with the exception of externally-provided services, the efficiency of expenditure has been assessed as a whole rather than benchmarking individual sections or unit rates.

Delivery of service

The IT and knowledge management services within LinkWater are delivered by a combination of in-house and external parties. $1.7 million of the proposed expenditure is for costs incurred by external parties. This includes:

- Contracted maintenance arrangements – established via prior competitive processes run by LinkWater and including tender and quotation activities
- Annual maintenance and support arrangements – the use of Government panels and standing offer arrangements have been utilised in the establishment of many of these agreements, utilising the State Government aggregation of purchasing for competitive pricing. For example, LinkWater utilises State Government pricing for Microsoft licensing and maintenance
- Externally-provided data centre services for the hosting of LinkWater's corporate and control systems and servers. This tendered service arrangement was instigated to provide safe, secure and redundant environments for these systems. The five-year arrangement is to be reviewed during 2012/13 for both effectiveness and efficiency

Current forecasts show nine FTEs for the 2012/13 period and ten thereafter (with the addition of a second IT Systems Coordinator).

Consultancy costs are included in the support and maintenance costs and are derived from existing State Government standing offer arrangements wherever possible. $290,000 is allocated to IT consulting costs for the 2012/13 period; a reasonable given the $1,221,741 assigned to in-house employee expenses.

Efficiencies and economies of scale

LinkWater is able to reduce costs over the long term by utilising State Government pricing and arrangements for Telstra fixed line, mobile and data services as well as for Microsoft licensing and maintenance.

Benchmarking

A benchmarking study undertaken by KPMG in March 2011 presented the following benchmarks for IT and knowledge management costs within an organisation of similar size and operating characteristics to LinkWater:

- Low - $2,760,548
- Median - $3,058,953
- High - $3,357,358

LinkWater's forecast total cost for the 2012/13 period ($3,083,837) falls near to the median reported benchmark value from the KPMG report. This suggests that LinkWater's IT and knowledge management costs are reasonable.

External services have been procured via competitive tenders or using State Government pricing, therefore there costs will be in line with market rates.

An external review of staffing requirements and numbers is proposed for late 2012, which will further assist in the benchmarking of resource requirements.

6.11.5. Allocation of overhead costs

Allocation of direct labour costs to capital projects is consistent with LinkWater's *Budget and Cost Allocation Procedure.*

6.11.6. Summary

The expenditure is prudent because IT and knowledge management services are required for LinkWater to meet its obligations under the Grid Contract.

Expenditure on IT and knowledge management as a whole is considered to be efficient. LinkWater's costs for this category are close to the median benchmarking value from KPMG's external report. In addition, external services have been procured in such a way that costs will be in line with market rates.

6.12. Overheads – corporate services

6.12.1. Description

The Corporate Services is defined by LinkWater as a corporate cost built up from the following support functions:

- Government relations
- Risk management
- Community and stakeholder management
- Annual reporting
- Employee communications
- Risk management
- Health safety and environment
- Human resources
- IT and knowledge management and
- Other miscellaneous activities

The total expenditure for overheads – corporate services for 2011/12 is given in **Table 46** below. From this it can be seen that LinkWater is expecting a cost increase of 28% from the previous financial year.

- **Table 46 Overheads – corporate services**

Submission to the Authority	Cost ($000s)		
	2011/12	2012/13	% increase
Corporate services	1,903	2,435	28.0%

The proposed cost submitted to the Authority for this overhead in 2012/13 is $2,434,981.

6.12.2. Provided documentation

The key reference documents used for this review are:

- *Regulatory Submission to the QCA – 2012-13 Grid Service Charges*, LinkWater, February 2012
- *Corporate Cost Benchmarking – LinkWater*, KPMG, 10 March 2011
- *Response to RFI ID No. 0012 – LinkWater Corporate Social Responsibility Business Plan*, LinkWater, March 2012
- Response to RFI ID No. 0012 – LinkWater Administration Business Plan (Incorporating the *General Manager Corporate Services Cost Allocation and Leasing)*, LinkWater, March 2012
- *Response to RFI ID No. 0012 – LinkWater Corporate Services Risk and Emergency Management Business Plan*, LinkWater, March 2012
- *Response to RFI ID No. 0012 – LinkWater Corporate Services Health, Safety, Environment and Quality Business Plan*, LinkWater, March 2012
- *Response to RFI ID No. 0012 – LinkWater Communication and Stakeholder Management Business Plan*, LinkWater, March 2012
- *Response to RFI ID No. 0012 – Business Unit Report – Corporate Services – Showing Net Numbers*, LinkWater, March 2012

6.12.3. Assessment of prudency

Corporate Services are not specifically identified in the Grid Contract, the SEQ System Operating Plan or Water Grid Manager's Operating Strategy.

LinkWater has referenced the following Business Plans in stating the requirement for the Corporate Services function:

- Corporate Social Responsibility Business Plan
- Administration Business Plan (Incorporating the General Manager Corporate Services Cost Allocation and Leasing)
- Corporate Services Risk and Emergency Management Business Plan
- Corporate Services Health, Safety, Environment and Quality Business Plan
- Communication and Stakeholder Management Business Plan

In each of the above business plans it sets out the objective of the plan and an implementation regime. LinkWater has also provided a short summary detailing the relevance of each Business Plan in reviewing the overhead cost of corporate services.

- *Corporate Social Responsibility*

LinkWater states within the Corporate Social Responsibility Business Plan, as referenced above that: "We recognise that, to be a responsible corporate citizen, CSR measures must integrate into all business functions and reviewed regularly. This way, "corporate responsibility" and "sustainability" can lose their exclusivity (as words and functions) and become embedded in each business decision." SKM considers the reason for LinkWater investing in a corporate social responsibility plan as conforming to current business trends.

- *Administration*

LinkWater states within the Administration Business Plan, as referenced above, that: "The delivery of an effective and efficient Administration Business Program will asst LinkWater to achieve its Strategic Objectives as outlined in the Operational and Strategic Plan." SKM agrees with the requirement of administrative support in assisting a business to be more effective and efficient. The sub-functions that fall within the administrative function are as follow:

- Corporate reception
- Security
- Office management and logistics
- Fleet management
- Building management

LinkWater has included the lease and sub-lease of the premises at 200 Creek Street, Brisbane within the building management sub-function

- *Risk and Emergency*

LinkWater states within the Corporate Services Risk and Emergency Business Plan, as referenced above, that: "*Delivery of the LinkWater Risk and Emergency Management Business Plan ensures delivery against Market Rule 4.26 and 4.36. The Risk and Emergency Management Business Plan is aimed at improving LinkWater's understanding of risk and the timely identification and potential incidents and emergencies.*" SKM agrees that a risk and emergency management plan is required to comply with Market Rule 4.26 and 4.36: SKM has not determined whether the Risk and Emergency Management Business Plan is consistent with the Water Grid Emergency Response Plan

- *Health, Safety, Environment and Quality*

LinkWater has advised SKM that: "*The Corporate Services HSEQ Business Plan will ensure LinkWater maintains legislative compliance with the Workplace Health and Safety Act and Regulation, Environmental Protection Act and Regulation and the Market Rules. Compliance with this Business Plan also maintains the certified Integrated Management System (IMS) QMS ISO 9001:2008, EMS ISO AS/NZS 14001:2004 and OHS AS/NZS 4801. Delivery towards these business*

objectives contribute directly to LinkWater's legislative compliance and the safety of people and the environment." SKM considers it prudent that LinkWater ensures that they maintain and comply with the relevant standards, legislative requirements and Market Rules.

- *Communication*

LinkWater has stated within the Response to RFI ID No. 0012 – LinkWater Communication and Stakeholder Management Business Plan, referenced above, that: "*The Communications and Stakeholder Management Business Plan supports LinkWater's Corporate Strategic Objective – "Enhanced Capability': LinkWater will be recognised as an employer that values its people and for its exceptional communications and systems. The Communications and Stakeholder Management Business Plan will enhance stakeholder relationships and ensure effective communications internally and externally.*" SKM agrees that communication and stakeholder management plays an integral part to how society view and relate to an organisation.

SKM concludes that the activities indentified under corporate services are relate to legislative requirements, standards of service and public expectations and are therefore considered to be prudent.

6.12.4. Assessment of efficiency

Calculation of costs

The 2012/13 forecast corporate services expenditure calculated using these reports is $2,434,981.

LinkWater has indicated that they have calculated the cost by making use of a bottom-up approach in certain instances and in other made use of historic expenditure. LinkWater has provided SKM with a detailed budget model that identifies specific items in the budget model and their associated cost. A summary of the costs are shown within **Table 47** below.

- **Table 47 Corporate services cost breakdown**

Cost category	Cost breakdown	% of total
Administration	$564,403	23.18%
Insurances	$9,646	0.4%
Information technology	$21,013	0.86%
Lease	$102,577	4.21%
Consultancy	$321,746	13.21%
Employee cost	$1,415,597	58.14%
Total	$2,434,981	100%

- *Administration*

The five, highest by value, items and their associated cost that forms part of the administration sub-function is:

- Photocopier maintenance - $136,100
- Company membership/subscription - $129,986

- Printing and stationary - $82,415
- Communication - $36,832
- Mobile phone - $30,750

- *Lease*

The lease sub-function comprises cleaning, repairs and electricity cost for the building at 200 Creek Street, Brisbane. LinkWater has provided SKM with past invoices for the various components and therefore LinkWater has demonstrated the basis of the cost calculation.

- *Consultancy*

The largest, item by value, included in the consultancy sub-function is for Occupational Health and Safety Consultants at a cost of $219,543. LinkWater stated within the Response to RFI ID No. 0012 – LinkWater Corporate Services Health, Safety, Environment and Quality Business Plan that: "*Contracting of external consultants will be undertaken in alignment with LinkWater's Procurement Procedures. External parties will be contracted where specialist services are required.*" Although LinkWater has not provided a basis of how the cost for Occupational Health and Safety Consultants have been calculated SKM does considers that it equates to two FTE's. LinkWater has provided a staffing level comparison for the Health, Safety, Environmental and Quality function within Australia. LinkWater has stated that Seqwater, post merger, and Allconnex have 14 FTEs. SKM therefore consider that even with the additional two FTE's that LinkWater is well below the two businesses referenced.

- *Employee cost*

From **Table 47** it can be seen that the largest cost component is the employee cost. LinkWater has listed a total of 16 FTE's ascribed to the corporate services function. The employee cost per FTE has been calculated by SKM as $88,474/FTE, this value is much less than the $110,000/FTE used by LinkWater. The total employee costs include all costs associated with employing staff, such as salaries, superannuation and payroll tax.

Benchmarking of costs

LinkWater commissioned a corporate cost benchmarking study by KPMG, in 2011, to assist in its internal benchmarking of overhead costs. The report aimed to provide an estimate for LinkWater's efficient non-capital corporate costs (excluding property leasing). The result of the report provided a range of efficient costs for each business unit within corporate overheads. These benchmarks have been developed to reflect the environment in which LinkWater operates, and to reflect the efficient costs associated with a company of the same asset base and annual turnover. The model has been built from both empirical and bottom-up benchmarks.

The mid-point for the total corporate overhead cost was $13,484,571. The total corporate support costs presented in LinkWater's submission, excluding leasing, was $12,779,888. The value calculated from the budget model through the method defined in the previous section the total corporate support cost, less leasing was $14,417,716.

For the specific cost of corporate services, the KPMG report presented a range of efficient costs, from a low of $2,142,960 a high of $3,687,977 and a median of $2,654,281. SKM therefore consider based on the range as determined by KPMG that the value presented in the report ($2,434,981) falls within this range and are therefore efficient.

LinkWater stated within the submission to the Authority that: *"The transfer of NPI Stage – 2 will involve an increase in community and stakeholder engagement, work place health and safety inspections on the new pipeline, post-completion transfer provisions and document registration. These costs are incurred by the Corporate Service business function."* SKM agrees with the argument that the Northern Pipe Interconnector Stage 2 being commissioned within the 2012/13 year will require more effort from the Corporate Services business function.

Delivery of service

The majority of the work involved in the corporate services expense has been provided in house. SKM considers this approach to be the most effective and efficient method in ensuring that the functions within the corporate services are delivered to LinkWater.

SKM considers the overhead expenditure for corporate services to be efficient for the following reasons:

- KPMG benchmarking, the overall cost submitted to the Authority for 2012/13 is within the efficient range as determined by the KPMG study, referenced above
- The expected increase of effort that will be required by the Corporate Services Team due to the commissioning of the Northern Pipe Interconnector – Stage 2 can be attributed to the increase in cost from 2011/12 to 2012/13
- The cost breakdown submitted by LinkWater has no items that are deemed to be inefficient by SKM

6.12.5. Summary

SKM considers that the cost for Corporate Services to be prudent. LinkWater has provided sufficient information for SKM to review all of the Corporate Service activities and SKM has deemed that all the activities are necessary for LinkWater to fulfil its obligations in the Grid Contract, as well as regulatory compliance, social expectations and legal obligations.

SKM considers that the cost for Corporate Services to be efficient. SKM has reviewed the benchmarking that has been undertaken by KPMG and concludes that even with the increase in effort that the Northern Pipe Interconnector Stage 2 will place on LinkWater that the cost proposed is within reason.

6.13. Overall Summary

A sample of twelve projects were identified and assessed as a representative sample of the operating expenditure program for 2012/13 for LinkWater. We have assessed these projects against the

Authority's definitions of prudency in particular the relevant driver and the decision making process and efficiency, including the standards of service, scope of work, timeliness of delivery and the costs.

The operational expenditure of eleven of twelve operational expenditure projects were assessed as both prudent and efficient.

For one of the operational expenditure projects, Operational Activities – Network Asset Ops, there was insufficient information to assess all of the expenditure as efficient.

The chemical cost project was assessed as both prudent and efficient however a revised operational expenditure was proposed. SKM noted that LinkWater applied 5% inflation adjustment to rates that SKM consider to be applicable for the 2012/13 year.

Table 48 presents a summary of the assessment of prudency and efficiency for the sample of operating costs.

- **Table 48 Sample project summary - revised operating expenditure profile ($000s)**

	Operating Expenditure item	Value ($000s)	Prudent	Efficient	Revised Value ($000s)
1	Maintenance & Operations – Planned Reservoir	2,515	Prudent	Efficient	2,515
2	Maintenance & Operations – Planned Balance Tanks	202	Prudent	Efficient	202
3	Maintenance & Operations – Variable Operational	1,167	Prudent	Efficient	1,167
4	Chemical Cost	533	Prudent	Efficient	506
5	Operational Activities – System Modelling & Network Information	1,005	Prudent	Efficient	1,005
6	Operational Activities – GIS	851	Prudent	Efficient	851
7	Operational Activities – Service Delivery	1,167	Prudent	Efficient	1,167
8	Operational Activities – Network Asset Ops	1,426	Prudent	Insufficient information to assess all expenditure as efficient	1,185
9	Operational Activities – Water Laboratory Testing	1,660	Prudent	Efficient	1,660
10	Property Leasing	1,509	Prudent	Efficient	1,509
11	IT & Knowledge Management	3,084	Prudent	Efficient	3,084
12	Corporate Services	2,435	Prudent	Efficient	2,435

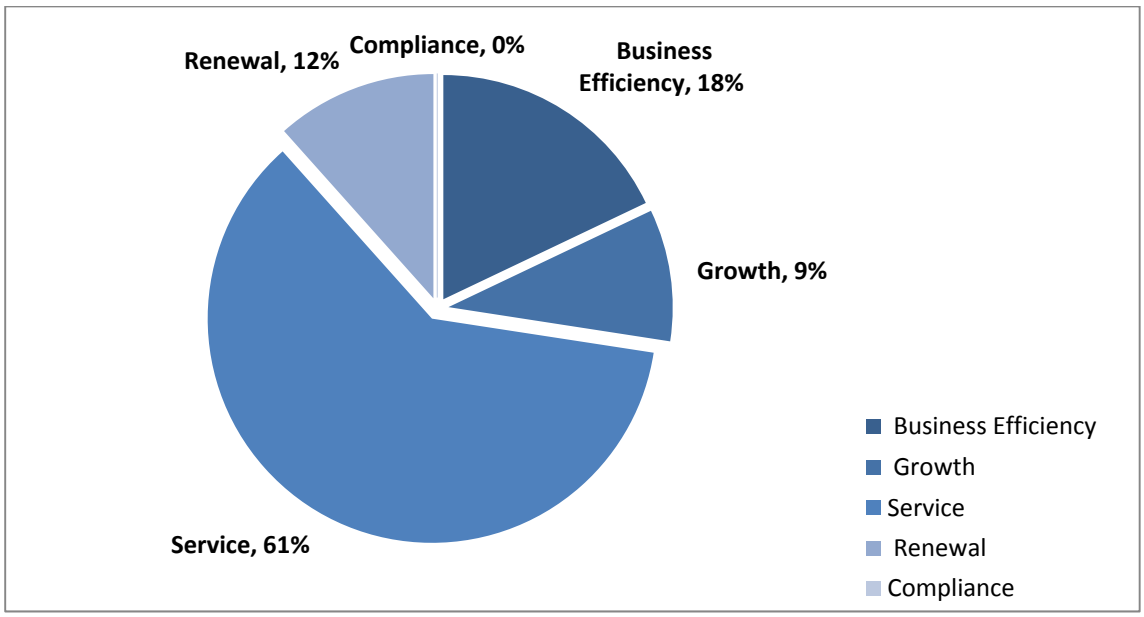
7. Capital expenditure 2012/13

This section contains the review of the prudency and efficiency of LinkWater's capital expenditure. The section is structured as follows:

- Overview of LinkWater's capital expenditure for 2012/13
- SKM's sample selection process
- Overview of prudency and efficiency reviews of LinkWater's capital expenditure
- Detailed prudency and efficiency reviews of the selected sample
- Summary and recommendations

7.1. Overview of capital expenditure

Figure 6 provides an overview of LinkWater's proposed capital expenditure for the 2012/13 financial year by their nominated cost drivers. Approximately two thirds of the costs are associated with service.



Source: Attachment C – *2012/2013 Capex Program by Project*, LinkWater, February 2011

- **Figure 6 LinkWater's capital expenditure cost driver comparison**

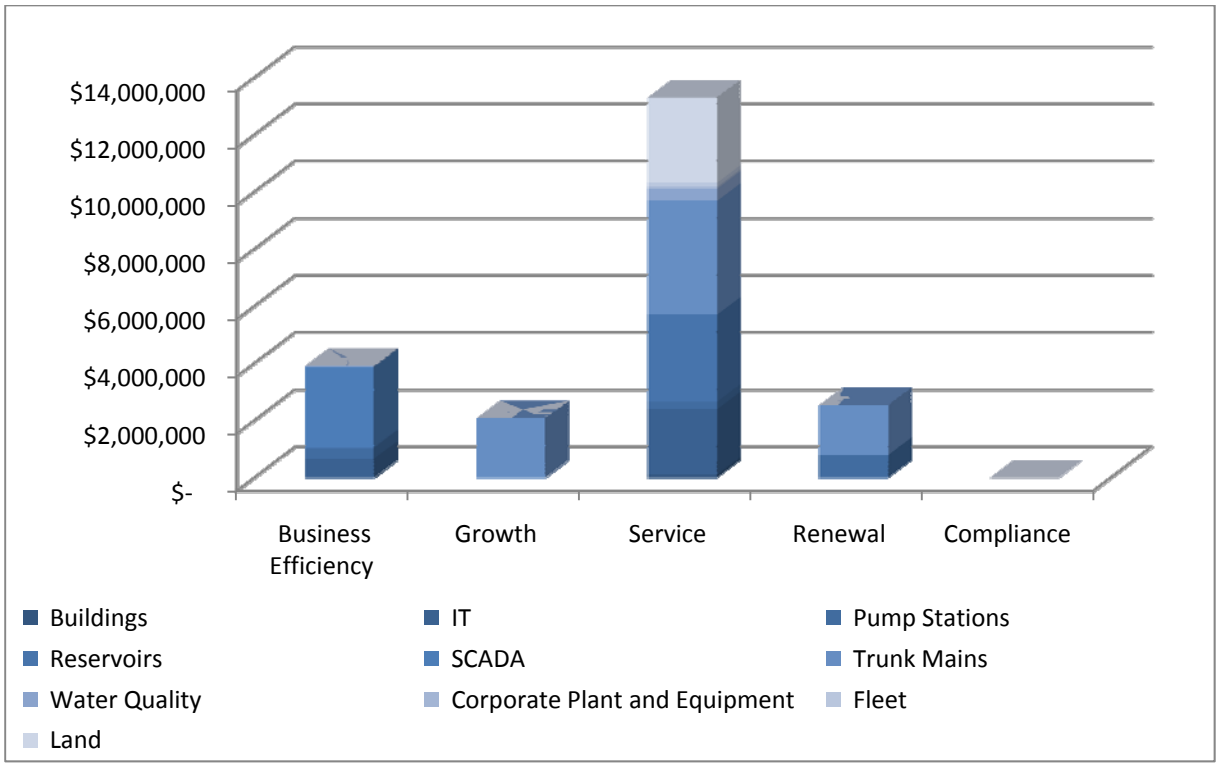
Table 49 identifies the expenditure associated with each of the cost drivers nominated by LinkWater for the 2011/12 and 2012/13 financial years. A review of the table indicates that the total proposed expenditure does not vary much however the distribution of the costs between the cost drivers of business efficiency, growth, service, renewal and compliance has changed significantly with growth increasing approximately 45 times and business efficiency increasing approximately 13 times with service and renewals decreased by 19% and 67% respectively.

- **Table 49 Forecast capital expenditure by cost driver ($000s)**

Cost driver	Cost ($000s) 2011/12	Cost ($000s) 2012/13
Business Efficiency	281	3,911
Growth	45	2,073
Service	16,487	13,301
Renewal	7,557	2,529
Compliance	0	0
Total	**24,369**	**21,815**

Source: Attachment C – *2012/2013 Capex Program by Project*, LinkWater, February 2011

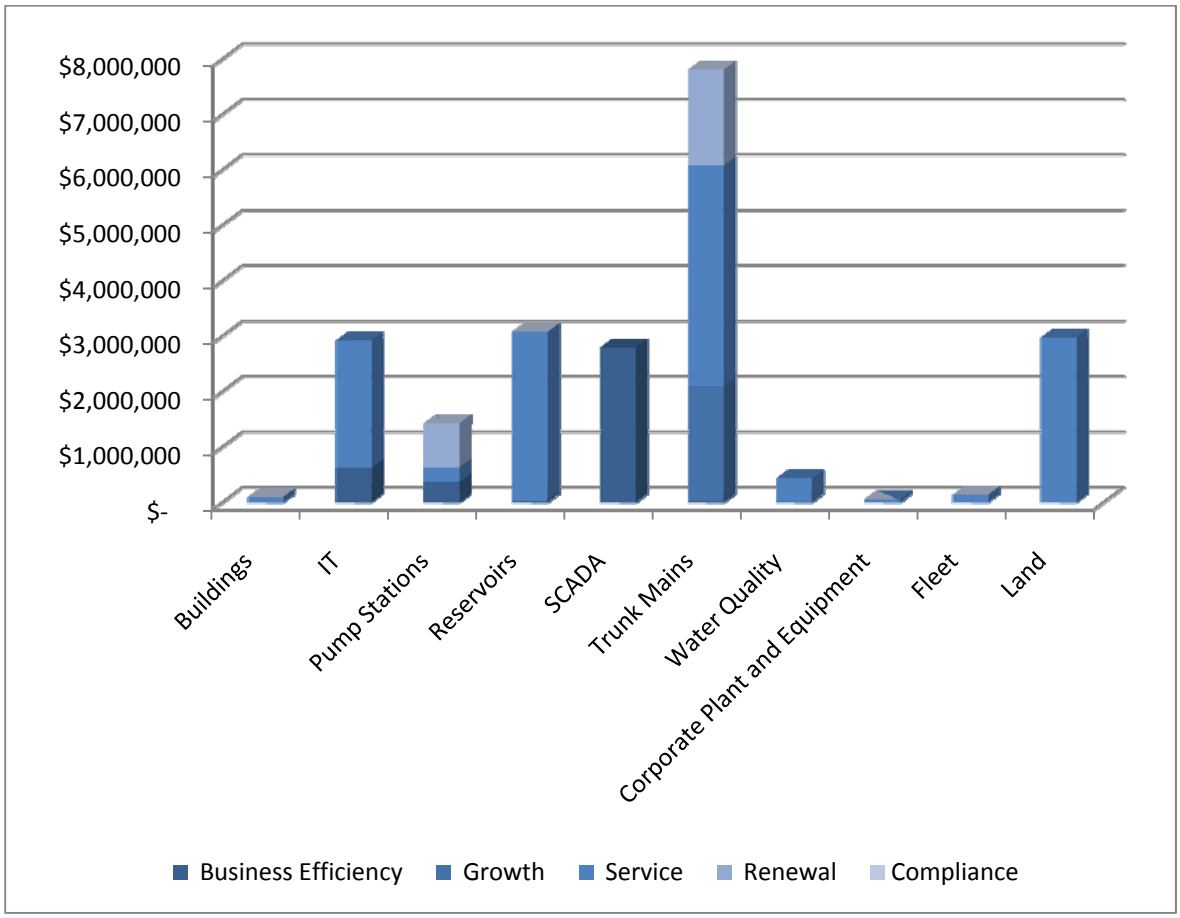
Figure 7 shows that the main driver of LinkWater's capital expenditure is service. This is a result of improvements to donor infrastructure required due to their legacy condition.



Source: Attachment C – *2012/2013 Capex Program by Project*, LinkWater, February 2011

- **Figure 7 LinkWater forecast capital expenditure for 2012/13 by cost driver**

Figure 8 shows the portion of capital expenditure allocated to each asset class. The trunk mains are the most prominent asset regarding capital expenditure; this reflects the asset split within LinkWater's asset set.



Source: Attachment C – *2012/2013 Capex Program by Project*, LinkWater, February 2011

- **Figure 8 LinkWater forecast capital expenditure for 2012/13 by asset type**

7.2. Key issues

7.2.1. Cost drivers

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

- Compliance – capital expenditure associated with the replacement or enhancement of an asset to prevent non-compliance with legislative requirements such as the *Water Act 2000*, Water Market Rule, Grid Services Contract, Water Quality Guidelines and OH&S
- 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
- Business Efficiency – capital expenditure designed to improve operational efficiency and reduce ongoing costs
- Growth – capital expenditure designed to provide an increase in the capability of an asset in response to increased demand, growth or variations required by a customer

- Service - 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
- A combination of the above

7.3. Sample selection

As part of this analysis, a sample of the capital expenditure projects from the 2012/13 budget have been analysed in detail in terms of their prudency and efficiency. The capital expenditures sample selection chosen by SKM in consultation with the Authority for detailed analysis is shown below in **Table 50**. These projects are assessed in detail in the following sections with an overview of the final assessment found in **Table 52**.

- **Table 50 Capital expenditure programs reviewed ($000s)**

Project	Driver	Cost (000s) 2012/13
Trunk Mains - Valve and Main Inspection and Remediation Program	Level of Service	2,107
Trunk Mains - Image Flat New Bulk Supply Point	Growth	2,073
Sparks Hill Reservoir: Reservoir 2 Refurbishment	Level of Service	1,305
Asset Information Management System	Business Efficiency	632
North Pine Pump Station - Surge Compressor and Switchboard Replacement	Renewal	516
Total Sample (5 projects)		**6,632**

The sample has been selected based on the overall value of costs within the 2012/13 budget and to be representative of the various categories of costs. The review has focused on projects that are forecast to be commissioned in 2012/13, as subsequent to commissioning they would be added to the RAB. The $6,632,000 in capital expenditure reviewed represents 30% of $21,815,000 in capital expenditure for 2012/13.

- **Table 51 2012/2013 capital expenditure project reviewed - asset type**

Project	Asset type	Cost (000s) 2012/13
Trunk Mains - Valve and Main Inspection and Remediation Program	Trunk mains	2,107
Trunk Mains - Image Flat New Bulk Supply Point	Trunk mains	2,073
Sparks Hill Reservoir: Reservoir 2 Refurbishment	Reservoirs	1,305
Asset Information Management System	IT	632
North Pine Pump Station - Surge Compressor and Switchboard Replacement	Pump stations	516
Total Sample (5 projects)		**6,632**

The status of reviewed capital expenditure projects within the project development timetable is shown in **Figure 9**.

	Project Status			
	Initiation	*Planning*	*Delivery*	*Finalisation*
	Need/Opportunity Identification *Opportunity and risk definition* *Option analysis* *Preliminary Design* *Business case Assessment and Approval*	*Project initialisation and management plan* *Studies, design and specification* *Delivery Procurement Strategy (where applicable)*	*Tender process / Purchasing* *Contract Establishment and execution* *Land Acquisition* *Commissioning* *Handover and Acceptance*	*Post Delivery Review* *Defect Management* *VFM and Financial Reports* *Closeout Reports* *Asset Transfer & Capitalisation*
Trunk Mains - Valve and Main Inspection and Remediation Program	↓			
Trunk Mains - Image Flat New Bulk Supply Point		↓		
Sparks Hill Reservoir: Reservoir 2 Refurbishment			↓	
Asset Information Management System	↓			
North Pine Pump Station - Surge Compressor and Switchboard Replacement	↓			

- **Figure 9 Capital expenditure program status**

7.4. Overview of prudency and efficiency

Table 52 shows an overview of the final assessment made for each project of the project sample chosen for assessment of prudency and efficiency. A full summary with recommendations for each project can be found in the following sections of this report.

- **Table 52 Overview of prudency and efficiency of capital expenditure sample selection**

Project	Cost 2012/13 ($000s)	Prudent	Efficient
Trunk Mains - Valve and Main Inspection and Remediation Program	2,107	Prudent	Efficient (based on additional information) Note: Insufficient information to assess expenditure beyond 2012/13 as efficient
Trunk Mains - Image Flat New Bulk Supply Point	2,073	Prudent	Efficient
Sparks Hill Reservoir: Reservoir 2 Refurbishment	1,305	Prudent	Efficient
Asset Information Management System	632	Prudent	Efficient
North Pine Pump Station - Surge Compressor and Switchboard Replacement	516	Prudent	Efficient excluding building

7.5. Trunk Mains - Valve and Main Inspection and Remediation Program

7.5.1. Proposed capital expenditure

Table 53 shows the proposed cost of the Trunk Mains - Valve and Mains Inspection and Remediation Program within the 2012/13 budget and beyond.

- **Table 53 Trunk mains valve and mains inspection and remediation program – Proposed capital expenditure profile**

Source	Costs ($000s)				
	2012/13	2013/14	2014/15	Subsequent	Total
Regulatory Submission to the QCA	2,107	-	-	-	-
PJR 2012/13 Capital Works Program (base cost)	1,832	1,895	1,895	4,200	9,822
PJR 2012/13 Capital Works Program (total cost)	2,105	-	-	-	-
Briefing Note – Response to SKM, Trunk Mains, Valve Inspection and Remediation Programme	2,105	2,179	2,179	4,830	11,293

None of the figures listed for 2012/13 capital expenditure in the documents listed in **Table 53** are consistent, but the Project Justification Report (PJR) total cost figure (including LinkWater project management and business support costs) is similar to that provided in LinkWater's submission to the Authority.

7.5.2. Project description

The project involves using a structured prioritised inspection program, under which valves and pits in the LinkWater trunk main network will be inspected and repairs completed on a regular basis. There are almost 4,000 valves with diameters up to 1,800 mm across the network. In addition, leakage detection will be required on a small number of mains, as nominated and prioritised by Operational Services - Service Delivery. Tasks to be undertaken as part of the valve inspection program include:

- Inspection of the valve and pit and capture of relevant asset and condition information
- Confirming that each valve is fully operational and provides an adequate seal. This will include mechanical exercising where access is available
- Confirming lid accessibility
- Confirming functionality of any valve actuators, SCADA etc, where installed
- Confirming location and erecting marker post as appropriate
- Assessing safety of all access equipment (lids, ladders etc)
- Determining if there is any evidence of leakage in the vicinity of the valve
- Undertaking repairs and replacement of any components that are not fully functional
- Undertaking leakage detection as directed by Service Delivery

The primary focus of the project is to ensure all valves across the network are fully functional and mains suspected of leakage are assessed and repaired. Mains nominated for leakage detection will be identified by Service Delivery through the System Water balance investigation project. Many existing valves, particularly on the 'acquired assets' have not been regularly serviced and cannot be relied upon to operate when needed.

7.5.3. Provided documentation

The key reference documents used for this review are:

- *Regulatory Submission to the QCA – 2012-13 Grid Service Charges*, LinkWater, February 2012
- *Attachment A: QCA Data Template*, LinkWater, February 2012
- *Project Justification Report - Trunk Mains – Valve Inspection and Remediation Program*, LinkWater, 20 November 2011
- *Memorandum in response to SKM Request RFID 0018 Trunk Mains – Valve Inspection and Remediation*, LinkWater, 9 March 2012
- *Critical Asset Inspection Team Proposal*, Version 5, Transfield Services and TRILITY, 16 May 2011
- *Internal Review of Maintenance Management Plan*, SMEC, June 2010
- *Briefing Note – Response to SKM, Trunk Mains, Valve Inspection and Remediation Programme*, LinkWater, 11 April 2012
- *Response to Request for Information - Trunk mains – Valve and Mains Inspection and Remediation Program*, LinkWater, June 2012

7.5.4. Prudency

Cost driver

The cost driver nominated by LinkWater for this project is *renewal.*

Valves are a critical part of the trunk-main network and serve a variety of purposes including:

- Isolation valves - to separate one part of the network from another
- Shut-off valves - to allow portions of the network to be shut-off for maintenance works and repairs
- Flow control valves - restrict the amount of flow, direction of flow and/or pressures in the mains
- Air valves - provide for the release of air from the mains and the rapid inflow of air in the event of a main being drained
- Scour valves – allow the scouring of accumulated sediment at low points and the main to be emptied

Each valve has a specific purpose and has characteristics peculiar to that purpose.

The valves are typically used infrequently. If there is not a regular inspection program valves might not be used, or even sighted, for many years which increases the likelihood that they will not operate properly when required. As the valves are typically spaced significant distances apart, a malfunctioning valve can require the shutting down of a much large portion of the network than would otherwise be required, with consequential impacts on supply.

Approximately 350 km of LinkWater's network of 530 km of trunk-mains were inherited from the various Councils. The valves on these mains are relatively old and were subject to a variety of maintenance programs, varying from regular maintenance to none at all in most cases. It is also suspected that a number of mains may experience leakage. As a consequence of this there is a large back-log of maintenance, refurbishment and renewal work required to bring the valve assets up to a fully, and reliably, functional state.

This project involves capital expenditure associated with works on assets that currently appear to meet service performance standards and legislative requirements but face an unacceptable risk of future non-compliance. The renewal will maintain existing levels of service over the life cycle of the asset. Therefore *renewal* is considered to be an appropriate driver for the project.

Decision making process

In 2010 LinkWater engaged SMEC to conduct a review of their Maintenance Management Plan. This review identified that LinkWater had limited knowledge of their civil assets including pipes, pits, valves and reservoirs. To rectify this deficiency LinkWater proposed to commence a 'Valve and Main Inspection and Remediation Program'.

Within the Project Justification report a number of broad-brush options were identified, including 'do nothing', 'repair when discovered' and 'programmed inspection and valve renovation'. LinkWater

considers the risks associated with the 'do nothing' option are unacceptable, as valves would continue to fail and would not be restored. 'Repair when discovered' is the default reactive option if a pro-active remediation program is not achievable. LinkWater considers that this would be sustainable in the long term but that it would retain a significant risk of valve failure and offer none of the benefits that could be achieved through regular inspection and trial operation of the assets. As the default it was not considered further. LinkWater's preferred option is 'programmed inspection and valve renovation', which is the basis for the proposed project costs.

A pilot project commenced in 2011/12 indicates that the program will be significant as many of the valves are in confined spaces and the works required are extensive. LinkWater's submission as a whole demonstrates a focus on asset management within the organisation, and an awareness of the importance of good asset management practices. Initially no information was provided by LinkWater detailing what was achieved during the six month pilot study. LinkWater state that, as per the 'March 2012 CAIT Inspection Report' (which has not been provided):

> *"... 157 asset location have been assessed by the end of January 2012, with the following findings:*
>
> - *51 defects have been highlighted by the inspection teams.*
> - *12 assets have been approved for capital replacement.*
> - *The remaining 39 will form part of the lower priority corrective maintenance works once the scope of works has been defined.*
> - *The current defect rate is 32.5%"*

In the *Briefing Note – Response to SKM, Trunk Mains, Valve Inspection and Remediation Programme* (LinkWater, 11 April 2012) states:

> *"The initial results from this exercise indicate that there is a requirement to continue and maintain the current strategy to ascertain the condition of LinkWater's critical valves. The high priority trunk main schemes are mostly within urban areas where any asset failure such as a burst water main has the potential to cause significant damage. LinkWater must have the ability to isolate its network quickly and be able to rezone supplies. Having confidence in its asset availability is critical to maintain supplies to customers and fulfilling LinkWater's contractual obligations."*

LinkWater advise that the Asset Management and Operations teams carried out a number of desk top studies on the likely condition of the inherited pipelines and engaged with TYCO to provide areas of pipeline failure based on a number of characteristics such as soil type, age of pipeline, pressure and material. Risk ratings were allocated to the assets based on risk of failure, supply impact, consequential damage and loss. A number of pipeline schemes were identified as having extreme (S24 Sparkes Hill to Green Hill, S16 Mt Crosby to Green Hill, and S21 Redlands Bay Islands Supply) or high (S2 Anstead to Runcorn, S6 Alexandra Hills to Capalaba WTP, Compton Rd to Supply Main, Green Hill to Wellers Hill, and Ipswich Western Main) risk rating and therefore prioritised for inspection and testing. In addition a total of 675 valves were identified to be at "Significant Risk"

(almost 17% of all valves), the majority of which are located within extreme risk pipeline schemes. These extreme and high risk pipeline schemes have been prioritised for inspection and testing with works to be completed by the end of 2013/14.

During the inspections and testing program if a defect or additional maintenance requirement is identified by the inspection team, a notification is produced which is sent immediately to LinkWater to allow the process for approval of the works and the production of a Work Order for the completion of the identified works to commence. LinkWater advises that remediation will be completed on a priority basis as determined by Service Delivery with only those of highest priority being completed as part of this project. Each proposed remediation will be considered on an individual basis and based on the current and future functionality and operational requirements at an asset and network level.

Although there has been no assessment of options within the proposed 'programmed inspection and valve renovation', or consideration of the possibility of using a combination of the options documented in the Project Justification Report, the manner in which the program has been set up is in effect a combination of the 'repair when discovered' option and the 'programmed inspection and valve renovation' option. Under the program, assets which are identified as having a higher risk rating are inspected and tested first with those identified as having a lower rating inspected and tested later. Correct application of the risk rating to an asset is of significant importance.

The inspection and remediation programme should be assessed in conjunction with LinkWater's other planned capital works to avoid remediation of assets which are scheduled for decommissioning in the near future or replaced as part of separate projects.

No NPV calculation has been provided to SKM. There have been no comparative cost estimates completed as LinkWater considers this beyond the scope of its assessment processes due to the complex assumptions involved. In *Memorandum in response to SKM Request RFID 0018 Trunk Mains – Valve Inspection and Remediation* (LinkWater, 9 March 2012) LinkWater state:

> *"LinkWater does not regard the "Do nothing" option as an acceptable response. However to associate cost with this option would require an estimate of the additional costs incurred by LinkWater when a faulty valve is found and additional works are required to work around this limitation. As every situation is different for a bulk system such as LinkWater's this would require some relatively arbitrary assumptions as to the frequency and extent of such situations. The more problematic element that should be included in costing this estimate is the impact on the Distribution Retail Entities and their customers from outages that extend over greater periods and over larger areas than a fully operative system would have required. This requires consideration of actual losses to industry and business plus assessment of societal losses arising from the disruption. While such a calculation is theoretically possible it is necessarily based on many assumptions and is beyond the scope of LinkWater's assessment processes.*
>
> *A comparison of "Repair when discovered" Vs "Programmed Inspection and Valve Renovation" has similar issues to the above discussion. Under a "Repair when Discovered" approach problems are fixed when they are discovered and this will reduce the likelihood of future repeats*

of the same problem at the same location. Such a program would have a lower expenditure profile that the programmed approach but should also include consideration of the third party effects described under the "Do Nothing" approach.

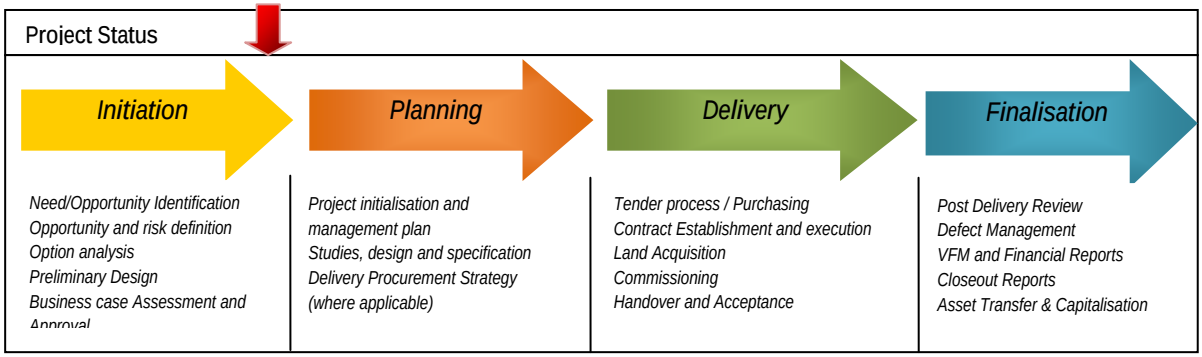
Only the programmed approach minimises the third party costs associated with valve failures, the associated societal costs and the reputation impacts on LinkWater when it is revealed that the absence of a planned maintenance plan for critical assets resulted in entirely predictable and unnecessary interruptions to water supply over potentially large areas of South East Queensland. Such inspections are normal within the industry to ascertain the initial condition of the asset."

SKM consider that a coarse assessment of the cost of these options can be completed focusing on significant aspects to a degree that is appropriate for the task and that these would inform the decision makers including the Board.

Further SKM believe that it should be within the scope of LinkWater's assessment process to do this, as whilst the quantification of risk is still a maturing practice in the industry, it is a process that is used where appropriate in contemporary practice.

Notwithstanding the above comments, the 2012/13 scope of the project has been assessed as prudent. The primary driver of renewal has been demonstrated. An acceptable decision making process has been documented. This decision making process can and should be improved.

7.5.5. Efficiency



The scope of works

The scope of works for this project includes:

- Locate and mark position of all valves, flow meters, distribution branches and isolation valves
- Record GPS position for uploading into LinkWater GIS system
- Compare GIS records with on site assets
- Install appropriate markers
- Pump and clean out any flooded pits
- Record type and condition of equipment above and below ground
- Confirm condition of any barrel union joints

- Confirm orientation of valves
- Operate valves using valve exercising equipment recording torque settings for each valve for uploading into LinkWater SAP
- Check condition of cathodic protection points
- Identify and check existing overland flow paths
- Identify any environmental constraints or risks
- Provide photographic records of pre and post inspection and minor repairs
- Provide reports on all assets and rectification requests for approval by LinkWater
- Leakage detection works, as determined by service delivery
- Repair or renewal of non-functioning high priority valves and fittings identified via the inspection process

These are assessed as appropriate for the Valve and Mains Inspection and Remediation Program.

Standards of work

The inspection teams are engaged from the existing Operations and Maintenance contractor and as such all work conforms with the conditions outlined in the contract. In addition all remediation work under taken must comply with the WSAA Water Supply Code (WSA 03-2011, including LinkWater Supplement).

Project cost

LinkWater advise that a Cost Estimation Guideline was utilised for the generation of the 2012/13 Capex program. LinkWater did not go to market for the engagement of labour services for this project. Instead LinkWater solely approached its current Operations and Maintenance contractor, Transfield Services and United Services (collective know as the Operations and Maintenance Joint Venture (OMJV) or Trility), for a quotation for resources to carry out the scope of works for the project. LinkWater advise that they have previously determined that the benefits of having works undertaken by the Service Contractor outweigh the benefits that might be obtained by tendering the works. LinkWater state in '*Response to Request for Information - Trunk mains – Valve and Mains Inspection and Remediation Program'* (LinkWater, June 2012) in support of this statement that:

> *"While LinkWater considers that the Services Contractor undertaking minor reactive capital works not only allows it to meet its Deed obligations, there are greater operational efficiencies and therefore cost efficiencies as the Services Contractor has an understanding of the condition and operation of the asset in question and can undertake the majority of small reactive works projects while either on site or in co-ordination with its routine inspections or maintenance works program.*
>
> *This allows reactive works to be undertaken quickly and efficiently and at market tested rates. As a result, delays in going through an alternative tendering process are eliminated thereby minimising risks of asset failure and reducing administrative costs."*

LinkWater's procurement procedure provides thresholds in approaching the market for procurement of goods and service relative to contract value. For contracts between $20,000 and $100,000 require a formal process of seeking two or more written quotes; for contracts between $100,000 and $250,000 need a minimum of three tenders, proposals or quotes through a formal invitation to those with special expertise and for contracts between $250,000 and $100 million must have a public request for tender. In addition approval to use a sole source may be permitted in circumstances where only one supplier has the capability to meet the need or there is genuine urgency. Justification to proceed with a sole supplier, under either circumstance, requires documented justification and approval by the Chief Executive Officer (CEO). No documentation has been provided by LinkWater to show that either of these processes has been followed.

LinkWater's Operations and Maintenance contractor submitted a proposal for the provision of two Critical Asset Inspection Teams (CAIT) with a total price per year of $931,500 plus an additional service fee of $77,625 per month based on labour, vehicles and tools and equipment. LinkWater advise that the rates provided in the cost estimate correspond with the current hourly wages agreed within the Operation and Maintenance Deed, with the fixed rates only rising in line with CPI. Further LinkWater advise that they intend to engage with the market to secure a market tested Operation and Maintenance contract in the 2013/14 financial year.

The Project Justification Report includes the following, **Table 54**, breakdown of costs for the project.

- **Table 54 Proposed cost**

Cost Summary	July – Dec 2011 Cost ($000s)	2011/12 Estimated Cost (x2) ($000s)	2012/13 Estimated Cost (+3% CPI) ($000s)
Service contractor costs – Material and sub-contractor (variable fee only)	828	1,656	1,706
Service contractor costs – Capex support	114	229	236
Total CAPEX (excl SC labour – non 'support'	**942**	**1,885**	**1,942**
Inspection (CAIT) project (actual $)	319	785	-
Inspection (CAIT) project (100% F/T Capex at 7.625k/mth)	466	932	959
TOTAL Service Delivery (excl service contractor non 'support' hours)	**1,408**	**2,670**	**2,901**

note: does not include Service Contractor labour costs that are not CAPEX office support (ie site hours)

Inspection (CAIT) project (100% Capex at 77.625k/month) 465.75

Source: *Project Justification Report - Trunk Mains – Valve Inspection and Remediation Program* (LinkWater, 20 November 2011)

The implementation of remediation works with significantly different estimated costs is not clear. Procedures for these are expected to generally be consistent with standard LinkWater expenditure approval processes.

LinkWater state that they do not have a prescriptive policy in place for determining when a project is of sufficient magnitude and the risk of failure does not require immediate action. When an asset requiring remediation is identified and the work is approved by LinkWater the process by which the

project proceeds is not clear, i.e. is the work completed by the O&M contractor or does the work go out for tender if it is over a certain amount. Two examples of obtaining quote for the remediation of identified issues have been provided by LinkWater (for the Reedy Creek leaking valve, $180,000, and the Waraba Creek leaking valve, $77,000) however the process for obtaining these quotes has not been provided, ie open market, panel of providers, etc. LinkWater state in '*Response to Request for Information - Trunk mains – Valve and Mains Inspection and Remediation Program'* (LinkWater, June 2012) that:

> *"Decisions regarding when a reactive project is of sufficient low risk to allow its inclusion in the planned capital works program is at the judgement of LinkWater's Operational Services GM. Decisions are made after consideration of field asset information provided by Trility."*

Within the *Briefing Note – Response to SKM, Trunk Mains, Valve Inspection and Remediation Programme* (LinkWater, 11 April 2012) LinkWater include a revised budget and program of work, as outline below in **Table 55**.

- **Table 55 Revised project costs**

Item	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Inspection	995,000	995,000	995,000	750,000	500,000	250,000
Remediation	800,000	900,000	900,000	900,000	900,000	900,000
LW Resources	37,002	-	-	-	-	-
Sub-Total	**1,832,002**	**1,895,000**	**1,895,000**	**1,650,000**	**1,400,000**	**1,150,000**
Direct LW Costs	272,866	284,250	284,250	247,500	210,000	172,500
TOTAL	**2,104,868**	**2,179,250**	**2,179,250**	**1,897,500**	**1,610,000**	**1,322,500**

Source: *Briefing Note – Response to SKM, Trunk Mains, Valve Inspection and Remediation Programme* (LinkWater, 11 April 2012)

In relation to **Table 55** LinkWater state:

> *"The inspection portion of this project shows a Capex funding decrease from 2015/16 until 2017/18. The initial years of inspection are fully funded by the Capex program as primarily capital remediation works are expected to be identified through the inspections. As the scheduled inspections move to newer, less critical assets (as per Tyco report), the outcomes are anticipated to be more corrective maintenance in nature. To reflect this, funding of the inspection program is gradually transitioned to the Opex program from 2015/16 to 2017/18, and is fully funded by the Opex program form 2018/19 onwards (not shown).*
>
> *However, as lower priority capital remediation works may be completed in the later years as deemed necessary, the remediation budget does not show a decrease. This will be revised in future years when further data is available."*

This review focuses on the 2012/13 expenditure only, however SKM would expect to see a decrease in the remediation expenditure as the program progresses over time as it is expected that the higher priority schemes would have the most issues and they would potentially be the most expensive to rectify.

The use of a cost estimation database in conjunction with costs from previous year's expenditure is an appropriate method to estimate project costs. The engagement of the current O&M contractor for the works without going to the market cannot be justified without evidence supporting LinkWater's conclusion that the benefits of having work undertaken under the O&M contract outweigh the benefits of going to the market. A definitive process regarding how the remediation work proceeds once an asset has been identified, should be developed and/or provided.

7.5.6. Policy and procedures

As per LinkWater's Procurement Management Procedure, items of capital expenditure with a nominal contract value between $250,000 and $100 million are considered to be significant capital works. This level of expenditure requires the procurement procedure of inviting a public request for tender. This process has not been followed for the project.

7.5.7. Timing and deliverability

Delivery of the project is based on the Critical Asset Inspection Team (CAIT) being at 100% utilisation. For the half-year from July to December 2011 the CAIT was at less than 70% utilisation. LinkWater has assumed in their budget that this rate will continue for the remainder of 2011/12 but that this will increase to 100% for the 2012/13 financial year.

It is proposed that the project will continue as a Capex project until 2017/18, after which it will be an operation expenditure item.

Risks to delivery include:

- Inspections taking longer than expected due to safety requirements such as confined space entry and traffic management
- Inability to shut down the network to allow remedial work, including possible issues with isolating the relevant parts of the network in order to complete remediation works if the required isolation valves are inoperable
- Lack of incentive for the CAIT team to get through the work quickly and programme it efficiently, as they are being paid on a time and expenses basis
- Service contractor not having the required resources to undertake the inspections and a proportion of the remedial work

Without implying the prudency or efficiency after 2012/13, the program appears achievable.

7.5.8. Efficiency gains

There are possibilities for efficiency gains using mass procurement of valves and other components. The time involved in procuring individual components as the need arises (current system) or as individual inspections are undertaken (proposed system) could be reduced and there would also be an expectation of lower unit rates when procuring in bulk. There would be future operation and maintenance efficiencies as a result of standardised equipment, fittings, fixings and spare parts.

LinkWater advise that they have commenced procuring additional critical pipeline spares such as collars, couplings and pipe but have not advised how other items are procured.

7.5.9. Allocation of overhead costs

Project management and business support costs have been allocated to the project, but no breakdown of these figures has been supplied.

7.5.10. Summary

The project is assessed as prudent. The primary driver of *renewal* has been demonstrated and an acceptable but improvable decision making process has been documented.

The 2012/13 project is assessed as efficient as the scope is appropriate and the standards of works are consistent with industry practice. The use of a cost estimation database in conjunction with costs from previous year's expenditure is an appropriate method to estimate project costs. The engagement of the current O&M contractor for the works without going to the market is difficult to substantiate without evidence supporting LinkWater's conclusion that the benefits of having work undertaken under the O&M contract outweigh the benefits of going to the market.

In addition a definitive process regarding how the remediation work proceeds once an asset has been identified should be developed. Consequently this project should be considered for ex-post reviews, and until this is completed the efficiency of future budget expenditure (2013/14 to 2017/18) is not confirmed.

The value of expenditure not considered to be prudent and efficient for 2012/13 only: Nil. This is illustrated below in **Table 56**.

- **Table 56 Trunk mains valve and mains inspection and remediation program - revised capital expenditure profile**

Project	Costs ($000s)				
	2012/13	2013/14	2014/15	Subsequent	Total
Trunk Mains – Valve and mains inspection and remediation program	2,105	Not assessed	Not assessed	Not assessed	Not assessed

The quality of the information provided on this project is outlined below in **Table 57**.

- **Table 57 Quality of information provided**

Section of Capex review	Trunk Mains – Inspection and Remediation		
Project description			
Provided documentation			
Prudency			
Cost driver			
Decision making process			
Efficiency			
Scope of works			
Standards of work			
Project cost			
Policy and procedures			
Timing and deliverability			
Efficiency gains			
Allocation of overhead costs			
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

7.6. Trunk Mains - Image Flat New Bulk Supply Point

7.6.1. Proposed capital expenditure

Table 58 shows the proposed cost of the Trunk Mains - Image Flat New Bulk Supply Point project within the 2012/13 budget.

- **Table 58 Trunk Mains - Image Flat New Bulk Supply Point Project – Proposed capital expenditure profile**

Source	Cost ($000s)				
	2012/13	2013/14	2014/15	Subsequent	Total
Regulatory Submission to the Authority	2,100	-	-	-	2,100
QCA Data Template	2,107	-	-	-	2,107
Project Justification Report: Trunk Mains – Image Flat New Bulk Supply Point	2,071	-	-	-	2,071

The information provided in the project justification report is consistent with the costs within LinkWater's submission to the Authority.

7.6.2. Project description

The Trunk Mains - Image Flat New Bulk Supply Point project involves the construction of an offtake connection from the Northern Pipeline Interconnector (NPI) Stage 2 to Unitywater's North Shore pipeline at the Nambour Showgrounds. This will include a 500 mm diameter flow control valve, a 500 mm diameter non-return valve, a 500 mm diameter flowmeter, four isolation valves and approximately 100 m of 500 mm diameter pipework.

The Image Flat Water Treatment Plant supplies water to the Image Flat reticulation system in the Unitywater water supply zone. It provides supply to Yandina, Eumundi, Nambour, Bli Bli, Mudjimba, Marcoola, Coolum and Peregian Springs. The Image Flat Water Treatment Plant has a daily production capacity of 25 ML/day with the mean day maximum month (MDMM) demand for the Image Flat reticulation system forecast to exceed this capacity by 2016. At present there is no contingency supply for plant failure or water quality issues.

The construction of the NPI Stage 2 presents an opportunity to create a connection to provide for redundancy of supply and potentially a primary supply in the short to medium term. This will increase security of supply for Nambour and the coastal area and allow for the deferral of the Image Flat WTP capacity upgrade.

7.6.3. Provided documentation

The key reference documents used for this review are:

- *Regulatory Submission to the QCA – 2012-13 Grid Service Charges*, LinkWater, February 2012
- *Attachment A: QCA Data Template*, LinkWater, February 2012
- *Project Justification Report: Trunk Mains – Image Flat New Bulk Supply Point*, LinkWater, February 2012
- *Letter from the WGM supporting the construction of the Image Flat Offtake*, SEQ Water Grid Manager, February 2012
- *Options Study for Bulk Supply to the Image Flat Sub-Region*, CH2M HILL, July 2011
- *Strategic Asset Management Plan for Bulk Water Transport Services*, LinkWater, 2009
- *Nambour Off-take Options Study*, KBR, August 2011

7.6.4. Prudency

Cost driver

The cost driver nominated by LinkWater for this project is *growth*.

The cost driver of growth is supported by the *Options Study for Bulk Supply to the Image Flat Sub-Region* (CH2M HILL, July 2011) undertaken by Seqwater and the *Nambour Off-take Options Study* (KBR, August 2011) undertaken by LinkWater, as outlined below.

According to the *Options Study for Bulk Supply to the Image Flat Sub-Region* (CH2M HILL, July 2011) the Image Flat Water Treatment Plant is conventional sedimentation and filtration plant which was constructed 1968 (Plant 1) and 1975 (Plant 2). The two plant trains have a total hydraulic capacity of 38.8 ML/d however the capacity of the plant is restricted by constraints including sludge management, clarifier and chemical dosing. The report states:

> *"The current plant capacity, as stated in the HACCP Plan (2011), is 25 MLD. Capacity constraints to sludge processing limit the sustainable plant production to 18 MLD. Under high*

turbidity and wet weather conditions as recently experienced, plant production was limited to about 12 MLD."

The demand projections used within the study, as outlined below in **Table 59**, indicate that the projected MDMM significantly exceeds the accepted maximum capacity of 25 ML/d of the Image Flat Water Treatment Plant. The report further states: *"The fact that this has not been a problem is primarily due to actual water demands being lower than projected...and that the plant can operate for short periods up to 35MLD. It is expected that significant shortfalls could occur is a sustained warm and dry spell occurred, or bounce-back of demand occurs."*

Table 59 Water demand projection for Image Flat sub-region

Year	2011	2016	2021	2031
Average Day (AD)	20.3	24.0	25.5	27.1
Mean Day Maximum Month (MDMM)	30.4	36.0	38.3	40.7

Source: *Options Study for Bulk Supply to the Image Flat Sub-Region*, CH2M HILL, July 2011

The *Nambour Off-take Options Study* (KBR, August 2011) identifies the Image Flat Water Treatment Plant as an aging plant which currently produces 18 ML/d, with a maximum production capacity of 25 ML/d and predicts that the plant will reach capacity by 2018. The installation of the new bulk supply point will allow for the demand to be met while delaying the need for capital outlay to upgrade the Image Flat Water Treatment Plant

Decision making process

An options study, which includes the 'do nothing' option has been conducted. A number of options were considered in the *Nambour Off-take Options Study* (KBR, August 2011), these were:

Option 1 375 mm diameter offtake that can supply up to 18 ML/d

Option 2 500 mm diameter offtake that can supply up to 30 ML/d

Option 3 Do nothing

The *Nambour Off-take Options Study* (KBR, August 2011) identifies that:

"the do nothing options results in an imminent upgrade at the Image Flat WTP by 2015, and no alternative supply available for the Nambour area and coastal region. Given the significant community costs and public health risks associated with this option, this is not considered further as the NPI pipeline connection is readily available to completely mitigate this risk."

The *Nambour Off-take Options Study* (KBR, August 2011) considers that the *"Effort required for implementation of design, offtake control and commissioning is expected to be comparable for both options."* Option 2 requires Unitywater to upgrade its North Shore trunk main, while Option 1 does not.

The estimated costs for the options are outlined below in **Table 60**.

- **Table 60 Estimated costs**

Option	Estimated Cost ($M)
Option 1: 375 mm offtake that can supply up to 18 ML/d	1.4
Option 2: 500 mm offtake that can supply up to 30 ML/d	1.75
Option 3: Do nothing	NA

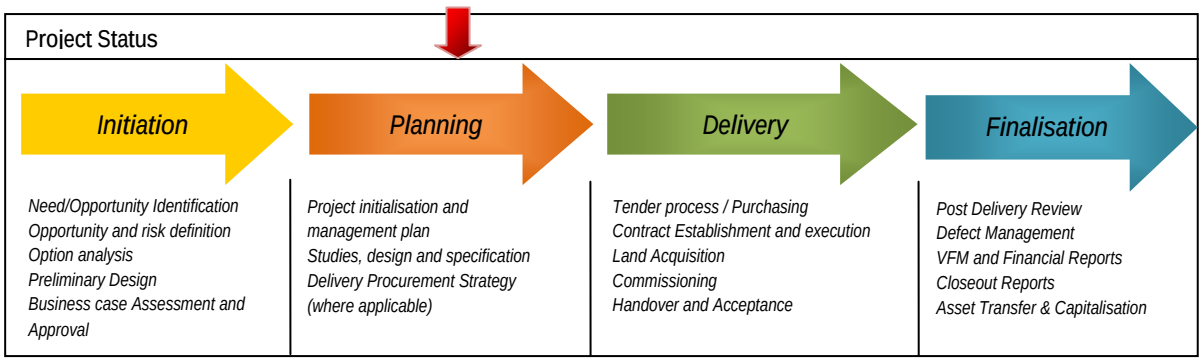
Source: *Nambour Off-take Options Study*, KBR, August 2011

The preferred option of a 500 mm offtake that can supply up to 30 ML/d was selected as it provides greater flow capability for a minimal cost increase and is support by the SEQ Water Grid Manager (as per the *Letter from the WGM supporting the construction of the Image Flat Offtake,* SEQ Water Grid Manager, February 2012).

The extension of the Northern Interconnector Pipeline initially to Image Flat Water Treatment Plant and then to Noosa network was identified in the *Strategic Asset Management Plan for Bulk Water Transport Services* (LinkWater, 2009).

Consequently the project has been assessed as prudent. The primary driver of growth has been demonstrated. An appropriate decision making process has been documented.

7.6.5. Efficiency



The scope of works

A number of options were considered prior to the selection of the installation of a new bulk supply point. This option was adopted as it will not only delay the need for capital expenditure to upgrade the Image Flat Water Treatment Plant, it also connects the region to the South East Queensland Water Grid allowing for the economical use of resources throughout the grid.

The scope of works for this project includes:

- Structural - flow control valve pit, flowmeter pit, general allowance for thrust blocks
- Mechanical valves, pipe and fittings - hydraulic control valve (globe type with pressure pump), non-return valve, actuated security valve (butterfly), manual isolation valves – double block and bleed (butterfly – four off), flowmeter
- Drain down points - dismantling joints, 100 m of pipe, tee, pipe specials and miscellaneous fittings

- Electrical and instrumentation - Energex connection, fibre optic connection, switchboard, programmable logic controller (PLC) and network hardware (outdoor switchboard), instrumentation (two pit level switches and two pressure transmitters)
- Software design / programming and implementation - control of equipment: one off Singer flow control valve (FCV) and one off Rotork actuated valve, PLC programming, operator interface panel (OIP) programming, SCADA programming, factory acceptance testing (FAT), pipe leg master updates to other sites, software / process commissioning, telemetry system modifications

These are assessed as appropriate for the selected option.

Standards of work

As the detailed design for this project is planned to be undertaken in the 2012/13 financial year the standard of works that it will conform to has not been provided in the documentation to date. It is, however, expected that the works will be required to conform to technical, design and construction legislative and industry requirements.

Project cost

The estimated costs, include a 5% contingency allowance, for the preferred option are outlined below in **Table 61**. The costs are provided in the *Nambour Off-take Options Study* (KBR, August 2011) which is stated to be accurate to ± 40%. The contingency allowance has been applied to each item as there is no separate item labelled 'contingency allowance' in the cost breakdown. Detailed design, tendering, construction and commissioning is planned to be undertaken in the 2012/13 financial year.

- **Table 61 Cost estimate breakdown**

Cost component	Cost ($)
Design	**199,400**
Civil, Structural & Mechanical	81,100
Instrumentation & Electrical	118,300
Supply and Installation	**1,440,000**
Civil, Structural & Mechanical	1,257,400
Instrumentation & Electrical	183,000
Software Design / Programming & Implementation	**66,200**
Commissioning	**39,600**
TOTAL	**1,745,600**

Source: *Nambour Off-take Options Study*, KBR, August 2011

The design costs for the civil, structural and mechanical components are approximately 6% of the supply and installation costs for the civil, structural and mechanical components. The design costs for the instrumentation and electrical components are approximately 65% of the supply and installation costs for the instrumentation and electrical components. The commissioning costs are approximately 3% of the total supply and installation costs. These are comparable to industry expectations. The design costs associated with of instrumentation and electrical components is highly situation specific which may explain the 65%.

For the 2012/13 budget submitted to the Authority, LinkWater have estimated the total cost of the project to be $2.1 million, as broken down in **Table 62**.

- **Table 62 Breakdown of cost estimate in budget**

	Cost Estimate ($)	Percentage
KBR estimate	1,745,600	
Allowance for direct labour resources	56,805	3% (of KBR estimate)
LinkWater Estimated Cost (Base)	**1,802,405**	
Project management and business support costs	268,456	15% (of Base)
LinkWater Estimated Cost (Total)	**2,070,861**	

SKM attempted to complete a bottom up cost estimate for the costs associated with the supply and installation of the civil, structural and mechanical components. Due to the limited information provided on the specifics of the proposed works, such as pit sizes and pipe and fitting details, SKM were not able to develop a comparable cost.

Notwithstanding this, as the project will be issued for tender, the cost is accepted as efficient.

7.6.6. Policy and procedures

LinkWater's Procurement Management Procedure considers items of capital expenditure with a nominal contract value between $250,000 and $100 million to be significant capital works. This level of expenditure requires the procurement procedure of inviting a public request for tender. This method of procurement should be adopted as the Image Flat New Bulk Supply Point has an expected capital expenditure of $1.8 million.

7.6.7. Timing and Deliverability

LinkWater proposed that the detailed design, tendering, construction and commissioning will be undertaken in the 2012/13 financial year. This time this is assessed as achievable.

7.6.8. Efficiency Gains

Connecting the Image Flat water supply region to the water grid allows the upgrade of the Image Flat Water Treatment Plant to be delayed.

7.6.9. Allocation of overhead costs

In their cost estimate KBR allowed a 5% contingency allowance. LinkWater has included a 3% allowance for direct labour costs on the KBR estimate and allowed 15% on the base cost for project management and business support costs (the breakdown of these costs have not been provided).

7.6.10. Summary

The project is assessed as prudent. The primary driver of growth has been demonstrated and an appropriate decision making process documented.

The project is assessed efficient as the scope is appropriate, the standards of works are expected to be consistent with industry practice and the costs are reasonable and will be tested by public tender.

The value of any expenditure not considered to be prudent or efficient: Nil.

For a complete audit trail the following additional information is required:

- Breakdown of costs, including rates

The adequacy of the information provided on this project is outlined below in **Table 63**.

- **Table 63 Adequacy of information provided**

Section of Capex review	Trunk Mains - Image Flat New Bulk Supply Point
Project description	
Provided documentation	
Prudency	
Cost driver	
Decision making process	
Efficiency	
Scope of works	
Standards of work	
Project cost	
Policy and procedures	
Timing and deliverability	
Efficiency gains	
Allocation of overhead costs	

Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

7.7. Sparks Hill Reservoir: Reservoir 2 Refurbishment

7.7.1. Proposed capital expenditure

Table 64 shows the proposed cost of the Sparkes Hill Reservoir 2 refurbishment within the 2012/13 budget.

- **Table 64 Sparkes Hill Reservoir 2 Refurbishment – Proposed capital expenditure profile**

Source	Costs ($000s)				
	2012/13	2013/14	2014/15	Subsequent	Total
Regulatory Submission to the QCA	1,305	-	-	-	1,305
Project Justification Report 2012-2013 Capital Works Program	1,304	-	-	-	1,304

The project value listed in LinkWater's Regulatory Submission to the Queensland Competition Authority was $1,304,973 whereas a value of $1.304M was provided in the project justification report.

It would seem that the Project Justification Report truncated the amount as opposed to rounding (up) the amount.

7.7.2. Project description

The Sparkes Hill Reservoir Complex is a critical part of the network supplying inner Brisbane suburbs from the North Pine Treatment Plant. There are no long-term plans to take the reservoir out of service. The Sparkes Hill Reservoir Complex consists of two reservoirs: Reservoir 1 and Reservoir 2. The two reservoirs are separate structures. Reservoir 2 is a large concrete structure and is the primary reservoir on site. Reservoir 1 is smaller and is currently off-line due to lower than historic demand. It will however be utilised whilst Reservoir 2 is undergoing repair.

Preliminary investigations of Reservoir 2 identified a number of defects in the main structure:

- The majority of roof seals have failed
- There is evidence of reinforcement corrosion in the exterior walls around much of the reservoir and spalling of concrete in one location

The deterioration of the seals and joints provides opportunity for the intrusion of contaminants. This poses unacceptable water quality risks. The reinforcement corrosion and concrete spalling are evidence of structural deterioration. If left unrectified, further structural deterioration will occur, and remedial work will be more difficult and expensive. Eventually, damage to the structure and reduction of its useful life will occur.

7.7.3. Provided documentation

The key reference documents used for this review are:

- *Regulatory Submission to the QCA – 2012-13 Grid Service Charges*, LinkWater, February 2012
- *Attachment A: QCA Data Template*, LinkWater, February 2012
- *Sparkes Hill Reservoir 2 Refurbishment Project Justification Report*, Version 2, Cardno Alexander Browne, February 2012.
- *Sparkes Hill Reservoir # 2 – Independent review of cost estimate*, Donald Cant Watts Corke, 12 December 2011.
- *Programme of works – Sparkes Hill 1&2 – Green Hills 1&2 reservoirs*, LinkWater, 09 March 2012
- *Sparkes Hill No.2 Reservoir Structural Assessment*, Cardno, August 2009
- *Refurbishment of Sparkes Hill Reservoir #2 and Green Hill Reservoirs #1 and #2 – Procurement and Evaluation Plan*, LinkWater, no date
- *Findings from reservoir inspections*, no author, no date
- *Sparkes Hill Reservoir # 2 – Records from 2011 inspection*, no author, no date
- *O.0115 Cost Estimator PWALL 110701.xls*, no author, no date
- *Kuraby Reservoir Roof Remediation Tender Submission*, Rob Carr Pty Ltd, August 2011
- *Tax invoice for the remediation of Aspley Reservoir*, no author, 18 October 2011

7.7.4. Prudency

Cost driver

The cost driver nominated by LinkWater for this project is *service*.

Elimination of potential entry points for contaminants is the immediate motivation for the remedial works and is the highest risk to be addressed. There is a high risk that pathogens may enter the drinking water stored in the reservoir through direct entry of vermin and contaminants or through the entry of contaminated natural water. LinkWater's Water Quality Risk Assessment Document states that actions to reduce the risks ranked High to Extreme shall be given top priority and action shall be undertaken within 12 months.

The rehabilitation will also maintain the structural integrity of the reservoir to ensure it achieves its full potential life. According to the 2009 Cardno structural assessment, overall the reservoir is in good condition and does have the potential for an ongoing useful life. There are no long term plans to take the reservoir out of service.

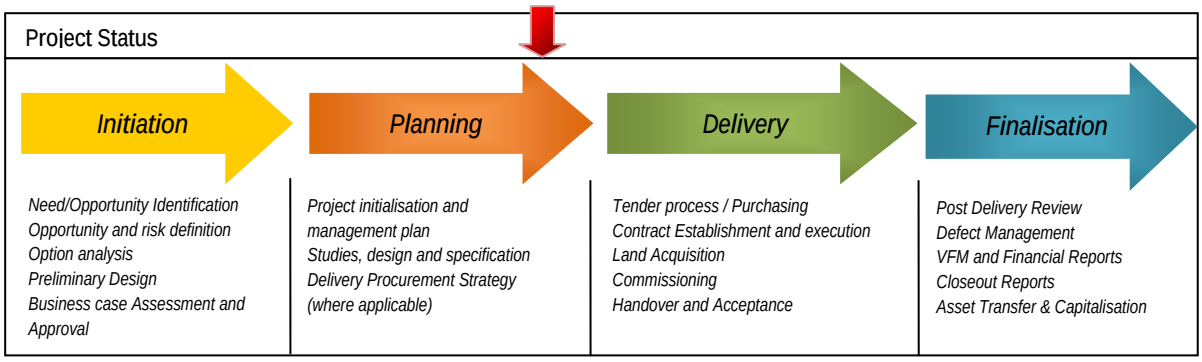
Decision making process

An options assessment has been conducted, including the 'do nothing', replace and refurbish options and LinkWater has found no practical alternative options to refurbishing the reservoir. The joint and seal repairs are required immediately to reduce the risk of contaminant intrusion. The risks associated with the 'do nothing' option are not acceptable. Additionally, if left unattended, deterioration of the concrete will continue and future remedial work will be more extensive and expensive. Eventually, collapse of parts of the reservoir structure would occur if no work was undertaken, rendering it unserviceable.

LinkWater has assessed that replacement of the reservoir, or more extensive works are too expensive and not required at this time. This decision was reached by assuming a conservative replacement value of $10 million and a discount rate of 5% which gave savings in net present value terms of $3.9 million from deferring the replacement of the reservoir by ten years alone. The refurbished reservoir is expected to have a remaining life much longer than ten years.

The project has been assessed as prudent. The primary driver of *service* has been demonstrated. An acceptable decision making process has been documented.

7.7.5. Efficiency



The scope of works

A number of third party inspections have been completed at the reservoir site, most recently a comprehensive and detailed inspection in 2011. These inspections identified a number of faults requiring urgent attention that are included in this project. However, as these inspections have very limited access to the inside of the reservoir there is uncertainty about what will be found when the reservoir is drained and cleaned. Taking the reservoir off-line twice, once to define the works and subsequently to undertake them would add additional downtime and increase the risk of supply outages. There would also be additional costs.

Therefore, based on known issues, the scope of this project includes:

- A detailed condition inspection of the 12,000 m^2 reservoir
- Resealing of roof expansion joints
- Exposure and cleaning of reinforcement and repairs of concrete in the external walls around the reservoir
- Internal and external repairs on the wall joints
- Undertaking any other work arising from the condition inspection

LinkWater intends to ask Tenderers to submit a lump sum price for the initial cleaning and inspection phase of the works and a schedule of rates for anticipated repairs. An assessment of the quantity of repairs required will be made by an independent engineer. The scope of works for the project is therefore considered appropriate.

Standards of works

LinkWater has a number of options for the approach taken for sealing the roof. Where there is significant deterioration of the expansion joints and a significant amount of cracking leading to expansion joints and/or where the concrete appears relatively thin or weak, LinkWater has previously elected to apply a contiguous waterproof seal over the entire roof. In another case, extensive works were undertaken on all of the roof joints. The detailed assessment shall determine which approach is best suited for this reservoir.

Project cost

For the purposes of preparing the cost estimate LinkWater has assumed that the works shall include:

- Resealing of roof expansion joints
- Exposure and cleaning of reinforcement and repairs of concrete in the external walls around the reservoir
- Internal and external repairs on the wall joints

For each element of identified work, the expected scope and costs have been identified with reference to works undertaken elsewhere where project information is available for comparison.

For example, the roof joint sealing costs have been prorated on an area basis to the roof sealing costs for the Aspley Reservoir, which has a similar joint spacing and for which similar observations were made in the preliminary design report. Allowances have been made for the severity of issues identified in the preliminary inspection report.

Preliminary and general costs were based on experience in recent reservoir refurbishment projects.

An assumption has been made for the remedial costs for floor joints, but the expenditure on this item is expected to be low relative to the total project cost and uncertainty arising from other assumptions.

A number of uncertainties remain in relation to the overall estimate for the works required that is included in this document. Additional work may be identified when the reservoir is drained, the scope of work required for individual elements may be under or over-stated or the unit rates that may apply may vary from those used in reference projects. While there is some uncertainty as to whether the full scope of works assumed in the cost estimate will be required, no allowance has been included for possible additions to the scope eg coating of the internal walls as has been required on the three most recent renovations. The resurfacing of the walls in the Kuraby Reservoir has been deferred to a later date and that would be an option for this reservoir given the time and cost of undertaking this work.

An independent review of both the Project Justification Report and the capital expenditure estimate prepared by Cardno was carried out by Donald Cant Watts Corke (DCWC). In its review report DCWC was of the opinion that the expected total cost to complete the project should be “in the order of $1.60 million”, ie higher than the project value listed in LinkWater’s Regulatory Submission to the Queensland Competition Authority. This difference is largely due to the use of a larger contingency value by DCWC (DCWC recommended a 50% contingency was adopted rather than the 20% contingency included by Cardno on the cost estimates for the project) but also includes rate escalation which was omitted from Cardno’s estimate as well as slightly larger quantities. A summary of the differences between the DCWC and Cardno estimates is provided in **Table 65**.

- **Table 65 Sparkes Hill Reservoir 2 refurbishment cost estimate comparison**

Item	Cardno Estimate ($)	DCWC Estimate ($)	Difference ($)
Concrete repairs	65,255	68,358	3,103
External wall joints	12,563	13,160	597
Internal wall joints	16,664	17,456	793
Roof joints	486,892	531,040	44,148
Wall construction joints	18,385	19,260	874
Internal clean	40,184	42,095	1,911
External clean	7,678	8,043	365
Subtotal of trade works	**647,620**	**699,412**	**51,792**
Engineering	52,188	78,281	26,094
P&G	226,667	244,794	18,127
Subtotal Eng & P&G	**278,855**	**323,075**	**44,221**
Escalation	-	71,574	71,574
Contingency	185,295	511,244	325,949
Total	**1,111,770**	**1,605,306**	**493,536**

7.7.6. Policy and procedures

The project follows LinkWater's standard procedures, including the production of a project justification report. An independent review has been carried out of both the project justification report and the cost estimate.

As per LinkWater's Procurement Management Procedure, items of capital expenditure with a nominal contract value between $250,000 and $100 million are considered to be significant capital works. This level of expenditure requires the procurement procedure of inviting a public request for tender. As the Sparkes Hill Reservoir 2 Refurbishment has an expected capital expenditure of $1.3 million it should be subject to this method of procurement. This is LinkWater's intention according to the procurement and evaluation plan produced for the project. The request for tender will be posted on the Queensland Government QGM Tendering website as well as on Tenderlink.

7.7.7. Timing and deliverability

LinkWater has provided a programme showing the timetabling of the Sparkes Hill Reservoir 2 refurbishment works and also the subsequent Green Hill Reservoirs 1 and 2 works, showing that the Sparkes Hill budget can be spent within the 2012/13 financial year. The programme also shows the Sparkes Hill Reservoir 1 works which will be completed in advance of the start of work on Sparkes Hill Reservoir 2 so that the reservoir can be taken offline for the duration of the works.

In the event that costs are higher than anticipated, LinkWater proposes that funds will be transferred from the Green Hill Reservoir project, or other projects, and that project will be partially rescheduled, enabling works on Sparkes Hill Reservoir to be completed as required.

7.7.8. Efficiency gains

LinkWater has identified that there is the opportunity to package the works at Green Hill and Sparkes Hill Reservoirs together. Given the interaction requirements, particularly in terms of scheduling, this would facilitate coordination between the projects as well as enabling economies of scale. LinkWater is therefore seeking tenders for refurbishment of Sparkes Hill Reservoir 2 and Green Hill Reservoirs 1 and 2. The process will rely on the refurbishment of each reservoir being a separable portion under the contract.

7.7.9. Allocation of overhead costs

Cardno has included 20% contingency on the cost estimates for the project. In its review of the project, including the cost estimates, DCWC recommended a 50% contingency was adopted in view of the risks and its experience in remediation work. LinkWater has not increased the contingency from 20%.

The capital cost (including 20% contingency) is estimated at $1.112 million, or $1.135 million including LinkWater's direct labour resources working on the project for 2012/13 only. An additional $170,000 of unspecified LinkWater project management and business support costs associated with the delivery of the project has been added to bring the total capital value to $1.305 million. $170,000 represents approximately 18% of the contract value (without contingency or LinkWater's direct labour costs), which is higher than industry average.

7.7.10. Summary

The project is assessed as prudent as the primary driver of *service* has been demonstrated and an appropriate decision making process has been documented.

The project is assessed as efficient as the scope is appropriate, the standards of works are consistent with industry practice and the costs will be market tested by public tender.

The value of any expenditure not considered to be prudent or efficient: Nil.

The adequacy of the information provided on this project is outlined below in **Table 66**.

- **Table 66 Adequacy of information provided**

Section of Capex review	Sparkes Hill Reservoir - Reservoir 2 Refurbishment
Project description	
Provided documentation	
Prudency	
Cost driver	
Decision making process	
Efficiency	
Scope of works	
Standards of work	
Project cost	
Policy and procedures	
Timing and deliverability	
Efficiency gains	
Allocation of overhead costs	

Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

7.8. Asset Information Management System

7.8.1. Proposed capital expenditure

Table 67 shows the proposed cost of the Asset Information Management System Project within the 2012/13 budget.

- **Table 67 Asset Information Management System Project – Proposed capital expenditure profile**

Source	Cost ($000s)					
	2011/12	2012/13	2013/14	2014/15	Subsequent	Total
Regulatory Submission to the Authority	-	632	-	-	-	632
Project Justification Report	-	632	-	-	-	632

The information provided in the project justification report for 2012/13 is consistent with the costs within LinkWater's submission to the Authority.

7.8.2. Project description

The LinkWater Asset Management business process is implemented in the SAP ERP. The aim of this project is to improve the data integrity within this system for the current managed assets and migrate this to a live system

The improvements to the SAP system will drive improvements in the following business processes

1) Planning for renewals and growth related infrastructure
2) Maximising the useful lives of managed assets

3) Optimising maintenance programs
4) Minimising system and service standard failures
5) Managing non routine events

This project is to complete Stage 3 and 4 of a 4 Stage project and consists of the implementation of an operational asset information system as a result of previous work which established data models and cleansed existing data for the system.

7.8.3. Provided documentation

The key reference documents used for this review are:

- *Regulatory Submission to the QCA – 2012-13 Grid Service Charges*, LinkWater, February 2012
- *Attachment A: QCA Data Template*, LinkWater, February 2012
- *Project Justification Report: Asset Management Information System Upgrade*, LinkWater, March 2011
- *Project Justification Report - 381023: Asset Management Information System Upgrade*, LinkWater, January 2011
- *Asset Information Management System Planning Check and Advice*, KPMG, January 2012
- *LinkWater Asset Alignment assessment & recommendation report*, SAP Australia, August 2011
- *Project Plan - Asset Information Management Systems RSG 20110907*, March 2012

7.8.4. Prudency

Cost driver

The cost driver by nominated LinkWater for this project is *business efficiency*.

The cost driver for this project is in the category of business efficiency and will affect service with increased reliability of equipment and reliability of supply. A better understanding of asset condition and environment will allow the optimisation of asset management activities and provide a platform for continuous improvement for both reliability and cost.

This project will improve the efficiency, reliability and life of the managed assets by providing correct and timely information and actions for the management of maintenance, and planning and other asset related activities.

Decision making process

The project has been developed through a number of reports that are listed above.

The project is to continue on from a predecessor project undertaken in the 2011/12 financial year.

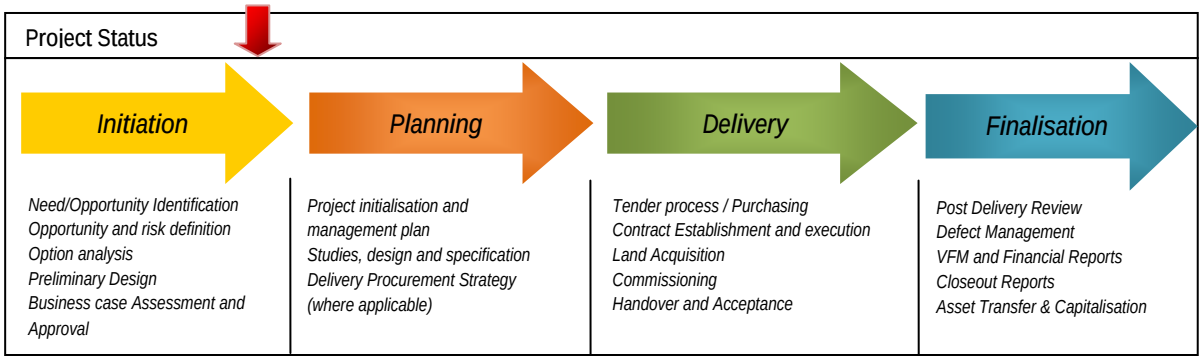
The project is based on one of the leading tools for asset management in the utilities sector.

Options of looking at an alternative tool or stopping the project will not realise the potential benefits that will be realised with the continuation of this project.

The KPMG report has established an appropriate project methodology and plan to achieve the basis components needed to manage the LinkWater Assets. The report has also outlined a plan to provide LinkWater with a leading practice solution. LinkWater have provided an amount of $20,000 for 2012/13 to investigate and develop a business case for this component of the plan

The project has been assessed as prudent. The primary driver of business efficiency has been demonstrated. An acceptable decision making process has been documented.

7.8.5. Efficiency



The scope of works

The 2012/13 scope for this project consists of:

- Implementing the data structure (defined in a previous Stage) in the LinkWater SAP system
- Extract, cleanse, enrich and migrate data to live system
- Implement base line functionality
- User training
- Business requirement definition for basic reporting
- Business requirements definition for leading practice solution

This is part of a four stage program of works with an established ERP (SAP). The program of works is logical for this type of program and leverages off existing organisational tools. The program is staged to take advantage of incremental improvements and reviews future stages to confirm that they provide a benefit to the business. The delivery is a mix of internal and external resources allowing for ownership of the system and a transfer of skills.

The project leverages of the LinkWater ERP and uses the SAP maintenance management modules allowing for the full integration with financials and stores and other components.

Standards of works

The project follows the data standards set up within the previous stages of the project.

The SAP program contains current industry practice standards and has optional modules that provide an opportunity to develop best practice. The linear assets module is one example.

Project cost

Table 68 outlines project consists of three components.

- **Table 68 Project stages and costs**

	Cost ($000s)
KPMG Stage 3 activities for 2012/13 – KPMG report January 2012 page 8	530
KPMG stage 4 proposal development (Business requirements definition for leading practice solution)	20
LinkWater direct corporate costs (Internal staff project participation costs)	82

This provides a total project cost of $632,000. This price has been built up by KPMG and is in line with industry expectations.

7.8.6. Policy and procedures

As per LinkWater's Procurement Management Procedure, items of capital expenditure with a normal contract value between $250,000 and $100 million are considered to be significant capital works. This level of expenditure requires the procurement procedure of inviting a public request for tender.

The project appears to follow the policies and procedures discussed in the policies and procedures section of the report.

7.8.7. Timing and deliverability

The KPMG report provides a comprehensive analysis of costs and timeframes.

KPMG have identified the risks to the project with the internal resources being allocated enough time for the project. It is important for the internal resources to have ownership of a project of this nature and importance.

The Project can be delivered within the assigned period as provided in the implementation plan

The barriers to a successful project have been reduced to one area (internal resources) that LinkWater has organisational control of.

7.8.8. Efficiency gains

While the project itself will not demonstrate efficiency gains immediately, the project will realise efficiency gains through the better management of assets. An industry rule of thumb for maintenance activities suggests that for every $1 spent on break down maintenance activities it will only cost $0.33 if the same activity was carried out under a planned program. The development and implementation of a quality asset management system will realise the potential improvements.

7.8.9. Allocation of overhead costs

The *Project Justification Report: Asset Management Information System Upgrade* (LinkWater, March 2011) identifies that approximately $80,000 or 15% of the base estimated cost was included for project

management and business support costs associated with the delivery of the project in 2012/13. The allocation between the two aspects has not been specified.

The KPMG report suggests that a 20% contingency is recommended based on experience with SAP projects and consideration of current level of certainty around requirements for the operational solution. As a costs submitted by LinkWater are based on the information provided by KPMG this 20% contingency is likely included in the cost estimate.

7.8.10. Summary

The project is assessed as prudent. The primary driver of business efficiency has been demonstrated and an appropriate decision making process was implemented to arrive at the project deliverables.

The project is assessed as efficient as the scope is appropriate, the standards of works are consistent with industry practice and the costs are consistent with prevailing market conditions.

The value of expenditure not considered to be prudent or efficient is: Nil.

The adequacy of the information provided on this project is outlined below in **Table 69**.

- **Table 69 Adequacy of information provided**

Section of Capex review	Asset Information Management System Project		
Project description			
Provided documentation			
Prudency			
Cost driver			
Decision making process			
Efficiency			
Scope of works			
Standards of work			
Project cost			
Policy and procedures			
Timing and deliverability			
Efficiency gains			
Allocation of overhead costs			
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

7.9. North Pine Pump Station Surge Compressor and Switchboard Replacement

7.9.1. Proposed capital expenditure

Table 70 shows the proposed cost of the North Pine Pump Station Surge Compressor and Switchboard Replacement within the 2012/13 budget.

- **Table 70 North Pine Pump Station Surge Compressor and Switchboard Replacement – Proposed capital expenditure profile**

Source	Cost ($000s)					
	2011/12	2012/13	2013/14	2014/15	Subsequent	Total
Regulatory Submission to the Authority	-	516	-	-	-	516
Project Justification Report	-	516	-	-	-	516

The information provided in the project justification report for 2012/13 is consistent with the costs in LinkWater's submission to the Authority.

7.9.2. Project description

The project aim is to improve the reliability of the water hammer protection for the trunk water main from North Pine pump station to Aspley reservoir. The core aspect of the project is to replace the compressors (two off) and a switchboard. LinkWater have assessed the equipment as being at the end of its life.

The physical protection of the equipment has two options, being:

1) To replace the equipment inside a new purpose built building (Option 3 – $515,056)
2) To replace the equipment inside the existing building (Option 2 – $177,672)

The first option is LinkWater's preferred option.

7.9.3. Provided documentation

The key reference documents used for this review are:

- *Regulatory Submission to the QCA – 2012-13 Grid Service Charges*, LinkWater, February 2012
- *Attachment A: QCA Data Template*, LinkWater, February 2012
- Memo, *Re: QCA-Grid Service Charges 2012/13 SKM Request RFID 0016 North Pine Pump Station – Surge compressor and Switchboard Replacement Project*, [redacted], 09/03/2012
- *Project Justification Report North Pine Pump Station – Surge Compressor and Switchboard Replacement*, Cardno, December 2011
- *Document Transmittal – Response to SKM Draft Report – Additional Information*, LinkWater, 30 April 2012

7.9.4. Prudency

Cost driver

The nominated cost driver by LinkWater for this project is *renewal*.

The existing trunk water main is currently used and useful. This is evidenced by the main from North Pine WTP to Aspley reservoir being a key component in providing a connection into Brisbane for water produced by North Pine Water Treatment Plant and for water produced by northern water

treatment plants connected to the northern pipeline interconnector. The facilities covered under this project allow this main to perform to designed parameters and prevent damage caused by water hammer, which would be a certain outcome if this equipment failed to operate as designed.

Decision making process

An options assessment has been completed including a 'do nothing option. Cardno were engaged to investigate and complete a project justification report. The report has investigated three Options, being:

- Option 1 - Do nothing – this has a high risk as the equipment is at the end of useful life and the consequence of failure would result in a loss of a significant source of water for the northern suburbs of greater Brisbane
- Option 2 - Replace the compressors and switch board in the existing building. LinkWater have stated that they are concerned with the risk and consequences for this construction method
- Option 3 - Replace the compressors and switchboard in a new building. LinkWater have stated that this is a conservative approach

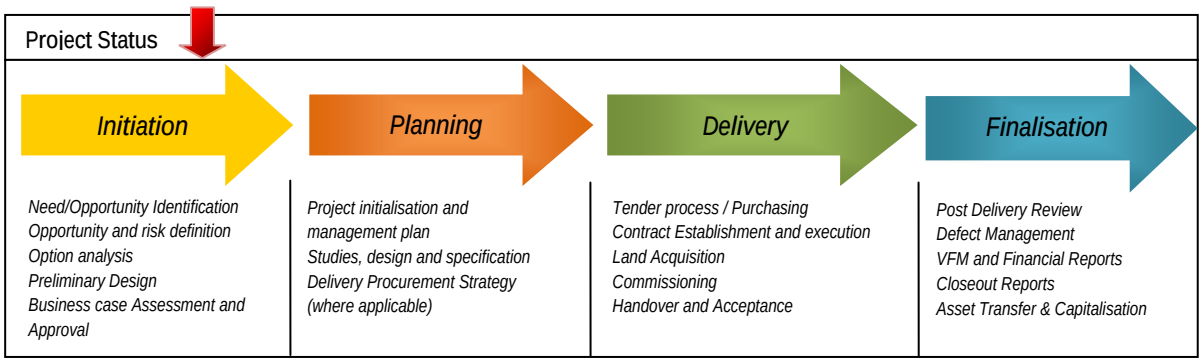
A full risk assessment and detailed construction method was not provided.

The project justification report recommended Option 3.

The project has been assessed as prudent based on the risk associated with doing nothing to preserve the integrity of the water hammer protection equipment, being unacceptable. The primary driver of renewal has been demonstrated.

An appropriate decision making process has been documented. The appropriateness of the outcome is discussed below.

7.9.5. Efficiency



An assessment of the efficiency for Options 2 and 3 as listed below was carried out given available information:

- Option 2 - Replace the compressors and switch board in the existing building. LinkWater have stated that they are concerned with the risk and consequences for this construction method, cost estimated at $177,672

- Option 3 - Replace the compressors and switchboard in a new building. LinkWater have stated that this is a conservative approach, cost estimated at $515,056

The scope of works

A detailed scope and design had not been completed at the time of compiling this review. The scope as described in the project justification report for Options 2 and 3 are generally is in line with the aim of the project (the replacement of compressors and switchboard).

The new compressor will connect to the existing surge tank. The new control and instrumentation will be installed in the new switchboard.

The use of existing services e.g. power has not been addressed in the documentation.

The scope as described in the project justification report, which includes the erection of a new building (Option 3), is not supported by the expected documentation, being:

1) A condition assessment of the existing building indicating a deteriorated structure
2) A preliminary design that indicates new equipment would not fit within the existing building
3) A risk assessment of the different construction methods that would indicate that a new building was required

Standards of works

The project has not progressed to a stage where documentation of the standards of works has occurred. It is anticipated that appropriate engineering standards for mechanical and electrical equipment will be used.

A detailed specification was not available at the time of this review. An assessment under these criteria was not able to be carried out as the project is still at the concept stage.

Project cost

A cost estimate has been complied based on prices obtained for similar equipment and is included in **Table 71**.

- **Table 71 Equipment cost estimate**

Item	Cost ($)
Compressors Ingersoll-Rand 2 x 15 kW	45,000
Switch board estimate	
3 tier Aluminium switchboard	15,000
2 x 20 kW drives with motor protection	5,000
Incoming Mains	5,000
Instrumentation and control	10,000
Installation	30,000
Contingency ~30%	20,000
Total	85,000
Project estimate	81,994

The cost estimates is compared to LinkWater costs as included in **Table 72**.

- **Table 72 Equipment cost estimate**

Item	LinkWater Cost ($)	SKM Cost Estimate ($)
Compressors	45,713	45,000
Pipework and equipment	26,791	27,000
Switchboard	81,994	85,000
Contract Overheads	23,174	23,000
Sub-Total excluding building	**177,672**	**180,000**
Total including building	**515,056**	

The main components of this project, compressors and switch board are within the bounds of the estimates for this equipment.

The cost of the building for Option 3 has been calculated as being in the order of $340,000 (difference between Option 2 and 3). The building cost is in the order of 65% of total project cost. SKM assess that with the correct construction method the building would not be necessary. Consequently the preferred option (Option 3) which includes the building has been assessed as not efficient.

Option 2 would be more cost efficient but would involve more coordination with other grid participants.

Within the '*Document Transmittal – Response to SKM Draft Report – Additional Information*' (LinkWater, 30 April 2012) LinkWater state that:

> *"SKM's proposed cost reduction for the building is therefore accepted. However, it should be noted that the estimate used for the revised work (Option 2 in the PJR) of $178k is the "base" cost. An allowance for Direct CAPEX Program Related Costs needs to be added to this to reflect its full program value and to make it comparable to the cost of $516k as originally proposed."*

SKM has revised the cost estimate in line with that used in the initial '*Project Justification Report North Pine Pump Station – Surge Compressor and Switchboard Replacement*' (Cardno, December 2011) and included '*Direct CAPEX Program Related Costs* (15%)' as a line item below in **Table 73**.

- **Table 73 Revised cost estimate**

Item	LinkWater Cost ($)
Compressors	45,713
Pipework and equipment	26,791
Switchboard	81,994
Contract Overheads	23,174
Sub-Total	**177,672**
Direct CAPEX Program Related Costs (15%)	26,651
TOTAL	**204,323**

The project is assessed as efficient as although the documented preferred option (Option 3) is not necessary to achieve the objectives of this project, LinkWater proposed to remove the construction of a new building from the scope of the project.

7.9.6. Policy and procedures

Appears to be consistent with LinkWater's policy and procedures.

As per LinkWater's Procurement Management Procedure, items of capital expenditure with a normal contract value between $250,000 and $100 million are considered to be significant capital works. This level of expenditure requires the procurement of inviting a public request for tender. For values below $250,000, three quotes are required. Consequently for Option 2, public tendering would not be required.

7.9.7. Timing and deliverability

The project is in the preliminary stages with only a project justification review undertaken.

The timing for this project will depend on the availability of the plant to complete the work. This in turn depends on close coordination with Seqwater and the SEQ Water Grid Manager.

The project is not complicated in nature; there are a number of contractors that could complete this job to a satisfactory level.

With the correct construction method and coordination with Seqwater there would be no barriers to the successful delivery within the 2012/13 financial year (before June 2013).

7.9.8. Efficiency gains

No efficiency gains have been indicated.

7.9.9. Allocation of overhead costs

The allowance for overheads within the contract is 13% of the cost ($23,000 of $178,000). The allocation of specific tasks within this total has not been specified. An additional allowance of 15% has been included for 'Direct CAPEX Program Related Costs'. This revised overall amount is considered reasonable for this stage of the project.

7.9.10. Summary

The project is assessed as prudent as the primary driver of *renewal* has been demonstrated and an appropriate decision making process has been followed

The project is assessed as efficient as the revised scope is appropriate, the standards of works are likely to be consistent with industry practice and the costs for the compressors and switchboard are consistent with prevailing market conditions.

The value of expenditure considered to be prudent and efficient is outlined below in **Table 74**.

- **Table 74 North Pine Pump Station Surge Compressor and Switchboard Replacement - revised capital expenditure profile**

Source	Cost ($000s)					
	2011/12	2012/13	2013/14	2014/15	Subsequent	Total
North Pine Pump Station Surge Compressor and Switchboard Replacement	-	204	-	-	-	204

The quality of the information provided on this project is outlined below in **Table 75**.

- **Table 75 Quality of information provided**

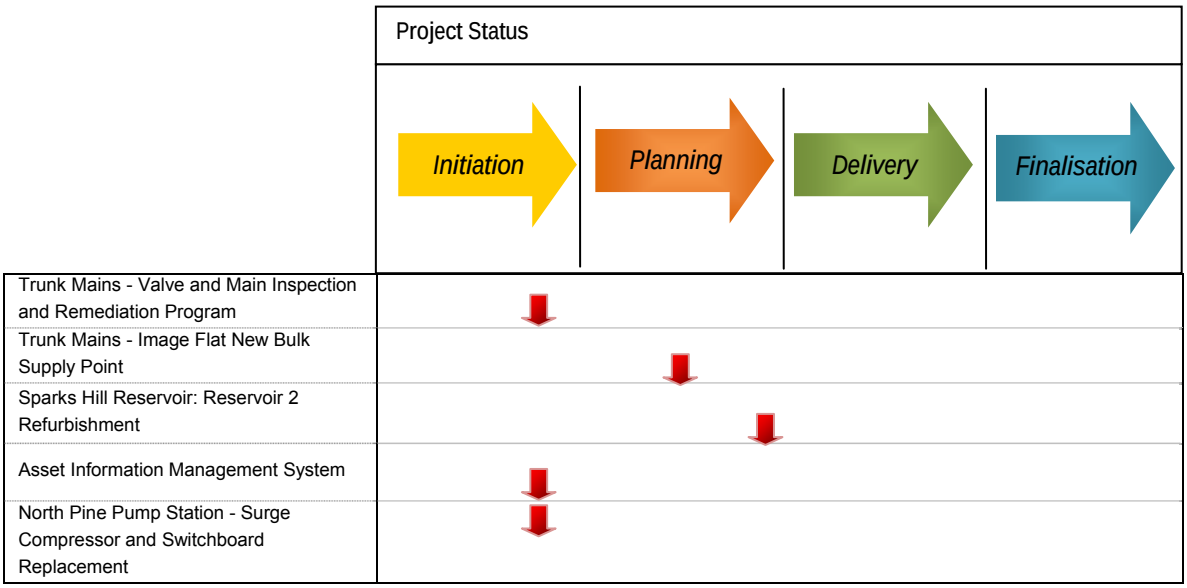
Section of Capex review	North Pine Pump Station Surge Compressor and Switchboard Replacement
Project description	
Provided documentation	
Prudency	
Cost driver	
Decision making process	
Efficiency	
Scope of works	
Standards of work	
Project cost	
Policy and procedures	
Timing and deliverability	
Efficiency gains	
Allocation of overhead costs	

Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

7.10. Summary

A sample of five projects were identified and assessed as a sample of the capital expenditure program for 2012/13 for LinkWater. We have assessed these projects against the Authority's definitions of prudency in particular the relevant driver and the decision making process and efficiency, including the standards of works, scope of work, timeliness of delivery and the costs.

The status of the five projects relative to the LinkWater Delivery Framework is illustrated in **Figure 10.**



- **Figure 10 Status of projects within the LinkWater Delivery Framework**

The capital expenditure of all five projects were assessed as both prudent and efficient. For the Trunk Mains - Valve and Main Inspection and Remediation Program only the proposed 2012/13 expenditure was assessed as efficient and for the North Pine Pump Station - Surge Compressor and Switchboard Replacement the expenditure excluding the building was assessed as efficient.

Table 76 provides an overview of the final assessment made for each project of the project sample chosen for assessment of prudency and efficiency.

- **Table 76 2012/13 sample project summary - revised capital expenditure profile ($000s)**

Project	Cost 2012/13 ($000s)	Prudent	Efficient	Revised Cost 2012/13 ($000s)
Trunk Mains - Valve and Main Inspection and Remediation Program	2,107	Prudent	Efficient (based on additional information) Note: Insufficient information to assess expenditure beyond 2012/13 as efficient	2,105
Trunk Mains - Image Flat New Bulk Supply Point	2,073	Prudent	Efficient	2,073
Sparks Hill Reservoir: Reservoir 2 Refurbishment	1,305	Prudent	Efficient	1,305
Asset Information Management System	632	Prudent	Efficient	632
North Pine Pump Station - Surge Compressor and Switchboard Replacement	516	Prudent	Efficient excluding building	204

Table 77 summarises the adequacy of information for the five projects.

- **Table 77 LinkWater capital expenditure review 2012/13**

Project	Trunk Mains - Valve and Main Inspection and Remediation Program	Trunk Mains - Image Flat New Bulk Supply Point	Sparks Hill Reservoir: Reservoir 2 Refurbishment	Asset Information Management System	North Pine Pump Station - Surge Compressor and Switchboard
Project description					
Provided documentation					
Prudency					
Cost driver					
Decision making process					
Efficiency					
Scope of works					
Standards of work					
Project cost					
Policy and procedures					
Timing and deliverability					
Efficiency gains					
Allocation of overhead costs					

Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

8. Capital expenditure 2011/12

8.1. Sample selection

As part of this analysis SKM are also required to:

> *"The consultant must assess the prudency and efficiency of 2011/2012 non-drought[4] capital expenditure for each GSP that:*
>
> *a) was not submitted to the Authority as part of GSPs' forecast capital expenditure during the 2011/2012 GSC investigation; and*
>
> *b) is material, where materiality is defined as exceeding $2 million;*
>
> *The consultant must also assess the efficiency only of the 2011/2012 non-drought capital expenditure for each GSP that:*
>
> *a) was submitted to the Authority as part of GSPs' forecast capital expenditure during the 2011/2012 GSC investigation; and*
>
> *b) differs significantly (more than 30%) from the forecast costs submitted by the GSP during the 2011/2012 investigation."*

A sample of the capital expenditure projects from the 2011/12 budget were chosen by SKM in consultation with the Authority for detailed analysis is shown below in **Table 78**. These projects are assessed in detail in the following sections with an overview of the final assessment found in **Table 79**.

Table 78 2011/2012 capital expenditure project reviewed ($000s)

Project	QCA approved value 2011/12 ($000s)	Estimated actual value 2011/12 ($000s)
Kuraby Reservoir. Concrete Refurbishment	0	912
Bundamba PS Flood Mitigation Work	0	1,267
Reservoir Access Hatch Alarms (Various sites)	0	217
Supply & Install Mixers (Various sites)	0	971
Total Sample (4 projects)	**0**	**3,368**

Notwithstanding that no individual sample project has a value of less than $2 million, a prudency assessment has been completed on all as they have not been previously submitted

8.2. Overview of prudency and efficiency

Table 79 shows an overview of the final assessment made for each project of the 2012/13 project sample chosen for assessment of prudency and efficiency. A full summary with recommendations for each project can be found in the following sections of this report.

[4] Non-drought capital expenditure refers to capital expenditure that was not required as part of the Water Regulation 2002 or the Regional Water Security Program. As a consequence, it excludes many of the largest capital expenditure projects undertaken by the GSPs, such as the Hinze Dam raising or the Northern Pipeline Interconnector Stage 2.

- **Table 79 Overview of prudency and efficiency of 2011/12 capital expenditure sample selection**

Project	Estimated actual value 2011/12 ($000s)	Prudent	Efficient
Kuraby Reservoir Concrete Refurbishment	912	Prudent	Revised cost based on LinkWater advice assessed as efficient
Bundamba PS Flood Mitigation Work	1,267	Prudent	Efficient
Reservoir Access Hatch Alarms (Various sites)	217	Prudent	Efficient
Supply & Install Mixers (Various sites)	971	Prudent	Efficient when purchase cost staged with construction period

8.3. Kuraby Reservoirs Concrete Refurbishment

8.3.1. Proposed capital expenditure

Table 80 shows the estimated 2011/12 cost of the Kuraby Reservoirs Concrete Refurbishment. No budget was approved by the Authority in the 2011/12 budget.

- **Table 80 Kuraby Reservoirs Concrete Refurbishment – change in 2011/12 capital expenditure**

Source	2011/12 Costs ($000s)			
	QCA approved value	Estimated actual value	Difference	% increase
Email correspondence	0	912	912	∞

8.3.2. Project description

The Kuraby Reservoirs Concrete Refurbishment project involves resealing the roof and repair of roof joints and roof gutters at the Kuraby Hill Reservoir to re-establish the contamination barrier at this facility. Initial external inspections by Cardno in 2009 revealed relatively minor faults requiring rehabilitation, with an estimated cost of $100,000. An additional $250,000 was approved in early 2011 to extend the scope of works to include draining the reservoir, completing an internal inspection and undertaking any repair works that may be revealed. This addition responded to the findings of the Aspley Reservoir refurbishment that had recently been completed.

The scope of the roof refurbishment included:

- Resealing of roof expansion joints
- Installing a water tight barrier across the entire roof to block entry of contaminants through the roof
- Installation of louvres above vent openings
- Repeat reservoir disinfection
- Investigate cause for coating blisters

8.3.3. Provided documentation

The key reference documents used for this review are:

- *Project Justification Report Kuraby Reservoir*, LinkWater, December 2009
- *Project Justification Report Kuraby Reservoir –Roof Refurbishment*, LinkWater, March 2012
- *Structural Assessment of Kuraby Reservoir*, Cardno, August 2009
- *Project Budget Transfer & Scope Change Form – Kuraby Reservoir Refurbishment*, LinkWater, December 2011
- *Evaluation Report – Provision of Kuraby Reservoir Roof Remediation*, LinkWater, August 2011
- *Request for Approval to Vary Contract – Kuraby Reservoir Roof Remediation*, LinkWater, December 2011
- *Contract Variation Order - Kuraby Reservoir Roof Remediation*, LinkWater, May 2011
- *Memorandum Re: Approval to undertake select Tender – Kuraby Reservoir Remedial*, LinkWater, July 2011
- *Memorandum – Response to SKM Draft Report, March 2012 Additional Information - Kuraby Reservoir Refurbishment*, LinkWater, 19 April 2012

8.3.4. Prudency

According to the terms of reference when assessing items for the prudency and efficiency of 2011/12 estimated actual capital expenditure:

> *"The consultant must assess the prudency and efficiency of 2011-12 non-drought[5] capital expenditure for each GSP that:*
>
> *a) was not submitted to the Authority as part of GSPs' forecast capital expenditure during the 2011-12 GSC investigation; and*
>
> *b) is material, where materiality is defined as exceeding $2 million;*
>
> *The consultant must also assess the efficiency only of the 2011-12 non-drought capital expenditure for each GSP that:*
>
> *a) was submitted to the Authority as part of GSPs' forecast capital expenditure during the 2011-12 GSC investigation; and*
>
> *b) differs significantly (more than 30%) from the forecast costs submitted by the GSP during the 2011-12 investigation."*

As this project was not submitted as part of last year's review an assessment of prudency is required.

Cost driver

The cost driver nominated by LinkWater for this project is *renewal*.

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[5] Non-drought capital expenditure refers to capital expenditure that was not required as part of the Water Regulation 2002 or the Regional Water Security Program. As a consequence, it excludes many of the largest capital expenditure projects undertaken by the GSPs, such as the Hinze Dam raising or the Northern Pipeline Interconnector Stage 2.

Initial external inspections undertaken as part of *Structural Assessment of Kuraby Reservoir* (Cardno, August 2009) revealed relatively minor faults requiring rehabilitation, with an estimated cost of $100,000. An additional $250,000 was approved in early 2011 to extend the scope of works to include draining the reservoir, making an internal inspection and undertaking any repair works that may be revealed. This addition reflected the findings of the Aspley Reservoir refurbishment that had recently been completed. The internal inspection identified multiple penetrations of the roof, extensive degradation of the surface of reservoir internal walls and additional minor structural problems. The extent of the roof faults means there is not an adequate barrier against contaminants entering the reservoir and this public health risk was considered the highest priority for remediation.

Decision making process

An options study, which included the 'do nothing' option has been conducted. Two options were considered in the *Project Justification Report Kuraby Reservoir* (LinkWater, December 2009), these were:

Option 1 Do Nothing

Option 2 Repair cracks and joints now

The advantages, disadvantages as well as the capital expenditure and net present value for each option was analysed by LinkWater as outlined below in **Table 81**.

Table 81 Options assessment

	Option 1 - Do Nothing	Option 2 - Repair cracks and joints now
Advantages	• Nil immediate expenditure / costs deferred	• Repair of roof seal will prevent ingress of potentially contaminated water into the tank. • Repair of external cracks and joints will prevent structural failure or more extensive repairs of the tank in the future. • Maintaining the tank with a reasonable outward appearance will minimise public concerns. • The repairs required now can probably be made whilst the reservoir remains in service.
Disadvantages	• The cracks will worsen over time and the underlying reinforcement will continue to corrode, leading to a possible structural failure of the reservoir which would be unacceptable. • Localised corrosion of underlying reinforcement on the exterior walls and degradation of the external joint filler will continue to occur and repair works will be more significant in the future if not attended to now. • Minor water contamination issues will continue to occur whilst the damaged reservoir roof seal is leaking. Contamination will gradually worsen over time as roof seal continues to break down or fail.	• Capital expenditure.

	Option 1 - Do Nothing	Option 2 - Repair cracks and joints now
	• Cracking and visible leakage from reservoir walls creates the perception of an unsafe asset and wastage of water in the eyes of the general public.	
Expenditure ($)	0	75,000
NPV ($)	- 212,000*	- 75,000

Source: *Project Justification Report Kuraby Reservoir*, LinkWater, December 2009

* The NPV of $212,000 is calculated by assuming a moderate failure equivalent to $250,000 in year 10 if cracks are not immediately repaired in addition to an estimated repair cost of $100,000 if current cracks and joints are left to deteriorate until year 11.

The risk rating after completing each option was assessed for each option, as outlined in **Table 82**.

- **Table 82 Options assessment**

	Option 1 - Do Nothing	Option 2 - Install reed switches
Likelihood	Possible	Unlikely
Consequence	Moderate	Minor
Consequence description	Loss of water supply over an entire suburb (12-24 hours); loss of income / increased costs $100k to $500k	Limited, local loss of water supply (6-12 hours); loss of income / increased costs $50k to $100k
Risk Rating	Significant	Low

Source: *Project Justification Report Kuraby Reservoir*, LinkWater, December 2009

The preferred option selected was Option 2 as although it has higher initial costs associated with it, has a lower NPV and reduces the risk rating.

Given the outcome of the internal inspection an options assessment was not undertaken as a ‘do nothing ‘option was not considered to address the issues.

Additional scope was added to the project in December 2011 for the installation of louvres above vent openings, repeating reservoir disinfection and to investigate the cause of coating blisters.

- The installation of louvres above vent openings was added due to reservoir roof flood testing which revealed that water which spilled over the edge of the reservoir roof could track down the external wall and enter the reservoir via the perforated vent openings. This was evidence that rain water could potentially carry contaminants from the reservoir roof, or external wall into the reservoir. Operational Services requested that a louvre be installed above each of the 66 vent openings to deflect water
- The repetition of reservoir disinfection was requested due to a failed water quality sample
- The investigation into the cause of coating blisters was requested due to blistering to the recent roof coating in a number of locations. The CSIRO has been requested to carry-out an independent assessment of the coating defect. The aim of this assessment is to ensure LinkWater has a thorough understanding of the root cause and has the appropriate information available to assess the Contractor’s proposed repair method

The project has been assessed as prudent. The primary driver of *renewal* has been demonstrated. An appropriate decision making process has been documented.

8.3.5. Efficiency

The scope of works

The scope of the roof refurbishment included:

- Resealing of roof expansion joints
- Installing a water tight barrier across the entire roof to block entry of contaminants through the roof
- Installation of louvres above vent openings
- Repeat reservoir disinfection
- Investigate cause for coating blisters

This appears to be an appropriate scope of works.

Standards of works

The standards of works adopted for this project appear to be consistent with industry standards.

Project cost

Initially no documentation was provided on the procurement process used for the engagement of Waterstop Solutions Pty Ltd. Subsequent to the submission of the draft report LinkWater provided additional information regarding the procurement process.

A Request for Tender (RFT) was released on 3 November 2010 to open market for the Kuraby Reservoir Remediation. As the extent of the damage within the Kuraby Reservoir could not be accurately determined prior to contract award a Schedule of Rates was called for in the RFT. In order to compare the Tender Costs a cost analysis exercise was undertaken utilising a repair scenario based upon the essential repairs as specified by the original Cardno assessment report.

When the tender period closed, on the 25 November 2010, seven (7) submissions had been received. The Tender Evaluation was performed in two stages, initially the tenders were short-listed to three (3), and then subsequently a preferred tenderer was recommended. The non-cost performance criteria used to assess tender effectiveness were:

- Demonstrated Experience
- Proposal, Systems and Materials
- Skilled Resources
- Local Industry Participation
- HSEQ

The outcome of the non-cost performance assessment and the cost comparisons are outlined below in **Table 83**.

- **Table 83 Tender evaluation outcomes**

Tenderer	Effectiveness (%)	Cost ($)
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

Waterstop Solutions were selected as the preferred tenderer by the evaluation panel [redacted]

A contract was awarded to Waterstop Solutions Pty Ltd for the value of [redacted] which covered site establishment and other known fixed costs only . The reservoir was isolated and drained to allow a detailed engineering survey to be undertaken to quantify the scope of repair work required. The engineering survey report was reviewed by LinkWater and the required scope of repair confirmed. A variation was approved in May 2011 for a value of [redacted] representing an additional [redacted] of the original contract budget, to undertake:

- Engineering evaluation with structural report
- Internal water blasting > 3,500 m^2 including environmental disposal measures
- Roof top cleaning and environmental disposal of mould and algae

From the investigation conducted by Waterstop Solutions Pty Ltd additional remedial works to reseal the roof was identified. A select tendering process was undertaken due to the urgency and short timeframes required to have the reservoir operational prior to the summer peak demand. Four tenders were received and assessed on the following non-cost criteria:

- Response to specification 30%
- Technical criteria 30%
- Local industry participation 10%
- Health, safety, environment and quality 20%

Rob Carr Pty Ltd were selected as the preferred contractor and awarded the contract in October 2011 at a price of [redacted]. A variation of [redacted] was approved in December 2011 for external coating of a besser block hut which houses the internal access point on top of the reservoir roof due to the potential for rainwater ingress into the reservoir.

A summary of the contract and variation costs for Waterstop Solutions Pty Ltd and Rob Carr Pty Ltd is provided in **Table 84**.

- **Table 84 Summary of contractor costs**

	Cost ($)
Waterstop Solutions Pty Ltd - Contract	[redacted]
Waterstop Solutions Pty Ltd - Variation 1	
Sub-Total	
Rob Carr Pty Ltd - Contract	
Rob Carr Pty Ltd - Variation 1	
Sub-Total	
TOTAL	**981,312**

The following cost estimate (below in **Table 85**) was included in the *Project Justification Report Kuraby Reservoir –Roof Refurbishment* (LinkWater, March 2012) for the total project expenditure, including 2010/11 expenditure.

- **Table 85 Total project cost estimate from the Project Justification Report**

Line Item	Cost ($)	Cost Type	Cost Basis (TRIM No.)
Primary Contract			
Roof Joints, Slab and Gutters	[redacted]	Committed	462688
Fixed Price – Site Establishment and Demolition		Committed	462688
Overheads – Amenities, Crane Hire, Generator, Waste Disposal		Committed	462688
Contract Total (Rob Carr Pty Ltd)		**Committed**	**486246**
Other Project Costs and Commitments			
Primary Contract Variation (awaiting approval)		Actual	510478
Project Management (Contract)		Actual	SAP Extract
Service Provider Isolations		Actual	SAP Extract
Cleaning and Disinfection (No.1)		Actual	SAP Extract
Telemetry		Actual	SAP Extract
External Wall Repair (Waterstop)		Actual	SAP Extract
Ancillary Expenses		Actual	SAP Extract
Future Committed Expenditure		Committed	SAP Extract
Sub-Total			
Budget Variation - Disinfection No2, Roof Louvres, Investigation		Committed	501793
Anticipated Budget Variation - Defects Liability Period ($60k estimate)		Estimate	
Reservoir Roof Refurbishment Estimated Total Cost	**872,941**		
Previous Reservoir Refurbishment costs	472,834*	Actual	SAP Extract
Kuraby Reservoir Estimated Overall Project Costs	**1,345,775**		

Source: *Project Justification Report Kuraby Reservoir – Roof Refurbishment*, LinkWater, March 2012

* The $472,834 includes Waterstop Solutions Pty Ltd final contract cost of $419,328 in addition to project management and other charges

SKM initially noted several potential issues in the budget provided by LinkWater, including:

- The $86,548 cost for service provider isolations identified in the Project Justification Report Kuraby Reservoir – Roof Refurbishment appears excessive

- The $29,887 cost for telemetry is not easily justifiable as being within the scope of work
- No information is provided on the $34,395 Future Committed Expenditure

LinkWater provided additional information relating to the above identified issues.

In relation to the service provider isolations, Linkwater has a services contract with Trility - Transfield Services Joint Venture with Trility - Transfield Services Joint Venture, to carryout Operations and Maintenance Services in relation to LinkWater's network assets. The 'Service Provider Isolations' line item, in **Table 85**, was for the following tasks, performed under the services contract:

- Draw down, scour and isolate the reservoir
- Issue and manage the Permit to Work system for Contractors working within the isolated reservoir
- Provide the necessary valve operations to enable reservoir washdown and disinfection
- Perform a flush of the inlet and outlet mains prior to returning the reservoir to service
- Refill and return the reservoir to service
- Perform the necessary electrical isolations
- Assist the electrical contractor with site wiring
- Commission the new level instrumentation
- Prepare as-built wiring diagrams

The breakdown of the initial Service Provider costs for the project is outlined in **Table 86**.

- **Table 86 Initial Service Provider costs**

Description	Value ($)
Valve operations and network isolations	58,478
Electrical work associated with the level instrumentation	8,409
Supply and installation of mixers	19,659
Total	**86,546**

LinkWater advise that for the 'Valve operations and network isolations' the Service Provider performed the following tasks:

- Draw down, scour and isolate the reservoir
- Issue and manage the Permit to Work system for Contractors working within the isolated reservoir
- Provide the necessary valve operations to enable reservoir washdown and disinfection
- Perform a flush of the inlet and outlet mains prior to returning the reservoir to service
- Refill and return the reservoir to service
- Drain the reservoir a second time to allow the disinfection process to be repeated and to refill the reservoir due an unsatisfactory water quality test result

On review of the costs attributed to the project, LinkWater identified that a line item for the supply and installation of mixers had been allocated to the project in error and that the costs were to be transferred to the correct project. The breakdown of the revised Service Provider costs for the project is outlined in **Table 87**.

- **Table 87 Revised Service Provider costs**

Description	Value ($)
Valve operations and network isolations	58,478
Electrical work associated with the level instrumentation	**8,409**
Total	**66,887**

As this work has been carried out under the services contract, with set rates, the costs associated with these tasks appear to be reasonable.

In relation to the telemetry costs, the 'Telemetry' line item, in **Table 85**, was for the costs associated with the installation of new level instrumentation at the Kuraby Reservoir. This instrumentation upgrade was not included within the original project scope, however it was identified after an incident occurred at Mount Cotton on 14 July 2011 where a water distribution zone lost supply due to a lack of water in the reservoir. In a post-incident review meeting held with Allconnex, it was agreed to install dual level transmitters at the Mount Cotton Reservoir. As a result of the incident LinkWater determined that level instrumentation should upgraded at Aspley, Heinemann Road, Narangba, Kimberley Park and Kuraby reservoirs. The upgrade work was conducted in conjunction with the Kuraby Reservoir Refurbishment project as LinkWater considered to prudent to complete while the reservoir was offline.

While the installation of new level instrumentation, and associated works, at the Kuraby Reservoir was not included in the original scope of work to appears reasonable that the work occur while the reservoir was offline for the refurbishment work. The installation of new level instrumentation is also renewal activity and comprises a low percentage of the total works (approximately 4%) and is not a material amount, a total of $38,296 (Telemetry cost plus Service Provider costs related to installation).

In relation to the 'Future Committed Expenditure' line item, in **Table 85**, LinkWater advise that it relates to a withheld value associated with defective works, the blistering of the reservoir coating. From the information provided by LinkWater the amount specified and process being applied is reasonable.

Based on the additional information provided by LinkWater a revised total project cost estimate has been developed, as outlined below in **Table 88**.

- **Table 88 Revised total project cost estimate**

Line Item	Cost ($)	Cost Type	Cost Basis (TRIM No.)
Primary Contract			
Roof Joints, Slab and Gutters	[redacted]	Committed	462688
Fixed Price – Site Establishment and Demolition		Committed	462688
Overheads – Amenities, Crane Hire, Generator, Waste Disposal		Committed	462688
Contract Total (Rob Carr Pty Ltd)		**Committed**	**486246**
Other Project Costs and Commitments			
Primary Contract Variation (awaiting approval)	3,000	Actual	510478
Project Management (Contract)	21,031	Actual	SAP Extract
Service Provider Isolations	66,887	Actual	SAP Extract
Cleaning and Disinfection (No.1)	22,070	Actual	SAP Extract
Telemetry	29,887	Actual	SAP Extract
External Wall Repair (Waterstop)	2,230	Actual	SAP Extract
Ancillary Expenses	2,296	Actual	SAP Extract
Future Committed Expenditure	34,395	Committed	SAP Extract
Sub-Total	**181,796**		
Budget Variation - Disinfection No2, Roof Louvres, Investigation	52,500	Committed	501793
Anticipated Budget Variation - Defects Liability Period ($60k estimate)	60,000	Estimate	
Reservoir Roof Refurbishment Estimated Total Cost	**853,280**		
Previous Reservoir Refurbishment costs	472,834*	Actual	SAP Extract
Kuraby Reservoir Estimated Overall Project Costs	**1,326,114**		

Source: *Project Justification Report Kuraby Reservoir – Roof Refurbishment*, LinkWater, March 2012 and *Memorandum – Response to SKM Draft Report, March 2012 Additional Information - Kuraby Reservoir Refurbishment*, LinkWater, 19 April 2012

* The $472,834 includes Waterstop Solutions Pty Ltd final contract cost of $419,328 in addition to project management and other charges

No information has been provided indicating any expenditure input between 2010/11 and 2011/12. Consequently an uncertainty on cost information exists and has not been clarified.

8.3.6. Policy and procedures

LinkWater's Procurement Management Policy specifies that items of capital expenditure with a contract value in excess of $250,000 are considered to be significant capital works, and therefore procurement involves inviting a public request for tender, a process which usually takes 60 days. This process was followed for the project.

Due to the limited timeframe available to complete the project prior to the summer peak demand when the Kuraby Reservoir was required to be online, LinkWater sought and received board approval to directly approach at least three contractors to submit tenders. LinkWater had recently undertaken two reservoir remediation projects, and therefore was familiar with available contractors. Consequently, procurement the Kuraby Reservoir Concrete Refurbishment is consistent with LinkWater's Procurement Management Policy.

8.3.7. Timing and deliverability

During the tender evaluation tenders were assessed on their ability to deliver the project on time, prior to the onset of the summer peak demand period. According to the variation approved in December 2011 the date of Practical completion was 28th February 2012. It is assessed that the project is able to be delivered before 30/06/2012.

8.3.8. Efficiency gains

No efficiency gains have been identified on this project.

8.3.9. Allocation of overhead costs

The Project Justification Report attributes a cost of $472,834 to the scope of work completed by Waterstop Solutions Pty Ltd. This cost includes a final contract cost of $420,000 and project management and other costs of $52,834 or 11% of project expenditure.

The total cost for the roof refurbishment completed by Rob Carr Pty Ltd is $872,941 and includes the Rob Carr Pty Ltd contract cost of $561, 984 (including the $3,000 variation) and a number of other charges as detailed in **Table 85**. The total overhead costs for the roof refurbishment is $21,031 or 2.5% of project expenditure.

The overhead costs allocated for the project are reasonable.

8.3.10. Summary

The project is assessed as prudent as the primary driver of renewal has been demonstrated and an appropriate decision making process has been documented.

The project is assessed efficient as the scope is appropriate, the standards of works are consistent with industry practice and the costs have been market tested.

While the initial project works by Waterstop Solutions Pty Ltd, to the value of $472,834 have been expended, SKM is unsure if they have already been included in the RAB. Based on the quantum of the amount sought of $900,000, it is expected that the works subsequent to the Waterstop Solutions works are the relevant works for review. Consequently the revised value of expenditure considered to be prudent and efficient is shown in **Table 89**.

- **Table 89 Kuraby Reservoirs concrete refurbishment - revised capital expenditure profile**

Source	Costs ($000s) 2011/12
Project Justification Report Kuraby Reservoir – Roof Refurbishment	853

The Authority should confirm if the original amount of $473,000 has been entered into the RAB and if not take the appropriate actions.

The adequacy of the information provided on this project is outlined below in **Table 90**.

- **Table 90 Adequacy of information provided**

Section of Capex review	Kuraby Reservoirs Concrete Refurbishment		
Project description			
Provided documentation			
Prudency			
Cost driver			
Decision making process			
Efficiency			
Scope of works			
Standards of work			
Project cost			
Policy and procedures			
Timing and deliverability			
Efficiency gains			
Allocation of overhead costs			
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

8.4. Bundamba Pump Station Flood Mitigation Work

8.4.1. Proposed capital expenditure

Table 91 shows the estimated actual 2011/12 value of the Bundamba Pump Station Flood Mitigation Work. No budget was sought of or approved by the Authority in the 2011/12 submission.

- **Table 91 Bundamba Pump Station Flood Mitigation Work – change in 2011/12 capital expenditure**

Source	2011/12 Costs ($000s)			
	QCA approved value	Estimated actual value	Difference	% increase
Email correspondence	0	1,267	1,267	∞

8.4.2. Project description

The Bundamba Pump Station Flood Mitigation Work project involves works to mitigate future flood damage on the Bundamba Pump Station and offtake. Additionally the projects will return the pump station and offtake to their pre-flood state.

During the January 2011 floods the pump station and offtake were inundated, by approximately 1 m and 2 m respectively. The floor levels were constructed above the 100 year flood level. The pump station and offtake were rendered non-operational by the flood damage. This resulted in an increase in flood insurance premium and an increase of 1,150% to the flood damage deductible limit until such time that flood mitigation works are undertaken.

The project has two stages:

- Stage 1: Design
  - Structural design of reinforced concrete wall and foundations
  - Design for the installation of Non-Return/Flap Valves on the 5 drains which pass underneath the wall
  - Design for sealing of the 13 electrical and telecommunications conduits which pass underneath the wall
  - Design of concrete bulkheads on the two water mains that pass underneath the wall
  - Regarding of the existing entrance pavement to allow a flush seal for the flood gate
  - Review the site dewatering capacity for flood events and augment pump size & layout if required
  - Re-profile surface drainage and new bund on Northern side of site to allow maintenance access
  - Tender and Construction Documents for the above including Form 15 Engineering Design Certificate for the wall
- Stage 2: Construction
  - Retaining wall construction
  - Reinstate roadways, paths, pits, services, grounds and structures impacted by installation of retaining wall
  - Installation of 6 m wide water proof flood gate
  - Dewater pump installation

8.4.3. Provided documentation

The key reference documents used for this review are:

- *Bundamba Flood Mitigation Feasibility Study – Design Scope*, LinkWater, February 2011
- *Bundamba Flood Mitigation Feasibility Study – Project Management Scope*, LinkWater, November 2011
- *Bundamba Pump Station Flood Mitigation Project – Construction Scope*, LinkWater, October 2011
- *Bundamba Pump Station Flood Mitigation – Project Management Plan*, LinkWater, October 2011
- *Procurement and Evaluation Plan – Provision of Bundamba Flood Mitigation Works*, LinkWater, no date
- *Email: Re Flood Mitigation Project*, Robert Ryan (Comdain), 31 August 2011
- *Project Risk Register - Bundamba Pump Station Flood Mitigation Works*, LinkWater, January 2012
- *Letter: Bundamba pump station flood mitigation works*, AON, 15 September 2011
- *FIN/PRC/280 Evaluation Report*, LinkWater, November 2011
- *Contract Variation Register*, LinkWater, 01 March 2012

- *Resolution by Board Members*, LinkWater, November 2011
- *Bundamba FMW Estimate*, LinkWater, 28 February 2012
- *Board & Committee Papers*, LinkWater, 30 November 2011
- *Project Justification Report*, LinkWater, March 2012

8.4.4. Prudency

According to the terms of reference when assessing items for the prudency and efficiency of 2011/12 estimated actual capital expenditure:

> *"The consultant must assess the prudency and efficiency of 2011-12 non-drought[6] capital expenditure for each GSP that:*
>
> *a) was not submitted to the Authority as part of GSPs' forecast capital expenditure during the 2011-12 GSC investigation; and*
>
> *b) is material, where materiality is defined as exceeding $2 million;*
>
> *The consultant must also assess the efficiency only of the 2011-12 non-drought capital expenditure for each GSP that:*
>
> a) was submitted to the Authority as part of GSPs' forecast capital expenditure during the 2011-12 GSC investigation; and
>
> *b) differs significantly (more than 30%) from the forecast costs submitted by the GSP during the 2011-12 investigation."*

As this project was not submitted as part of last year's review an assessment of prudency has been completed.

Cost driver

The cost driver nominated by LinkWater for this project is *achieving required level of service*, which aligns with the Authorities driver of *service*.

This cost driver is supported by the Bundamba Pump Station being an integral part of the Southern Regional Water Pipeline (SRWP) and is essential for complying with Monthly Instructions issued by SEQ Water Grid Manager.

Decision making process

An options study, which included the 'do nothing' option has been conducted. Two options were considered in the *Project Justification Report* (LinkWater, March 2012), these were:

Option 1 Do Nothing - reinstate the pump station and live with the potential risk of repeat flooding. This option is only worthy of consideration because of the relatively low likelihood of occurrence of such flood events

[6] Non-drought capital expenditure refers to capital expenditure that was not required as part of the Water Regulation 2002 or the Regional Water Security Program. As a consequence, it excludes many of the largest capital expenditure projects undertaken by the GSPs, such as the Hinze Dam raising or the Northern Pipeline Interconnector Stage 2.

Option 2 Build flood protection works – reinstate the pump station and construct a flood wall to protect the station

Option 1 involves only works required are associated with restoring the damaged electrical equipment and re-commissioning the pump station, with no additional capital expenditure but with exposure to an insurance deductible of $2.5 million for any future event. This option provides no improvement in the exposure of this pump station to a repeat of the 2011 inundation.

Option 2 involves the construction of a concrete wall around the pump station to a finished level of 18.8 m (AHD datum) to provide effective protection against a repeat of the January 2011 flood with a freeboard allowance of 300 mm. This would require a wall approximately 2 m high from the original ground levels. Associated works include the installation of an auxiliary generator to drive sump pumps and communications in the event of a power failure to the site (as occurred in the flood event). Current estimate for the completed works is $1.15 million. Option 2 virtually eliminates the risk of damage to the pump station from a possible similar flood event in the future.

The two options were evaluated on three considerations - financial, impact on service and impact on reputation, as outlined below:

- Financial - A simple calculation would indicate that spending $1.15 million now to avoid a $2.5 million deductible on any future insurance claim has a clear financial advantage given that such an event has just occurred and generated $3 million damage to electrical equipment at the pump station. However this needs to be weighed against the likelihood of this occurring and comparing the future value of that benefit

  A further financial consideration is that if another flood did occur it would seem almost certain that flood protection works would be implemented at that time if they were not undertaken now. This would seem to make the decision more one of ‘when’ rather than ‘if’
- Impact on Service - While the Bundamba Pump Station is not frequently utilised at this time, this will change as major growth occurs in the southern hinterland of SEQ. This growth will be increasingly reliant on this pump station and there is an associated expectation that such core infrastructure will achieve high levels of reliability and resilience
- Impact on Reputation - The community has high expectations of the organisations that operate their water supply systems in terms of professionalism and appropriate management of risk. Losing the pump station again to an event that has already occurred and suffering major service disruptions as a result would be inexcusable for LinkWater and for the State Government

LinkWater determined that the protection of the pump station by constructing a flood wall would be prudent and efficient.

8.4.5. Efficiency

The scope of works

The *Bundamba Pump Station Flood Mitigation Project Construction Scope of Works* document provides the following outline regarding the project’s scope of works:

- *"Construction of flood-proof free standing retaining wall (see Sketches below) to RL 18.8m*
  - *Site Establishment (including Office, Cribbing, Power, Lighting & Water)*
  - *Traffic Control*
  - *Excavation & removal of spoils*
  - *Supply & installation of formwork, reinforcement and premixed concrete*
  - *Strip & remove all formwork*
  - *Finish concrete surfaces as detailed in design drawings*
  - *Supply & Install Water stops to all Joints & Construction Joints.*
- *Supply & installation of flood gate*
- *Galvanised chain wire mesh barbed wire top security fencing along the top off the finished concrete walling and flood gate*
- *Remove pavements and kerbing where shown on design drawings, supply and install new pavements and kerbing*
- *Repair & make good landscaping and site drainage impacted by works*
- *Block the ingress of flood water through pipes, conduits and the like*
- *Remove granular materials around pipes and conduits in trenches and infill with impermeable materials as show on the design drawings*
- *Supply, installation and commissioning of an automated start-up pump and generator. The auto switching for power from the generator shall be provided by others. The generator is to be located on the South Eastern end of the site with fuel tank sufficient for 1 weeks supply. Cabling and connection is required to the power inlet on the North Eastern wall of the pump station*
- *In the Bundamba Offtake Facility (North Western side of Hanlon St) the removable roof shall be unbolted and craned off. Galvanised framed infill walling 2.4m high (clad to match exist internal and external) shall be supplied and installed above the existing walls. A new internal galvanised staircase and platform 2.4m high shall be supplied and installed to straddle over the existing pipe work. Remove, relocate and rewire the switchboard to the new platform. Replace the removable roof. Connect, test and commission the offtake.*
- *Supply and install flood gate x 6 m wide. Flood gate shall be zinc primed plus 2 coat epoxy finish or galvanised*
- *Surveying to certify construction at site boundaries*
- *Supply as constructed drawings and flood operation manual*
- *Supply one year defect rectification"*

Standards of works

The standards of works adopted for this project appear to be consistent with industry standards.

Project cost

The *Procurement and Evaluation Plan – Provision of Bundamba Flood Mitigation Works* document details the tender review process to be undertaken for this project. Each tender was assessed with respect to the weighted and non-weighted criterion. The weighted criterions are as follows, with their relative weightings being 10%, 55% and 35% respectively:

- *"Statement regarding demonstrated experience in the delivery of similar services*
- *Statement regarding the Respondents availability and commitment to deliver Services ideally before 23 December 2011*
- *The Contractor's Margin Percentage (as per attached Costing spreadsheet), which will be applied to all Trade Costs associated with the delivery of Services"*

Additionally, the non-weighted criterions were:

- *"The Contractor's Direct Costs, which will be applicable to the delivery of Services*
- *An upper limit estimate of the likely pricing range for the completion of works based on available Scope of Works and Preliminary Design"*

The *FIN/PRC/280 Evaluation Report* details that three tenders were received and assessed as follows:

> *"The Tenderers supplied an estimate for the works. These estimates ranged from $447,000 to $1,100,000. No basis of estimate was provided by any Tenderer. As there is a high level of variability and no comparable bases between Tenderers, their supplied estimates have not been used in this assessment.*
>
> *An internal costing spreadsheet was created to compare Tenderer costs in a common scenario. The spreadsheet is derived from the more detailed Quantity Surveyor estimate and includes a contingency based on preliminary design, a dry weather program, the likelihood of site variables given the limited site investigation and potential for shift work (night shift) of 20%."*

This method re-calculated the Tenders in the range of about $919,000 to about $978,000. The Contractor with the lowest cost also scored best in the criterion assessment and was identified as the preferred Contractor.

The *Resolution by Board Members* document states the following values (excluding GST) for the elements comprising the project:

"Construction Works:	*Alder (Proposed)*	*$996,000*
Design:	*AECOM*	*$135,000*
Quantity Surveyor:	*Turner and Townsend*	*$100,000*
Project Management:	*KBR*	*$235,000"*

This document states that the total cost for the project excluding GST is $1,466,000 and the total cost including GST is $1,612,600. Additionally it is stated *"that the combined value of the contracts, inclusive of GST, remains within the original project cost plan of $2.5 million, reported to the Work and Environment Committee at its September 2011 meeting"*.

The *Bundamba FMW Estimate* spreadsheet indicates the latest cost estimate for the project is about $1.8 million. An error has been discovered in the spreadsheet, which appears to have arisen when the "Construction Estimated – Accruals" line has been added as the construction Purchase Order and the construction costs have been double counted. The cost estimate has been recalculated to be about $1.15 million. This value does not match the sum submitted to the Authority of $1.267 million, however it is less than that stated in the *Resolution by Board Members* document ($1.6 million including GST).

Notwithstanding the above, the project is assessed as efficient.

8.4.6. Policy and procedures

LinkWater followed their procurement procedure to engage a contractor for the completion of the works.

8.4.7. Timing and deliverability

The *Board & Committee Papers* document states that the project has been delayed due to *"order delays for essential parts (Variable Speed Drives) from Japan"*. *This is explained as being due to "Siemens (being) unable to meet the demand for these parts due to the natural disasters in Japan"*.

The document states that *"after an initial assessment it as expected that repairs would be complete by 31 December 2011"*. The document states that *"it is expected that the pump station will be fully operation by March 2012"*.

It is considered that the project can be delivered by the new completion date assuming that there are no further delays to the delivery of materials.

8.4.8. Efficiency gains

The main project driver is to reduce the flood damage insurance premiums for the Bundamba Pump Station, which will additionally reduce the flood damage deductable. This is discussed in the *Project Justification Report* as follows.

> *"The potential for another similar, or greater, flood to occur could not be discounted and this was reflected in a proposal from LinkWater's insurer to increase the excess form the previous $200,000 per event to $2.5 million per event. This would reduce to $1.0 million per event if flood protection works were constructed"*.

Furthermore, the flood resulted in about $3 million of damage to the pump station, which if a similar event occurred would be largely borne by LinkWater due to the revised insurance scheme.

8.4.9. Allocation of overhead costs

The breakdown of costs in the *Bundamba FMW Estimate* spreadsheet do not include overhead costs.

8.4.10. Summary

The project is assessed as prudent as the primary driver of *achieving required level of service* has been demonstrated and an appropriate decision making process has been documented.

The project is assessed efficient as the scope is appropriate, the standards of works are consistent with industry practice and the costs are consistent with prevailing market conditions.

The value of 2011/12 expenditure not considered to be prudent or efficient: Nil

The quality of the information provided on this project is outlined below in **Table 92**.

- **Table 92 Quality of information provided**

Section of Capex review	Bundamba Pump Station Flood Mitigation Work
Project description	
Provided documentation	
Prudency	
Cost driver	
Decision making process	
Efficiency	
Scope of works	
Standards of work	
Project cost	
Policy and procedures	
Timing and deliverability	
Efficiency gains	
Allocation of overhead costs	

Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

8.5. Reservoir Access Hatch Alarms

8.5.1. Proposed capital expenditure

Table 93 shows the estimated actual value 2011/12 of the Reservoir Access Hatch Alarms project within the 2011/12 budget. No budget was reviewed or approved by the Authority in 2011/12.

- **Table 93 Reservoir Access Hatch Alarms project – change in 2011/12 capital expenditure**

Source	2011/12 Costs ($000s)			
	QCA approved value	Estimated actual value	Difference	% increase
Email correspondence	0	217	217	∞

8.5.2. Project description

The Reservoir Access Hatch Alarms project involves the completion of a site audit to ascertain the extent of security measures required to be implemented, as Stage 1. These measures are the installation

of reed switches to reservoir access hatches which are alarmed back to SCADA, which are to be completed as Stage 2 of the project. Unauthorised access has been identified as a significant risk through the water quality risk assessment process and this mitigation measure has been identified. The overall project is to install electrically monitored security to hatches, gates and doors at various water reservoirs.

8.5.3. Provided documentation

The key reference documents used for this review are:

- *Project Justification Report Reservoir Hatch Alarms*, LinkWater, January 2010
- *Email: RE Project O.141*, [redacted] (LinkWater), 13 September 2011
- *CAPEX Review Committee Minutes of Meeting – 18 August 2011*, LinkWater, 18 August 2011
- *Procurement and Evaluation Plan – Provision of Reservoir Security Hatches Alarms and SCADA Works*, LinkWater, March 2011
- *Variation Request Form – Variation 2 - Provision of Reservoir Security Hatches Alarms and SCADA Works*, J. & P. Richardson Industries Pty. Ltd., February 2012
- *Contract Variation Order – Variation 1 - Reservoir Security Hatches Audit and Repair*, LinkWater, October 2011
- *Document Approval Form Contract 392997 - J & P Richardson Industries Pty Ltd - Provision of Reservoir Security Hatches Alarms and SCADA Works*, LinkWater, April 2011
- *Request for Quotation: Provision of Reservoir Security Hatches Alarms and SCADA Works*, LinkWater, February 2011
- *Scope of Works / Technical Specifications - Reservoir Security Hatch Alarm and SCADA Works*, LinkWater, November 2010
- *Reservoir Access Hatch Alarms Project Management Plan*, LinkWater, October 2010
- *Project Setup Form - Reservoir Access Hatch Alarms*, LinkWater, October 2010
- *Reservoir Hatch Alarms Risk Register*, LinkWater, August 2008
- *Scope Of Works for Reservoir*, no author, no date
- *FIN/PRC/181 - Evaluation Report Provision of Reservoir Security Hatches Alarms and SCADA Works*, LinkWater, March 2011
- *Memorandum – Response to SKM Draft Report, March 2012 Additional Information - Reservoir Access Hatch Alarms*, LinkWater, 19 April 2012

8.5.4. Prudency

According to the terms of reference when assessing items for the prudency and efficiency of 2011/12 estimated actual capital expenditure:

"The consultant must assess the prudency and efficiency of 2011-12 non-drought[7] capital expenditure for each GSP that:

a) was not submitted to the Authority as part of GSPs' forecast capital expenditure during the 2011-12 GSC investigation; and

b) is material, where materiality is defined as exceeding $2 million;

The consultant must also assess the efficiency only of the 2011-12 non-drought capital expenditure for each GSP that:

a) was submitted to the Authority as part of GSPs' forecast capital expenditure during the 2011-12 GSC investigation; and

b) differs significantly (more than 30%) from the forecast costs submitted by the GSP during the 2011-12 investigation."

As this project was not submitted as part of last year's review an assessment of prudency is required.

Cost driver

The cost driver nominated by LinkWater for this project is *renewal*. The access portals do not have existing alarms, consequently the driver *renewal* is difficult to sustain.

The *Project Justification Report Reservoir Hatch Alarms* (LinkWater, January 2010) identifies the project as:

"Installation of reed switches to reservoir access hatches which are alarmed back to SCADA. Unauthorised access has been identified as a significant risk through the water quality risk assessment process and this mitigation measure has been identified."

The report further identifies:

"Persons with malicious intent gaining unauthorised access into the reservoirs could contaminate or poison the water supply. Other consequences of a security breach could be drowning."

It is considered that the driver could be more appropriately identified as *improvement*.

Decision making process

An options study, which includes the 'do nothing' option has been conducted. A number of options were considered in the *Project Justification Report Reservoir Hatch Alarms* (LinkWater, January 2010), these were:

Option 1 Do Nothing

Option 2 Install reed switches

[7] Non-drought capital expenditure refers to capital expenditure that was not required as part of the Water Regulation 2002 or the Regional Water Security Program. As a consequence, it excludes many of the largest capital expenditure projects undertaken by the GSPs, such as the Hinze Dam raising or the Northern Pipeline Interconnector Stage 2.

The advantages, disadvantages as well as the capital expenditure and net present value for each option was analysed, as outlined below in **Table 94**.

- **Table 94 Assessment of options**

	Option 1 - Do Nothing	Option 2 - Install reed switches
Advantages	Nil capital expenditure	Both authorised and unauthorised access into the reservoirs will be logged on SCADA If a security breach has occurred, an alarm will be received immediately so an investigation can commence without delay
Disadvantages	Unauthorised access into reservoirs will go undetected	Potential false alarms if reed switches are incorrectly specified or incorrectly fitted
Expenditure ($)	Nil	80,000
NPV ($)	- 147,000	- 80,000

Source: *Project Justification Report Reservoir Hatch Alarms*, LinkWater, January 2010

The risk rating after completing each option was assessed for each option, as outlined below in **Table 95**.

- **Table 95 Assessment of options**

	Option 1 - Do Nothing	Option 2 - Install reed switches
Likelihood	Possible	Unlikely
Consequence	Major	Moderate
Consequence description	Significant impact on immediate community. Community and interest group complaints likely. State media coverage. Political interest. Water contamination impacts for small population leading to hospitalisation of people.	Limited impact on community. Possible local media coverage. Widespread and severe impact on water quality amenity requiring sections of the network to be shut down to contain impact.
	Risk is deemed to be significant if a person with malicious intent gains unauthorised access into a reservoir and the access goes undetected.	Risk is considered to be lessened if remote monitoring of reservoir access hatches is provided for.
Risk Rating	Significant	Medium

Source: *Project Justification Report Reservoir Hatch Alarms*, LinkWater, January 2010

The preferred option selected was Option 2 as although it has higher costs associated with it, it reduces the risks the organisation is exposed to.

The project has been assessed as prudent. The primary driver has been assessed as *improvement.* An appropriate decision making process has been documented.

8.5.5. Efficiency

The scope of works

The scope of work for this project included:

- Stage 1 – Audit and Report
  - An audit of each reservoir to ascertain:

a) The exact extent of the required Scope of Works per reservoir

b) Respondents will be required to provide a lump sum price for undertaking the Scope of Works per reservoir, utilizing the schedule of rates provided in response to Stage 2 requirements

- Stage 2 – Supply and Install
  - Installation of new hermetically sealed magnetic type Reed switches to hatches, gates and doors where required
  - Supply and install new 4 core Olflex cable / 2 pair Instrolex cable (or equivalent) from switch to the site Programmable Logic Controller (PLC) / Remote Telemetry Unit (RTU) Input / Output (I/O) marshalling terminals
  - Wire all switches as fail-safe (i.e. open circuit will raise an alarm); Test all existing door / hatch switches (for all reservoir / Water Quality (WQ) sites) to ensure switches are wired fail-safe (correct as required)
  - Replace all switches wired to PLC/RTU analogue inputs. Rewire individually to PLC/RTU digital inputs
  - Replace faulty switches / wiring;
  - Electrical schematic drawings and PLC /RTU and I/O Lists to be marked up for all site works

Standards of works

The standard of works that the work was required to conform to was to LinkWater's existing standards for SCADA systems as well as technical, design and construction legislative and industry requirements.

Project cost

The *Project Justification Report Reservoir Hatch Alarms* (LinkWater, January 2010) estimates the capital expenditure as $80,000 while the email correspondence indicates that the 2011/12 estimate actual expenditure will be $271,459. This is a difference of approximately $137,000 or 127%. The *Procurement and Evaluation Plan – Provision of Reservoir Security Hatches Alarms and SCADA Works* details that the project was expected to be completed in June 2011, which may explain why the cost was not entered in the 2011/12 budget.

The *Reservoir Access Hatch Alarms Project Management Plan* (LinkWater, October 2010) describes the initial proposed expenditure, as outlined below in **Table 96**.

- **Table 96 Proposed Expenditure – LinkWater Project Management Plan**

Stage	Description		Amount
(Level 1)	(Level 2)	(Level 3)	($)
Initiation			
Planning	Project Design	Design & Specifications	5,000
Delivery	Project Implementation	Installation	65,000
	Other Delivery costs	Communications	
Finalisation	Contingency		10,000
TOTAL			**80,000**

The project utilised a Select Request for Tender process. Tenders were invited from two companies, J & P Richardson Industries Pty Ltd and SAGE Automation, who are engaged in a Service Level Agreements with LinkWater. A Select Request for Tender process was utilised due to elevated risks associated with the project due to the interface with and modification of LinkWater's various SCADA systems as part of the scope. As is detailed in the *FIN/PRC/181 - Evaluation Report Provision of Reservoir Security Hatches Alarms and SCADA Works* both companies tendered for the project.

A contract was awarded to J & P Richardson Industries Pty Ltd for Stage 1 of the Reservoir Security Hatch and SCADA audit with a value of $34,440 in April 2011. Stage 1 comprised of an audit and report on each reservoir to ascertain the exact scope of works required for each reservoir.

Stage 2 comprised of the supply and installation of infrastructure in accordance with the findings of the report produced in Stage 1. Email correspondence provided by LinkWater indicates that the initial budget of approximately $80,000 was for Stage 1 of the project which was to investigate the full extent of the required works and prepare a report with full costings from which, if approved, would proceed to Stage 2 – implementation of the findings of the report (in full or part). J & P Richardson Industries Pty Ltd prepared the report and submitted costs for the 12 reservoirs that they assessed required hatch alarms.

LinkWater advise that the Capital Review Committee (CRC) considered the proposed works and cost for Stage 2 in August 2011. Initially no information had been provided by LinkWater in relation to the CRC and its authority to make decisions on project variations. Subsequent information provided by LinkWater informed that the CRC is a key governance body over the operational development and delivery of the capital works program. The role of the CRC is defined the Capital Expenditure Program Management Plan 2010-2012 and is primarily to provide executive level oversight, facilitate rapid decision making and promote a clear, unified direction. One of the CRC's responsibilities, of direct relevance to this project, is to:

- *"Review and approve project variations:*
  - *Financial variations greater than the contingency allowed for each project would required CRC review and approval"*

The CRC's considered the risks of not undertaking the work and the consequences of potentially over spending the program budget and concluded that the project addressed a significant risk and remained

a high priority. The project budget was increased to accommodate the direct costs and provisional allowances associated with the full Stage 2 scope of works.

A contract variation was submitted by J & P Richardson Industries Pty Ltd for a value of $185,819 and approved in October 2011 for the completion of the Stage 2 works. A second variation was submitted by J & P Richardson Industries Pty Ltd for a value of $3,696 and approved in February 2012 for unforeseen issues encountered during installation works.

- **Table 97 Project costs**

	Cost ($)	Percentage of Original Cost
J & P Richardson Industries Stage 1 contract	34,440	-
J & P Richardson Industries Stage 2 contract – Variation 1	185,819	540%
J & P Richardson Industries Stage 2 contract – Variation 2	3,696	11%
TOTAL	**223,955**	**651%**

Aspects included in Variation 1 are:

- **Table 98 Variation 1 cost breakdown**

Variation	Cost ($)
Wellers Hill: Supply and install reed switches, new conduit as required, cabling, inputs to digital terminal and configure and commission SCADA alarms as per Contractor's quotation AK62347, LinkWater to free issue I/O card for the RTU MD1000	[redacted]
Green Hill: Supply and install reed switches, new conduit as required, cabling, inputs to digital terminal and configure and commission SCADA alarms as per Contractor's quotation AK62166. LinkWater to free issue DI card required for RTU MD1000	
Sparkes Hill: Supply and install reed switches, new conduit as required, cabling, inputs to digital terminal and configure and commission SCADA alarms as per Contractor's quotation AK62310.	
Aspley Reservoir: Supply and install reed switches, new conduit as required, cabling, inputs to digital terminal and configure and commission SCADA alarms as per Contractor's quotation AK62309.	
Kuraby Reservoir: Supply and install reed switches, new conduit as required, cabling, inputs to digital terminal and configure and commission SCADA alarms as per Contractor's quotation AK62273.	
Robina Tank 1: Supply and install reed switches, new conduit as required, cabling, inputs to digital terminal and configure and commission SCADA alarms as per Contractor's quotation AK62366.	
Clover Hill Tank 2: Supply and install reed switches, new conduit as required, cabling, inputs to digital terminal and configure and commission SCADA alarms as per Contractor's quotation AK62366.	
Narangba: Supply and install reed switches, new conduit as required, cabling, inputs to digital terminal and configure and commission SCADA alarms as per Contractor's quotation AK62308.	
Heinemann Rd: Supply and install reed switches, new conduit as required, cabling, inputs to digital terminal and configure and commission SCADA alarms as per Contractor's quotation AK62306.	
Mount Cotton: Supply and install reed switches, new conduit as required, cabling, inputs to digital terminal and configure and commission SCADA alarms as per Contractor's quotation AK62307.	
Alexandra Hills: Supply and install reed switches, new conduit as required, cabling, inputs to digital terminal and configure and commission SCADA alarms as per Contractor's quotation AK62256.	
Kimberly Park: Supply and install reed switches, new conduit as required, cabling, inputs to digital terminal and configure and commission SCADA alarms as per Contractor's quotation AK62274.	
TOTAL	**185,819.31**

Source: *Contract Variation Order – Variation 1 - Reservoir Security Hatches Audit and Repair* (LinkWater, October 2011)

Aspects included in Variation 2 are:

- **Table 99 Variation 2 cost breakdown**

Variation	Cost ($)
Green Hill: Supply Of Digital Input Module DIM-102 F17 24v for Logica RTU Green Hill: Installation of input module, termination of new IO points in switchboard and configuration of RTU	[redacted]
TOTAL (excluding GST)	**3,360.00**

Source: *Variation Request Form – Variation 2 - Provision of Reservoir Security Hatches Alarms and SCADA Works* (J. & P. Richardson Industries Pty. Ltd., February 2012)

The total cost of the project indicated in **Table 100** is $223,955, plus an allowance of 15% for LinkWater costs.

- **Table 100 Summary of project costs**

Item	Cost ($)
J & P Richardson Industries Stage 1 contract	34,440
J & P Richardson Industries Stage 2 contract – Variation 1	185,819
J & P Richardson Industries Stage 2 contract – Variation 2	3,696
Sub-Total	**223,955**
Linkwater overheads (15%)	33,593
TOTAL	**257,548**

This is in excess of the 2011/12 estimated actual value ($217,000). LinkWater advise that:

> *"Stage 1 of the works was undertaken during June 2011 with reports received through June and July. The balance of allocated project funding, $33,858, was carried in to 2011/12 with the project for Stage 2 of the works."*

Based on the initial budget for Stage 1 of the project being $80,000, the above statement indicates that $46,142 was spent in the 2010/11 budget for Stage 1. When the $46,142 is subtracted from the total budget ($257,548) the remaining $211,406 is generally consistent with the 2011/12 estimated actual value ($217,000).

8.5.6. Policy and procedures

J & P Richardson Industries Pty Ltd was engaged for Stage 1 of the project following a Select Request for Tender process. J & P Richardson Industries Pty Ltd was engaged for Stage 2 of the project by utilising the schedule of rates within the Stage 1 tender.

The appropriate process for the approval of the revised project expenditure was utilised with the CRC reviewing and approving the revised expenditure.

8.5.7. Timing and deliverability

It is stated in the *Procurement and Evaluation Plan – Provision of Reservoir Security Hatches Alarms and SCADA Works* (18 March 2010) that the expected completion date was in June 2011. It is

assumed that this is for Stage 1 only as the scope for Stage 2 is to be determined by Stage 1 and hence the program could not be determined prior to the scope being defined.

The *Contract Variation Order – Variation 1 - Reservoir Security Hatches Audit and Repair* document that relates to Stage 2, states that the revised completion date for the project was in December 2011.

LinkWater have advised that Practical Completion was granted to J & P Richardson Industries Pty Ltd on the 28 February 2012.

8.5.8. Efficiency gains

No efficiency gains have been identified for this project.

8.5.9. Allocation of overhead costs

LinkWater have allowed approximately 14% contingency allowance for Stage 1 of the project. No overhead allocation information has been provided for Stage 2.

8.5.10. Summary

The project is assessed as prudent. The primary driver of *improvement* has been demonstrated and an appropriate decision making process has been documented.

The project is assessed as efficient as the scope is appropriate, the standards of works are consistent with industry practice and although not all of the costs have been market tested, the Stage 1 costs and the schedule of rates identified in the proposal of Stage 1, which were used for the completion of Stage 2 works, have been market tested.

The value of expenditure not considered to be prudent and efficient: Nil.

The adequacy of the information provided on this project is outlined below in **Table 101**.

- **Table 101 Adequacy of information provided**

Section of Capex review	Reservoir Access Hatch Alarms
Project description	
Provided documentation	
Prudency	
Cost driver	
Decision making process	
Efficiency	
Scope of works	
Standards of work	
Project cost	
Policy and procedures	
Timing and deliverability	
Efficiency gains	
Allocation of overhead costs	

Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

8.6. Supply and Install Mixers

8.6.1. Proposed capital expenditure

The following table shows the estimated actual value 2011/12 cost of the Supply and Install Mixers project within the 2011/12 budget. No budget was requested of or approved by the Authority.

- **Table 102 Supply and Install Mixers – change in 2011/12 capital expenditure**

Source	2011/12 Costs ($000s)			
	QCA approved value	Estimated actual value	Difference	% increase
Email correspondence	0	971	971	∞

8.6.2. Project description

The Reservoirs – Mixer Installation Program involves the purchase of 20 water mixer over a three year program (2011 to 2014) to be installed at Aspley, Kuraby and Kimberly Park reservoirs in 2011/12; and at Sparkes Hill 2, Green Hill 1 and 2 reservoirs in 2012/13 and Wellers Hill 1 and 2 reservoirs in 2013/14 to eliminate stratification, uniformly distribute disinfectant and reduce the potential for nitrification. The project was initiated due to issues with loss of disinfectant residuals during summer.

8.6.3. Provided documentation

The key reference documents used for this review are:

- *Reservoir Mixers Risk Register*, LinkWater, August 2008
- *Project Justification Report: Reservoirs - Mixer Installation Program*, LinkWater, March 2011
- *Sparkes Hill Reservoir Chloramine Dosing Feasibility Study*, MWH, June 2011

- *Reservoir Mixers Installation Project Management Plan*, LinkWater, August 2011
- *CAPEX Review Committee Minutes of Meeting – 18 August 2011*, LinkWater, 18 August 2011
- *Quotation Q11-144 for supply of PAX mixers for additional tanks*, Metaval, October 2011
- *CAPEX Review Committee Minutes of Meeting – 17 November 2011*, LinkWater, 17 November 2011
- *Sole Source Justification for Metaval supply of 20 PAX Mixers*, LinkWater, November 2011
- *CAPEX Review Committee Minutes of Meeting – 13 January 2012*, LinkWater, 13 January 2012
- *Memorandum – Response to SKM Draft Report, March 2012 Additional Information – Supply & Install Mixers*, LinkWater, 19 April 2012

8.6.4. Prudency

According to the terms of reference when assessing items for the prudency and efficiency of 2011/12 estimated actual capital expenditure:

> *"The consultant must assess the prudency and efficiency of 2011-12 non-drought*[8] *capital expenditure for each GSP that:*
>
> *a) was not submitted to the Authority as part of GSPs' forecast capital expenditure during the 2011-12 GSC investigation; and*
>
> *b) is material, where materiality is defined as exceeding $2 million;*
>
> *The consultant must also assess the efficiency only of the 2011-12 non-drought capital expenditure for each GSP that:*
>
> *a) was submitted to the Authority as part of GSPs' forecast capital expenditure during the 2011-12 GSC investigation; and*
>
> *b) differs significantly (more than 30%) from the forecast costs submitted by the GSP during the 2011-12 investigation."*

As this project was not submitted as part of last year's review an assessment of prudency is required.

Cost driver

The 'Business Driver Category' nominated by LinkWater for this project is *Achieving Required Level of Service*, which aligns with the Authority's cost driver of *compliance*.

The *Project Justification Report: Reservoirs - Mixer Installation Program* (LinkWater, March 2011) identifies that a loss of disinfectant residual in a number of reservoirs has been noted as a recurring issue each summer. It is believed to be caused by nitrification of water that is disinfected with chloramine and its occurrence is prevalent during warm weather associated with the summer season. Nitrification, if left unresolved for prolonged periods, can generate unpalatable tastes and odours in the water. More importantly it also has the potential to place the health and safety of consumers at risk due

[8] Non-drought capital expenditure refers to capital expenditure that was not required as part of the Water Regulation 2002 or the Regional Water Security Program. As a consequence, it excludes many of the largest capital expenditure projects undertaken by the GSPs, such as the Hinze Dam raising or the Northern Pipeline Interconnector Stage 2.

to the loss of disinfection residual and the possible occurrence of pathogenic bacteria in the supply. If this occurs LinkWater would not comply with the requirements of the Australian Drinking Water Guidelines (ADWG).

However, no documentation has been provided that identifies alternative methodologies or chemicals to chloramine that could be used for disinfection where considered.

The *Project Justification Report: Reservoirs - Mixer Installation Program* (LinkWater, March 2011) further states that:

> *"This project is a response to the water quality compliance issues associated with nitrification that are the subject of discussions with external stakeholders the SEQ Water Grid Manager (SEQ WGM) and Allconnex Water as part of the nitrification working group."*

Based on the information provided SKM assess that *compliance* is an appropriate cost driver for the project.

Decision making process

A recent study was completed, *Sparkes Hill Reservoir Chloramine Dosing Feasibility Study* (MWH, June 2011), to investigate the existing water quality at Sparkes Hill Reservoir, and the supply from upstream reservoirs at Aspley and Green Hill. It was found that major nitrification events have occurred in Sparkes Hill and upstream reservoirs. Initially, this report was not provided for review however it was subsequently provided to allow the review to be completed. A number of mixing alternatives were assessed by MWH in the report including:

- Aerators
- Reorientation of inflows
- Reticulating pump
- Propeller mixers
- PAX active submersible water mixers
- SolarBee mixers

A multi-criteria analysis (MCA) of the options was undertaken based on reliability/likelihood of success, capex cost, alignment to budget timeframes, safety, operability, opex cost, site constraints, environmental issues and level of stakeholder interaction. The PAX mixers scored the highest in the MCA and were identified as the preferred option due to simpler installation, more satisfactory dosing arrangement and comparable or lower capital cost.

In addition the installation of PAX mixers was recommended with the aim of breaking down any stratification occurring in the storage to reduce the loss of disinfectant and limit the conditions that encourage growth of nitrification. Based on these findings, mixers were installed in Narangba and Alexander Hills reservoirs as a trial. The trial resulted in favourable outcomes for the reservoirs. As this is specialised equipment there is a preference for a standard solution with the same mixers across

all the reservoirs that need these installations to provide efficiency benefits in relation to servicing and the holding of critical spares.

To address the issue of reservoir nitrification, LinkWater has implemented the Reservoir Mixer Installation Program.

Two options were considered for the program, these were:

Option 1 Do Nothing

Option 2 Purchase 20 PAX water mixers required for the overall program and install the six of the mixers at Aspley, Kuraby and Kimberly Park reservoirs in the 2011/12 year to address the most urgent needs

The 'Do Nothing' option will not resolve the current issue with nitrification. The size of the reservoirs, summer temperatures and the storage of chloraminated water inevitably results in nitrification events or a high potential for them to occur. Such events severely compromise LinkWater's ability to comply with the ADWG which is one of LinkWater's most fundamental performance obligations. This option will not yield the required outcome and was not considered further. LinkWater has completed its Water Quality Risk Assessment Document in support of its Drinking Water Quality Management Plan. This document identifies the risk associated with "Poor mixing within a storage reservoir or balance tank' in the Brisbane area as 'High (12)'.

The alternative option considered was the installation of mixers in the reservoirs to eliminate stratification and reduce the potential for nitrification. This will require the installation of PAX active submersible water mixers and potential upgrades associated with electrical and control services i.e. power supply, telemetry, level monitoring, etc.

The project has been assessed as prudent. The primary driver of *compliance* has been demonstrated. An acceptable decision making process has been documented.

8.6.5. Efficiency

The scope of works

For 2011/12 the scope of works for the program includes:

- the purchase all 20 PAX mixers (to take advantage of the substantial discount offered for this number)
- the installation of mixers at Aspley Reservoir, Kuraby Reservoir and Kimberly Park Reservoir

This appears to be an appropriate scope of works.

Standards of works

The standards of works adopted for this project appear to be consistent with industry standards.

Project cost

The *Project Justification Report: Reservoirs – Mixer Installation Program* (LinkWater, March 2012) estimates the capital expenditure for 2011/12 as $892,000 while the email correspondence indicates that the 2011/12 estimate actual expenditure will be $971,170. This is approximately $80,000 difference or 9%. No explanation of the difference between the costs provided in the justification report and those submitted to the Authority have been provided.

The following table outlines the proposed expenditure for the program.

- **Table 103 Project costs**

Item	2011/12 Cost Estimate ($, ex GST)	2012/13 Cost Estimate ($, ex GST)	2013/14 Cost Estimate ($, ex GST)	Total Cost Estimate ($, ex GST)
Project Management (@10% of cost, excluding extra PAX mixer purchase)	50,000	-	-	50,000
Purchase and delivery of 20x PAX mixers (@ $27,800 each)	556,000	-	-	556,000
Installation, electrical and control services:				
Aspley Reservoir	83,200	-	-	83,200
Kuraby Reservoir	60,000	-	-	60,000
Kimberly Park Reservoir	67,800	-	-	67,800
Sparkes Hill Reservoir	-	72,000	-	72,000
Green Hill Reservoirs	-	40,000	40,000	80,000
Wellers Hill Reservoirs	-	-	80,000	80,000
Contingency (@15% of cost, excluding extra PAX mixer purchase)	75,000	-	-	75,000
Total	892,000	112,000	120,000	1,124,000

Source: *Project Justification Report: Reservoirs – Mixer Installation Program* (LinkWater, March 2012)

The costs associated with the purchase of the PAX mixers were not initially provided. LinkWater subsequently provided a quote obtained from Metaval, the sole suppliers of PAX mixers in Australia, for the supply of up to 20 PAX mixers. The quote included a sliding scale of price depending upon the number of mixers purchased. The quoted unit price of a PAX mixer was [redacted] each, and applied for purchase of under 1 to 9 mixers, the purchase of 10 to 19 mixers had a reduced unit price of [redacted] each (approximately [redacted] discount) and the purchase of all 20 mixers reduced the unit cost to [redacted] each (approximately [redacted] discount), as outlined below in **Table 104**.

- **Table 104 Metaval PAX mixer pricing**

Item	Units	Total Cost
Unit Price (1-9 units)	1	[redacted]
Qty: 10 including multi-unit discount	10	
Qty: 20 including multi-unit discount	20	

A proposal for sole source justification was submitted to, and subsequently endorsed by, the Chief Executive Officer for the purchase of all 20 mixers from Metaval in accordance with the LinkWater Procurement Management Procedure (MGT-095). The proposal stated the justification as:

- *"Simple installation with not structural modifications required*
- *More satisfactory dosing arrangement*
- *Lower capital cost*
- *Significantly lower operations and maintenance costs"*

In relation to value for money the proposal states that:

> *"Despite the sole source engagement, value for money can be demonstrated by comparing the costs of PAX mixers to other mixers currently available. The MWH report outlines five (5) alternative options. The average costs of alternative mixers range from $30,000 - $70,000 each. Further, as mentioned previously, LinkWater can leverage off the bulk discount available and generate savings of* [redacted] *by purchasing all required mixers in one (1) transaction.*
>
> *The direct engagement of Metaval Consolidated Pty Ltd over a public tender process to deliver the PAX mixers is recommended as follows:*
>
> - *PAX mixers have been recommended by MWH as the preferred mixer to meet LinkWater's requirements*
> - *Metaval Consolidated Pty Ltd is the bone fide supplier of PAX mixers in Australia*
> - *Costs have been benchmarked already to other mixers currently available, with the PAX mixer being more effective and lower cost*
> - *Further market approach is considered unnecessary and would delay the mitigation of nitrification events occurring in reservoirs"*

It is typical procedure to enter the capital expenditure into the RAB after it has been commissioned. Consequently it is recommended that the purchase cost for the mixers be distributed across the years in which they are installed and commissioned.

Consequently the proposed project costs are revised as indicated in **Table 105** below:

- **Table 105 Revised Project Costs**

Item	2011/12 Cost Estimate ($, ex GST)	2012/13 Cost Estimate ($, ex GST)	2013/14 Cost Estimate ($, ex GST)	Total Cost Estimate ($, ex GST)
Project Management (@10% of cost, excluding extra PAX mixer purchase)	50,000	-	-	50,000
Purchase and delivery of 20x PAX mixers (@ $27,800 each)	167,000	250,000	139,000	556,000
Installation, electrical and control services:				
Aspley Reservoir	83,200	-	-	83,200
Kuraby Reservoir	60,000	-	-	60,000
Kimberly Park Reservoir	67,800	-	-	67,800
Sparkes Hill Reservoir	-	72,000	-	72,000
Green Hill Reservoirs	-	40,000	40,000	80,000
Wellers Hill Reservoirs	-	-	80,000	80,000
Contingency (@15% of cost, excluding extra PAX mixer purchase)	75,000	-	-	75,000
Total	503,000	362,000	259,000	1,124,000

The project is assessed efficient as the scope is appropriate, the standards of works are consistent with industry practice and the costs, although not market tested, were benchmarked against other mixers available and are only available from a sole source within Australia. However, SKM recommends a redistribution of the purchase cost for the mixers across the years in which they are installed and commissioned.

8.6.6. Policy and procedures

As per LinkWater's Procurement Management Procedure, items of capital expenditure with a normal contract value between $250,000 and $100 million are considered to be significant capital works. This level of expenditure generally requires the procurement procedure of inviting a public request for tender. For this project a Sole Source Justification was approved for the engagement of Metval for the supply of the 20 PAX mixers without going to the market.

8.6.7. Timing and deliverability

The *Project Justification Report: Reservoirs – Mixer Installation Program* (LinkWater, March 2012) identifies the schedule for the Reservoirs – Mixer Installation Program as outlined below in **Table 106**.

- **Table 106 Mixer installation program schedule**

Reservoir	Estimated No. of PAX mixers	Year of Installation
Aspley	3	2011/12
Kuraby	2	2011/12
Kimberly Park	1	2011/12
Sparkes Hill 2	4	2012/13
Green Hill 1 & 2	5	2012/13
Wellers Hill 1 & 2	5	2013/14

The current progress of this project has not been provided by LinkWater.

8.6.8. Efficiency gains

LinkWater opted to purchase all 20 of the required PAX mixers in 2011/12 due to savings achievable due to buying in bulk. The quantum of this saving has not been demonstrated to SKM.

8.6.9. Allocation of overhead costs

LinkWater have allowed approximately 10% on the cost (excluding extra PAX mixers) for project management 15% on the cost (excluding extra PAX mixers) for contingency.

8.6.10. Summary

The project is assessed as prudent. The primary driver of compliance has been demonstrated and an acceptable decision making process has been documented.

The project is assessed efficient as the scope is appropriate, the standards of works are consistent with industry practice and the costs, although not market tested, were benchmarked against other mixers available and are only available from a sole source within Australia. However, SKM recommends a redistribution of the purchase cost for the mixers across the years in which they are installed and commissioned.

An $80,000 difference in the cost of the mixer occurs between various LinkWater documents. This has not been resolved and until it is resolved it cannot be approved. The values in **Table 107** below are the reduced amounts.The value of expenditure considered to be prudent and efficient is outlined below in **Table 107**.

- **Table 107 Project Supply and Install Mixers - revised capital expenditure**

Project	Costs ($000s)		
	2011/12	2012/13	2013/14
Supply and Install Mixers	503	362	259

The quality of the information provided on this project is outlined below in **Table 108**.

- **Table 108 Quality of information provided**

Section of Capex review	Supply and Install Mixers		
Project description			
Provided documentation			
Prudency			
Cost driver			
Decision making process			
Efficiency			
Scope of works			
Standards of work			
Project cost			
Policy and procedures			
Timing and deliverability			
Efficiency gains			
Allocation of overhead costs			
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

8.7. Summary

A sample of four projects of the capital expenditure program for 2011/12 were identified as requiring additional review due to unexpected increases in actual estimated costs compared with approved budget and assessed. We have assessed these projects 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.

Two of the four projects have been assessed as both prudent and efficient**. Table 109** provides an overview of the final assessment made for each project of the project sample chosen for assessment of prudency and efficiency.

- **Table 109 2011/12 sample project summary - revised capital expenditure profile ($000s)**

Project	Cost 2011/12 ($000s)	Prudent	Efficient	Revised Cost 2011/12 ($000s)
Kuraby Reservoir Concrete Refurbishment	912	Prudent	Revised cost based on LinkWater advice assessed as efficient	853
Bundamba PS Flood Mitigation Work	1,267	Prudent	Efficient	1,267
Reservoir Access Hatch Alarms (Various sites)	217	Prudent	Efficient	217
Supply & Install Mixers (Various sites)	971	Prudent	Efficient when purchase cost staged with construction period	503

The adequacy of information supplied is summarised in **Table 110**.

- **Table 110 LinkWater capital expenditure review 2011/12**

Project	Kuraby Reservoir. Concrete Refurbishment	Bundamba PS Flood Mitigation Work	Reservoir Access Hatch Alarms (Various sites)	Supply & Install Mixers (Various sites)
Project description				
Provided documentation				
Prudency				
Cost driver				
Decision making process				
Efficiency				
Scope of works				
Standards of work				
Project cost				
Policy and procedures				
Timing and deliverability				
Efficiency gains				
Allocation of overhead costs				
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation	

9. Proposed revised expenditure

We have proposed revised expenditure for capital and operating expenditure in accordance with our evaluation of the operating and capital expenditure items reviewed on an exception basis.

A summary of changes for operating and capital expenditure items is provided below.

9.1. Operating expenditure

We have amended the operating expenditure in accordance with our evaluation of the sample of operating expenditure items reviewed. We found all operating expenditure in our sample to be prudent, however, in a number of samples we found that the operating expenditure proposed was not efficient.

The recommended operating costs after the review of the samples are found in **Table 111**.

- **Table 111 Recommended amendments to operating cost budgets**

Opex item		Asset	LinkWater proposed	SKM recommended
4	Operational Activities – Network Asset Ops	Pipes, reservoirs, pump stations	$1,426,295	$1,185,042
9	Chemical Cost	Dosing (chemical) cost	$532,863	$506,000

9.2. Capital expenditure

The following tables summarises our recommended alternate budget costs for capital expenditure items reviewed for 2012/13 and 2011/12 that we consider were either not prudent and or not efficient.

- **Table 112 2012/13 recommended amendments to capital cost budgets**

CAPEX PJR TRIM Reference	Project	Revised Cost ($000s)				
		2012/13	2013/14	2014/15	Subsequent	Total
496357	North Pine Pump Station Surge Compressor and Switchboard Replacement	204	-	-	-	204

- **Table 113 2011/12 recommended amendments to capital cost budgets**

LinkWater Ref	Project	Revised Costs ($000s) 2011/12
O.0115	Kuraby Reservoir Concrete Refurbishment	853
O.0187	Supply & Install Mixers (Various sites)	503

10. Conclusions and overall recommendations

10.1. Conclusion

SKM has reviewed the prudency and efficiency of a sample of LinkWater's operating and capital expenditure costs for 2012/13 and the review of past capital expenditure projects from 2011/12 based on the information provided by LinkWater. In addition SKM has reviewed the policies and procedures adopted by LinkWater for operating and capital expenditure budget planning.

10.2. Overall recommendations

The overall recommendation is that:

- **Policies and procedures review** – SKM recommends that LinkWater's procurement policy be adjusted to require three quotes for goods and services valued between $20,000 and $100,000 instead of the current two required

10.3. Operational Expenditure

From the review undertaken by SKM all but one operating expenditure project reviewed was determined to be prudent and efficient. **Table 114** below presents the revised operating expenditure.

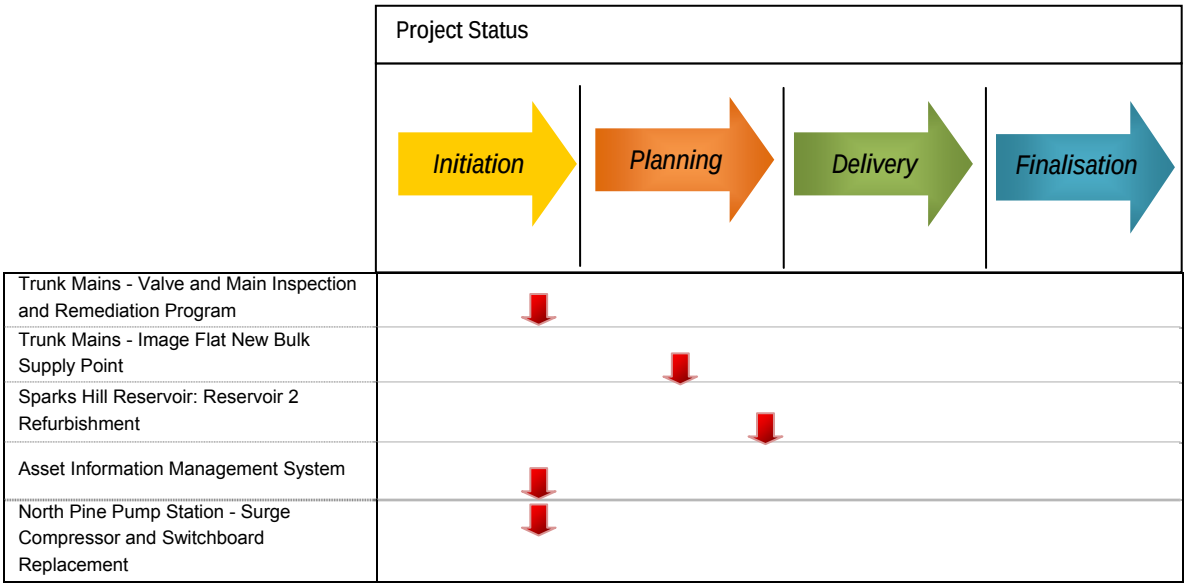
- **Table 114 Summary of revised operating costs ($000s)**

Operating Expenditure item		Value ($000s)	Prudent	Efficient	Revised Value ($000s)
1	Maintenance & Operations – Planned Reservoir	2,515	Prudent	Efficient	2,515
2	Maintenance & Operations – Planned Balance Tanks	202	Prudent	Efficient	202
3	Maintenance & Operations – Variable Operational	1,167	Prudent	Efficient	1,167
4	Chemical Cost	533	Prudent	Efficient	506
5	Operational Activities – System Modelling & Network Information	1,005	Prudent	Efficient	1,005
6	Operational Activities – GIS	851	Prudent	Efficient	851
7	Operational Activities – Service Delivery	1,167	Prudent	Efficient	
8	Operational Activities – Network Asset Ops	1,426	Prudent	Insufficient information to assess all expenditure as efficient	1,185
9	Operational Activities – Water Laboratory Testing	1,660	Prudent	Efficient	1,660
10	Property Leasing	1,509	Prudent	Efficient	1,509
11	IT & Knowledge Management	3,084	Prudent	Efficient	3,084
12	Corporate Services	2,435	Prudent	Efficient	2,435

10.4. Capital expenditure 2012/13

A sample of five projects were identified and assessed as a representative sample of the capital expenditure program for 2012/13 for LinkWater. We have assessed these projects against the Authority's definitions of prudency in particular the relevant driver and the decision making process and efficiency, including the standards of works, scope of work, timeliness of delivery and the costs.

The status of the five projects relative to the LinkWater Delivery Framework is illustrated in **Figure 10.**



- **Figure 11 Status of projects within the LinkWater Delivery Framework**

The capital expenditure of all five projects were assessed as both prudent and efficient. For the Trunk Mains - Valve and Main Inspection and Remediation Program only the proposed 2012/13 expenditure was assessed as efficient and for the North Pine Pump Station - Surge Compressor and Switchboard Replacement the expenditure excluding the building was assessed as efficient.

Table 76 provides an overview of the final assessment made for each project of the project sample chosen for assessment of prudency and efficiency

- **Table 115 2012/13 sample project summary - revised capital expenditure profile ($000s)**

Project	Cost 2012/13 ($000s)	Prudent	Efficient	Revised Cost 2012/13 ($000s)
Trunk Mains - Valve and Main Inspection and Remediation Program	2,107	Prudent	Efficient (based on additional information) Note: Insufficient information to assess expenditure beyond 2012/13 as efficient	2,105
Trunk Mains - Image Flat New Bulk Supply Point	2,073	Prudent	Efficient	2,073
Sparks Hill Reservoir: Reservoir 2 Refurbishment	1,305	Prudent	Efficient	1,305
Asset Information Management System	632	Prudent	Efficient	632
North Pine Pump Station - Surge Compressor and Switchboard Replacement	516	Prudent	Efficient excluding building	204

Table 116 summarises the adequacy of information for the five projects.

- **Table 116 LinkWater capital expenditure review 2012/13**

Project	Trunk Mains - Valve and Main Inspection and Remediation Program	Trunk Mains - Image Flat New Bulk Supply Point	Sparks Hill Reservoir: Reservoir 2 Refurbishment	Asset Information Management System	North Pine Pump Station - Surge Compressor and Switchboard
Project description					
Provided documentation					
Prudency					
Cost driver					
Decision making process					
Efficiency					
Scope of works					
Standards of work					
Project cost					
Policy and procedures					
Timing and deliverability					
Efficiency gains					
Allocation of overhead costs					
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation		

Comparing the project status, prudency and efficiency assessment and adequacy of information illustrates that projects further along the implementation journey are more likely to have more

adequate information and be assessed as prudent and efficient. It is noted that this assessment is at a specific point in time, and that the purpose of this review is to determine the validity of entry of costs into the RAB.

Consequently there is a situation whereby this review is unable to confirm the prudency or efficiency due to its position in the implementation journey, whilst good practice requires an allowance to be made in LinkWater's forward budget.

Where prudency and/or efficiency cannot be established, this does not solely mean that the project is inappropriate, it may mean that the status of the project is not sufficiently progressed to enable confirmation of entry of all costs into the RAB. A contributing factor to this maybe the frequency of reviews being shorter than the implementation period of large capital expenditure projects.

10.5. Capital expenditure 2011/12

A sample of four projects of the capital expenditure program for 2011/12 were identified as requiring additional review due to unexpected increases in actual estimated costs compared with approved budget and assessed. We have assessed these projects 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.

Two of the four projects have been assessed as both prudent and efficient**. Table 117** provides an overview of the final assessment made for each project of the project sample chosen for assessment of prudency and efficiency.

- **Table 117 2011/12 sample project summary - revised capital expenditure profile ($000s)**

Project	Cost 2011/12 ($000s)	Prudent	Efficient	Revised Cost 2011/12 ($000s)
Kuraby Reservoir Concrete Refurbishment	912	Prudent	Revised cost based on LinkWater advice assessed as efficient	853
Bundamba PS Flood Mitigation Work	1,267	Prudent	Efficient	1,267
Reservoir Access Hatch Alarms (Various sites)	217	Prudent	Efficient	217
Supply & Install Mixers (Various sites)	971	Prudent	Efficient when purchase cost staged with construction period	503

The adequacy of information supplied is summarised in **Table 118**.

- **Table 118 LinkWater capital expenditure review 2011/12**

Project	Kuraby Reservoir. Concrete Refurbishment	Bundamba PS Flood Mitigation Work	Reservoir Access Hatch Alarms (Various sites)	Supply & Install Mixers (Various sites)
Project description				
Provided documentation				
Prudency				
Cost driver				
Decision making process				
Efficiency				
Scope of works				
Standards of work				
Project cost				
Policy and procedures				
Timing and deliverability				
Efficiency gains				
Allocation of overhead costs				
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation	

Comparison of the efficiency assessment and the adequacy of information table illustrates that documentation regarding allocation of overheads costs is a common issues.

Various obstacles to reporting were encountered, these included:

- Information format and adequacy
- Timeframe of review
- Location of this review in the project delivery journey

It is acknowledged that there is a short timeframe in which to provide the required information, however the information should be available as a result of good practice. LinkWater staff cooperated extensively and worked beyond normal business hours to respond to requests and queries. This commitment is appreciated.

Appendix A Terms of Reference

Phase 1 – 2011/2012 fixed and variable operating expenditure (Opex) review

The Authority requires a detailed review of the current level of fixed operating costs (including overhead and fixed employee costs) and variable costs incurred by the GSPs. The assessment would be performed on data submitted by the bulk entities for the 2011/2012 period, as well as additional data requested from the GSPs as appropriate.

The consultancy is intended to build upon the review of operating costs conducted during the 2011/2012 GSC investigation. The consultancy will:

a) benchmark the GSPs against key cost parameters at relevant comparator organisations and good industry practice. Benchmark assessments may include parameters such as FTEs to water volume ratio, FTE to asset capacity ratio, maintenance to asset value ratio, operational costs to overhead costs ratio, total fixed costs to water volume ratio etc;
b) identify any duplication of effort relating to fixed operating costs between GSPs, their contractors and the WGM; and
c) identify any potential efficiency improvements and achievable operating cost (fixed and variable) savings as a result of the Seqwater-Water Secure merger on 1 July 2011.

The consultant will use a bottom up, needs-based assessment of costs on a functional level in order to understand what costs within a function are directed to which activities.

While noting that non-direct (indirect and overhead) cost categories are not standardised across the GSPs, the consultancy will review the following fixed operating cost activities:

a) Asset Management;
b) Capital Planning;
c) Engineering Services;
d) Planned and unplanned maintenance; and
e) Administration.

The consultancy will review all component costs of the above activities including internal and external (contractor's) costs to identify potential efficiency improvements.

In order to establish the basis for an assessment of the GSP's proposed overhead and fixed employee costs, the consultant will need to outline:

a) the services provided by the bulk entities' head offices;
b) major overhead and fixed employee cost categories and their key cost drivers (and how they are tied into the GSP's respective business objectives);
c) high level indicators to assess the relative efficiency of cost components using appropriate comparators, good industry practice and available benchmarking data. Examples of such

indicators could include FTEs as a proportion of overhead costs, overhead costs as a percentage of total operating costs, or proprietary benchmarking tools which establish rates of efficiency; and

d) given constraints related to employee retention, how the Authority could assess the potential for efficiency gains once the GSP's provide their projected expenditure for 2012/2013. This could include quantum and timing of any potential efficiency gains.

In regard to variable costs, the consultancy should review potential savings in energy and chemical costs, within the constraints of demand forecasts defined by the Government.

The Authority's objective is to have this phase complete by 29 February 2012.

Phase 2 – 2012/2013 GSC Draft Report investigation

The Authority is required to publish a Draft Report detailing recommended Grid Service Charges for 2012/2013 by 30 April 2012. The Authority requires assistance in assessing the prudency and efficiency of the GSP's proposed capital and operating costs for 2012/2013.

Phase 2 will commence following the receipt of the GSP's information submissions on 29 February 2012, to be completed by 23 March 2012. Phase 2 is comprised of three components.

Component 1 – Prudency and Efficiency of 2012/2013 forecast Operating Expenditure

The consultant must assess whether each of the GSPs' submitted operating costs proposed for 2012/2013 are prudent and efficient. The assessment of prudency and efficiency of operating expenditure will review a representative sample, to be agreed with the Authority, of each GSP's forecast operating costs. The sample should include the top 10% of operating expenditure items by value and, preferably, at least 50% of the total operating expenditure.

In assessing prudency and efficiency, the consultant must:

a) assess whether the GSPs' policies and procedures for operational expenditure represent good industry practice;

b) assess the standards of service adopted by each GSP and whether these standards have been approved by external agencies. The consultant should where appropriate refer to broader benchmark analysis of Phase 1;

c) assess whether the GSPs' operating expenditure is prudent. Operating expenditure is prudent if it is required to meet the GSP's requirements relating to:

    c) its Grid Contract;

    d) the South East Queensland System Operating Plan; and

    e) production forecasts for the regulatory period are to consistent with the grid instructions forecast in the Operating Strategy (or any successor documents) and any relevant information provided to the GSPs in accordance with the system operating plan;

d) assess whether the GSPs' operating expenditure is efficient. 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. In assessing efficiency, the consultant must have regard to the conditions prevailing in relevant markets, historical trends in operating expenditure and the potential for efficiency gains or economies of scale; and

e) assess the appropriateness of any allocation methodology of overhead operating costs.

Component 2 – Prudency and Efficiency of 2011/2012 estimated actual Capital Expenditure

The consultant must assess the prudency and efficiency of 2011/2012 non-drought[9] capital expenditure for each GSP that:

a) was not submitted to the Authority as part of GSPs' forecast capital expenditure during the 2011/2012 GSC investigation; and
b) is material, where materiality is defined as exceeding $2 million;

The Authority does not expect that this will be a large number of items, but may include some material capital expenditure to rectify damage caused by the January 2011 floods that was not included in the GSPs' 2011/2012 submissions.

The consultant must also assess the efficiency only of the 2011/2012 non-drought capital expenditure for each GSP that:

a) was submitted to the Authority as part of GSPs' forecast capital expenditure during the 2011/2012 GSC investigation; and
b) differs significantly (more than 30%) from the forecast costs submitted by the GSP during the 2011/2012 investigation.

Again, the Authority does not expect that this will be a large number of items. If the total number of items to be reviewed exceeds 15, the Authority will agree a representative sample with the consultant.

Component 3 – Prudency and Efficiency of 2012/2013 forecast Capital Expenditure

The consultant must assess the prudency and efficiency of a representative sample of 2012/2013 forecast non-drought capital expenditure for each GSP. The sample, to be agreed with the Authority, should include all capital expenditure projects exceeding $2 million in value, the top 10% of capital expenditure projects by value and at least 50% of total capital expenditure.

For any capital expenditure project that was commenced in 2011/2012, but will incur expenditure during 2012/2013, the consultant must take into account the Authority findings in its investigation of 2011/2012 GSCs.

The definition of prudency and efficiency to be adopted by the consultant are the same as those in Component 2 above.

[9] Non-drought capital expenditure refers to capital expenditure that was not required as part of the Water Regulation 2002 or the Regional Water Security Program. As a consequence, it excludes many of the largest capital expenditure projects undertaken by the GSPs, such as the Hinze Dam raising or the Northern Pipeline Interconnector Stage 2.

The consultant must also assess:

a) whether the entities' policies and procedures for forecasting capital expenditure represent good industry practice. In particular, the policies and procedures must reflect strategic development plans, integrate risk and asset management planning, corporate directives, be consistent with external drivers, and incorporated robust procurement practices;
b) whether corporate or overheads costs have been appropriately assigned to capital expenditure projects.

For the purposes of the Phase 2 review, capital expenditure is prudent if it required as a result of a legal obligation, growth in demand (consistent with the grid instructions forecast in the Operating Strategy (or any successor documents) and any relevant information provided to the GSPs in accordance with the system operating plan); renewal of existing infrastructure that is currently used and useful, or it achieves an increase in reliability or quality of supply that is explicitly endorsed or desired by the WGM.

Capital expenditure is efficient if:

a) 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 the substitution possibilities between capex and opex and non-drought network alternatives such as demand management;
b) 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; and
c) 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 it view with references to relevant interstate and international benchmarks and information sources. For example, the source of comparable units 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.

Phase 3 – 2012/2013 GSC Final Report investigation

Following the publication of the Authority's Draft Report, the Authority will receive submissions from GSPs and other stakeholders. These submissions may include updated information or challenge the technical findings included in the Authority's Draft Report.

The consultant must assist the Authority in responding to stakeholder submissions by:

a) considering its Phase 2 recommendations in light of new information; and
b) responding to technical matters included in stakeholder submissions.

The extent of work required for Phase 3 will depend on the complexity of submissions received from stakeholders.

Phase 3 will commence in May 2012 after the receipt of stakeholder submissions and will be complete by mid-June 2012. More precise dates will be negotiated with the consultant as the project progresses.

SINCLAIR KNIGHT MERZ

SKM