SINCLAIR KNIGHT MERZ

SKM

Seqwater Irrigation Price Review 2013-2017

Assessment of Capital and Operating Expenditure

FINAL

December 2012

Seqwater Irrigation Price Review 2013-2017

ASSESSMENT OF CAPITAL AND OPERATING EXPENDITURE

- Rev 6
- Final
- 12 December 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 irrigation prices 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, Seqwater 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, Seqwater 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 Seqwater.

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 Seqwater's Irrigation Schemes. This review is part of the Authority's process to develop irrigation prices to apply to seven Seqwater water supply schemes from 1 July 2013 to 30 June 2017 (four years).

1.1. Introduction and background

The Authority appointed SKM to provide independent advice regarding the prudency and efficiency of Seqwater's capital (renewal) and operating costs to form the basis of costs eligible for recovery through cost-reflective irrigation prices during the 2013-17 regulatory period.

Seqwater operates seven water supply schemes, being:

- Cedar Pocket Dam Water Supply Scheme
- Central Brisbane River Water Supply Scheme
- Central Lockyer (including Morton Vale Pipeline) Water Supply Scheme
- Logan River Water Supply Scheme
- Lower Lockyer Valley Water Supply Scheme
- Mary Valley (including Pie Creek) Water Supply Scheme
- Warrill Valley Water Supply Scheme

1.2. Policy and procedure review

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

Budgetary process

The intent of Seqwater's budgetary process is to be in line with good industry practice, which SKM considers that Seqwater largely achieves. However, there are opportunities for improvement. These include the development of a robust integrated asset management approach, which incorporates risk and condition assessment on an on-going basis, not just when planning and prioritising asset renewals projects.

Risk and asset management planning

Seqwater has made progress in developing robust asset management processes and procedures for comprehensive asset information. While Seqwater may not currently have good asset condition information due to its recent formation and the lack of condition information transferred from previous owners/operators, we consider that the plans and processes it has adopted to assess the condition of its assets will rectify this situation if carried through. However, SKM notes that four years have elapsed since Seqwater acquired these assets, and in SKM's opinion the current lack of asset information should be capable of being rectified prior to the next regulatory review. SKM also notes that for some water supply schemes, unplanned (ie reactive) maintenance significantly outweighs

planned maintenance. This would suggest that asset management procedures for those assets are in need of revision or review unless Seqwater has made a conscious decision, based on risk, to allow these assets to run to failure.

Installed capital asset cost escalation rate determination

SKM considers the composite indexation series developed by Cardno not to be appropriate for rebasing the replacement value of the assets making up the renewal/refurbishment annuity value submitted to the Authority. This is partly because of the restrictions of the brief requiring the development of one indexation series only and partly because of the approach adopted by Cardno in developing a composite index based on dams and weirs based on applying a higher weighting on composite indices such as CPI, building price index, rather than on the indices of the primary constituent components.

SKM also considers that, if renewal values are to be developed by escalation of installed costs on a like for like replacement basis, it would be more appropriate for a number of escalation indices to be developed for related groups of asset classes rather than a single composite index to cover all asset types. Further these indices should be derived predominantly from movement in prices of constituent components rather than from composite indices such as CPI. However, to take account of changes in technology, SKM considers that there would be merit in Seqwater considering revaluing the assets on a modern equivalent replacement asset basis, using asset class modern equivalent building blocks rather than assuming like for like replacements. On balance, SKM considers that the escalation indices developed by Cardno are likely to overstate replacement costs rather than understate them. The quantum of overstatement is dependent on the asset class in question.

Corporate directives

SKM is satisfied that the service standards applied by Seqwater in providing irrigation services is in line with and meets its obligations under and standards established by the *Water Act 2000.*

Procurement

While Seqwater's procurement policies and procedures do not provide for sustainable purchasing per se, its requirement to adhere to State Procurement Policy does require it to integrate sustainability into the procurement of goods, services and construction. As such SKM considers that Seqwater is meeting its sustainability requirements as set out under the State Procurement Policy without expending excessive cost in doing so.

One concern SKM has with respect to Seqwater's procurement policies is the arrangement for sole sourcing from tender panels. The relatively high limit of up to $100,000 of such single source purchases with limited review required from supervisory managers could permit misuse. It may be prudent for further limits to be placed on such an arrangement.

1.3. Capital expenditure

A sample of 12 capital expenditure items planned to be undertaken during the 20 year capital asset renewals annuity period covered by this regulatory review were selected by the Authority as a representative sample of the capital expenditure program for Seqwater's Irrigation Schemes. SKM has assessed these projects against the Authority's definitions of prudency, in particular the relevant

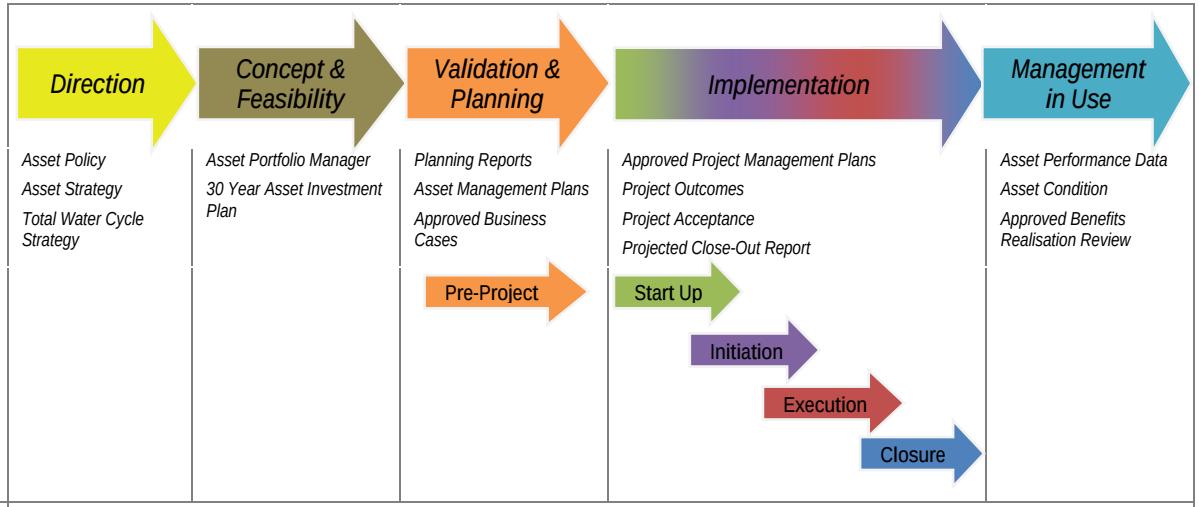
driver and the decision making process, and efficiency, including the standards of works, scope of work, timeliness of delivery and the costs.

Table 1 provides an overview of the final assessment made for each project of the sample chosen for assessment of prudency and efficiency. From the review undertaken by SKM 10 of the 12 capital expenditure items reviewed were determined to be prudent and efficient.

- **Table 1 Summary of revised capital costs ($'000)**

	Expenditure Item	Item Cost ($'000)	Prudent	Efficient	Revised Cost ($'000)
1	Cedar Pocket Dam - Telemetry	68	Prudent	Efficient	68
2	Bromelton Weir - Telemetry	105	Prudent	Revised cost efficient	70
3	Clarendon Dam - Embankment (Main Dam)	312	Prudent	Efficient	312
4	L1 Distribution - Observation Bores	344	Not prudent	Efficient	0
5	Clarendon Diversion - Control Equipment	174	Prudent	Efficient	174
6	Central Lockyer - Gauging Stations	120	Prudent	Revised cost efficient	143.4
7	Clarendon Diversion - Access Road	122	Prudent	Efficient	122
8	Warrill Creek Diversion Weir - Access Road & Hard Standing	194	Prudent	Revised cost efficient	69.3
9	Calico Creek Channel/Pie Ck Main Channel – Various Air Valves	269	Prudent	Efficient	269
10	Somerset Dam - Inlet Screens & Trash Racks - Structural Walls, Columns & Beams	3,251	Prudent	Efficient	3,251
11	Clarendon Diversion - Trash Screens	50	Prudent	Efficient	50
12	Central Lockyer and Mary Valley Metering	1,670	Partially prudent	Efficient	2,484

The status of the sample projects is included as indicated in **Figure 1**. The majority of the projects sampled are in the concept and feasibility stage, ie prior to the planning phase. The documentation for these projects in minimal, as is to be expected for projects within this phase. For all projects, sufficient documentation was provided to complete an assessment.



Cedar Pocket Dam - Telemetry	
Bromelton Weir - Telemetry	
Clarendon Dam - Embankment (Main Dam)	
L1 Distribution - Observation Bores	
Clarendon Diversion - Control Equipment	
Central Lockyer - Gauging Stations	
Clarendon Diversion - Access Road	
Warrill Creek Diversion Weir - Access Road & Hard Standing	
Calico Creek Channel/Pie Ck Main Channel – Various Air Valves	
Somerset Dam - Inlet Screens & Trash Racks - Structural Walls, Columns & Beams	
Clarendon Diversion - Trash Screens	
Central Lockyer and Mary Valley Metering	

Figure 1 Status of projects within the Seqwater Delivery Framework

The adequacy of the information provided is illustrated in **Table 2**. The level of detail provided has been assessed based on the current status of the project. The documentation for the projects that are within the concept and feasibility stage (being 10 of the 12 selected) is minimal. However, SKM considers this to be expected for projects within this phase. As these projects progress, it is expected that additional information would be available, eg business cases, options reports.

- **Table 2 Seqwater capital expenditure information adequacy**

Section of review	Cedar Pocket Dam - Telemetry	Bromelton Weir - Telemetry	Clarendon Dam - Embankment (Main Dam)	L1 Distribution - Observation Bores	Clarendon Diversion - Control Equipment	Central Lockyer - Gauging Stations	Clarendon Diversion - Access Road	Warrill Creek Diversion Weir - Access Road & Hard Standing	Calico Creek Channel/Pie Ck Main Channel – Various Air Valves	Somerset Dam - Inlet Screens & Trash Racks - Structural Walls, Columns & Beams	Clarendon Diversion - Trash Screens	Central Lockyer and Mary Valley Metering
Project description												
Provided documentation												
Prudency												
Identified need												
Timing of asset replacement or refurbishment												
Scope of works												
Efficiency												
Scope of works												
Standards of work												
Project cost												
Decision making process												

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

In addition to the expenditure items selected for detailed analysis, a number of other expenditure items were identified from the ten asset classes for which the Authority asked SKM to evaluate if the findings of the detailed review could be applied to these other expenditure items.

The following table identifies where SKM believes the findings of prudency and efficiency can be generalised across a particular asset class to determine the likely prudency and efficiency of total expenditure in that class.

Table 3 Summary of possible application of findings

Project	Application possible?	Prudent	Efficient	Cost ($'000)
Telemetry				
Wivenhoe Dam - Telemetry	No	N/A	N/A	N/A
Maroon Dam – Telemetry	No	N/A	N/A	N/A
Clarendon Dam – Telemetry	Yes	Yes	Yes	70
Atkinson Dam - Telemetry	Yes	Yes	Yes	70
Embankment				
Clarendon Dam - Earthworks/Formation	No	N/A	N/A	N/A
Cedar Pocket Dam – Embankment	No	N/A	N/A	N/A
Borumba Dam - Embankment	No	N/A	N/A	N/A
Observation Bores				
Central Lockyer – Observation Boreholes	Yes	Yes	Yes	200
Atkinson Dam – Observation Bores (15)	Yes	Yes	Yes	75
Control Equipment				
Clarendon Diversion - Control Equipment	Yes	Yes	Yes	137
Pie Creek Pump Station - Control Equipment	Yes	Yes	Yes	123
Clarendon Diversion - Control Equipment	Yes	Yes	Yes	26
Atkinson Dam - Spillway Control Structure	Yes	Yes	Yes	20
Atkinson Dam - Spillway Control Structure	Yes	Yes	Yes	15
Atkinson Dam - Spillway Control Structure	Yes	Yes	Yes	15
Warrill Creek Diversion Weir - Control Equipment	Yes	Yes	Yes	98
L1 Distribution - Buaraba Ck Diversion Channel Gate Control Equipment	Yes	Yes	Yes	12
Borumba Dam - Control Equipment	Yes	Yes	Yes	14
Moogerah Dam - Control Equipment	Yes	Yes	Yes	21
Gauging Stations				
L1 Distribution - Gauging Stations - Lower Lockyer	Yes	Yes	N/A	N/A
Mary River - Gauging Stations	Yes	Yes	N/A	N/A
Warrill Ck - Gauging Station	Yes	Yes	N/A	N/A
Logan River - Gauging Stations	Yes	Yes	N/A	N/A
Roads				
Clarendon Diversion - Access Road	Yes	Yes	Yes	50
Clarendon Diversion - Access Road to Weir R/Bk	Yes	Yes	Yes	24
Atkinson Dam - Main Wall Embankment	Yes	Yes	Yes	42
Clarendon Dam - Access Roads	Yes	Yes	Yes	20
Clarendon Diversion - Turn Outs	Yes	Yes	Yes	15
Clarendon Diversion - Access Road to Weir R/Bk	Yes	Yes	Yes	10
Atkinson Dam - Access Road & Car park	Yes	Yes	Yes	10
Bromelton Weir – Road Amtd 113.2km	Yes	Yes	Yes	60
Pie Creek Pump Station - Access Road	Yes	Yes	Yes	81
L1 Distribution - O'Reilly Weir R/Bank Access Road	Yes	Yes	Yes	30
Air Valves				
Lake Dyer Diversion - Air Valve	No	N/A	N/A	N/A

Project	Application possible?	Prudent	Efficient	Cost ($'000)
L1 Distribution - Buaraba Creek Supply Pipeline Air Valve 1 at 24.40m	Yes	Yes	Yes	6
L1 Distribution - Buaraba Creek Supply Pipeline Air Valve 2 at 1770.30m	Yes	Yes	Yes	6
Upper Warrill Diversion - Double Air Valves-2829m, 3342m	Yes	Yes	Yes	21
Upper Warrill Diversion - Double Air Valves at 10911.60m	Yes	Yes	Yes	11
Upper Warrill Diversion - Double Air Valves at 273m	Yes	Yes	Yes	11
L1 Distribution - Buaraba Creek Supply Pipeline Double Air Valve 1 at 1551.40m	Yes	Yes	Yes	1
Trash Screens				
Atkinson Dam - Inlet Screens & Trash Racks - Trash Screens	No	N/A	N/A	N/A
Somerset Dam - Trashracks	No	N/A	N/A	N/A
Borumba Dam - Trash Screens	No	N/A	N/A	N/A
Morton Vale Reticulation - Trash Screen	Yes	Yes	Yes	18
Maroon Dam - Intake Trash Screens	Yes	Yes	Yes	36
Somerset Dam - Inlet Screens & Trash Racks - Spares in Sand Blasting Shed for Refurbishment	No	N/A	N/A	N/A
Wivenhoe Dam - Inlet Screens & Trash Rack - Trash Rack	Yes	Yes	Yes	80
Kent's Lagoon Diversion Weir - Trash Screen	No	N/A	N/A	N/A
Upper Warrill Diversion - Trash Screen at inlet	No	N/A	N/A	N/A

Table 3 indicates that for the majority of the project the findings from the detailed investigation can be applied to projects within the same assets class.

The general reasons for not being able to apply the findings from the detailed project reviews are as follows:

- The scope of works was significantly different to the project reviewed
- The scope of works was undefined and the cost profile indicated that the works were significantly different to the project reviewed (eg large one off project compared to a minor reoccurring spend)

1.4. Operational Expenditure

A sample of 12 operating expenditure items were assessed as a representative sample of the operational expenditure budget for Seqwater's Irrigation Schemes. **Table 4** below presents a summary of the prudency and efficiency reviews of Seqwater's operating expenditure. From the review undertaken by SKM all but four operating expenditure projects reviewed were determined to be inefficient.

- **Table 4 Summary of revised operating costs ($'000)**

	Operating Expenditure item	Terms of Reference Value $'000 (2013-14)	NSP Value $'000 (2013-14)	Prudent	Efficient	SKM Recommended Value $'000 (2013-14)
1	Cedar Pocket Dam WSS Operations - Direct Labour and Contractors	49.0	51.4	Prudent	Not efficient	39.2
2	Central Brisbane River WSS Operations - Materials and Other	1,528.7	1,132.4^	Prudent	Efficient	1,528.7
3	Central Brisbane River WSS Operations - Direct Labour and Contractors	3,143.1	3,212.7	Prudent	Not efficient	3,085.7
4	Central Lockyer Valley WSS Repairs and Maintenance - Planned	320.9	313.5	Prudent	Efficient*	125.0
5	Central Lockyer Valley WSS Repairs and Maintenance - Unplanned	131.1	128.1	Prudent	Efficient*	51.0
6	Logan River WSS Operations - Direct Labour	408.8	418.4	Prudent	Not efficient	253.4
7	Lower Lockyer Valley WSS Operations - Direct Labour	225.5	265.8	Prudent	Not efficient	168.8
8	Lower Lockyer Valley WSS Operations - Materials and Other	236.4	199.5^	Prudent	Efficient	236.4
9	Mary Valley WSS Operations - Direct Labour	420.6	429.1	Prudent	Not efficient	350.4
10	Morton Vale Pipeline Operations - Direct Labour	25.0	25.0	Prudent	Not efficient	7.0
11	Pie Creek Repairs and Maintenance - Planned	48.8	52.5	Prudent	Not efficient	36.2
12	Warrill Valley WSS Operations - Materials and Other	314.0	271.0^	Prudent	Not efficient	282.6

*Seqwater identified an error in its original submission in which costs associated with Mount Crosby were included in the Central Lockyer budget. Following the removal of the Mount Crosby costs, the operational expenditure for both planned and unplanned repairs and maintenance for Central Lockyer was found to be efficient.

^ *The NSP value does not include costs of materials, only 'other' whereas the QCA Terms of Reference value includes expenditure on materials as well as 'other'.*

In addition to the forecast operating costs, SKM was also requested to review historical costs for:

- Recreation Maintenance – $230,186 in the Mary Valley in 2008-09 and 2010-11
- Repair & Maintenance – Unplanned of $67,187 in Pie Creek in 2008-09 and 2010-11

SKM found that recreation maintenance in the Mary Valley was prudent but the efficiency of costs incurred in 2008-09 could not be assessed as no detailed cost breakdown was available. SKM found that the cost incurred in 2010-11 ($123,293) was efficient. Similarly, the expenditure at Pie Creek was

also found to be inefficient due to a lack of information regarding costs incurred in 2008-09. However, SKM found Pie Creek Repair & Maintenance – Unplanned costs incurred in 2010-11 ($36,172) to be efficient.

In its draft report, SKM recommended that the Authority adopts a revised forecast operating expenditure for 2012-13 significantly below that budgeted by Seqwater for a number of operating expenditure items. The reasons for SKM's recommendations at the time of the draft report were founded on the historic expenditure data provided by Seqwater to SKM which showed an expenditure level significantly below that forecast for future years by Seqwater. In addition, during the development of the draft report and up until just prior to issuing a final report Seqwater had not provided SKM with sufficient information to justify the projected step change in expenditure, nor had Seqwater provided sufficient information to underpin the number of full time equivalents and other budget costs making up the forecast expenditure.

However, just prior to SKM's issue of a final report, Seqwater advised that it was able to provide further information that it considered underpinned its budget forecast. Seqwater also advised that the reasons this information wasn't initially provided were primarily that a number of cost items had been incorrectly allocated in its accounting systems and, in terms of full time equivalent requirements, Seqwater had not previously advised of changes in duties for dam operators relating to increased time involved with data entry and training programmes. Following receipt of this additional information, the Authority commissioned SKM to undertake additional analysis for a number of operating expenditure items. The results of this additional analysis are presented in this final report under sections entitled "Further Analysis" for each of the operating expenditure items affected.

The adequacy of the information provided is illustrated in **Table 5**.

- **Table 5 Seqwater operational expenditure information adequacy**

Section of review	Direct Labour and Contractors – Cedar Pocket Dam WSS	Materials and Other – Central Brisbane River WSS	Direct Labour, Central Brisbane River WSS	Planned Maintenance, Central Lockyer Valley WSS	Repairs and Maintenance – Unplanned, Central Lockyer Valley WSS	Direct Labour, Logan River WSS	Direct Labour, Lower Lockyer Valley WSS	Materials and Other, Lower Lockyer Valley WSS	Direct Labour, Mary Valley WSS	Direct Labour, Morton Vale Pipeline	Repairs and Maintenance – Planned, Pie Creek Distribution System	Materials and Other, Warrill Valley WSS	Recreation Maintenance, Mary Valley WSS	Pie Creek Infrastructure Maintenance – Reactive Maintenance
Operating item description														
Provided documentation														
Prudency														
Efficiency														
Evaluation of costs														
Delivery of service														
Market conditions	NA		NA			NA	NA		NA	NA				
Efficiencies and economies of scale														
Benchmarking														
Policy and procedures														

Seqwater provided to SKM its method for forecasting operating expenditure. Seqwater indicated that its budget is developed from a "zero base" with all expenses required to be justified on the basis of the need for the expense. For subsequent years forecast, Seqwater escalated its budget generally by 4% pa. Seqwater's budgeting process also requires managers to undertake a variance analysis of their budget forecast against the prior year's actual expenditure. In SKM's view the budgeting and forecasting process and forecasting process Is reasonable as long as appropriate reconciliation of budget to actual expenditure is undertaken and differences are explained. However, SKM was not provided evidence that these variance analyses were undertaken and hence could not assess the rigour with which it was undertaken. In some cases, this has resulted in SKM being unable to understand and hence explain the large increase in forecast operating expenditure against historical expenditure.

In addition to the expenditure items selected for detailed analysis, SKM was asked to consider the application of findings of the operational expenditure review to other operational expenditure items.

The following table identifies where SKM believes the findings of prudency and efficiency can be generalised across a particular operating expenditure class to determine the likely prudency and efficiency of total expenditure in that class.

- **Table 6 Summary of possible application of findings**

Project	Application possible?	Prudent	Efficient	SKM Recommended Values $'000 (2013-14)
Direct Labour and Contractors				
Cedar Pocket Dam WSS	Yes	Yes	No	39.2
Central Brisbane River WSS	No	Yes	No	3,085.7
Direct Labour				
Logan River WSS	Yes	Yes	No	253.4
Lower Lockyer Valley WSS	Yes	Yes	No	168.8
Mary Valley WSS	Yes	Yes	No	350.4
Morton Vale Distribution System	No	Yes	No	7
Materials and Other				
Central Brisbane River WSS	Yes	Yes	No	657.8
Lower Lockyer Valley WSS	Yes	Yes	Yes	199.5
Warrill Valley WSS	Yes	Yes	No	239.6
Repairs and Maintenance				
Central Lockyer Valley WSS – Planned	Yes	Yes	Yes	125
Central Lockyer Valley WSS – Unplanned	Yes	Yes	Yes	51
Pie Creek Distribution System – Planned	Yes	Yes	No	36.2

Further analysis

As a result of the further information identified by Seqwater after SKM had completed the assessment of the efficiency of the operating expenditure, the Authority commissioned SKM to undertake further analysis of six operating expenditure items to include the information that Seqwater was able to supply. These items include:

- Cedar Pocket Labour
- Logan Labour
- Lower Lockyer Labour
- Mary Valley Labour
- Morton Vale Labour
- Pie Creek Maintenance

Further discussions were held with Seqwater to review this additional information. SKM found that had the information been made available earlier, the recommendations would have been different. SKM notes that the additional information provided by Seqwater has also indicated that the initial proposal for the Mary Valley WSS labour costs was over estimated. In this further review, SKM found that the reduced value for the Mary Valley WSS is efficient and recommends it acceptance. SKM also found that the new information for plan maintenance at Pie Creek provided sufficient justification for the

proposed expenditure and thus we find that the proposed costs of planned maintenance at Pie Creek efficient. SKM's view of the efficiency of the six proposed costs items are shown in **Table 7**.

Table 7 Revised efficiency recommendations

Project	Proposed Costs ($000) 2013-14	Efficient
Cedar Pocket Dam Water Supply Scheme Labour cost	51.4	No
Logan River Water Supply Scheme Labour cost	321.5	No
Lower Lockyer Valley Water Supply Scheme Labour cost	265.8	No
Mary River Water Supply Scheme Labour cost	233.5	Yes
Morton Vale Distribution System Labour cost	43.3	No
Repairs and maintenance – Planned, Pie Creek	52.5	Yes

Further Seqwater has also reduced the proposed labour cost for the Logan River WSS. On the other hand, a higher labour cost proposal was provided for the Morton Vale Distribution System. While SKM found that the proposed direct labour costs for the Morton Vale Distribution System, Cedar Pocket, Logan and Lower Lockyer WSS not efficient, the difference between the Seqwater forecast and SKM's recommendation has narrowed significantly.

The revised recommendations for these six operating expenditure items are shown in **Table 8**.

Table 8 Revised operating expenditure recommendations

Project	SKM Recommended Values $'000 (2012-13)	SKM Recommended Values $'000 (2013-14)
Cedar Pocket Dam Water Supply Scheme Labour cost	44,178	45,945
Logan River Water Supply Scheme Labour cost	306,130	318,375
Lower Lockyer Valley Water Supply Scheme Labour cost	248,097	258,021
Mary River Water Supply Scheme Labour cost	224,495	233,475
Morton Vale Distribution System Labour cost	36,019	37,460
Repairs and maintenance – Planned, Pie Creek	50,500	52,500

2. Introduction

The Queensland Competition Authority (the Authority) is required to recommend the irrigation prices to apply to seven Seqwater Water Supply Schemes (WSSs) from 1 July 2013 to 30 June 2017.

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

- Conduct a first order review of information adequacy for nominated projects
- Organise and attend a project review meeting with Authority
- Undertake a gap analysis
- Conduct interviews with Seqwater personal and site visits
- Issue information requests for additional information
- Undertake a review of Seqwater's policies and procedures for capital and operating costs
- Review additional information received
- Undertake assessments of prudency and efficiency for nominated capital and operational expenditure items
- Detail findings in a report

The consultancy consists of two components:

- Component 1: Capital/Renewal Costs – First order review of information adequacy for nominated projects, project review meeting with Authority, gap analysis, interviews and site visits, issue information requests, policy and procedures review, review of additional information, assessment of prudency, assessment of efficiency
- Component 2: Operating Costs – First order review of information adequacy for nominated projects, project review meeting with Authority, gap analysis, interviews and site visits, issue information requests, policy and procedures review, review of additional information, assessment of prudency, assessment of efficiency

This report addresses both components 1 and 2.

2.1. Terms of reference

The full terms of reference are included in **Appendix A**.

2.1.1. Scope exclusions

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

- Discussion of Seqwater's infrastructure with the exception of the irrigation schemes and associated costs
- Development of detailed costs to benchmark capital and operating expenditure items to a level of accuracy greater than ± 30%

2.2. Report overview

This report is structured as follows:

- Background
- Policy and procedures review
- Operational expenditure
- Capital expenditure
- Conclusions and overall recommendations

3. Background

3.1. Seqwater

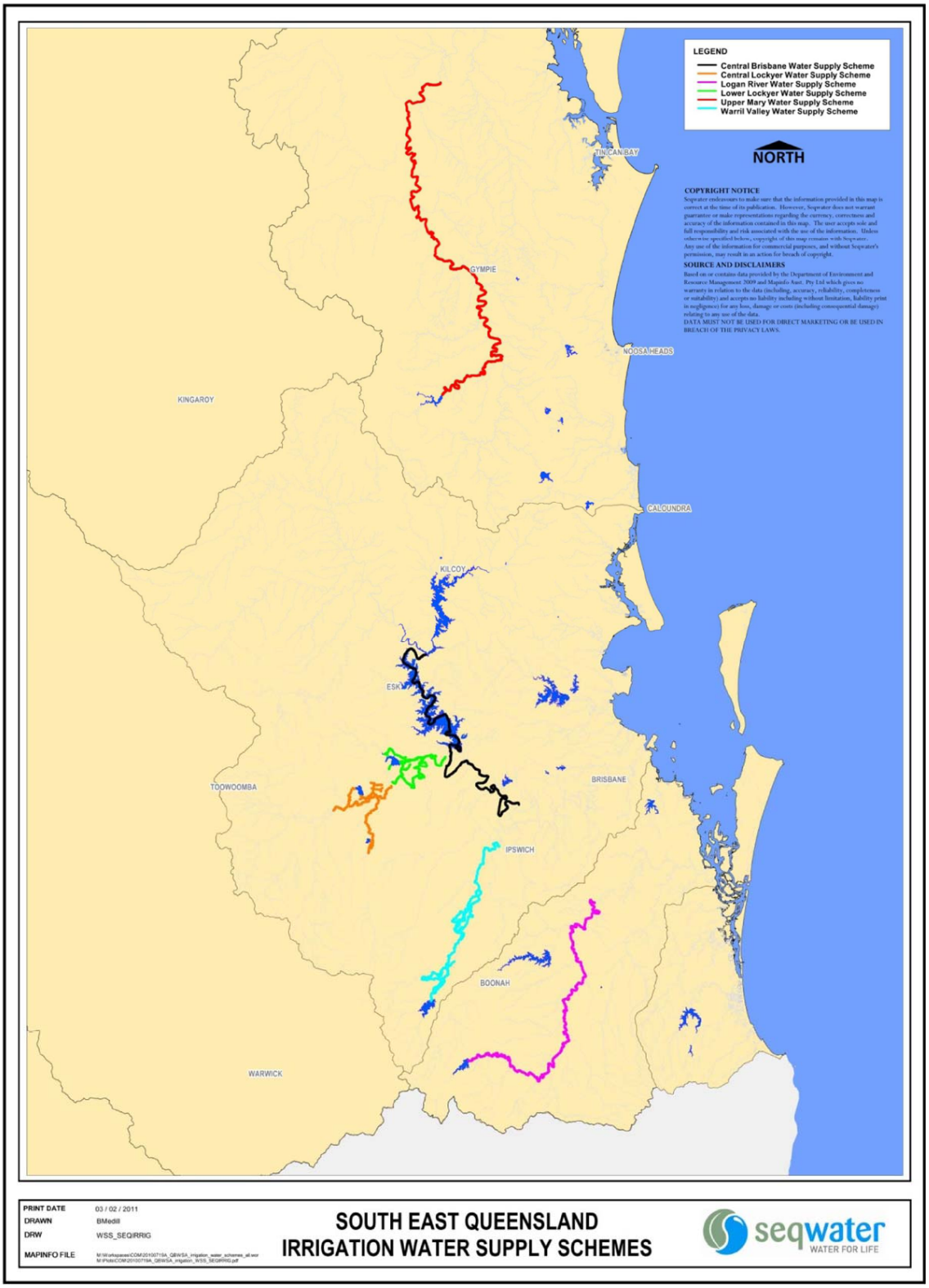
Seqwater stores and treats water from dams, weirs, bores and other water storages, and also supplies desalinated water from the Gold Coast Desalination Plant and purified water from the Western Corridor Recycled Water Scheme. Seqwater supplies raw water to some 1,455 irrigation customers, as well as industrial users and local governments.

Seqwater commenced operations in 2008-09, after it was transferred a range of water supply assets from local governments, SunWater, SEQWater Corporation and others. Most of Seqwater's water assets were acquired between February and July 2008 via the water market reform process and were transferred from a range of previous owners including many local governments. Seqwater did not take operational responsibility for most of these assets until 1 July 2008 and, in cases where the transfers occurred earlier than this date, the previous owners generally continued to operate the assets under Interim Service Level Agreements until 30 June 2008. Even after 1 July 2008, many of the assets continued to be operated under Service Level Agreements for some time.

The reform process resulted in five water supply schemes (Central Lockyer Valley (including Morton Vale Pipeline), Logan River, Lower Lockyer Valley, Mary Valley (including Cedar Pocket Dam and Pie Creek), and Warrill Valley) being transferred to Seqwater from SunWater, effective from the 2008-09 year. Seqwater inherited the 2006 price paths, as well as the contractual arrangements in place at that time. Seqwater was also transferred the storage assets that comprise the Central Brisbane River Water Supply Scheme from SEQWater Corporation Limited. Supplies to irrigation users in this scheme were previously managed by the Department of Environment and Resource Management (DERM). No prices applied when the assets were transferred, and Seqwater has not applied prices since as it was expected they would be set as part of this regulatory process.

Seqwater's irrigation customers hold water access entitlements (WAE) in seven water supply schemes:

- Cedar Pocket Dam Water Supply Scheme
- Central Brisbane River Water Supply Scheme
- Central Lockyer Valley (including Morton Vale Pipeline) Water Supply Scheme
- Logan River Water Supply Scheme
- Lower Lockyer Valley Water Supply Scheme
- Mary Valley (including Pie Creek) Water Supply Scheme
- Warrill Valley Water Supply Scheme



Source: Terms of Reference: Seqwater Irrigation Price Review 2013-17 – Assessment of Capital and Operating Expenditure, Queensland Competition Authority, June 2012

- **Figure 2 Seqwater Irrigation Water Supply Schemes**

Of the seven water supply schemes, Central Lockyer Valley, Lower Lockyer Valley and Cedar Pocket Dam water supply schemes only supply water to irrigators. The other four water supply schemes also provide water for urban, industrial and irrigation use.

Additionally, Seqwater operates the Pie Creek Distribution System and the Morton Vale Pipeline Distribution System.

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.

The Authority has been directed to develop irrigation prices to apply to seven Seqwater water supply schemes from 1 July 2013 to 30 June 2017 (four years).

The Ministers' Notice requires, among other things, that bulk water supply and channel prices and tariff structures are set so as to provide a revenue stream that allows Seqwater to recover the efficient costs associated with:

a) operational, maintenance and administrative activities (including recreation and compliance costs)
b) renewing and rehabilitating existing assets using a renewals annuity methodology

3.3. Prudency and Efficiency

The Authority, in the Terms of Reference, defines prudency and efficiency, for both capital and operational expenditure, as:

- *Expenditure is **prudent** if it:*
  - *a) is necessary to operate to WSS or tariff group;*
  - *b) results from a legal or compliance obligation; and*
  - *c) is required to fulfil regulatory obligation such as those specified in a Resource Operation Plan or Interim Resource Operations Licence.*
- *Expenditure is **efficient** if:*
  - *a) the scope of the works (which reflects the general characteristics of the expenditure) is the best means of achieving the desired outcomes after having regard to the options available, including substitution possibilities between capital and operating expenditure;*
  - *b) the standard of 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 its views with reference to relevant interstate or international benchmarks and information sources. For example, the source of comparable unit costs and indexes must be*

given and the efficiency of costs justified. The consultant should identify the reasons for any costs higher than normal efficient commercial levels.

- SKM must also assess:
  a) whether Seqwater's policies and procedures for operational and capital expenditure represent good industry practice, integrate risk and asset management planning, corporate directives, appropriate drivers and robust procurement practices likely to deliver least cost delivery
  b) whether the proposed timing of the expenditure is appropriate (i.e. based on lowest whole-of-life costs) or whether the expenditure could be delayed, or needs to be brought forward
  c) whether Seqwater's methodology for forecasting 2012-13 operating costs is appropriate and likely to produce prudent and efficient results
  d) the standards of service adopted and whether these standards have been approved or are required by external (government) agencies
  e) whether management procedures incorporate appropriate approval processes and allow for sufficient monitoring and reporting against budget/implementation plans

3.4. Background information

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

- *Cover Letter Investigation – Pricing for Seqwater Irrigation Schemes: 2013-14 to 2016-16*, Seqwater, 30 April 2012
- *2013-14 Irrigation pricing – Submission to the Queensland Competition Authority*, Seqwater, April 2012
- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47 – Report on Methodology*, Seqwater, April 2012
- *Hydrologic Assessment of Headworks Utilisation Factor's (HUFs)*, Seqwater, March 2012
- *Cedar Pocket Dam Water Supply Scheme – Network Service Plan*, Seqwater, undated
- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47: Report – Cedar Pocket Tariff Group*, Seqwater, April 2012
- *Central Brisbane River Water Supply Scheme – Network Service Plan*, Seqwater, undated
- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47: Report – Central Brisbane Tariff Group*, Seqwater, April 2012
- *Central Lockyer Valley Water Supply Scheme – Network Service Plan*, Seqwater, undated
- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47: Report – Central Lockyer Tariff Group*, Seqwater, April 2012
- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47: Report – Morton Vale Tariff Group*, Seqwater, April 2012
- *Logan River Water Supply Scheme – Network Service Plan*, Seqwater, undated
- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47: Report – Logan Tariff Group*, Seqwater, April 2012
- *Lower Lockyer Valley Water Supply Scheme – Network Service Plan*, Seqwater, undated

- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47: Report – Lower Lockyer Tariff Group*, Seqwater, April 2012
- *Mary Valley Water Supply Scheme – Network Service Plan*, Seqwater, undated
- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47: Report – Mary River Tariff Group*, Seqwater, April 2012
- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47: Report – Pie Creek Tariff Group*, Seqwater, April 2012
- *Warrill Valley Water Supply Scheme – Network Service Plan*, Seqwater, undated
- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47: Report – Warrill Valley Tariff Group*, Seqwater, April 2012

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

4. Policy and procedure review

The following section presents a review of Seqwater's policies and procedures relating to the supply of water to irrigators. SKM undertook a review of Seqwater's policies and procedures as part of the recent Grid Service Charges Review 2012-13. Seqwater has confirmed that the same policies and procedures that were reviewed by SKM as part of the Grid Service Charges Review 2012-13, have been applied consistently to Seqwater's budget forecasting for the purposes of this Irrigation Price Review 2013-17. This applies to all of the following areas of policies and procedures:

- Capital and operational budget formation
- Risk and asset management policies
- Procurement
- Corporate directives

For completeness, the relevant policy and procedure reviews previously carried out by SKM and contained in its report: *"Grid Service Charges 2012-13: Phase 2 Assessment of Prudency and Efficiency of Operating and Capital Costs – Seqwater", June 2012* are included in this report.

This section is structured as follows:

- Good industry practice
- Capitalisation policy
- Budget formation
- Strategic development plans
- Risk and asset management planning
- Corporate directives
- External drivers
- Standards of service review
- Procurement

4.1. Good industry practice

The Authority has requested SKM to review Seqwater's procurement, asset performance and condition assessment policies and procedures and assess whether these policies and procedures represent good industry practice.

Good industry practice for an irrigation provider'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 water storage and distribution 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

4.2. Budget formation

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

4.2.1. Procedure for estimating capital expenditure

Seqwater has proposed a rolling 20 year renewals annuity, consistent with the approach recommended by the Authority in its SunWater's irrigation pricing review. Seqwater has defined renewals as non-maintenance expenditure that is required to maintain the service capacity of the assets.

Seqwater has based its renewals forecast on the more significant and predictable renewals expenditure items. Seqwater has not attempted to include minor renewals projects (less than $10,000), or renewals on water treatment plants at recreation areas, or make any allowance or contingency for renewals expenditure arising from damage or changes in law. This approach has been adopted to focus the renewals forecasting effort on more material items of expenditure necessary for meeting irrigator supply service standards.

Seqwater identified renewals needs and the schedule of projects through a range of processes, including:

- The existing Facility Asset Management Plans (FAMPs)
- The existing asset maintenance program
- Reports from site safety inspections and dam safety management program
- Advice from operators

Seqwater then evaluated potential projects against criticality and other criteria, conducted workshops with local staff and undertook site inspections to validate and adjust the scope and timing of projects. In cases, SKM understands that Seqwater has revised the timing of major renewals projects to a later time where there was not sufficient evidence that the asset required renewal, or renewal of the asset could be deferred at an acceptable risk of failing to meet service standards or compliance obligations. SKM considers that such an approach is appropriate provided the condition and risk and consequence of failure of the asset are taken into account in deferring renewal projects. However, the workshop approach has a risk that there can be inbuilt bias to solutions (and therefore expenditure) to which there is already a disposition.

4.2.2. Good industry practice for capital budgeting

The following outlines what we consider to be good industry practice in capital expenditure 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. In future submissions SKM recommends an allowance for productivity adjustment to operating costs be made, and an adjustment to capital costs to reflect the ability to deliver projects in necessary timeframes.

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, or to meet a specified regulatory obligation, 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:

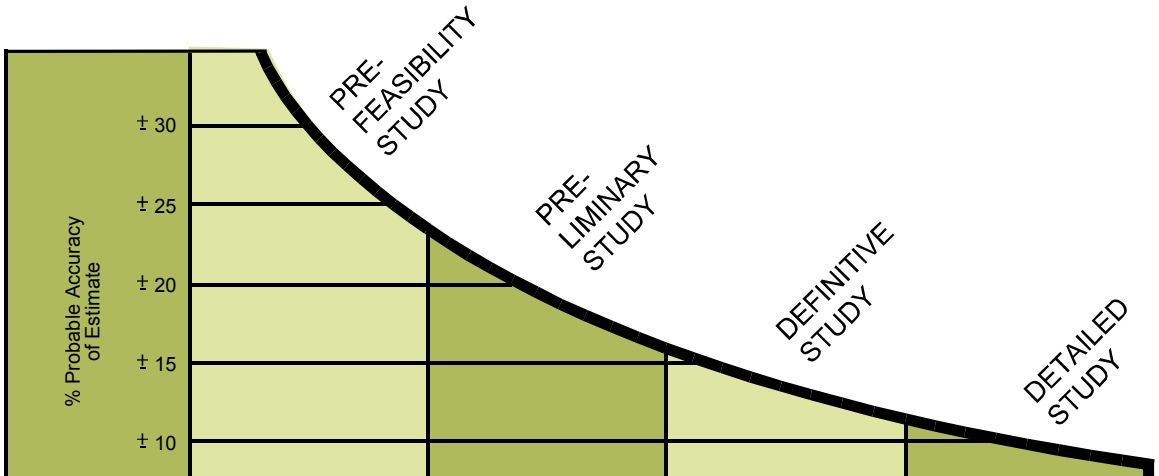
- A phased process, starting with a project outline, through to defined requirements for business cases and final approvals

- 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 incorporating historic learnings

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% or more depending on the stage at which the planning process resides compared to the timing of commencement of the project.



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

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

In addition, the overall capital expenditure programme should be weighted equally through the respective regulatory periods, to avoid peaks and troughs in capital project delivery capacity

4.2.3. Procedure for estimating operating expenditure

Seqwater's forecast operating expenditure for 2013-14 to 2016-17 is escalated from its 2012-13 budget. The escalation rates are applied at two different rates:

- 4% for labour, contractors and materials, and repairs and maintenance
- 2.5% for energy, insurance, rates and all other items

The budget for 2012-13 has been built up from a zero base. This requires all expenses to be justified based on the need for the expense.

4.2.3.1. The budgetary process

Budget forecasting for the 2012-13 base year was performed at the team level, with team managers responsible for the initial build up of team budgets. Team budgets were prepared from a whole-of-asset-portfolio perspective.

Seqwater has implemented the following budget process for both its bulk water supply and irrigator supply businesses:

- Managers are required to explain variances based on historical comparisons. For the 2012-13 budget, the variance analysis was to compare the 2012-13 budget to the prior year (2010-11) actual expenditure, the prior year budget and the current year (2011-12) forecast
- Where an overhead cost could be directly attributed to an asset or class of assets, an irrigation scheme or service, the budget process required that the cost be allocated to those assets or schemes rather than to corporate overheads
- The budget process required that detailed cost and qualitative information used to inform the budget process must be retained by the relevant team manager for future reference
- Demand projections underpinning any planned capital expenditure or changes in operating costs were to be substantiated with a detailed assessment and aligned with the Water Grid Manager's (WGM) demand projections. If, due to the timing of the budget preparation, the projections were not available from the WGM, the 2010-11 actual volumes were to be adopted
- To allocate the budget to projects, sub-services and work orders, the structure of the groups and teams and their projects in the corporate information system remained the same as the previous year, with only minor amendments to sub-services and work orders
- Expenditure relating to new projects and/or initiatives need to be justified during the preparation of the Strategic and Operating Plans. Budget requests for such expenditure were considered and prioritised by the Executive Leadership Team (ELT) and recommended to the Board separately. A set of minimum information requirements were required for new expenditure justification regardless of value and applied to all projects and/or initiatives. These requirements included additional information about cost drivers (linking expenditure to identified categories of business needs), the demonstration of options assessment, a description of cost estimation (quantity, rates, past projects, industry benchmark, market quotes, past consultant reports or previous studies and any contingency) and a brief statement about project delivery and Seqwater's capacity to deliver the project/initiative in the proposed timeframes (in-house resources versus outsourced contractor)
- Seqwater's budget is approved annually by the ELT and the Board. Quarterly forecasts are also prepared and approved by the ELT and the Board

4.2.3.2. Application to irrigation schemes

Seqwater's 2012-13 budget was prepared from a whole-of-asset-portfolio perspective. Costs associated with irrigation scheme assets were not considered separately from other assets as the budgeting process was applied at an organisational level for all assets and activities in 2012-13.

Thus, irrigation storages are operated by the Dam Operations team along with the water storages used for urban water supply and irrigation assets are maintained by the Infrastructure Maintenance team alongside all other assets.

Five of Seqwater's irrigation schemes jointly service rural irrigators as well as the urban residents and businesses supplied by Seqwater through the WGM. The three exceptions are Cedar Pocket Dam and the Central and Lower Lockyer Valley schemes, which exclusively supply irrigation customers. Current Grid Service Charge (GSC) pricing arrangements allow for the costs of all these irrigation schemes to be included in the GSCs paid by the WGM and for the irrigation revenues to be passed back to the WGM to offset the costs[1]. The following process is undertaken to allocate costs to the irrigation schemes:

- For each of the relevant irrigation schemes, Seqwater has identified the assets that pertain to that scheme (including assets used jointly for irrigation services and urban water supply)
- For each asset identified as pertaining to a particular irrigation scheme, the direct costs forecast for that asset is identified in the 2012-13 budget. These costs are shown in individual line items that describe the reason for the expenditure, the natural account code used by Seqwater and the budgeted amount
- For each asset-specific Operational Cost Report, Seqwater has reviewed the line items and manually removed any line items that pertain exclusively to urban water supply as opposed to irrigation services. For example, catchment management and water quality related activities that are conducted for the benefit of urban water supply and are not needed for irrigation services have been removed. In a small number of cases Seqwater identified a line item that comprised of several activities, where some but not all of those activities pertained exclusively to urban water supply. In these cases, that line item has been removed and another line item was added detailing the reduced amount that was relevant to irrigation activities once the urban water supply activities were removed
- For the line items that remain, Seqwater then escalated the 2012-13 forecast expenditure into the future years for 2013-14 to 2016-17 base on the rates detailed earlier in Section 4.2.3
- This process results in a operating expenditure forecast for 2013-14 to 2016-17, which excludes expenditure that is solely for the benefit of urban water supply
- For the assets that relate to schemes that jointly provide irrigation services as well as urban water supply, the forecast expenditures are then to be apportioned according to the Headworks Utilisation Factor (HUF) methodology. For the assets that solely service irrigation schemes, the forecast expenditures are not further apportioned

Seqwater's accounting system captured only direct operating costs for each responsibility centre and, for the production-related centres, production overhead costs to the relevant production function. Seqwater's accounting policies and practices did not allocate indirect costs (such as corporate costs, overheads or centralised technical and operational functions) to specific assets or activities.

[1] Less the renewals annuity component of pricing. Renewals expenditure in the Lower and Central Lockyer Valley schemes and the Cedar Pocket scheme are not included in Seqwater's capital expenditure proposals for the purposes of determining GSCs.

4.2.3.3. Forecasting labour costs

Labour costs associated with irrigation assets are sometimes portions only of the salaries associated with whole FTE positions. Seqwater allocates staff in its operational areas across asset locations and across activities in accordance with groups of assets in sub-regional geographic areas.

Salaries are determined in compliance with the Industrial Award applying to Seqwater and also take into account any applicable changes in increments throughout the period in question. The amounts presented for salaries/wages are inclusive of on-costs such as superannuation, leave entitlements, payroll tax and overtime.

4.2.3.4. Forecasting repairs and maintenance costs

Seqwater splits maintenance costs into:

- Scheduled maintenance, which is periodic maintenance scheduled in advance
- Planned maintenance, which is maintenance undertaken to improve the condition (to a desired level of condition) of an asset that is operational in the immediate term or work arising from safety audits, environmental audits or process improvements
- Reactive maintenance, which is maintenance undertaken to reinstate the operation and/or performance of an asset that has ceased to either operate or perform as designed and needs to be repaired or replaced immediately

The first two types of repairs and maintenance – scheduled and planned – are considered "planned" repairs and maintenance because this work can be scheduled with some degree of flexibility. The third type of repairs and maintenance – reactive – is considered "unplanned" as this work is generally urgent and cannot be scheduled with any flexibility.

Seqwater estimated that 38.5% of all maintenance will be scheduled, 32.5% will be planned and 29% will be reactive maintenance. These percentages are based on industry standards and are targeted by Seqwater. SKM notes though, that for some water supply schemes, unplanned (ie reactive) maintenance significantly outweighs planned maintenance suggesting that asset management procedures for those assets are in need of review.

4.2.4. SKM's assessment

The intent of Seqwater's budgetary process is to be in line with good industry practice, which SKM considers that Seqwater largely achieves. However, there are opportunities for improvement. These include the development of a robust integrated asset management approach, which incorporates risk and condition assessment on an on-going basis, not just when planning and prioritising asset renewals projects. This is discussed further in Section 4.3.

While the Seqwater budgetary process provides for variance analysis of its operating expenditure budget forecast against the prior year's actual expenditure, this variance analysis was not provided to SKM for assessment. In many instances this has lead to SKM not being able to explain the large increase in forecast operating expenditure against historical actual expenditure.

4.3. Risk and asset management planning

4.3.1. Asset management approach

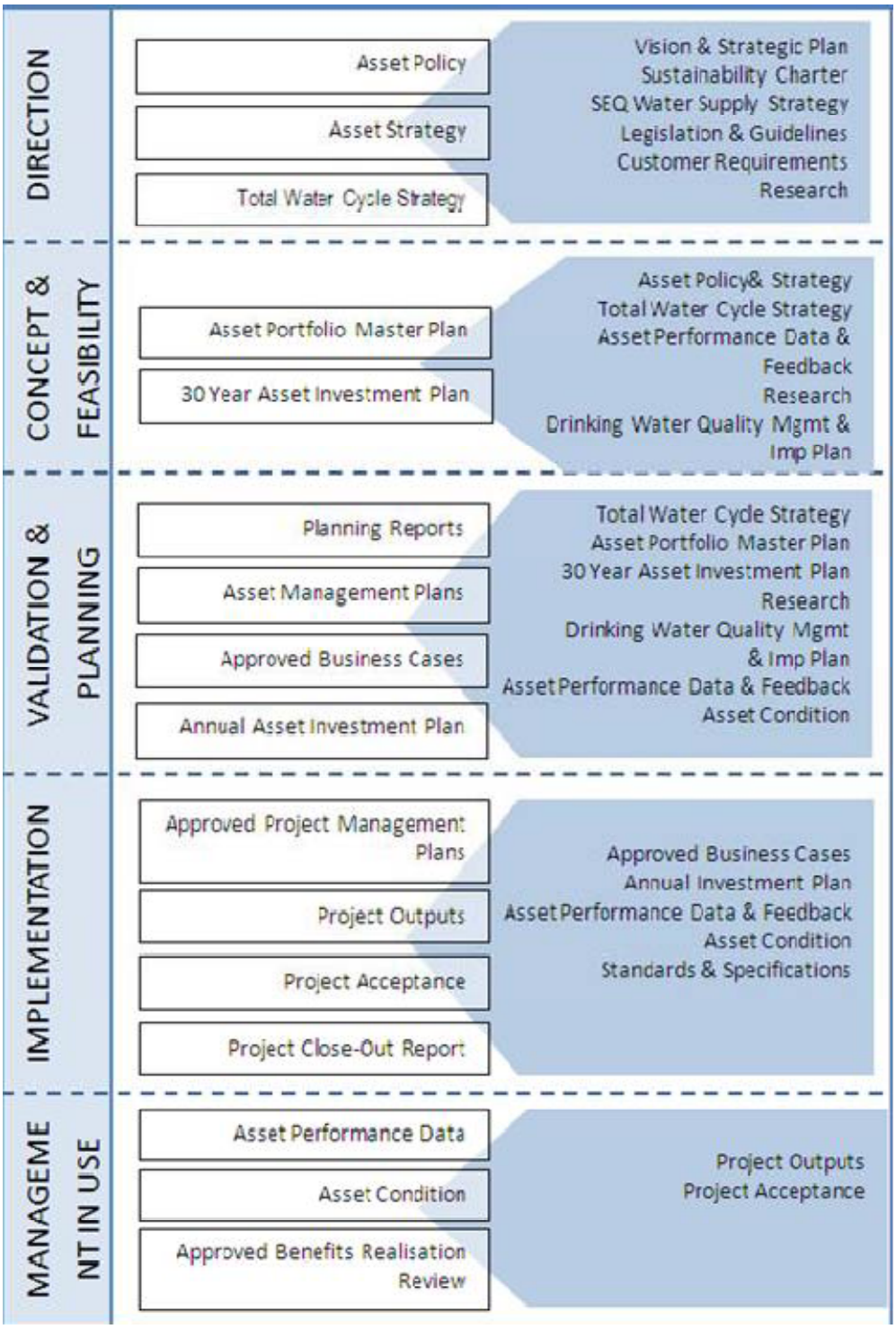
Seqwater's asset management function is broad and encompasses the entire lifecycle of physical assets, from direction setting, to management in use, to disposal, as well as considering the broader direction and long term planning of its asset portfolio.

Seqwater manages a complex asset portfolio, comprising a range of natural and built assets of varying asset types, ages, sizes, geographic dispersion and condition accompanied by varying degrees of asset information and knowledge. Seqwater recognises that its effectiveness as a business is underpinned by its understanding and management of its assets.

4.3.2. Asset management framework

Seqwater commenced development of an overarching Asset Management Framework to manage its assets in 2010-11, summarised below in **Figure 4**. It aims to facilitate improved integration, planning and management of natural and built assets and to align with the delivery of Seqwater's Strategic Plan and attain successful performance in asset management by achieving:

- uniform organisational processes in asset management
- prudent asset investment decision-making
- a balanced approach to investment across our catchments
- standardising processes for successful asset management (including project delivery)
- delivering efficient outcomes and value for money



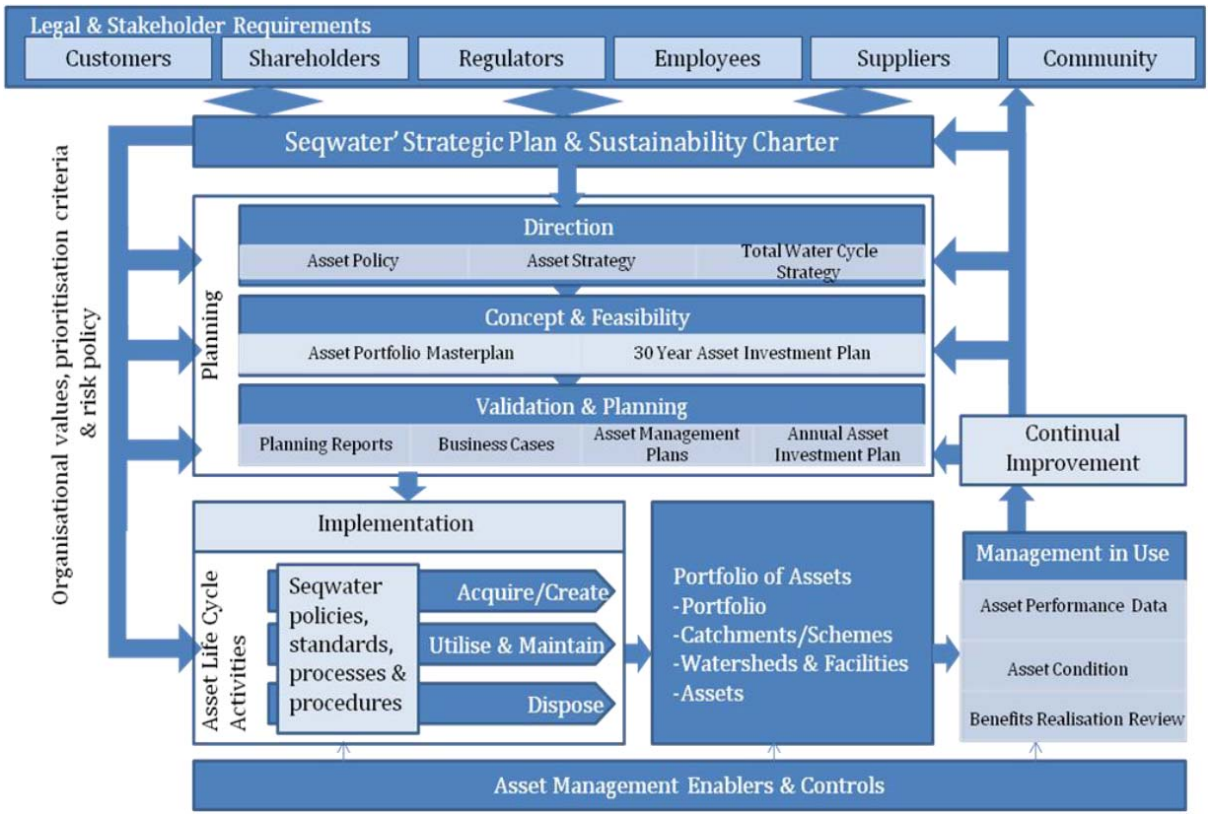
- **Figure 4 Seqwater's Asset Management Framework overview**

The framework incorporates five phases:

- Direction
- Concept and feasibility

- Validation and planning
- Implementation
- Management in use

The 'delivery' version of the Asset Management Framework is indicated in **Figure 5**.



- **Figure 5 Seqwater's Asset Management Framework (Delivery)**

During 2011-12, Seqwater undertook an internal benchmarking exercise of reviewing its functions and the scope and content of the asset management policies, strategies and procedures it is developing under the Asset Management Framework against accepted asset management industry best practice. The International Infrastructure Management Manual (IIMM) (IPWEA, 2006) and the UK Publically Available Specification - the Optimized Management of Physical Assets – No. 55 (PAS-55) (IAM, 2008) are widely accepted best practice industry guides for asset intensive organisations, such as Seqwater, in developing and implementing asset management frameworks and best practice asset planning and management practices. The IIMM's approach and scope for development and implementation of an Asset Management Plan was used to ensure the scope and content of the policies, strategies and procedures being developed by Seqwater would deliver a mature and comprehensive asset management framework.

Seqwater indicates that the development and implementation of the Asset Management Framework will:

- *"address development of a complete and accurate Asset Register of all assets and capture of all critical asset information;*

- *in consideration of Seqwater's Grid Contract and the Grid Operating Protocols, confirm what levels of service (performance standards) existing assets are required to sustain over their predicted residual lives to meet SEQ growth demands as determined by the Queensland Water Commission;*
- *conduct an asset condition assessment (to a basic level) of all assets and a detailed condition, risk and criticality assessment of identified critical assets;*
- *determine the condition and performance based residual lives of all assets in order to determine the lifecycle and renewal costs of the asset portfolio;*
- *undertake asset risk and criticality assessments to determine which assets pose the greatest business risks with asset failure for a prioritised, more detailed assessment;*
- *optimise the operation and maintenance regimes for both critical and non-critical assets (where opportune) to minimise overall business risk to asset failure;*
- *plan asset investment, renewal and disposal solutions, focussing on priority assets and others when appropriate, to meet Grid Contract obligations and level of service requirements (performance standards); and*
- *determine and maintain a prudent 30-year forecast of asset investment and operational funding requirements - reviewed each year as Seqwater improves its knowledge of its assets."*

4.3.3. Asset information and management systems

Seqwater implemented an Asset Migration project prior to taking over ownership and responsibility for bulk water infrastructure in SEQ with the aim to migrate asset data into its then asset management system called HardCat. The extent, quality and structure of the data varied significantly. The development of a new Asset Register was required which established an asset hierarchy. Each site was audited to identify existing assets and their position within the asset hierarchy. The development of the irrigation infrastructure aspect of the new Asset Register is still in progress with the majority of irrigation asset details not recorded in the Asset Register.

In 2009, Seqwater commenced implementation of a new Asset Management System, called TechnologyOne. The system is currently used as the new Asset Register, as well as to manage maintenance.

As the new Asset Register is under development for irrigation infrastructure, Seqwater maintains asset information in various locations.

4.3.4. Renewals planning process

Seqwater's renewal planning process generally comprises the following:

- Identification of asset renewal needs
- Evaluation of potential renewal works
- Development and approval of proposed renewal programs/projects

An outline of each step is provided as follows.

Identification of asset renewal needs

Seqwater has several existing processes being implemented in which the need to renew an asset is identified.

- Operator advice - facility operators generally have a good understanding of the condition and performance of a large proportion of assets at facilities. A 'work request' system is in place where the operators can identify issues with assets, many of which are related to the need to renew an asset.
- Asset Maintenance Program - consists of Scheduled Maintenance, Reactive Maintenance and Planned Maintenance. Asset renewal needs are commonly identified as part of the maintenance program, either when inspecting an asset and considering future renewal needs, or when addressing an asset failure and considering whether to repair or renew the asset
- Dam Safety Management Program (DSMP) - a combination of policy, procedures and activities which aim to ensure that each dam remains safe. Generally consists of: the establishment and implementation of Standing Operation Procedures and operation and maintenance manuals, ongoing dam condition monitoring, regular dam safety inspections and regular dam safety reviews. Asset renewal needs are commonly identified as part of the DSMP
- Facility Asset Management Plan (FAMP) development - document a 10 year program of capital investment and operational maintenance investment required to maintain the capacity and quality performance of that facility
- Site Safety Assessments - aim of the assessments is to allow for review of safety aspects at the site by people who do not normally work at the site. Most outcomes of the site safety review are addressed through actions undertaken by operators, changes to operational procedures or corrective maintenance work orders but a small number require works to be scheduled through the minor works and renewals programme

Evaluation of potential renewal works

Following identification of asset renewal needs, potential renewal works are evaluated. The valuation comprises the following:

- Assessment/consideration of risk of failure
- Options assessment (considering options such as 'do nothing', defer timing of works, non-asset solutions)
- Scoping and cost estimation of recommended option

Where proposed renewal works have a value of greater than $10,000, a business case is developed.

Development and approval of proposed renewal programs/projects

The Renewals Programmes are governed by the Minor Works and Renewals Project Control Group. This group oversees the development and delivery of the programme. Projects are identified through a condition and criticality assessment process that defines the risk of asset failure. This failure risk is used to prioritise projects in the programme.

Seqwater has an Asset Portfolio Master plan which outlines long term facility level planning for Seqwater, however this planning does not currently extended to irrigation assets. The Asset Portfolio Master plan provides projections regarding upgrades, disposals and new facilities. The renewals programmes are developed cognisant of these longer term facility level plans so that these renewals plans are consistent with longer term objectives.

Business cases are developed prior to works commencing. The business case confirms the need identified during the planning process and includes an options assessment to determine the most efficient method of meeting the need. The business case outlines the project scope of work and the project budget. Work on a project of value greater than $10,000 will not proceed without a business case approved through the governance group.

4.3.5. Proposed future asset management improvements

Seqwater advises that in addition to the further development of its Asset Management Framework and the irrigation infrastructure part of the new Asset Register, it is planning to implement the following specific improvements that will assist future asset renewal planning:

- Record (and update on an ongoing basis) key asset assessment data (such as condition, criticality, estimated remaining life and asset failure information) within TechnologyOne
- Develop modules either within TechnologyOne, or linked to it, to use asset data within TechnologyOne to both analyse asset performance and develop preliminary renewal projections
- Develop an FAMP for each Irrigation Scheme
- Ongoing improvements to the criticality and condition assessment processes and other business processes

4.3.6. SKM's assessment

Seqwater has made progress in developing robust asset management processes and procedures for comprehensive asset information. While Seqwater may not currently have good asset condition information due to its recent formation and the lack of condition information transferred from previous owners/operators, we consider that the plans and processes it has adopted to assess the condition of its assets will rectify this situation if carried through.

We note that four years have elapsed since Seqwater acquired these irrigation assets. Whilst progress on asset knowledge is apparent, in SKM's opinion the current lack of information should be rectified and robust asset management plans and asset information should be put in place prior to the next regulatory review.

4.4. Seqwater installed capital asset cost escalation rate determination method

In preparing for its submission to the Authority for the 2013-17 Irrigation Price Review, Seqwater commissioned Cardno to develop cost escalation indices to escalate capital asset as built costs (ie replacement values) to June 2012 from both a 2008 and a 2010 base year. The applicable base year for a particular asset is dependent on the source of the asset capital valuation information. In developing its forecast of capital asset replacement costs for its irrigation asset portfolio over the price setting annuity period of June 2012 to June 2037 (ie 25 years), Seqwater employs a number of methods to determine asset replacement annuity value submission. One of these methods, particularly for assets that are to be replaced a number of years hence is to assume a like for like replacement and to use an as installed cost rebased to June 2012 terms.

In order to use this method, Seqwater therefore needs to apply appropriate escalators to recast its capital asset installed costs into June 2012 money terms. This section comments on the

appropriateness of the escalator adopted as developed by Cardno in its report: "*Asset Valuation Indexation"* dated March 2012.

SKM understands from the Cardno report that, in its brief to Cardno, Seqwater stated that it required a single index, for each year of escalation, to escalate capital asset valuations for all asset types. Many of the assets in question have been transferred from SunWater to Seqwater and as such the asset value information, for replacement cost purposes, has been derived from SunWater asset values.

4.4.1. Background

From earlier work undertaken for the Authority by SKM in undertaking a review of SunWater's forecast renewal capital project expenditure, SKM reviewed the methods by which SunWater had re-valued its asset base to 2008 money terms (one of the base year's to which the Cardno developed escalator has been applied by Seqwater in its submission to the Authority). This analysis is contained in SKM's report: *"SunWater Price Regulation: Review of Selected Annuity Values for Refurbishment and Replacement Items"* 6 October 2011.

Our assessment of the process used to establish the 2008 base year installed capital costs contained in this report is reproduced below for convenience given its applicability to the valuations applied to the assets transferred from SunWater to Seqwater:

"The basis for the capital estimates is asset component building block unit rates first established in 1997 from an asset valuation utilising as installed drawings to develop bills of materials for individual annuity assets. These asset component 1997 values (unit rates) are escalated by SunWater to June 2008 values using standard asset class escalation factors established by Cardno during a 2008 valuation.

SunWater commissioned independent consultants Cardno to develop suitable escalation factors.

In developing escalation rates to take the 1997 asset values to 2008 money terms, Cardno first grouped asset types into a number of broad categories e.g. electrical equipment. It then sub divided these categories into identifiable asset types such as pumps of varying ratings. Cardno then compared the 1997 asset values for each asset component in a given group against a 2008 cost for that asset type identified by Cardno to produce a 1997:2008 value range of ratios. Cardno then averaged the 1997:2008 ratios for each asset component type grouping to develop an average unit rate escalator for a given group of asset building blocks so hence all electrical assets were allocated a 2.13 multiplier, all pumps were allocated a 1.5 multiplier etc.

In undertaking this exercise Cardno noted that some 1997 values were inconsistent eg a 75kW pump in a particular asset BOM was valued at a higher price (higher building block unit rate) than a 132 kW pump. To attempt to compensate for this, Cardno ignored 1997:2008 value ratios that were clear outliers eg for the pump example all ratios above 3.0 and below 0.6 were ignored in the averaging process.

These relatively broad multipliers are then applied by SunWater to the 1997 unit rates captured for each asset component on an individual basis in the 1997 valuation. Whilst we note that this approach

was proposed by Cardno[2] with qualifications regarding the unspecified scope of the building blocks, potential overlap of building blocks, and time constraints that affected the ability to conduct a more extensive study, we have some concerns with the reasonableness of applying blanket escalation factors across the different asset categories covering such an extensive time interval. In particular we consider that, as the 1997 rates for similar asset types varied widely (as noted by Cardno), applying a broad based single multiplier to the individual 1997 values could result in significant cost errors on a project by project basis. Taking the example of the category of pumps, at the extreme, applying this approach could result in a pump of the same pump rating having a unit rate that ranges between 1.5/0.6 = 2.5 times a central 2008 unit rate and 1.5/3.0 = times 0.5 times a central 2008 unit rate.

Hence the result is that, for those 1997 unit rates (component costs) in the bills of materials that are higher than they should be, multiplying them by an averaged standard uplift (1997 average cost to 2008 cost ratio) exacerbates the cost inconsistency of those particular components as compared to an accurate 2008 unit rate and vice versa for those components that have a lower 1997 unit rate than then should.

Whilst the use of standard asset component class multipliers on 1997 installed component costs works when the asset base is considered as a portfolio, in that the overvalued items are compensated by undervalued (costed) items, the approach breaks down when individual replacement annuity item costs are benchmarked during a regulatory price set review. In that those annuity items for which the 1997 installed component costs are significantly higher than the 1997 mean for those components will be deemed in-efficient and hence excluded from the annuity value. Whilst those assets whose 1997 component costs were in line with or below the benchmark at the time, will be deemed, when multiplied with the Cardno multiplier to escalate to 2008 costs to be efficient. This will skew the average replacement cost (on a portfolio basis) to below the 2008 (or 2010) benchmark and hence reduce the annuity value below that required by SunWater.

We consider that rather than using a multiplier to escalate individual 1997 values, it would have been more appropriate if Cardno had developed a standard 2008 unit rate for each asset component type (building block) and then for SunWater to apply this 2008 rate universally to replace individual 1997 unit rates in the BOMs for each asset.

We also consider, from our review of the Cardno 2008 Asset Valuation Report (the Cardno report) that the report itself does not provide sufficient detail to ascertain the accuracy of the escalation indices applied to the 1997 SunWater valuation. For the 2008 unit rate update, Cardno has escalated the 1997 unit rates based on average price increases from a combination of sources listed below:

- *Direct recent contract price data for identical items to escalate from 1997 to 2008,*
- *Rawlinsons Australian Construction Guide for 1997 and 2008, and*
- *Recent SunWater dam valuations.*

From review of the 4,028 items in the SunWater Bill of Materials (BOM), 11 items only were directly escalated based on recent contract price data identified by Cardno. The remaining items in the BOM have been escalated by the following method:

[2] Cardno, *SunWater Asset Valuation: Final Report*, June 2008

- *Identify assets for escalation to be based against.*
- *Complete asset valuation based on total BOM for the asset and unit rate price in 1997.*
- *Compare 1997 asset valuation to 2008 asset valuation.*
- *Break 2008 asset valuation into individual contribution for each BOM item and compare to 1997 unit price.*
- *Combine BOM items into 20 material categories and average escalation ratio per category.*
- *Repeat for all assets being assessed.*
- *Average category escalation ratios for each asset, removing statistical outliers, to produce average category escalation ratio for all assets.*

The Cardno report provides limited detail of where source information was derived apart from Rawlinsons and the recent dam valuations. Additionally, the grouping of BOM items into material categories has been based on item technical use. For example steel, concrete, polyethylene and glass reinforced polymer pipes have been grouped into one category 'pipe supply' for escalation as opposed to grouping items according to price drivers. Steel prices have differing market price drivers compared to oil prices (which drives plastic prices) and domestic construction drivers and therefore will experience escalation at differing rates.

We have compared the Cardno indices with other publically available data, in particular, the Australian Bureau of Statistics (ABS) Catalogue Series 6427.02 – Producer Price Index for the following:

- ***Table 9 Comparison of Cardno Escalators with ABS Derived Escalators***

ABS Item	Index	ABS 1997-2008	Cardno Group	Cardno 1997-2008
Cement / Lime / Concrete	Sep-1997 = 116.6 Sep-2008 = 153.6	1.37	Dam concrete – DC2	1.89
Steel Pipe	Sep-1997 = 117.6 Sep-2008 = 224.8	1.91	Pipe Supply - PS	2.28
Polymer	Sep-1997 = 113.8 Sep-2008 = 144.6	1.27		
Electrical	Sep-1997 = 113.8 Sep-2008 = 175.1	1.53	Electrical - EL	2.13
Pipe Installation	ABS 6345.05b EGW Labour – Priv & Pub Sep-1997 = 62.9 Sep-2008 = 98.2	1.56	Pipe Installation - PI	2.34

We acknowledge that the above doesn't represent a true like for like comparison for some of the indices, for example the ABS escalators for concrete and electrical pickup material costs only, where as the Cardno escalators for these items are a composite of material and labour escalators. However on the review of available information from the Cardno report and publically available information, our analysis would suggest that the Cardno rates for 2008 are generally overstated.

In addition to the above concerns with regards to the process used by Cardno in developing escalators and their application, we are of the opinion that escalating unit rates across an 11-year interval could result in values that are potentially inconsistent with market rates. We have long maintained a position with electricity utilities and regulatory authorities that the primary cost drivers for

electrical asset prices, for example, are movements in commodity prices, labour costs and common market indices including the Consumer Price Index and the Trade Weighted Index. Therefore, long-range escalation can potentially understate or overstate movements in these market indices, and caution should be exercised in relying upon such values for forecast expenditure estimates.

We would suggest that it may be prudent for SunWater to consider review their list of building blocks and rationalise it to eliminate overlaps, as well as periodically benchmarking their building block unit rates in future to ensure they remain consistent with market costs.

There may also be merit in SunWater considering moving to a modern equivalent asset classification approach in future revaluations of its asset base. By using modern equivalent asset types and unit rates for those assets applicable at the time of valuation, SunWater would be able to develop annuity values based on current technology and be assured that the rates used are more current than the escalated 1997 rates currently used."

SKM considers that the above commentary is still applicable to the 2008 base year asset values (installed costs) for those assets transferred from SunWater to Seqwater. SKM's key concerns over these valuations are that:

- The multiplier applied by Cardno is higher than SKM's benchmark indices for similar assets and hence the values are likely to be over stated
- Cardno's method of grouping valuations of related assets and then using the mean of these values to develop a multiplier for that asset class which is then applied to each assets 1997 value results in assets that are overstated at the 1997 valuation becoming relatively more overstated and vice versa for those assets that are understated at the 1997 valuation
- The method doesn't capture changes in technology that may result in a lower cost of replacement when a modern equivalent asset is used to replace existing assets
- The general reduction in Information Control and Telecommunications (ICT) costs due to technological advancements has not been captured

Given the above, SKM considers that the 2008 base year valuation (indexed installed cost) for SunWater's assets transferred to Seqwater is not necessarily a sound basis from which to derive June 2012 installed costs.

SKM has not been provided information on the development of the 2010 base year costs for those irrigation assets not transferred from SunWater and hence cannot comment on the validity of the rebased (to 2010 money terms) installed cost of those assets.

4.4.2. Review of Cardno escalators

As mentioned, Seqwater commissioned Cardno to develop a single time series of a compound index to enable escalation of 2008 and 2010 base year installed cost valuations to June 2012 money terms. The brief to Cardno from SunWater was to:

"... provide an appropriate index for Seqwater's existing valuation data that is:

- *Appropriate for the application to assts under consideration;*

- *Able to be applied to all assets – that is a single index for all asset classes;*
- *Transparent in how it is has been derived; and*
- *Sufficiently robust for regulatory review."*

Cardno states in its report[3] that:

"For reasons of expediency and simplicity a 'top down' analysis of cost indices is preferred by Seqwater to a 'bottom up' analysis of the movement of the costs estimates on each asset class".

SKM considers that a more robust method for escalating 2008 and 2010 base year costs, better able to withstand regulatory review, would have been capable of being developed had the brief not restricted Cardno to the development of a single set of indices for all asset classes. Rather, SKM considers it would have been more appropriate if the brief had allowed Cardno to develop indices for related asset class groupings based on movements in the major component cost items of each asset class.

Although SKM considers it reasonable to develop, for reasons of simplicity, a single set of indices for civil infrastructure, such indices are not likely to be applicable to mechanical and electrical equipment and certainly not to ICT equipment (whose cost has declined in real terms over the last 20 years).

In developing the cost escalation indices, Cardno analysed the mix of irrigation assets owned and operated by Seqwater and concluded that:

... the greatest proportion by value of Seqwater's assets in its irrigation schemes is dams and weirs, accounting for 72% of the total. Civil works (which includes earthworks, buildings, roads and fences) accounts for 22% of the assets by value. Irrigation and mechanical and electrical assets account for a small proportion of the total asset value"

"Accordingly, the movement of the value of dams and weirs will be the biggest driver for overall movement in irrigation assets [replacement values]. *And therefore, the construction inputs for dams and weirs, particularly concrete and earthworks, will be important factors in the movement in the value of dams and weirs, and the overall portfolio of Seqwater's irrigation assets".*

SKM agrees with this analysis when considering the replacement value of the entire portfolio and that if this is what was intended to be achieved, then the development of a single set of indices based on movement in component costs for dams and weirs would be appropriate. However, SKM does not agree that this approach is appropriate for the development of replacement costs for renewal items submitted to a regulator during a price review for the following reasons:

- Dams and weirs, as an asset class, have the longest asset lives of Seqwater's irrigation asset portfolio. As such the majority of the renewal and refurbishment annuity items submitted to the Authority in a pricing review are likely to be assets other than dams and weirs for which the escalation indices developed will not necessarily be applicable. This will lead to replacement values that are either over stated or understated. Those that are overstated, and subject to independent review are likely to be determined as inefficient and hence removed from the annuity portfolio. Those that are understated (in terms of replacement value) will be determined as

[3] *"Asset Valuation Indexation: Prepared for Seqwater" March 2012*

efficient, but the value submitted is unlikely to be revised up to a more appropriate replacement value. The net result of this is that the overall renewal/refurbishment annuity value will be skewed to a lower value than should be the case.

- Movement in component costs for mechanical and electrical equipment, particularly ICT equipment tend to be materially different to movement in component costs for civil infrastructure, particularly dams and weirs. As such, replacement values for mechanical and electrical equipment and ICTs derived from 2008 or 2010 base year costs utilising the single set of indices developed by Cardno are unlikely to reflect market based 2012 replacement values for such equipment.
- Typically, a regulator will seek independent review of a sample of assets making up the overall renewal/refurbishment annuity value rather than adopt a portfolio review approach. As such renewal/replacement items will be viewed on their own merits, without regards to the balancing effect of a portfolio approach. As such, developing indices based on a portfolio of assets, rather than on different asset classes is not considered appropriate for development of asset renewal values for submission to a regulator.

Having determined that dams and weirs constituted the greatest part (by value) of the irrigation assets, Cardno then proceeded to develop a single set of indices to enable escalation of asset values by analysis of a range of indices selected for their "*broad alignment with the nature of the assets in question"* ie dams and weirs. The indices selected for evaluation were:

- Road and bridges construction
- Consumer prices index (CPI)
- Building price index
- Concrete, cement and sand
- Steel
- Labour (construction industry)

With the exception of the consumer prices index, SKM considers the basket of indices selected by Cardno for developing indices for civil infrastructure, particularly dams and weirs to be appropriate. In SKM's experience of appraising and revaluing utility assets, SKM has not found CPI to be a useful proxy for utility asset value indexation.

Having selected a series of indices, Cardno then applied a weighting factor to each index, according to its perceived relevance to the assets in question in order to develop a single composite indexation series. Cardno applied a moderate to high weighting factor to the Roads and Bridges Construction index, the Building Price Index and the CPI as these were seen as most closely tracking movements in construction costs in Queensland and Cardno considered that the CPI has an important role in informing inflation expectations.

Conversely, Cardno applied low weightings to input factor indices (steel, concrete, cement and sand, and labour (construction industry). The reason being that Cardno considers that these indices are only an indirect measure of cost movement since cost movements also relies on changes in technology, design standards etc.

SKM questions the rationale behind the application of weightings for the following reasons:

- As mentioned, SKM's experience is that CPI is not a good proxy for utility asset installed cost indexation. Also, whilst CPI may drive wage expectation, this is only of value if using forecast CPI to predict movements in Labour indices. Historic movement in labour costs should be fully captured in the historic Labour (construction industry) index.
- Accounting for changes in technology would be appropriate if the asset valuations were to be undertaken on a modern equivalent replacement basis. However, SKM understands that these indices have been applied to the as installed bill of materials; as such technology changes have not been accommodated.

On this basis, SKM considers that it would be more appropriate to apply a moderate to high weighting to those indices that are applicable to the actual make up costs of the assets in questions (ie labour (construction and industry), steel, concrete, cement and sand.

SKM also notes that both the building price index and the indices for concrete, steel and cement and for steel have trended negatively since circa June 2009.

Given the above, SKM questions the validity of method used by Cardno to develop a single composite index series for use by Seqwater in rebasing the replacement value of its assets from base years of 2008 and 2010 to June 2012.

That said, and from a brief review of the indices considered more applicable to the assets in questions, namely: Concrete, cement and sand; Steel; Labour (construction industry), SKM notes that labour has trended positive at almost double the rate of CPI whilst Steel, Concrete, cement and sand indices have trended negative over the period in question. As such, if, as a rough generality, labour costs for civil construction projects are considered to represent a significant component of the costs of civil infrastructure assets, then, use of the above three indices in developing a composite index would result in a lower composite index than that developed by Cardno.

In summary, SKM considers that the composite indexation series developed by Cardno not to be appropriate for rebasing the replacement value of the assets making up the renewal/refurbishment annuity value submitted to the Authority. This is partly because of the restrictions of the brief requiring the development of one indexation series only and partly because of the approach adopted by Cardno in developing a composite index based on dams and weirs based on applying a higher weighting on composite indices such as CPI, building price index, rather than on the indices of the primary constituent components.

SKM considers that, if renewal values are to be developed by escalation of installed costs on a like for like replacement basis, it would be more appropriate for a number of escalation indices to be developed for related groups of asset classes rather than a single composite index to cover all asset types. Further these indices should be derived predominantly from movement in prices of constituent components rather than from composite indices such as CPI. However, to take account of changes in technology, SKM considers that there would be merit in Seqwater considering revaluing the assets on a modern equivalent replacement asset basis, using asset class modern equivalent building blocks rather than assuming like for like replacements. On balance, SKM considers that the escalation indices developed by Cardno are likely to overstate replacement costs rather than understate them. The quantum of overstatement depending on the asset class in question,

4.5. Corporate directives

Seqwater has adopted the following objectives of corporate governance which are based on those set out in the *AS 8000-2003 - Good Governance Principles* (the Australian Governance Standard):

- enhance organisational performance
- understand and manage risks to minimise the negative aspects and maximise the opportunities
- strengthen shareholder and/or community confidence in an entity
- enhance the public reputation of an entity through enhanced transparency and accountability
- allow Seqwater to demonstrate how they are discharging their legal, shareholder and ethical obligations
- provide a mechanism for benchmarking accountability
- assist in the prevention and detection of fraudulent, dishonest and/or unethical behaviour

Seqwater has adopted the following principles of corporate governance which are set out in the *State Water Authorities Governance Framework*. These principles are as follows:

- lay solid foundations for management and oversight
- structure the Board to add value
- promote ethical and responsible decision making
- safeguard integrity in financial reporting
- make timely and balanced disclosure
- respect the rights of shareholders
- recognise and manage risk
- remunerate fairly and responsibly

The 2010-11 to 2014-15 Strategic Plan summarises Seqwater's vision, values, goals, business drivers and key corporate expectations. Seqwater vision is 'Water for life – vibrant, sustainable and optimistic urban and rural communities and businesses'.

Seqwater's mission statement is '*Seqwater provides innovative and efficient management of both natural and built catchments, water storages, and treatment services to ensure the quantity and quality of water supplies'*.

Seqwater's goals are:

1) Water supply quality and security - provide urban consumers with reliable water of a quality that meets or exceeds the Australian Drinking Water Guidelines (ADWG) as required by regulation, contract and best practice
2) Catchment sustainability - effectively research and manage the water catchments to maximise water quality while also providing for flood mitigation, fostering rural productivity, providing places of recreation, enhancing biodiversity and providing amenity for the people of SEQ

4.5.1. Standards of service review

Seqwater states, in *2013-14 Irrigation Pricing Submission to the Queensland Competition Authority* (Seqwater, April 2012), that:

> *"Service standards have been established in all WSSs, except Central Lockyer and Central Brisbane River. Where service standards exist, they were established in consultation with customer representatives in 2001 and were carried across to Seqwater from SunWater Limited.*
>
> *Each NSP sets out the service standards as they relate to that scheme."*

In relation to service targets, each network service plan contains a statement referencing the clause 3 of the standard contract. The *Water Supply Arrangements and Service Targets: Mary River Water Supply Scheme - Upper Mary (Pie Creek - Cedar Pocket Dam - Mary River)* states:

> *"We are committed to publishing service targets and to reporting to customers our performance against the targets. Following discussion and consultation with the Irrigator Advisory Committee, this document contains service targets that have been set for the Mary River Water Supply Scheme – Upper Mary (Pie Creek – Cedar Pocket Dam – Mary River)."*

Whereas the *Water Supply Arrangements and Service Targets* documents for Logan River, Lower Lockyer Valley, Warrill Valley water supply schemes states:

- *"3(d) Seqwater shall, at approximately annual intervals, during this Agreement publish a report comparing the performance of Seqwater with the Service Targets;*
- *3(e) Seqwater shall publish Service Targets for the Regulated Area and revise these from time to time after considered changes in customer needs determined through customer consultation, and changes in industry practice and procedures."*

From these statements it is apparent that Seqwater's obligation for determining standards of service and providing water to customers which meets those standards is established by the standard supply contract set out under the *Water Act 2000*.

In reviewing the network service plans for the Mary Valley, Cedar Pocket Dam, Logan River, Lower Lockyer Valley and Warrill Valley SKM identified that all of the schemes operate under the same service targets. These are outlined below in **Table 10**.

- **Table 10 Service targets**

Service Area	Aspect	Target
Planned Shutdowns	Timing	The timing of all planned shutdowns will be set following consultation with the Irrigator Advisory Committee (for a shutdown affecting a large part of the scheme) or customer groups or individuals (for shutdowns effecting small areas).
	Duration	Seqwater will complete all planned shutdowns within the period notified to customers (unless later varied be agreement with the groups originally consulted with). Unless something occurs that is beyond Seqwater's control, such as adverse weather conditions.
	Notice	For shutdowns planned to exceed 2 weeks, at least 8 weeks written notice by letter will be provided to each customer affected by the annual shutdown. For shutdowns planned to exceed 3 days, at least 2 weeks written notice by letter, fax, telephone, or verbal advice will be provided to each customer affected by the shutdown. For shutdowns planned to be less than 3 days, at least 5 days notice will be provided at least verbally to each customer affected. Each notice will state the start date, and anticipated shutdown duration. A courtesy reminder will be placed in the local newspaper 1 week before the planned shutdown commences.
Unplanned Shutdowns	Duration	Unplanned shutdowns will be fixed so that at least partial supply can be resumed to those customers requiring water within 48hrs of Seqwater being notified of the event. Some events may interrupt supply greater that the above standard and are excluded from these targets. Seqwater will publish these events from time to time.
	Notice	Seqwater will notify all affected customers requiring water verbally or by telephone, radio announcement or fax of the likely duration of the interruption to supply within 24 hours of learning of the event, or by the end of the first business day following the event, whichever is the earlier.
	Meter repairs	Faults causing restrictions to supply will be repaired within 1 working day of Seqwater being notified.
Total frequency of interruption to supply	Frequency of interruptions to supply	No customer will experience more than 6 planned or unplanned interruptions per water year.
Complaints		Seqwater will provide an initial response to all complaints within 5 working days of receiving a complaint by the customer in writing or by telephone to a Business Centre. Seqwater will either resolve a customer's complaint, or provide a written response providing reasons why the complaint has not or cannot be resolved within 21 days of receiving the complaint.
Customer obligations		The Customer principal obligations are set out in clause 4 of the Standard Contract.

4.6. Procurement

In response to our request for its procurement policies and practices, Seqwater provided three documents – Procurement Policy, Procurement Handbook and Procurement Supply Procedures. These document Seqwater's formal policy and procedures for procurement.

4.6.1. Procurement policy

The Procurement Policy has been prepared to encourage best practice in procurement. It aims to assist staff involved in the procurement process to focus on the business outcomes required by Seqwater and to comply with relevant Acts and standards. The key objectives of the policy are to:

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

Seqwater's procurement policy seeks to achieve these objectives through applying the following principles:

- A planned approach to all procurement whereby savings and synergies will be realised through effective planning, clarity of scope, a longer term outlook, managing demand and negotiating value for money outcomes
- Create flexibility in our process through well considered procurement strategies and market research
- Communicate in an open and effective manner by engaging early and often with stakeholders, taking a cross-organisational perspective and engaging the supply market through defined scopes and measurable deliverables
- Ensure probity and ethical conduct in all procurement activities
- Ensure that the level of procurement effort is commensurate with levels of risk and criticality
- Make commercial decisions which align with business strategies and reflect value for money whilst promoting socially responsible, safe and sustainable procurement
- Provide governance over Seqwater procurement outcomes through appropriate oversight of procurement activities

4.6.2. Procurement procedure

The Procurement Handbook provides guidelines for obtaining goods, services and assets and is designed to support the objectives of the Procurement Policy. The procurement process involves five major process steps:

- Planning
- Tendering
- Purchasing
- Contract Management
- Logistics

It provides thresholds in approvals required for procurement of goods and service where contracts with values:

- Between $20,000 and $100,000 requires written approval, eg email, from the Manager
- Between $100,000 and $500,000 requires a memo signed by the EGM

- Between $500,000 and $2 million required a Business Case signed by the CEO
- Greater than $2 million required a Business Case presented to the Board signed, with Board approval

According to the 'Procurement Decision Making Matrix', in the Procurement Handbook, the thresholds in approaching the market for procurement of goods and service where contracts with values:

- Panel arrangements -
  - Tiered Panel arrangement -
    - Less than $500,000 may be obtained from one supplier
    - Greater than $500,000 need to develop a Sourcing Strategy
  - Standard Panel arrangement -
    - Less than $100,000 may be obtained from one supplier
    - Between $100,000 and $500,000 need to develop a Request for Quote (RFQ) – minimum three quotes
    - Greater than $500,000 need to develop a Sourcing Strategy
- Contract arrangement -
  - Less than $500,000 may be obtained from one supplier
  - Greater than $500,000 need to develop a Sourcing Strategy
- No arrangement -
  - Less than $20,000 may be obtained from one supplier
  - Between $20,000 and $100,000 need to develop a Request for Quote (RFQ) – minimum three quotes
  - Greater than $100,000 need to develop a Sourcing Strategy
- Construction -
  - Less than $500,000 need to develop a Minor Works RFQ
  - Greater than $500,000 need to develop a Sourcing Strategy

A waiver of the procurement process may be sought when:

- A genuine urgent requirement exists
- A recognised specialist or leading authority in a particular field is required
- A sole supplier situation exists

In such cases, Seqwater's CEO must approve use of this sole supplier.

The decision on whether the tender will be an open or closed tender must be reviewed and approved by an Executive General Manager. Tenders may be conducted when Seqwater wishes to appoint a panel of suppliers or when a project manager, in conjunction with the Contracts Procurement team, determines a need to go to tender. The project manager and Contracts Procurement team will recommend whether the tender will be open or closed. This decision must be approved by the Executive General Manager. Seqwater provides several types of contracts. Executive General

Managers may sign contracts up to $100,000, while the CEO can sign contracts up to $500,000. Contracts over $500,000 must have Board approval.

The Procurement Handbook states that, as a general rule, a minimum of 12 weeks should be allowed for simple tenders and up to 16 weeks (or more) for complex, higher risk tenders. Once the tender process has closed, the proposals are evaluated according to the evaluation plan, with the procurement committee playing a probity role. Weighting/gating criteria are applied on a project by project basis. An evaluation and recommendation report is presented to the procurement committee for approval, recommending a proposal.

The project manager is responsible for the administration and supervision of goods delivered or services provided under a contract and for ensuring that, before the commencement of any work under the contract, the supplier fulfils its obligations to Seqwater by complying with any requirements in relation to the Workplace Health and Safety Act.

To ensure that Seqwater is receiving good service and value for money through its contracts, the project manager is responsible for monitoring and inspecting the work undertaken or goods delivered for conformity with the contract. When requested, the project manager will be required to complete and provide an evaluation of the supplier to the Contracts Procurement team.

Procurement methods for large projects exceeding $2 million include:

- Design and construct
- Build Own Operate and Transfer (BOOT) delivery
- Alliances
- Standard tenders and contracts

The flexibility to use various approaches allows Seqwater to accommodate a range of project types, and is consistent with industry practices. Seqwater is developing a formal process to determine optimal procurement strategies for major projects or those for which efficiencies of scale may be leveraged.

4.6.3. SKM's assessment

Overall, SKM considers Seqwater's procurement policies and procedures to be reasonable. While Seqwater's procurement policies and procedures do not provide for sustainable purchasing per se, its requirement to adhere to State Procurement Policy does require it to integrate sustainability into the procurement of goods, services and construction. As such SKM considers that Seqwater is meeting its sustainability requirements as set out under the State Procurement Policy without expending excessive cost in doing so.

A further concern that we have is the arrangement for sole sourcing from tender panels. The relatively high limit of up to $100,000 of such single source purchases with limited required review from supervisory managers could allow misuse. It may be prudent for further limits to be placed on such an arrangement.

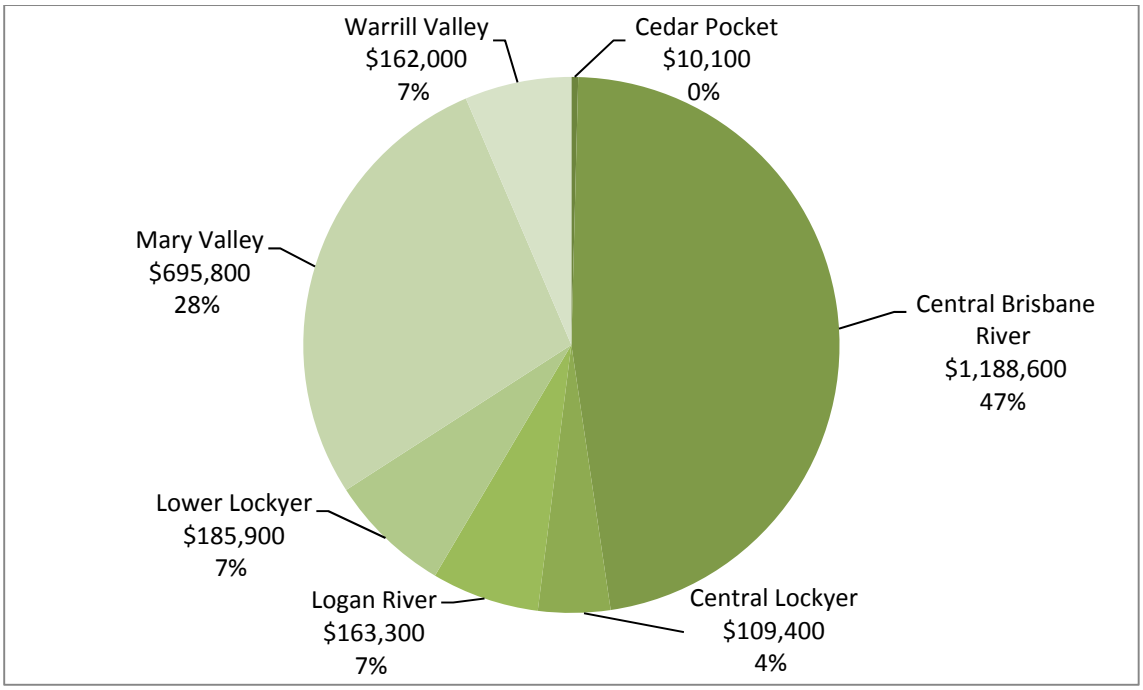
5. Capital expenditure

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

- Overview of capital expenditure
- Selected sample
- Overview of prudency and efficiency reviews of Seqwater's capital expenditure
- Detailed prudency and efficiency reviews of the selected sample
- Summary
- Information provision

5.1. Overview of capital expenditure

The breakdown of Seqwater's proposed capital expenditure for the 2013-14 to 2016-17 financial years by water service scheme can be seen in **Figure 6**. This expenditure will be recovered from irrigators and urban/industrial customers. Almost half of this expenditure is attributed to the Central Brisbane River Water Supply Scheme, with the Mary Valley Water Supply Scheme the second highest.



Source: Seqwater 2013-14 to 2016-17Irrigation Price Review, Seqwater, April 2012

- **Figure 6 Capital expenditure by water supply scheme**

5.2. Selected sample

The Authority selected 12 capital expenditure items for detailed analysis as shown below in **Table 11**. These items were selected from 10 asset classes.

- **Table 11 Capital expenditure items for detailed analysis ($'000)**

	Asset Class	WSS/Tariff Group	Expenditure Item	Works Descriptions	Renewal Year	Item Cost ($'000)
1	Telemetry	Cedar Pocket	Cedar Pocket Dam - Telemetry	Replace	2021,2031	68
2	Telemetry	Logan	Bromelton Weir - Telemetry	Replace	2014,2024, 2034	105
3	Embankment	Central Lockyer	Clarendon Dam - Embankment (Main Dam)	Refurbish	2013-19	312
4	Observation Bores	Lower Lockyer	L1 Distribution - Observation Bores	Refurbish	2019,2024, 2029,2034	344
5	Control Equipment	Central Lockyer	Clarendon Diversion - Control Equipment	Replace	2029	174
6	Gauging Stations	Central Lockyer	Central Lockyer - Gauging Stations	Replace	2023,2033	120
7	Roads	Central Lockyer	Clarendon Diversion - Access Road	Replace	2023	122
8	Roads	Warrill	Warrill Creek Diversion Weir - Access Road & Hard Standing	Replace	2029	194
9	Air Valves	Pie Creek	Calico Creek Channel/Pie Ck Main Channel – Various Air Valves	Replace	2033	269
10	Outlet Works	Central Brisbane	Somerset Dam - Inlet Screens & Trash Racks - Structural Walls, Columns & Beams	Replace	2026	3,251
11	Trash Screens	Central Lockyer	Clarendon Diversion - Trash Screens	Refurbish	2015,2020, 2025,2030, 2035	50
12	Meters	Central Lockyer	Central Lockyer Metering	Replace	2022, 2046	1,007
		Mary Valley	Mary Valley Metering	Replace	2022, 2046	5,23

Source: Terms of Reference: Seqwater Irrigation Price Review 2013-17 – Assessment of Capital and Operating Expenditure, Queensland Competition Authority, June 2012

In addition to the expenditure items selected for detailed analysis, a number of other expenditure items were identified from the ten asset classes. For these items, SKM has been asked to provide a recommendation as to whether the findings can be generalised across a particular asset class to determine the likely prudency and efficiency of total expenditure in that class. These items are outlined in **Table 12**.

- **Table 12 Additional capital expenditure items ($'000)**

Asset Class	WSS/Tariff Group	Expenditure Item	Works Descriptions	Renewal Year	Item Cost ($'000)
Telemetry	Central Brisbane	Wivenhoe Dam - Telemetry	Replace	2032	282
	Logan	Maroon Dam – Telemetry	—	2022, 2032	20
	Central Lockyer	Clarendon Dam – Telemetry	Replace	2022, 2032	70
	Lower Lockyer	Atkinson Dam - Telemetry	Replace	2018, 2028	70
Embankment	Central Lockyer	Clarendon Dam - Earthworks/Formation	Refurbish	2020	50
	Cedar Pocket	Cedar Pocket Dam – Embankment	Refurbish	2015	18
	Mary River	Borumba Dam - Embankment	Refurbish	2014	230
Observation Bores	Central Lockyer	Central Lockyer –Observation Boreholes	Refurbish	2019, 2024, 2029, 2034	200
	Lower Lockyer	Atkinson Dam - Observation Bores (15)	Replace	2021	75
Control Equipment	Central Lockyer	Clarendon Diversion - Control Equipment	Replace	2029	137
	Pie Creek	Pie Creek Pump Station - Control Equipment	Replace	2014	123
	Central Lockyer	Clarendon Diversion - Control Equipment	Refurbish	2014	26
	Lower Lockyer	Atkinson Dam - Spillway Control Structure	Refurbish	2015	20
	Lower Lockyer	Atkinson Dam - Spillway Control Structure	Refurbish	2014	15
	Lower Lockyer	Atkinson Dam - Spillway Control Structure	Refurbish	2014	15
	Warrill	Warrill Creek Diversion Weir - Control Equipment	Replace	2034	98
	Lower Lockyer	L1 Distribution - Buaraba Ck Diversion Channel Gate Control Equipment	Replace	2028	12
	Mary River	Borumba Dam - Control Equipment	Replace	2036	14
	Warrill	Moogerah Dam - Control Equipment	Replace	2037	21
Gauging Stations	Lower Lockyer	L1 Distribution - Gauging Stations - Lower Lockyer	Replace	2023, 2033	80
	Mary River	Mary River - Gauging Stations	Replace	2023, 2033	140
	Warrill	Warrill Ck - Gauging Station	Replace	2023, 2033	140
	Logan	Logan River - Gauging Stations	Replace		104
Roads	Central Lockyer	Clarendon Diversion - Access Road	Refurbish	2016, 2021, 2026, 2061, 2036	50
	Central Lockyer	Clarendon Diversion - Access Road to Weir R/Bk	Replace	2024	24
	Lower	Atkinson Dam - Main Wall	Refurbish	2023, 2024	42

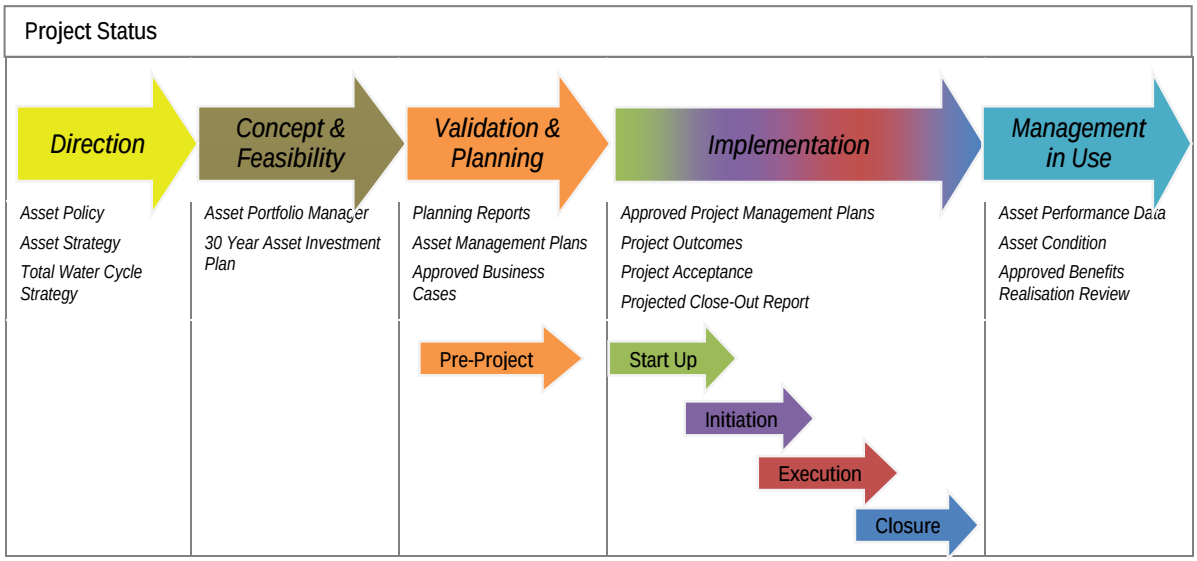
Asset Class	WSS/Tariff Group	Expenditure Item	Works Descriptions	Renewal Year	Item Cost ($'000)
	Lockyer	Embankment			
	Central Lockyer	Clarendon Dam - Access Roads	Replace	2024	20
	Central Lockyer	Clarendon Diversion - Turn Outs	Refurbish	2016, 2026, 2036	15
	Central Lockyer	Clarendon Diversion - Access Road to Weir R/Bk	Refurbish	2020, 2035	10
	Lower Lockyer	Atkinson Dam - Access Road & Car park	Refurbish	2018	10
	Logan	Bromelton Weir – Road Amtd 113.2km	Refurbish	2018, 2028, 2033, 2038	60
	Pie Creek	Pie Creek Pump Station - Access Road	Replace	2033	81
	Lower Lockyer	L1 Distribution - O'Reilly Weir R/Bank Access Road	Replace	2029	30
Air Valves	Central Lockyer	Lake Dyer Diversion - Air Valve	Refurbish	2014, 2034	12
	Lower Lockyer	L1 Distribution - Buaraba Creek Supply Pipeline Air Valve 1 at 24.40m	Replace	2018	6
	Lower Lockyer	L1 Distribution - Buaraba Creek Supply Pipeline Air Valve 2 at 1770.30m	Replace	2018	6
	Warrill	Upper Warrill Diversion - Double Air Valves-2829m, 3342m	Replace	2025	21
	Warrill	Upper Warrill Diversion - Double Air Valves at 10911.60m	Replace	2025	11
	Warrill	Upper Warrill Diversion - Double Air Valves at 273m	Replace	2025	11
	Lower Lockyer	L1 Distribution - Buaraba Creek Supply Pipeline Double Air Valve 1 at 1551.40m	Replace	2018	1
Outlet Works		NA			
Trash Screens	Lower Lockyer	Atkinson Dam - Inlet Screens & Trash Racks - Trash Screens	Replace	2030	45
	Central Brisbane	Somerset Dam - Trashracks	Replace	2026	1,399
	Mary Valley	Borumba Dam - Trash Screens	Replace	2035	111
	Morton Vale	Morton Vale Reticulation - Trash Screen	Refurbish	2015	18
	Logan	Maroon Dam - Intake Trash Screens	Refurbish	2030	36
	Central Brisbane	Somerset Dam - Inlet Screens & Trash Racks - Spares in Sand Blasting Shed for Refurbishment	Replace	2026	175
	Central Brisbane	Wivenhoe Dam - Inlet Screens & Trash Rack - Trash Rack	Refurbish	2016	80
	Warrill	Kent's Lagoon Diversion Weir - Trash Screen	Replace	2035	5
	Warrill	Upper Warrill Diversion - Trash	Replace	2025	3

Asset Class	WSS/Tariff Group	Expenditure Item	Works Descriptions	Renewal Year	Item Cost ($'000)
		Screen at inlet			

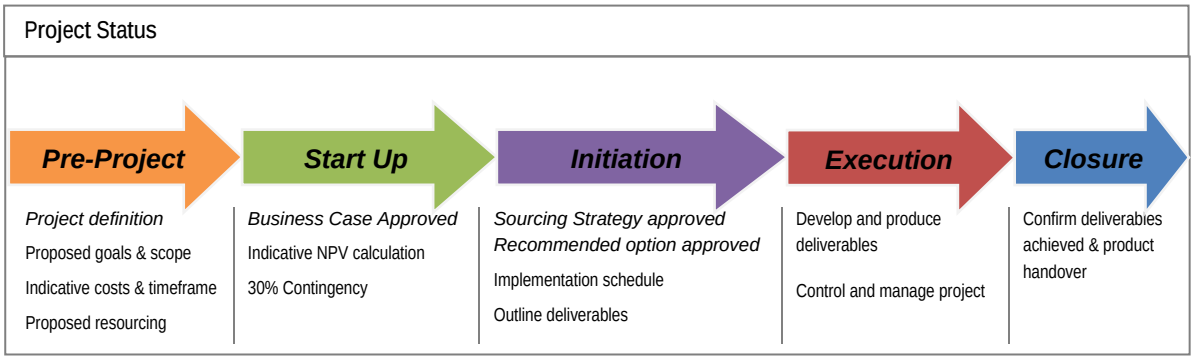
Source: Terms of Reference: Seqwater Irrigation Price Review 2013-17 – Assessment of Capital and Operating Expenditure, Queensland Competition Authority, June 2012

5.3. Project status

The following figures depict a summarised version of the Seqwater project delivery asset management framework.



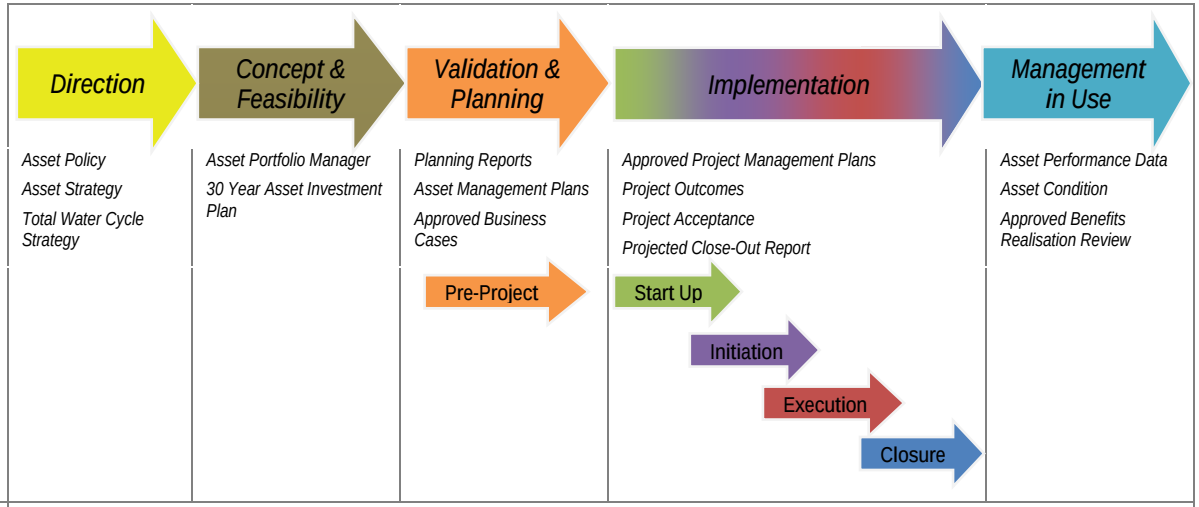
■ **Figure 7 Overview of Seqwater project delivery framework**



■ **Figure 8 Seqwater project delivery framework**

As a project progresses through the phases of project delivery, the detail of the description and costs, including accuracy of cost estimates, and program increases, whilst the value of the contingency should decrease. In addition there are various milestones and gateway reviews that it will incur. The location of the project at the time of the review therefore should respond to a certain level of documentation.

The status of the sample projects is included as indicated in **Figure 9**. The majority of the projects sampled are in the concept and feasibility stage, ie prior to the planning phase. The documentation for these projects in minimal, as is to be expected for projects within this phase but sufficiently robust to establish the need and timing under renewals annuity program. For all projects, sufficient documentation was provided to complete an assessment.



Cedar Pocket Dam - Telemetry	
Bromelton Weir - Telemetry	
Clarendon Dam - Embankment (Main Dam)	
L1 Distribution - Observation Bores	
Clarendon Diversion - Control Equipment	
Central Lockyer - Gauging Stations	
Clarendon Diversion - Access Road	
Warrill Creek Diversion Weir - Access Road & Hard Standing	
Calico Creek Channel/Pie Ck Main Channel – Various Air Valves	
Somerset Dam - Inlet Screens & Trash Racks - Structural Walls, Columns & Beams	
Clarendon Diversion - Trash Screens	
Central Lockyer and Mary Valley Metering	

Figure 9 Status of projects within the Seqwater Delivery Framework

5.4. Overview of prudency and efficiency

Table 13 shows an overview of the final assessment made for each selected capital expenditure items prudency and efficiency.

- **Table 13 Overview of prudency and efficiency of selected capital expenditure items**

	Expenditure Item	Item Cost ($'000)	Prudent	Efficient
1	Cedar Pocket Dam - Telemetry	68	Prudent	Efficient
2	Bromelton Weir - Telemetry	105	Prudent	Revised cost efficient
3	Clarendon Dam - Embankment (Main Dam)	312	Prudent	Efficient
4	L1 Distribution - Observation Bores	344	Not Prudent	Efficient
5	Clarendon Diversion - Control Equipment	174		
6	Central Lockyer - Gauging Stations	120	Prudent	Revised cost efficient
7	Clarendon Diversion - Access Road	122	Prudent	Efficient
8	Warrill Creek Diversion Weir - Access Road & Hard Standing	194	Prudent	Revised cost efficient
9	Calico Creek Channel/Pie Ck Main Channel – Various Air Valves	269	Prudent	Efficient
10	Somerset Dam - Inlet Screens & Trash Racks - Structural Walls, Columns & Beams	3,251	Prudent	Efficient
11	Clarendon Diversion - Trash Screens	50	Prudent	Efficient
12	Central Lockyer and Mary Valley Metering	1,670	Prudent	Revised cost efficient

In summary, the majority of the projects reviews are found to be prudent and efficient, with the exception being the L1 Distribution Observation Bores in the Lower Lockyer Valley Water Supply Scheme as the bores are not necessary to operate the water supply scheme. For four of the projects, during the review process a revised project cost has been established Seqwater. These revised costs have been found to be efficient.

A full summary with recommendations for each project can be found in the following sections of this report.

5.5. Cedar Pocket Dam Telemetry

5.5.1. Proposed capital expenditure

Table 14 shows the proposed cost of the Cedar Pocket Dam Telemetry Replacement Project.

- **Table 14 Mary Valley Water Supply Scheme, Cedar Pocket Dam Telemetry – Proposed capital expenditure profile**

Source	Costs ($'000)		
	2020-21	2030-31	Total
Terms of reference drawn from Seqwater's original NSP	34	34	68

5.5.2. Project description

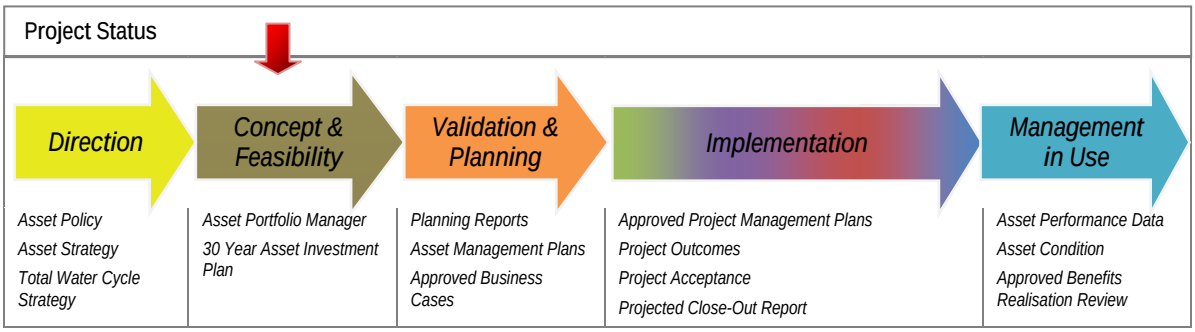
The project provides for the renewal of gauging and telemetry assets at Cedar Pocket Dam. The gauging station locations are at the headwater and the tailwater levels. The Cedar Pocket Dam Tailwater Gauge is currently read manually via a gauge board and is located a distance downstream of the dam due to the physical constraints of the stream. Seqwater proposes to install new air bubbler-style stream gauging stations during 2012-13financial year in order to better meet the compliance requirements of the Mary Basin Resource Operations Plan. The works nominated in this project will be replacement of both the upstream and downstream gauging equipment on a 10 year recurrence interval.

The project is recurring due to the anticipated deterioration over time of the electronic and communications equipment which will be used. In SKM's experience this type of equipment can typically be expected to reach obsolescence after approximately 10 years service, beyond which it can be expected to suffer a reduction in reliability resulting from an increased component failure rate and lack of service support.

SKM is not aware of any component of the costs being attributed to damage from the 2010-11 floods.

5.5.3. Project status

The project is not to be carried out until 2020-21. In the Seqwater Asset Delivery Framework, as discussed in SKM's report Assessment of Capital and Operating Expenditure – Seqwater (June 2012), the project would be classified as pre-implementation, in the Concept and Feasibility stage, meaning prior to preliminary design. SKM has reviewed the project cost estimates and found them to be reasonable. The project is ready to proceed to the preliminary design phase. SKM considers the current position in the Seqwater Asset Delivery Framework as appropriate given the value and timing of this renewal project.



5.5.4. Provided documentation

The documents used for this review are:

- *Water Monitoring Data Collection Standards*, Version 2.1 Natural Resources and Water, March 2007
- *Mary River Basin Resource Operations Plan*, Department of Environment and Resource Management, September 2011
- *SM Project Outline: Cedar Pocket Dam Telemetry*, Seqwater, undated

- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47 – Report on Methodology*, Seqwater, April 2012
- *Information Request Response – QCA Irrigation Price Review 2013-17: RFI001 Cedar Pocket Telemetry*, Seqwater, 8 August 2012

The documentation received is considered sufficient for the purposes of this prudency and efficiency assessment.

5.5.5. Prudency

Identified need

The need for this project has been determined as required to fulfil the regulatory obligations as specified in the Resource Operations Plan. SKM understands that, to date, these requirements have not been met for the tailwater telemetry. This need is supported by reference to Attachment 7 of Seqwater's submission, Mary Basin Resource Operations Plan, which requires continuous time series data for the water level (headwater) and the stream flow (tailwater). The proposed telemetry equipment will fulfil these requirements.

The telemetry system is used to provide continuous, real time, water level measurements to DNRM. The telemetry function is of limited value to the irrigators as it is not used for controlling water flow to irrigators. However, discussions with operators revealed it was occasionally useful during times of high river flows to take opportunity of water harvesting, and could possibly be made use of for other purposes such as trending analysis. However, as the telemetry function is a Resource Operating Licence condition, it can reasonably be argued that it was the irrigators that triggered the need for a licence for the dam and hence they should pay for the necessary infrastructure to meet the licence condition. This is a position supported by SKM.

The automation of level recording and data transfer is required to efficiently manage data integrity and quality. All Seqwater stream-flow data is automatically recorded and transferred via radio link to a central database location. This is to ensure that the data is secure and errors or gaps that are a feature of a manual system are avoided.

In summary, the project supports the need for replacement of the telemetry system at Cedar Pocket Dam and as such is prudent both in terms of need and timing, albeit there is an argument for advancing the timing of the tailwater telemetry installation to achieve full Resource Operating Licence compliance earlier than planned.

Policies and procedures

The level of service required to be provided in accordance with the Resource Operating Licence is for continuous time series data for the water level (headwater) and the stream flow (tailwater). SKM interprets this from an engineering perspective as a requirement for the provision of real-time data – hence the need for a radio link to transmit the data. The proposed telemetry equipment will fulfil these requirements. While it would be possible to accumulate the data at site and store it as a historical file for periodic retrieval, SKM does not believe this is the intention as described in the Resource Operating Licence. For the small incremental cost of a radio transmitter and antenna, estimated at sub $1k, real-time data can be made available in the public domain. Compared with the alternative of no telemetry, this cost should be off-set against the cost of an operator required to regularly visit the

sites, manually download the data and then upload it to a central location. For this reason SKM believes a telemetry system is the practical solution.

A cost breakdown and schedule has been provided which provides a time frame and budget for future expenditure.

Timing of asset replacement or refurbishment

The age of the existing manually-read gauging system is not clear. However the condition assessment by Seqwater has dictated replacement in 2020-21. The expected life of the asset is 10 years. Hence the programmed replacement is scheduled to be repeated in 2030-31.

Seqwater's standard useful asset life for telemetry components and level measurement equipment is 10 years (refer to Appendix C of Seqwater's submission supporting document: Report on Methodology). Seqwater's standard asset refurbishment period for telemetry has yet to be determined (refer to Appendix D of Seqwater's submission supporting document: Report on Methodology). In the absence of any determination for this SKM believes the standard asset life, which is in keeping with industry standards and hence appropriate, should be used.

As discussed earlier, this type of equipment can normally be expected to reach obsolescence in industry after approximately 10 years service, beyond which it can be expected to suffer a reduction in reliability due to an increased component failure rate and a lack of service support. In some cases the equipment life may be extended. However in SKM's experience 10 years can be considered typical. On this basis the timing of the asset replacement is considered appropriate.

Scope of works

The project provides for the replacement of a gauging and telemetry system, which currently does not meet the requirement of the Resource Operations Plan at the Cedar Pocket Dam. The gauging will involve level measurement upstream and downstream of the weir. From these level measurements the stream-flows can be calculated and made available to all relevant stakeholders.

There are a number of methods of level gauging available but the method generally adopted by Seqwater involves use of a bubbler tube through which low pressure air is supplied. The outlet of the tube is near the bottom of the stream channel, and the air pressure required to achieve a minimum air flow can be used to infer the water level. This is a very simple method of fluid level measurement, appropriate for the level of accuracy required in this particular application. It is also robust, with no electronic field sensors, has minimal moving parts and, provided the electronic components are appropriately housed (as is the case at Cedar Pocket Dam), should offer very reliable service.

Other methods available include use of ultrasonic, float sensors and electrical capacitance devices, all of which involve more complex field-mounted sensors which are susceptible to damage through deterioration, storm or vandalism.

Although Seqwater has yet to undertake options analysis for this project, SKM understands a bubbler system is favoured to maintain commonality with similar equipment used elsewhere in the system. SKM believes this method of stream gauging selected by Seqwater is appropriate for the application.

Telemetry equipment is required for the transmission of the water levels to Seqwater central locations and for this information to be made continuously available to stakeholders via the internet. Seqwater has chosen a simple radio link (with battery back-up) to achieve this. Alternatives would include

connection to a telephone landline (not yet available at Cedar Pocket Dam) but this would be susceptible to washout during floods. Alternatively a microwave link could be used but this would require expensive towers to achieve the "line-of-sight" links needed for repeater stations.

SKM believes this method of telemetry selected by Seqwater is appropriate for the application.

Conclusion

On the basis of the above commentary, with consideration of the options available and the eventual equipment selection the project has been assessed by SKM as prudent.

5.5.6. Efficiency

Scope of works

As outlined in the preceding discussion, the proposed scope of work is considered the best means of achieving the desired outcome of providing measurement and telemetering of the stream gauging at Cedar Pocket Dam.

Standard of works

The proposed works will be a relatively straightforward process involving like-for-like direct replacement of existing equipment with a system of similar capability. The works will need to comply with standard electrical installation techniques, in particular the Australian Wiring Rules AS/NZS 3000. The system will use existing allocated radio frequencies for the telemetry link and will not require additional licensing.

Project cost

Seqwater has provided a breakdown of the cost estimate for the replacement works. The major supply components of the cost have been verified independently by SKM by means of market quotes and other cost components (such as install and design costs) have been estimated by SKM from historic, benchmark costs from similar projects. The summary of the cost comparison is shown in **Table 15**.

- **Table 15 Cedar Pocket Dam Weir Telemetry – Cost Estimate**

Item	Seqwater Estimate	SKM Estimate
Design	$3,500	$5,500
Procurement	$2,000	$2,500
Supply and Installation		
2 x Campbell Scientific CR1000 Data Logger	$8,600	$7,600
2 x HW Air Force Compressor Bubblers	$9,000	$15,500
McVan Tipping Bucket Rain Gauge	$2,100	$2,100
Ancillaries	$1,800	$1,800
Seqwater Internal Costs	$7,000	$8,500
TOTAL	**$34,000**	**$43,500**

Both the SKM estimate and the Seqwater estimate are for cost of a single installation project. As the variance between the SKM estimate and the Seqwater estimate is less than 30%, the Seqwater estimate is accepted as reasonable and appropriate and hence efficient.

Decision making process

There are a number of methods of level gauging available but the method generally adopted by Seqwater involves use of a bubbler tube through which low pressure air is supplied. This is a very simple and cost-effective method of fluid level measurement, appropriate for the level of accuracy required. It is also robust, with no electronic field sensors, has minimal moving parts and, provided the electronic components are appropriately housed, should offer very reliable service.

A detailed options analysis is scheduled to be completed in the Validation & Planning phase of Seqwater's Asset Delivery Framework, which will occur at a time closer to the Implementation phase when the project is due to be delivered and commissioned.

SKM believes this method of stream gauging (selected by Seqwater in their cost estimate) is appropriate for the application.

5.5.7. Summary

The project is assessed as prudent as the primary driver of the replacement of the stream gauging and telemetry 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 quality of the information provided on this project is outlined below in **Table 16**.

Table 16 Quality of information provided

Section of CAPEX review	Cedar Pocket Dam Telemetry		
Project description			
Provided documentation			
Prudency			
Identified need			
Timing of asset replacement or refurbishment			
Scope of works			
Efficiency			
Scope of works			
Standards of work			
Project cost			
Decision making process			
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

5.5.8. Application to other projects

The possible application of the findings to the four additional telemetry projects is discussed in the Bromelton Weir Telemetry project review and as such is not repeated here.

5.6. Bromelton Weir Telemetry

5.6.1. Proposed capital expenditure

Table 17 shows the proposed cost of the Bromelton Weir Telemetry Replacement Project.

- **Table 17 Logan River Water Supply Scheme, Bromelton Weir Telemetry – Proposed capital expenditure profile**

Source	Costs ($'000)		
	2022-23	2032-33	Total
Terms of reference drawn from Seqwater's original NSP	35	35	70

In response to a request for information issued by SKM, Seqwater has confirmed that the telemetry upgrade originally scheduled for 2013-14 has already been completed. No record was available which documented the costs for this upgrade. However, on the understanding that the estimate for the future upgrades was based upon these actual costs, SKM believes the cost would have been in the order of $35,000. While the original budgeted period was for the 2013-14, 2023-24 and 2033-34 financial years, the 2013-14 project was brought forward to 2012 opportunistically using external funding made available by the Bureau of Meteorology (BOM). The funding was ad hoc, arising from BOM's own identified needs relating to hydrological modelling (possibly following the recent flood events) and is considered to be unlikely to be repeated on future occasions when the assets are due to be replaced.

5.6.2. Project description

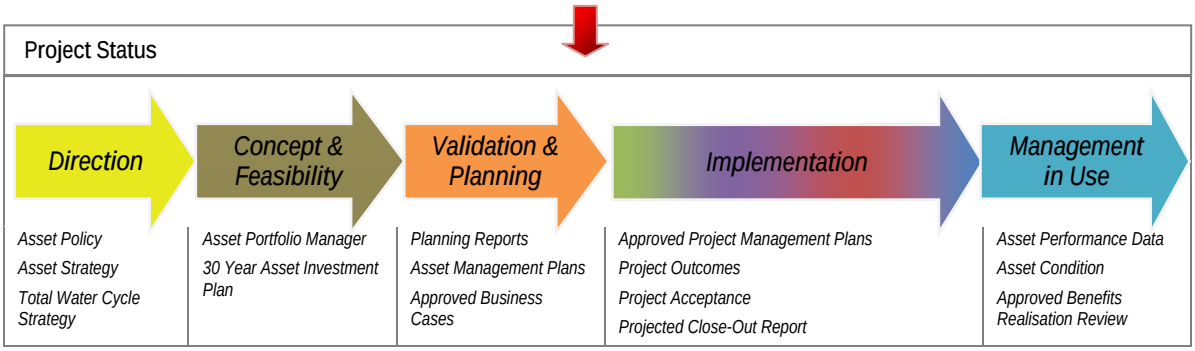
The project provides for the replacement of gauging and telemetry assets, which are considered to be at the end of their design lives at the Bromelton Weir.

The project is a recurring one, and is brought about by the age of the existing electronic and communications equipment. In SKM's experience this type of equipment can typically be expected to reach obsolescence in industry after approximately 10 years service, beyond which it can be expected to suffer a reduction in reliability due to an increased component failure rate and a lack of service support.

SKM is not aware of any component of the costs being attributed to damage from the 2010-11 floods. However, as noted above, funding provided by BOM for the first stage of the project may have been made available partly as a result of the 2010-11 floods.

5.6.3. Project status

The project is currently at the end of the validation and planning stage. Information available to SKM provides justification for the works based upon accepted criteria and provides a suitable time frame for implementation. SKM considers the current position in the Seqwater Asset Delivery Framework as appropriate given the value and timing of this renewal project. The project is ready to proceed to the purchasing and implementation phase.



5.6.4. Provided documentation

The documents used for this review are:

- *Water Monitoring Data Collection Standards*, Version 2.1 Natural Resources and Water, March 2007
- *Logan Basin Resource Operations Plan*, Department of Environment and Resource Management, December 2009
- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47 – Report on Methodology*, Seqwater, April 2012
- *SM Project Outline: Bromelton Weir Telemetry*, Seqwater, undated
- *Information Request Response – QCA Irrigation Price Review 2013-17: RFI002 Bromelton Weir Telemetry*, Seqwater, 8 August 2012

The documentation received is considered sufficient for the purposes of this prudency and efficiency assessment.

5.6.5. Prudency

Identified need

The need for this project has been determined as required to fulfil the regulatory obligations as specified in the Interim Resource Operations Licence.

This need is supported by reference to Tables 13 and 14, Logan Basin Resource Operations Plan, which requires continuous time series data for the water level (headwater) and the stream flow (tailwater). The proposed telemetry equipment will fulfil these requirements.

The telemetry system is used to provide continuous, real time, water level measurements to DNRM. The telemetry function is of limited value to the irrigators as it is not used for controlling water flow to irrigators, although discussions with operators revealed it was occasionally useful during times of high river flows to take opportunity of water harvesting, and could possibly be made use of for other purposes such as trending analysis. However, as the telemetry function is a Resource Operating Licence condition, it can reasonably be argued that it was the irrigators that triggered the need for a licence for the dam and hence they should pay for the necessary infrastructure to meet the licence condition. This is a position supported by SKM.

The automation of level recording and data transfer is required to efficiently manage data integrity and quality. All Seqwater stream flow data is automatically recorded and transferred via radio link to a

central database location. This is to ensure that the data is secure and errors or gaps that are a feature of a manual system are avoided.

In summary, the project supports the need for replacement of the telemetry system at Bromelton weir and as such is prudent both in terms of need and timing.

Policies and procedures

The level of service required to be provided in accordance with the Resource Operating Licence is for continuous time series data for the water level (headwater) and the stream flow (tailwater). SKM interprets this from an engineering perspective as a requirement for the provision of real-time data – hence the need for a radio link to transmit the data. The proposed telemetry equipment will fulfil these requirements. While it would be possible to accumulate the data at site and store it as a historical file for periodic retrieval, SKM does not believe this is the intention as described in the Resource Operating Licence. For the small incremental cost of a radio transmitter and antenna, estimated at sub $1k, real-time data can be made available in the public domain. Compared with the alternative of no telemetry, this cost should be off-set against the cost of an operator required to regularly visit the sites, manually download the data and then upload it to a central location. For this reason SKM believes a telemetry system is the practical solution.

A cost breakdown and schedule has been provided which provides a time frame and budget for future expenditure.

Timing of asset replacement or refurbishment

The age of the existing asset is one year. The expected life of the asset is 10 years; hence the next programmed replacement is scheduled for 2022-23.

Seqwater's standard useful asset life for telemetry components and level measurement equipment is 10 years (refer to Appendix C, Report on Methodology). Seqwater's standard asset refurbishment period for telemetry has yet to be determined (refer to Appendix D, Report on Methodology). In the absence of any determination for this SKM believes the standard asset life, which is in keeping with industry standards and hence appropriate, should be used.

A visual inspection was carried out on 16/08/2012. As discussed above, the equipment was replaced earlier this year. This was made possible with funds from the Bureau of Meteorology. As would be expected the equipment was observed to be in good working condition. No records of previous condition assessments were available. A photograph of the gauging equipment panels are shown in **Figure 10**.

- **Figure 10 Stream Gauging Equipment**

Because the expected lifetime of such equipment is approximately 10 years, the proposed timing of the asset replacement is therefore considered appropriate.

As discussed earlier, this type of equipment can normally be expected to reach obsolescence in industry after approximately 10 years service, beyond which it can be expected to suffer a reduction in reliability due to an increased component failure rate and a lack of service support. In some cases the equipment life may be extended. However, in SKM's experience, 10 years can be considered typical. On this basis the timing of the asset replacement is considered appropriate.

Scope of works

The project provides for the replacement of gauging and telemetry assets, which are at the end of their design lives at the Bromelton Weir. The gauging involves level measurement upstream and downstream of the weir. From these level measurements the stream flows can be calculated and made available to all stakeholders in the SEQ Water supply scheme.

There are a number of methods of level gauging available in industry but the method adopted by Seqwater involves use of a bubbler tube through which low pressure air is supplied. The outlet of the tube is near the bottom of the stream channel, and the air pressure required to achieve a minimum air flow can be used to infer the water level. This is a very simple method of fluid level measurement, appropriate for the level of accuracy required. It is also robust, with no electronic field sensors, has minimal moving parts and, provided the electronic components are appropriately housed, as is the case at Bromelton Weir, should offer very reliable service.

Other methods available include use of ultrasonic, float sensors and electrical capacitance devices, all of which involve more complex field-mounted sensors which are susceptible to damage through deterioration, storm or vandalism.

SKM believes this method of stream gauging selected by Seqwater is appropriate for the application.

Telemetry equipment is required for the transmission of the water levels to SEQ Water central locations and for this information to be made continuously available to stakeholders via the internet. Seqwater has chosen a simple radio link (with battery back-up) to achieve this. Alternatives would include connection to a telephone landline (not yet available at Bromelton Weir) but this would be susceptible to washout during floods. Alternatively a microwave link could be used but this would require expensive towers to achieve the "line-of-sight" links needed for repeater stations.

SKM believes this method of telemetry selected by SEQ Water is appropriate for the application.

Conclusion

On the basis of the above commentary, with consideration of the options available and the eventual equipment selection the project has been assessed as prudent.

5.6.6. Efficiency

Scope of works

As outlined in the preceding discussion, the proposed scope of work is considered the best means of achieving the desired outcome of providing measurement and telemetering of the stream gauging at Bromelton Weir.

Standard of works

The proposed works will be a relatively straightforward process involving like-for-like direct replacement of existing equipment with a system of similar capability. The works will need to comply with standard electrical installation techniques, in particular the Australian Wiring Rules AS/NZS 3000. The system will use existing allocated radio frequencies for the telemetry link and will not require additional licensing.

Project cost

Seqwater has provided a breakdown of the cost estimate for the replacement works. The major supply components of the cost have been verified independently by SKM by means of market quotations, and other cost components (such as install costs and design costs) have been estimated by SKM from historic, benchmark costs from similar projects. The summary of the cost comparison is shown in **Table 18**.

- **Table 18 Bromelton Weir Telemetry – Cost Estimate**

Item	Seqwater Estimate	SKM Estimate
Design	$7,500	$5,500
Procurement	$2,500	$2,500
Supply and Installation		
Campbell Scientific CR1000 Data Logger	$4,300	$3,800
2 x HW Air Force Compressor Bubblers	$8,800	$15,500
McVan Tipping Bucket Rain Gauge	$2,100	$2,100
Ancillaries	$1,800	$1,800
Seqwater Internal Costs	$8,000	$8,500
TOTAL	**$35,000**	**$39,700**

The differences between SKM and Seqwater estimates are due mainly to SKM market enquiries results (Seqwater may be able to negotiate alternative prices) and different capital cost multipliers used for installation. As the total variance between the SKM estimate and the Seqwater estimate is less than 30%, the Seqwater estimate is accepted as reasonable and appropriate and hence efficient.

Decision making process

There are a number of methods of level gauging available in the industry but the method adopted by Seqwater involves use of a bubbler tube through which low pressure air is supplied. This is a very simple and cost-effective method of fluid level measurement, appropriate for the level of accuracy required. It is also robust, with no electronic field sensors, has minimal moving parts and, provided the electronic components are appropriately housed, as is the case at Bromelton Weir, should offer very reliable service. This method of water level measurement is the one currently in use at Bromelton Weir which has reportedly provided reliable results in the past.

SKM believes this method of stream gauging selected by SEQ Water is appropriate for the application.

5.6.7. Summary

The project is assessed as prudent as the primary driver of the replacement of the stream gauging and telemetry 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 quality of the information provided on this project is outlined below in **Table 19**.

Table 19 Quality of information provided

Section of CAPEX review	Bromelton Weir Telemetry		
Project description			
Provided documentation			
Prudency			
Identified need			
Timing of asset replacement or refurbishment			
Scope of works			
Efficiency			
Scope of works			
Standards of work			
Project cost			
Decision making process			
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

5.6.8. Application to other projects

SKM has been asked to determine whether the results of the telemetry project reviewed in detail can be applied to four additional telemetry projects, as outlined in **Table 20**.

- **Table 20 Additional telemetry projects**

Parent Asset	Asset Description	Works Descriptions	Renewal Year	Item Cost ($'000)
Central Brisbane - Wivenhoe Dam	Telemetry	Replace	2032	282
Logan - Maroon Dam	Telemetry	-	2022, 2032	20
Central Lockyer - Clarendon Dam	Telemetry	Replace	2022, 2032	70
Lower Lockyer - Atkinson Dam	Telemetry	Replace	2018, 2028	70

The Central Lockyer Valley and Lower Lockyer Valley projects are replacement projects; and based on the evaluation of similar projects the costs appear reasonable and therefore efficient. If Seqwater has followed the same process for the development of the projects and the cost estimates then the findings from the Bromelton Weir and Cedar Pocket Dam review may be applied to these projects.

The Logan project has no work description and as such no assessment can reasonably be made. The Central Brisbane project relates to Wivenhoe Dam, and the estimated cost indicates the work is on a scale which is not comparable to that at Bromelton Weir or Cedar Pocket Dam.

The assessment of whether the telemetry project review findings can be applied to the four additional projects is summarised in **Table 21**.

- **Table 21 Application of findings to telemetry projects**

Parent Asset	Asset Description	Works Descriptions	Renewal Year	Item Cost ($'000)	Application possible?	Prudent and efficient
Central Brisbane - Wivenhoe Dam	Telemetry	Replace	2032	282	No	N/A
Logan - Maroon Dam	Telemetry	Replace	2022,2032	20	No	N/A
Central Lockyer - Clarendon Dam	Telemetry	Replace	2022,2032	70	Yes	Yes
Lower Lockyer - Atkinson Dam	Telemetry	Replace	2018,2028	70	Yes	Yes

5.7. Clarendon Dam Embankment – Refurbish Riprap

5.7.1. Proposed capital expenditure

Table 22 shows the proposed cost of the Clarendon Dam Embankment Refurbishment of Riprap.

- **Table 22 Clarendon Dam Embankment Refurbishment of Riprap – Proposed capital expenditure profile**

Source	Costs ($'000)						
	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Total
Terms of reference drawn from Seqwater's original NSP	52	52	52	52	52	52	312

5.7.2. Project description

Clarendon Dam is an off-stream storage with an earth and rockfill embankment dam, approximately 4.2km in length. Earth dams are susceptible to erosion by wave action if they are not adequately protected. In response to this issue, the designers of the Clarendon dam included a layer of rock (or riprap) on the lake side of the embankment to absorb and disperse the wave energy.

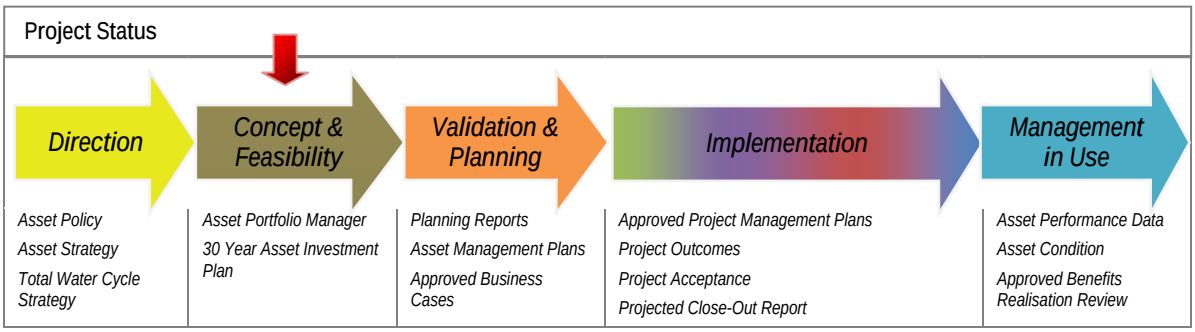
The rock was sourced from two quarries: Phase I rock was sourced from Harlaxton Quarry near Toowoomba and Phase III rock from Ropley Road Quarry near Tent Hill Creek. Since the completion of the dam in the mid 1990's, the Phase III rock has deteriorated due to the wetting and drying cycles experienced by the raising and lowering of the lake levels. The rock has deteriorated to such an extent that Seqwater now considers sections of the riprap ineffective.

The project proposes to add additional rock to deteriorated areas of the dam face. It is intended to undertake these works over a six year period from 2013-14 financial year through to 2018-19 financial year with the timing of the works to coincide with low lake levels. Seqwater has programmed the works over a number of years to remain flexible – the rate of the works undertaken being dependent on the rate of deterioration as monitored and the availability of materials.

SKM is not aware of any component of the costs being attributed to damage from the 2010-11 floods.

5.7.3. Project status

The expenditure for this project is programmed to commence in the 2013-14 financial year. In the Seqwater Asset Delivery Framework is classified as pre-implementation, in the Concept and Feasibility stage, meaning prior to the preliminary design. SKM considers the current position of the project in the Seqwater Asset Delivery Framework as appropriate given the value and timing of this refurbishment project.



Documentation available for review includes asset valuation and condition assessments undertaken by Cardno in 2010, and an engineering investigation to replace the riprap, undertaken by SunWater in 2007.

5.7.4. Provided documentation

The documents used for this review are:

- *Information Request Response – QCA Irrigation Price Review 2013-17: RFI003 Central Lockyer WSS, Clarendon Dam Embankment – Refurbish Rip Rap*, Seqwater, 8 August 2012
- Extract from SunWater Report '*Clarendon Dam – Strategy to Refurbish Rip-Rap*', SunWater, May 2007

5.7.5. Prudency

Identified need

The renewal of the embankment riprap is necessary to protect the Clarendon Dam earth embankment from erosion due to wave action on the lake. Not undertaking this renewals expenditure could have consequential unacceptable impacts on dam safety. The safe operation of the Clarendon Dam is in turn required to collect and store water for use in the Central Lockyer Valley Water Supply Scheme.

In summary, the renewal of the riprap is required for the operation the Clarendon Dam and is therefore necessary to operate the Central Lockyer Valley Water Supply Scheme.

Policies and procedures

The project has been identified as part of the Irrigation Infrastructure Renewal Projections 2013-14 to 2046-47 for the Central Lockyer Valley Tariff Group. As identified above, the project is due to commence in 2013-14 and it is currently only at the concept and feasibility phase. The level of documentation available for this project is minimal and in SKM's consideration should be further advanced than it currently is given the level of expenditure and the fact that it is programmed to commence within 12 months.

SKM recommends that Seqwater undertakes an option analysis prior to the implementation of the project as proposed.

Timing of asset replacement or refurbishment

The Clarendon Dam embankment was commissioned in 1993, and hence is currently 19 years old. The timing of the renewal of the riprap is based on condition assessments.

Seqwater's standard useful asset life for dam embankment and dam civil works is 200 years. Hence, the renewal of the riprap commencing in 2013-14 will occur much sooner than the nominal useful asset life would predict.

From conversations with Seqwater staff, SKM understands that the rock sourced from Ropley Road Quarry was known to have poor durability characteristics at the time of construction and vulnerable to slaking (deterioration from wetting and drying cycles). Standard procedure during the construction of an earth dam is to undertake rigorous and frequent testing of the soils and rock used to construct the dam. Hence, the supply of riprap with a lower durability by the dam constructor was an informed decision.

This decision would be based on balancing the cost of sourcing and transporting rock with superior durability characteristics from a quarry further afield, and using rock from Ropley Road Quarry with a shorter asset life.

Whilst specific documentation of this decision was not sighted; SKM believes this to be a reasonable explanation for the course of events during construction, and that the dam owner knowingly accepted the risk. Hence, recourse against the supplier is not considered to be a feasible action for Seqwater.

The SunWater report recommended that Seqwater put in place a regular (12 monthly) deterioration monitoring programme. SKM understands that such monitoring occurs as part of annual dam inspections, and will continue throughout the proposed renewal works to focus works on areas of greatest need.

Scope of works

The scope of works is to place 1,800 m^3 of 200mm new nominal diameter riprap on the upstream face of the dam. The rock will be placed in patches where the deterioration of the existing riprap is of most concern. The work is expected to take place over six years, with an average of 300 m^3 of rock being placed each year.

SKM considered this approach to be consistent with the need identified in the SunWater report, with the addition of flexibility in the works programme.

Conclusion

On the basis that the safe operation of Clarendon Dam is required to operate the Central Lockyer Valley Water Supply Scheme, and condition of the riprap (as per the SunWater report and as seen on-site) the project has been assessed as prudent.

5.7.6. Efficiency

Scope of works

As discussed above, the scope of work is considered by Seqwater to be the current best means of achieving the desired outcome of providing adequate erosion protection to Clarendon Dam. The proposed approach to place rock on top of the existing riprap and to target areas of specific concern (based on on-going monitoring) is a suitable approach.

Standard of works

The key performance standard for this project is the quality of the rock to be used. The SunWater report identified the Withcott Quarry as the nearest potential source of riprap. However, the report was not conclusive on the suitability of the rock from this quarry and recommended further testing, including petrographic analysis, MBV and Wet/Dry Variation testing to be undertaken. The alternative offered in the SunWater report is Harlaxton Quarry near Toowoomba.

An economic analysis may indeed show that the patch replacement of riprap with a locally sourced rock (cheaper but with lower durability) may be preferred to importing rock from a distant quarry (expensive but higher durability). Such an analysis should be part of Seqwater's option analysis and will be reflected in the investment required for these works.

Project cost

Seqwater has provided an indicative budget for the refurbishment of the riprap. This budget breakdown is outlined in **Table 23**.

- **Table 23 Clarendon Dam Riprap – Budget breakdown**

Items	Sub-Items	Costs ($)
Contract Costs		
Design	Civil	3,000
Procurement	Preparation of scope of work and RFQ	2,500
Supply and Install	Supply to site and placement of 300m3 of 200mm riprap @ $125/m3 (including supply, transport and placement rates estimated from local rates and Rawlinsons 2012).	37,500
Sub-Total		**43,000**
Seqwater Internal Costs		
Work Supervision		3,000
PM Costs (15% of Contract Costs)		6,000
Sub-Total		**9,000**
TOTAL (per year for six years)		**52,000**

Source: *SM Project Outline: Clarendon Dam Embankment Rip Rap*, Seqwater, undated

SKM considered it is important that a suitable source of rock is known in order to complete this work, and to forecast the cost. Whilst using unit rates provided in *Rawlinsons* is typical for many types of construction works in the budgetary stage, the unit price for rock is highly variable. Factors such as quality (hardness, durability etc), size, and transportation cost all act to increase or decrease costs. Indeed, the cost to transport the rock from the quarry may be a significant portion of the unit rate. SKM understands that the identification of a quarry that can supply the rock to the required quality has not been confirmed.

SKM estimated the cost to procure 200mm riprap from the quarry gate at $40-80 per cubic metre. Additional to this is the cost to transport the rock to the dam estimated at $15-30 per cubic metre depending on the distance carted, and an excavator to place the rock estimated at $20-25 per cubic metre. Assuming the mid value of these ranges the SKM estimate of the unit rate to supply and place rock is $105 per cubic metre ($31,500 for 300m3) Hence, Seqwater's unit price of $125 per cubic metre ($37,500 for 300m^3) to supply and place rock was within SKM's estimated range.

SKM assessed the allowance for Design, Procurement, Works supervision and Project Management to be consistent with other Seqwater projects and standard industry practice.

- **Table 24 Cost estimate comparison**

Item	Seqwater Estimate	SKM Estimate
Design	$3,000	$5,500
Procurement	$2,500	$2,500
Supply and Installation Supply to site and placement of 300m^3 of 200mm riprap @ $125/m^3 (including supply, transport and placement rates estimated from local rates and Rawlinsons 2012).	$37,500	$31,500
Seqwater Internal Costs	$9,000	$8,500
TOTAL	**$52,000**	**$48,000**

Decision making process

As indicated above, no option analysis has been undertaken to date. This is expected to occur later in the project. SKM recommends that Seqwater undertakes an options analysis prior to the implementation of the project as proposed. As discussed previously, such an options analysis should include a net present value analysis weighing up the durability of the rock (and hence expected usable life) and the cost to supply and replace the rock.

Given that this work is expected to commence in 2013-14 financial year we would have expected that this options analysis would be complete, at least in a preliminary sense. Key to the accurate cost of the project is the confirmation of a quarry to supply rock of the required standards such that unit prices and transportation costs can be determined.

However, given that the cost of the rock would likely be higher than the current estimate if an options analysis determined that a higher grade rock than currently sourced should be procured, and given that the current proposed costs are within +-30% of SKM's estimate, SKM has determined that the proposed costs are reasonable and hence efficient.

5.7.7. Summary

The project is assessed as prudent as the Clarendon Dam riprap renewal is required to operate the Central Lockyer Valley Water Supply Scheme, that the timing of the works is considered accurate and that the scope of works is reasonable, the project has been assessed as prudent.

The project is assessed as efficient. The scope of works is appropriate, the standards of works are consistent with industry practice and the revised project costs are consistent with prevailing market conditions. Although an options analysis considering whole of life costs has not been undertaken to show that this is the least cost manner of undertaking these works, SKM considers that should the options analysis determine that a higher grade rock be sought than that currently budgeted for, the costs are more likely to increase over budgeted costs rather than decrease.

Nevertheless, expenditure for this project is expected to commence next financial year and as yet a number of considerations are unresolved that will have influence of whole of life costs. These are: the location of quarry and required transport costs, durability of rock and expected life, life cycle strategy (eg use lower grade rock but replace more often versus using higher grade rock with greater

durability). Hence, SKM recommends that a detailed options analysis is undertaken as soon as practicable to develop definitive project costs.

The quality of the information provided on this project is outlined below in **Table 25**.

- **Table 25 Quality of information provided**

Section of CAPEX review	Clarendon Dam Embankment Refurbishment of Riprap
Project description	
Provided documentation	
Prudency	
Identified need	
Timing of asset replacement or refurbishment	
Scope of works	
Efficiency	
Scope of works	
Standards of work	
Project cost	
Decision making process	

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

5.7.8. Application to other projects

SKM finds that the above findings cannot be applied to other embankment refurbishment projects for the following reasons:

- It is unclear whether the scope of works for other projects includes or excludes the renewal of riprap

- **Table 26 Application to other embankment projects**

Parent Asset	Asset Description	Works Descriptions	Renewal Year	Item Cost ($'000)	Application possible?	Prudent and efficient
Clarendon Dam	Earthworks/Formation	Refurbish	2020	50	No	N/A
Cedar Pocket Dam	Embankment	Refurbish	2015	18	No	N/A
Borumba Dam	Embankment	Refurbish	2014	230	No	N/A

5.8. L1 Distribution Observation Bores

5.8.1. Proposed capital expenditure

Table 27 shows the proposed renewal costs of the L1 Distribution Observation Bores.

- **Table 27 L1 Distribution Observation Bores – Proposed capital expenditure profile**

Source	Costs ($'000)				
	2018-19	2023-24	2028-29	2033-34	Total
Terms of reference drawn from Seqwater's original NSP *	88	88	88	80	344
Lower Lockyer Valley Tariff Group Report	86	86	86	86	344

*Distribution of cost based on *SM Project Outline: Lower Lockyer Distribution Observation Bores*, Seqwater, undated

5.8.2. Project description

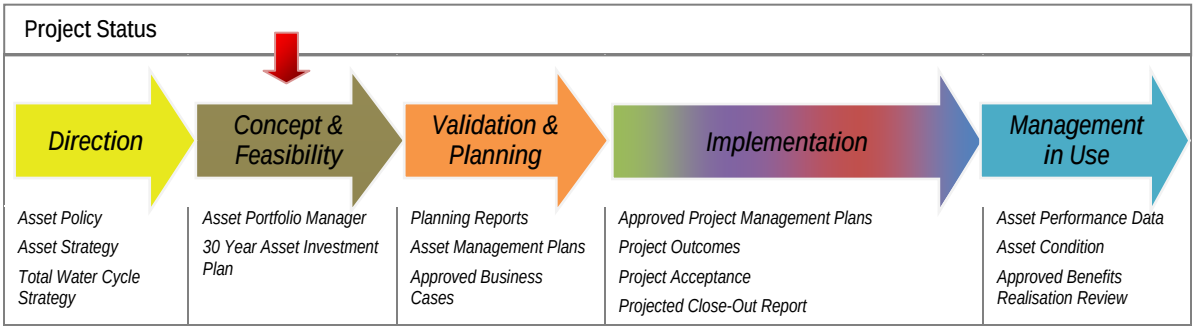
The L1 Distribution Observation Bores expenditure item involves the renewal of a total of 43 observation bores, 11 bores every 5 years (with 10 in the last year) commencing in 2018-19. The bores are located throughout the geographical area of the Lower Lockyer Valley Water Supply Scheme.

The bores used to monitor water levels in the aquifers and model the ground water within the Lower Lockyer Valley Water Supply Scheme area. There is significant interaction between ground water and surface water in the area and forward planning regarding ground water entitlements is required to consider the impact on established surface water entitlements. The Ground Water Model owned and managed by the Queensland Department of Natural Resources and Mines (DNRM), is the means by which these impacts are assessed. The bores are read and the resulting data managed by the DNRM.

SKM is not aware of any component of the costs being attributed to damage from the 2010-11 floods.

5.8.3. Project status

Seqwater states that as the project is not to commence until 2018-19 and that the project is to be classified as in the Concept and Feasibility phase of the Seqwater Asset Delivery Framework. SKM considers the current position in the Seqwater Asset Delivery Framework as appropriate given the value and timing of this renewal project.



The available information on this project is consistent with the current status of the project. At this stage, no detailed options analysis has been undertaken. Seqwater has advised that detailed options analysis is scheduled to be completed in the Validation and Planning phase of Seqwater's Asset Delivery Framework. SKM understands that this analysis is due to occur prior and closer to the Implementation phase when the project is due to be delivered and commissioned. SKM considers this approach to be in line with good industry practice as it is appropriate to undertake a more detailed

assessment closer to the planned date of delivery, some six years hence, when the condition of the existing infrastructure can be reassessed.

5.8.4. Provided documentation

The documents used for this review are:

- *2013-14 Irrigation pricing – Submission to the Queensland Competition Authority*, Seqwater, April 2012
- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47 – Report on Methodology*, Seqwater, April 2012
- *Lower Lockyer Valley Water Supply Scheme – Network Service Plan*, Seqwater, undated
- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47: Report – Lower Lockyer Tariff Group*, Seqwater, April 2012
- *Information Request Response – QCA Irrigation Price Review 2013-17: RFI004 Lower Lockyer, Ground Water Bores*, Seqwater, 12 August 2012
- *SM Project Outline: Lower Lockyer Distribution Observation Bores*, Seqwater, undated
- *Interim Resource Operations Licence for Lower Lockyer Valley Water Supply Scheme,* Department of Natural Resources and Water, July 2008
- *Information Request Response – QCA Irrigation Price Review 2013-17: RFI030 Lower Lockyer, Ground Water Bores*, Seqwater, 27 August 2012

Limited information has been provided on the L1 Distribution Observation Bores expenditure item, however as the project is in the Concept and Feasibility stage this is not unexpected.

5.8.5. Prudency

Identified need

This project has been identified as being necessary to operate the Lower Lockyer Valley Water Supply Scheme. This need is not supported by any specific or particular documentation or legislative requirement however Seqwater states that the ongoing operation of the bores is directly relevant to the ongoing planning activities of the Queensland Department of Natural Resources and Mines, and its Ground Water Model, and Seqwater therefore considers that there is an implied government direction or arrangement requiring Seqwater to continue to maintain the operation of these bores.

When the *Interim Resource Operations Licence for Lower Lockyer Valley Water Supply Scheme* was originally issued in 2004 it contained the following monitoring obligation:

> *"underground water levels in monitored bores within regulated underground water areas on a quarterly basis and coordinated with measurements for metered use in those bores."*

The licence was subsequently amended and the condition removed as *"there are no groundwater aspects to the scheme"* (*Interim Resource Operations Licence for Lower Lockyer Valley Water Supply Scheme,* Department of Natural Resources and Water, July 2008).

As such, Seqwater is under no legislative requirement to monitor the groundwater levels within the Lower Lockyer Valley Water Supply Scheme. Additionally, the surface water users within the scheme currently pay for the upkeep of the bores but have no direct benefit.

In response to SKM's request for information, regarding the ownership of the bore and use of data, Seqwater stated that they agree that DNRM may be the appropriate owner of the bores, ground water extractions do impact surface water availability in the water supply scheme and that the information is not used operationally by Seqwater in the Lower Lockyer Valley Water Supply Scheme.

In summary, the renewal of the observation bores is not necessary to operate the Lower Lockyer Valley Water Supply Scheme.

Policies and procedures

The project has been identified as part of the Irrigation Infrastructure Renewal Projections 2013-14 to 2046-47 for the Lower Lockyer Valley Tariff Group. As identified above, the project is not due to be implemented, in the first instance, until 2018-19 and it is currently only at the concept phase. Subsequently whilst the level of documentation available for this project is minimal, it is in line with the current status of the project. Seqwater has indicated that a formal condition assessment and detailed options analysis is scheduled to be completed more contemporaneously with the expected end of the asset life in the Validation and Planning phase of Seqwater's Asset Delivery Framework. SKM believes that the replacement of an asset based on the results of an adequate condition assessment and options analysis represent good industry practice.

SKM recommends that Seqwater undertakes a condition assessment and options analysis, prior to the implementation of the project as proposed by Seqwater. SKM also recommends that the planned approach and justification of the timing of renewal is suitably documented.

Timing of asset replacement or refurbishment

The observation bores in the Lower Lockyer Valley Water Supply Scheme were installed over a period of time. The renewal of the bores is based on a standard useful asset life of 50 years and does not take into account condition of the bores. The age profile of the observation bores varies as outlined below in **Table 28**, which demonstrates that eight of the bores have exceeded their standard life.

Table 28 Age profile of observation bores

Year installed	Number of bores	Current age (years)	Current remaining Life (years)*
1945	2	67	-17
1960	6	52	-2
1963	1	49	1
1964	4	48	2
1969	3	43	7
1973	2	39	11
1974	1	38	12
1990	20	22	28
1991	4	21	29

* Based on a standard useful asset life of 50 years

Whilst Seqwater has allocated a standard useful asset life for bores of 50 years, it has not yet determined a standard refurbishment period for the bores. The Australian Taxation Office's TR 2012/2 identifies the effective life of raw water bores associated with 'Water Supply' as 30 years. Based on industry experience SKM considers that a useful life of 50 to 60 years is appropriate for observation bores and that a refurbishment period of 20 years would be appropriate. SKM considers

that the useful asset life applied by Seqwater for this asset is reasonable and in keeping with industry practice. As such SKM considers that the timing for renewal of these assets is appropriate and adequate for the intended purpose.

No detailed condition assessments have been undertaken for the L1 Distribution observation bores. Seqwater stated that condition information provided by operational staff indicated that, for the bores past their standard asset life, they were not yet in need of renewal.

The planned renewal programme, together with details of age of the bores is provided in **Table 29**. From this, SKM notes that four of the bores are scheduled to be renewed prior to reaching the end of their standard asset life of 50 years whilst some are scheduled to be replaced significantly beyond the date of their standard serviceable asset life.

SKM considers that account should be taken of condition, as well as age of asset compared to standard asset life when determining the refurbishment and or renewal timing of an asset. Although a standard asset life of 50 to 60 years for a water bore is in keeping with industry practice, the condition information provided to SKM indicates that the bores that are currently 67 years old are still serviceable. As such SKM considers that the timing of the proposed renewals should be reconsidered. The renewals period should be extended to at least coincide with the end of serviceable asset life and, for those bores whose condition is known, the serviceable asset life should be adjusted to take account of the condition of the bore.

Table 29 Age profile at scheduled renewal

Year installed	Number of Bores	Current age (years)	Year renewal scheduled	Age when renewal scheduled (years)
1945	2	67	2019	74
1960	6	52	2019	59
1963	1	49	2019	56
1964	2	48	2019	55
1964	2	48	2024	60
1969	3	43	2024	55
1973	2	39	2024	51
1974	1	38	2024	50
1990	3	22	2024	34
1990	11	22	2029	39
1990	6	22	2030	40
1991	4	21	2030	39

* Distribution based number of bores proposed to be renewed at each interval

Scope of works

Seqwater states that the scope of works, for each observation bore, is to drill a new 75 mm diameter observation bore to a maximum depth of 30 m and encase with PVC pipe with a lid. SKM considers this scope of work to be acceptable if the bore has reached the end if its serviceable life and condition assessment indicates that it needs replacement.

Seqwater advises that no options analysis has been completed as the project is in the Concept and Feasibility phase and will be completed in the Validation and Planning phase. Without an options

analysis having been completed it is not possible to determine if the replacement of the observation bores is the best means of achieving the desired outcome.

Conclusion

On the basis that the observation bores are not required to operate the Lower Lockyer Valley Water Supply Scheme the project to replace the bores has been assessed as not prudent.

5.8.6. Efficiency

Scope of works

As discussed above, the completion of an options analysis is required before it can be determined if the scope of work is the best means of monitoring groundwater within the Lower Lockyer Valley Water Supply Scheme. However, Seqwater's proposal to replace the current bores with new bores if they are not able to be refurbished is reasonable.

Standard of works

Seqwater has not provided sufficient information to determine the standards of works that the renewal is to be completed to. Given the nature of the asset the replacement of the existing bores with equivalent sized bores is considered appropriate.

Project cost

Seqwater has provided an indicative budget for the replacement of an observation bore. This budget breakdown is outlined below in **Table 30**.

- **Table 30 Budget breakdown**

Items	Sub-Items	Costs ($)
Contract Costs		
Design	Civil	600
	Mechanical	-
	Electrical	-
	Control	-
Procurement	Preparation of scope of work and RFQ	1,500
Supply and Install	Site set up and establishment	1,500
	Drilling of typical 30m bore at $65/m (Rawlinsons 2012) including PVC casing	1,950
	Bores testing and calibration	950
Sub-Total		**6,500**
Seqwater Internal Costs		
Work Supervision		1,500
PM Costs (15% of Contract Costs)		-
Sub-Total		**1,500**
TOTAL		**8,000**

Source: *SM Project Outline: Lower Lockyer Distribution Observation Bores*, Seqwater, undated

Seqwater indicates that the budget is accurate to ± 30%. This level of accuracy is appropriate for a project in the Concept and Feasibility phase. Seqwater states that "*the indicative budget was estimated based on an assumed scope of work. This was necessary as the deterioration in condition and / or failure event has yet to occur. Costs other than for drilling new bores were derived from*

expectations of what would be required to deliver a small programme of low cost projects spatially distributed across a wide area on land not controlled by Seqwater."

SKM has undertaken a cost estimate for the supply and install costs per observation bore, based on recently completed projects and industry experience. SKM would expect the total overhead costs associated with the project to be up to 30% of the contract costs for a project with a value less than $100,000. SKM's estimate is provided and contrasted with Seqwater's cost estimate in **Table 31**.

Table 31 Cost estimate comparison

Component	Seqwater estimate ($)	SKM estimate ($)	Difference (%)
Design	600	312	-48%
Procurement	1,500	468	-69%
Supply and Install			
Site set up and establishment	1,500	500	-67%
Drilling of 30m bore including PVC casing	1,950	4,699*	62%
Bores testing and calibration	950		
Seqwater Internal Costs	1,500	780	-48%
Total	**8,000**	**6,759**	**16%**

*Includes bore testing and calibration costs

We recognise that there is a large difference between SKM's estimate for supply and install of the observation bores and Seqwater's, derived from Rawlinson's. However SKM's estimate is based on recent and relevant project experience completed in the region. SKM assessed the allowance for design, procurement and Seqwater internal costs. Whilst these are considered to be high compared to other Seqwater projects and standard industry practice, the overall costs are within the Seqwater estimate for the project are within 30% of the SKM's estimates and is therefore considered efficient.

Decision making process

As indicated above, no options analysis has been undertaken to date. This is expected to occur later in the project. SKM recommends that Seqwater undertakes an options analysis, prior to the implementation of the project as proposed. However, given the nature of the project, an options analysis is not expected to significantly change the scope of works.

Conclusion

On the basis that the standards of works are appropriate and the revised project costs are considered accurate, the project has been assessed as efficient.

5.8.7. Summary

The project is assessed as not prudent as the observation bores are not required to operate the Lower Lockyer Valley Water Supply Scheme.

The project is assessed efficient as the scope of works is appropriate, the standards of works are consistent with industry practice and the revised project costs are consistent with SKM's estimate for such works.

The quality of the information provided on this project is outlined below in **Table 32**.

- **Table 32 Quality of information provided**

Section of CAPEX review	L1 Distribution Observation Bores		
Project description			
Provided documentation			
Prudency			
Identified need			
Timing of asset replacement or refurbishment			
Scope of works			
Efficiency			
Scope of works			
Standards of work			
Project cost			
Decision making process			
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

Additional information will be required for future stages of the project, for example, prior to implementation, SKM would expect to see more detail on the scope of works, including a completed options analysis and condition assessment.

As noted above the project has been deemed not prudent as refurbishment of the bores is not required for the operation of the Lower Lockyer Valley Water Supply Scheme and hence no capital costs should be set against this project.

The value of expenditure considered to be prudent is outlined below in **Table 33**.

- **Table 33 Revised capital expenditure profile**

Project	Costs ($'000)				
	2018-19	2023-24	2028-29	2033-34	Total
L1 Distribution Observation Bores	0	0	0	0	0

5.8.8. Application to other projects

SKM has been asked to determine whether the results of the observation bore project reviewed in detail can be applied to two additional observation bore projects, as outlined in **Table 34**.

- **Table 34 Additional observation bore projects**

Parent Asset	Asset Description	Works Descriptions	Renewal Year	Item Cost ($'000)
Central Lockyer – Boreholes	Observation Boreholes	Refurbish	2019, 2024, 2029, 2034	200
Lower Lockyer -Atkinson Dam	Observation Bores (15)	Replace	2021	75

SKM has reviewed the proposed projects based on the limited information available and without visual inspection of the assets.

The Atkinson Dam observation bores, which are also within the Lower Lockyer Valley Water Supply Scheme, are required under the Dam Safety Programme for the Atkinson Dam and the Central Lockyer – Observation Boreholes are required under the *Interim Resource Operations Licence for Central Lockyer Valley Water Supply Scheme*. Given the requirements of the Atkinson Dam Safety Programme and the Central Lockyer Valley Water Supply Scheme Interim Resource Operations Licence and on the basis of the available information, SKM considers that the proposed expenditure for both projects is prudent.

Further, SKM found the proposed expenditure (relating to Lower Lockyer Observation Bores) to be efficient. Therefore, assuming that the same method to estimate cost was used in the Atkinson Dam – Observation Bores (15) or the Central Lockyer – Observation Boreholes project, SKM considers that the expenditure is likely to be prudent and efficient.

- **Table 35 Application of findings to additional observation borehole projects**

Parent Asset	Asset Description	Works Descriptions	Renewal Year	Item Cost ($'000)	Application possible?	Prudent and efficient
Central Lockyer – Boreholes	Observation Boreholes	Refurbish	2019, 2024, 2029, 2034	200	Yes	Yes
Lower Lockyer -Atkinson Dam	Observation Bores (15)	Replace	2021	75	Yes	Yes

5.9. Clarendon Diversion Control Equipment

5.9.1. Proposed capital expenditure

Table 36 shows the proposed cost of the Clarendon Diversion Control Equipment project.

- **Table 36 Clarendon Diversion Control Equipment – Proposed capital expenditure profile**

Source	Costs ($'000)	
	2028-29	Total
Terms of reference drawn from Seqwater's original NSP	174	174

5.9.2. Project description

The Clarendon Diversion Control Equipment controls the Redbank Creek Pump Station. The equipment was originally installed in 1993. The pump station is used to harvest water from Redbank and Lockyer Creeks into Clarendon Dam. The operating rules require that the pump station must be capable of remote start up and shut down to maximise the benefit of infrequent water harvesting opportunities.

The control equipment to be replaced consists of the following:

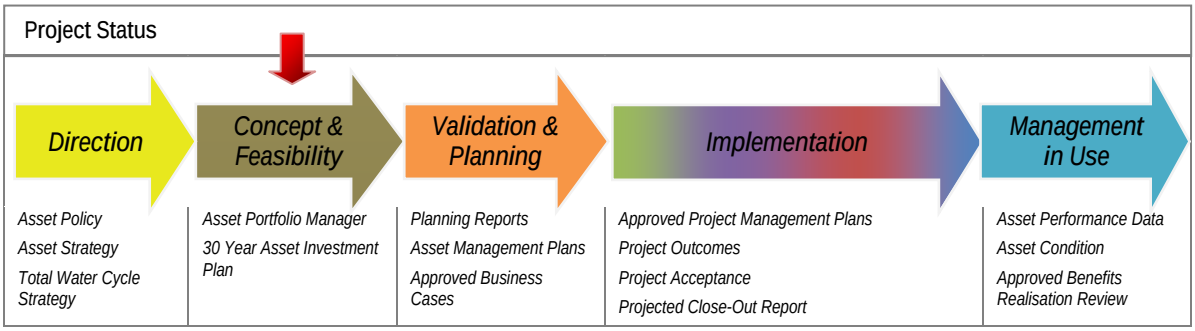
- Control Panel
- PLC
- SCADA
- Communications Equipment

- Level Sensing and Flow Recorders (including water level indicators in the Clarendon Channel)

SKM is not aware of any component of the costs being attributed to damage from the 2010-11 floods.

5.9.3. Project status

The project is planned to be carried out in 2028-29. The project is currently at the Concept and Feasibility stage, and has yet to progress to preliminary design. Information available to SKM provides justification for the works based upon accepted criteria and provides a suitable time frame for implementation. SKM considers the current position in the Seqwater Asset Delivery Framework as appropriate given the value and timing of this renewal project.



5.9.4. Provided documentation

The documents used for this review are:

- *Water Monitoring Data Collection Standards*, Version 2.1 Natural Resources and Water, March 2007
- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47 – Report on Methodology*, Seqwater, April 2012
- *SM Project Outline: Clarendon Diversion Channel*, Seqwater, undated
- *Irrigation Request Response QCA Irrigation Price Review 2013-17: RFI005 Central Lockyer – Clarendon Diversion Control Equipment*, Seqwater, 10 August 2012

The documentation received is considered sufficient for the purposes of this prudency and efficiency assessment.

5.9.5. Prudency

Identified need

While the operating rules do not in themselves require that the pump station must be capable of remote start up and shut down, this remote functionality is needed for Seqwater to maximise the benefit of infrequent water harvesting opportunities as allowed by the operating rules. The relevant section of the operating rules (as set out in the interim Resource Operating Licence) states:

> *"Pumping of water from Lockyer Creek (at Jordan 1 Weir) and Redbank Creek (at Jordan 2 Weir) into Lake Clarendon may only occur when there is sufficient combined flow in Lockyer and Laidley Creeks (in excess of what is being diverted into Lake Dyer and Lake Clarendon) to overtop Kentville Weir. The maximum diversion rate to Lake Clarendon is 376 ML/day"*

The justification for remote control of the pump station hinges upon the responsibility of Seqwater to utilise the water harvesting opportunities to the fullest. The pump station can only operate when certain water flows develop and certain thresholds are reached in the Lockyer and Laidley Creeks. These stream flow events are infrequent. Failure to operate the Redbank Creek Pump Station when these opportunities arise would limit water extraction from those creeks and would therefore impact detrimentally upon water availability for irrigators in the water supply scheme. Access to the pump station during flow events can be difficult as flow events coincide with rain and floods, flow events can develop with limited warning, and they may be of very short duration. The ongoing operation of the Redbank Creek Pump Station is necessary to ensure adequate extraction of water and is therefore necessary to operate the water supply scheme or tariff group. Furthermore, it is necessary that the Redbank Creek Pump Station can be controlled remotely, and the equipment in question is integral to remote operation. On this basis the renewal of the equipment is considered necessary.

Site discussions with the operating staff supported the contention that, without a remote control capability, it is not feasible to generate a response to flood events quickly enough to take advantage of the water harvesting opportunities as they arise. In addition, they point out risk of damaging community relations which are easily strained whenever local farmers become aware that water harvesting is not being managed optimally.

SKM estimates that, of the total of $174,000 budgeted for the project, approximately $25,000 (the cost of SCADA server and auto-dialler) represents the value of the remote control function

In summary, the project documentation supports the need for replacement of the control system at the Clarendon Diversion and as such is prudent in terms of need.

Policies and procedures

The level of service required to be provided to achieve the water diversion in accordance with the operating rules is for remote pump control. The proposed equipment will fulfil these requirements.

A cost breakdown and schedule has been provided which provides a time frame and budget for future expenditure.

Timing of asset replacement or refurbishment

The age of the existing asset is not available. A useful life of 35 years has been adopted by Seqwater to determine the required renewal date of the equipment. On this basis the next programmed replacement is scheduled for 2028-29, which would indicate an original service date of 1993.

Seqwater's standard useful asset refurbishment frequency for electrical/control equipment is 18 years (refer to Appendix D, Irrigation Infrastructure Renewal Projections 2013-14 to 2046-47, Report on Methodology). SKM believes this 18 year refurbishment frequency is in keeping with industry standards for serviceable asset life for motor control equipment (20 years) and conflicts with the projected 35 year life adopted by Seqwater. A visual site inspection was carried out on 17/08/2012, which revealed some automated components were not functional. Ongoing condition assessment occurs through Seqwater's preventative maintenance program. A formal condition assessment is planned to occur with the expected end of the asset life.

In SKM's experience this type of control equipment can normally be expected to reach obsolescence in industry after approximately 15 to 20 years service, beyond which it can be expected to suffer a reduction in reliability due to an increased component failure rate and a lack of service support.

However, a useful life of 35 years has been adopted by Seqwater to forecast the required renewal of this equipment. This asset life has been taken from the Asset Data inherited from the SunWater Asset Systems. This asset life is considered by Seqwater to be an outer estimate for the life of the asset. SKM concurs with this view and considers that adoption of a 20 year asset life would be more appropriate.

On the basis of the foregoing discussion SKM believes the proposed timing of the asset replacement is likely to be brought forward by 15 years to 2013-14, particularly given the criticality of the installation.

Scope of works

The project provides for the replacement of control equipment, which will be at the end of its design life at the Clarendon Dam. The equipment allows pumping of water from Lockyer Creek and Redbank Creek into Lake Clarendon whenever there is sufficient combined flow in Lockyer and Laidley Creeks. The maximum daily diversion permissible into Lake Clarendon is 376 ML.

Replacement of the equipment involves a full control panel fitted with programmable logic controller, telemetry and SCADA equipment, and the necessary water level sensing devices. The equipment proposed will be a replica of that which currently exists, which is appropriate for the application.

Conclusion

SKM considers that Seqwater should review the planned timing of the project. However, on the basis of the above commentary and with consideration of the options available and the eventual equipment selection, the project has been assessed as prudent.

5.9.6. Efficiency

Scope of works

As outlined in the preceding discussion, the proposed scope of work is considered the best means of achieving the desired outcome of providing control equipment at Clarendon Dam.

Standard of works

The proposed works will be a relatively straightforward process involving like-for-like direct replacement of existing equipment with a system of similar capability. The works will need to comply with standard electrical installation techniques, in particular the Australian Wiring Rules AS/NZS 3000. SKM understands the system will use existing allocated radio frequencies for the SCADA and telemetry link and will not require additional licensing.

Project cost

Seqwater has provided a breakdown of the cost estimate for the replacement works. The major supply components of the cost have been verified independently by SKM by means of market quotations, and other cost components (such as install costs and design costs) have been estimated by SKM from historic, benchmark costs from similar projects. The summary of the cost comparison is shown in **Table 37**.

- **Table 37 Clarendon Diversion Control Equipment – Cost Estimate**

Item	Seqwater Estimate	SKM Estimate
Design	$14,000	$17,000
Procurement	$3,000	$3,000
Supply and Installation		
Control panel (SS, 2 m x 0.8 m x 0.4 m) with termination wiring	$27,500	$20,000
PLC - Siemens, SIMATIC S5-100U, 14 I/O cards	$27,500	$30,000
PLC wiring and termination	$15,000	$12,000
SCADA server	$15,000	$10,000
Auto-Dialer	$10,000	$10,000
Multitrode and level sensors	$10,000	$10,000
Flow recorders	$12,000	$12,000
Phone lines 1 km each 3 off	$8,000	$8,000
Seqwater Internal Costs	$32,000	$32,000
TOTAL	**$174,000**	**$164,000**

As the variance between SKM estimate and Seqwater estimate is less than 30%, the Seqwater estimate is accepted as valid and hence efficient.

Decision making process

Detailed options analysis is scheduled to be completed in the Validation & Planning phase of Seqwater's Asset Delivery Framework, which will occur more contemporaneously to the Implementation phase when the project is due to be delivered and commissioned.

5.9.7. Summary

The project is assessed as prudent as the primary driver of the replacement of the control equipment 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 quality of the information provided on this project is outlined below in **Table 38**.

- **Table 38 Quality of information provided**

Section of CAPEX review	Clarendon Diversion - Control Equipment		
Project description			
Provided documentation			
Prudency			
Identified need			
Timing of asset replacement or refurbishment			
Scope of works			
Efficiency			
Scope of works			
Standards of work			
Project cost			
Decision making process			
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

5.9.8. Application to other projects

SKM has been asked to determine whether the results of the telemetry project reviewed in detail can be applied to ten additional telemetry projects, as outlined in **Table 39**.

- **Table 39 Additional control equipment projects**

WSS/Tariff Group	Expenditure Item	Works Descriptions	Renewal Year	Item Cost ($'000)
Parent Asset	Asset Description	Replace	2029	137
Clarendon Diversion	Control Equipment	Replace	2014	123
Pie Creek Pump Station	Control Equipment	Refurbish	2014	26
Warrill Creek Diversion Weir	Control Equipment	Refurbish	2015	20
LI Distribution	Buaraba Ck Diversion Channel Gate Control Equipment	Refurbish	2014	15
Borumba Dam	Control	Refurbish	2014	15
Moogerah Dam	Control	Replace	2034	98
Clarendon Diversion	Control Equipment	Replace	2028	12
Atkinson Dam	Spillway Control Structure	Replace	2036	14
Atkinson Dam	Spillway Control Structure	Replace	2037	21

Essentially all the projects listed in **Table 39** consist of refurbishment or replacement of existing control equipment to meet the requirements of the operating plan. Provided Seqwater has followed the same process for the development of these projects and the associated cost estimates then the findings from the Clarendon Diversion control equipment replacement review may be applied to these projects.

The assessment of whether the telemetry project review findings can be applied to the ten additional projects is summarised in **Table 40**.

- **Table 40 Application of findings to control equipment projects**

Parent Asset	Asset Description	Works Descriptions	Renewal Year	Item Cost ($'000)	Application possible?	Prudent and efficient
Clarendon Diversion	Control Equipment	Replace	2029	137	Yes	Yes
Pie Creek Pump Station	Control Equipment	Replace	2014	123	Yes	Yes
Warrill Creek Diversion Weir	Control Equipment	Refurbish	2014	26	Yes	Yes
LI Distribution	Buaraba Ck Diversion Channel Gate Control Equipment	Refurbish	2015	20	Yes	Yes
Borumba Dam	Control	Refurbish	2014	15	Yes	Yes
Moogerah Dam	Control	Refurbish	2014	15	Yes	Yes
Clarendon Diversion	Control Equipment	Replace	2034	98	Yes	Yes
Atkinson Dam	Spillway Control Structure	Replace	2028	12	Yes	Yes
Atkinson Dam	Spillway Control Structure	Replace	2036	14	Yes	Yes
Atkinson Dam	Spillway Control Structure	Replace	2037	21	Yes	Yes

5.10. Central Lockyer Valley Water Supply Scheme Gauging Stations

5.10.1. Proposed capital expenditure

Table 41 shows the proposed cost of the Central Lockyer Valley Water Supply Scheme gauging stations Project.

- **Table 41 Central Lockyer Valley Water Supply Scheme, Gauging stations – Proposed capital expenditure profile**

Source	Costs ($'000)		
	2022-23	2032-33	Total
Terms of reference drawn from Seqwater's original NSP	60	60	120

5.10.2. Project description

The project provides for the renewal of gauging and associated telemetry assets in the Central Lockyer Valley Water Supply Scheme.

The relevant gauging station locations are as follows:

- Bill Gunn Dam Head Works (HW)
- Clarendon Dam HW
- Showgrounds Weir HW

- Lockyer Creek Gauging station
- Redbank Gauging Station
- Bob Bird Hut

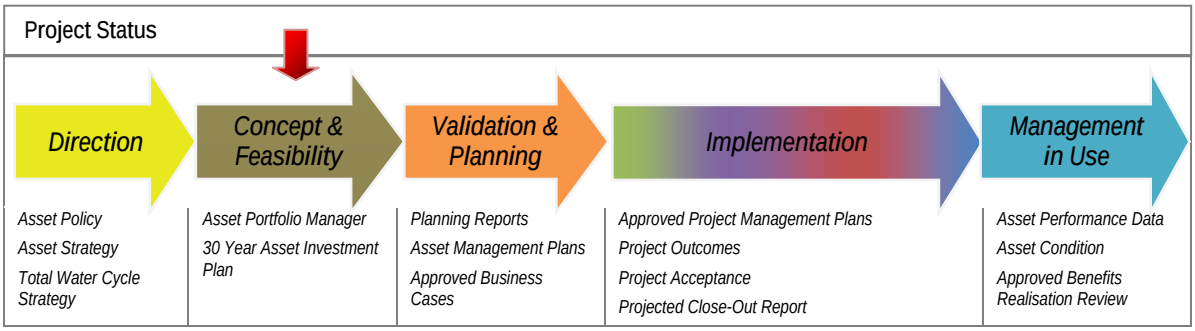
The gauging station locations are at the headwater and the tailwater levels at each site. Seqwater proposes to install new water level recorder and data logger at stream gauging stations during the 2022-23 financial year in order to better meet the compliance requirements of the Central Lockyer Resource Operations Licence. The works nominated in this project will be replacement of both the upstream and downstream gauging equipment on a 10 year recurrence interval.

The project is a recurring one, due to the anticipated deterioration over time of the electronic and communications equipment which will be used. In SKM's experience this type of equipment can typically be expected to reach obsolescence in industry after approximately 10 years service, beyond which it can be expected to suffer a reduction in reliability resulting from an increased component failure rate and a lack of service support.

SKM is not aware of any component of the costs being attributed to damage from the 2010-11 floods.

5.10.3. Project status

The project is not to be carried out until 2022-23, and then repeated in 2032-33. In the Seqwater Asset Delivery Framework, as discussed in SKM's report Assessment of Capital and Operating Expenditure – Seqwater (June 2012), the project would be classified as pre-implementation, in the Concept and Feasibility stage, meaning prior to preliminary design. SKM considers the current position of the project in the Seqwater Asset Delivery Framework as appropriate given the value and timing of this renewal project. The project is ready to proceed to the preliminary design phase.



5.10.4. Provided documentation

The documents used for this review are:

- *Water Monitoring Data Collection Standards*, Version 2.1 Natural Resources and Water, March 2007
- *Interim Resource Operations Plan for Central Lockyer Valley Water Supply Scheme*, Natural Resources and Water, July 2008
- *SM Project Outline: Central Lockyer Valley Gauging Stations*, Seqwater, undated
- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47 – Report on Methodology*, Seqwater, April 2012

- *Irrigation Request Response – QCA Irrigation Price Review 2013-17: RFI006 Central Lockyer WSS – Gauging Stations*, Seqwater, 8 August 2012

The documentation received is considered sufficient for the purposes of this prudency and efficiency assessment.

5.10.5. Prudency

Identified need

The need for this project has been determined for different reasons depending on the location, and summarised as follows:

- Bill Gunn Dam HW: to fulfil regulatory obligations specified in the interim Resource Operations Licence, and dam safety compliance
- Clarendon Dam HW: to fulfil regulatory obligations specified in the interim Resource Operations Licence, and dam safety compliance
- Showgrounds Weir HW: to fulfil regulatory obligations specified in the interim Resource Operations Licence
- Lockyer Creek Gauging Station: required operationally for warning of flow events that trigger operation of the Clarendon Diversion Pump Station
- Redbank Gauging Station: required operationally for control of Clarendon Diversion Pump Station
- Bob Bird Hut: required operationally to measure releases from Clarendon Dam to the Lockyer Creek

The Interim Resource Operations Licence requires continuous time series data for the water level (headwater) and the stream flow (tailwater) at Bill Gunn Dam, Clarendon Dam and Showgrounds Weir. In addition releases from Clarendon Dam are required to be recorded by the gauge at Bob Bird Hut. The proposed gauging and telemetry equipment will fulfil these requirements.

The telemetry system is used to provide continuous, real time, water level measurements to DNRM. The telemetry function is of limited value to the irrigators as it is not used for controlling water flow to irrigators, although discussions with operators revealed it was occasionally useful during times of high river flows to take opportunity of water harvesting, and could possibly be made use of for other purposes such as trending analysis. However, as the telemetry function is arguably an interim Resource Operating Licence condition, it can reasonably be argued that it was the irrigators that triggered the need and hence they should pay for the necessary infrastructure to meet the licence condition. This is a position supported by SKM.

The automation of level recording and data transfer is required to efficiently manage data integrity and quality. All Seqwater stream flow data is automatically recorded and transferred via radio link to a central database location. This is to ensure that the data is secure and to avoid errors or gaps that are associated with manual systems.

Lockyer Creek and Redbank Gauges are critical for Seqwater to maximise the diversions to Clarendon Dam (an outcome that is of particular interest to the irrigators) while ensuring there is no breach of the diversion restrictions. Without these gauges Seqwater cannot determine that there is a flow in the Lockyer creek upstream of Kentville Weir. Furthermore, data from the gauges is critical for

Seqwater to comply with reporting on flow event management as required by the interim Resource Operating Licence.

In summary, the project documentation provided supports the need for replacement of the gauging stations at all Central Lockyer locations (Bill Gunn Dam, Clarendon Dam, Showgrounds Weir, Bob Bird Hut, Lockyer Creek and Redbank) and as such is prudent both in terms of need and timing.

Policies and procedures

The level of service required to be provided in accordance with the interim Resource Operating Licence is for continuous time series data for the water level (headwater) and the stream flow (tailwater). SKM interprets this as a requirement for the provision of real-time data; hence the need for a radio link to transmit the data. The proposed telemetry equipment will fulfil these requirements.

A cost breakdown and schedule has been provided which provides a time frame and budget for future expenditure.

Timing of asset replacement or refurbishment

The age of the existing manually-read gauging system is not clear. However, ongoing condition assessment occurs through Seqwater's preventative maintenance program and via operator reports. A formal condition assessment will occur with the expected end of the asset life. The condition assessment by Seqwater has dictated replacement in 2022-23. As the expected life of the asset is 10 years. Seqwater has programmed the next replacement to occur in 2032-33.

Seqwater's standard useful asset life for telemetry components and level measurement equipment is 10 years (Appendix C, Report on Methodology). Seqwater's standard asset refurbishment period for telemetry has yet to be determined (Appendix D, Report on Methodology). In the absence of any determination for this SKM believes the standard asset life, which is in keeping with industry standards and hence appropriate, should be used.

As discussed earlier, this type of equipment can normally be expected to reach obsolescence in industry after approximately 10 years service, beyond which it can be expected to suffer a reduction in reliability due to an increased component failure rate and a lack of service support. In some cases the equipment life may be extended. However in SKM's experience 10 years can be considered typical. On this basis the timing of the asset replacement is considered appropriate.

Scope of works

The Central Lockyer Valley Water Supply Scheme is operated under an interim Resource Operations Licence as a Resource Operations Plan is yet to be issued for the Scheme. The project provides for the replacement of gauging and telemetry systems to meet the requirements of the interim Resource Operations Licence. The gauging will involve level measurement upstream and downstream of the weir. From these level measurements the stream flows can be calculated and made available to all stakeholders in the Seqwater supply scheme.

There are a number of methods of level gauging available in industry but the method adopted by Seqwater involves use of a bubbler tube through which low pressure air is supplied. The outlet of the tube is near the bottom of the stream channel, and the air pressure required to achieve a minimum air flow can be used to infer the water level. This is a very simple method of fluid level measurement, appropriate for the level of accuracy required in this application. It is also robust, with no electronic

field sensors, has minimal moving parts and, provided the electronic components are appropriately housed should offer very reliable service.

Other methods available include use of ultrasonic, float sensors and electrical capacitance devices, all of which involve more complex field-mounted sensors which are susceptible to damage through deterioration, storm or vandalism.

Although Seqwater has yet to undertake an options study for this project, SKM understands a bubbler system is favoured to maintain commonality with similar equipment used elsewhere in the system. SKM believes this method of stream gauging selected by Seqwater is appropriate for the application.

Telemetry equipment is required for the transmission of the water levels to Seqwater central locations and for this information to be made continuously available to stakeholders via the internet. Seqwater has chosen a simple radio link (with battery back-up) to achieve this. Alternatives would include connection to a telephone landline but this would be susceptible to washout during floods. Alternatively a microwave link could be used but this would require expensive towers to achieve the "line-of-sight" links needed for repeater stations.

SKM believes this method of telemetry selected by Seqwater is appropriate for the application.

Conclusion

On the basis of the above commentary, with consideration of the options available and the eventual equipment selection, the project documentation supports the need for replacement of the gauging stations at all six Central Lockyer locations (Bill Gunn Dam, Clarendon Dam, Showgrounds Weir, Bob Bird Hut, Lockyer Creek, and Redbank) and as such is prudent both in terms of need and timing.

5.10.6. Efficiency

Scope of works

As outlined in the preceding discussion, the proposed scope of work is considered the best means of achieving the desired outcome of providing measurement and telemetering of the stream gauging at Central Lockyer Valley Water Supply Scheme.

Standard of works

The proposed works will be a relatively straightforward process involving like-for-like direct replacement of existing equipment with a system of similar capability. The works will need to comply, where applicable, with standard electrical installation practices, in particular the Australian Wiring Rules AS/NZS 3000. The system will use existing allocated radio frequencies for the telemetry link and will not require additional licensing.

Project cost

Seqwater has provided a breakdown of the cost estimate for the replacement works. The major supply components of the cost have been verified independently by SKM by means of market quotations, and other cost components (such as install costs and design costs) have been estimated by SKM from historic, benchmark costs from similar projects. The summary of the cost comparison is shown in **Table 42**.

- **Table 42 Central Lockyer Valley Water Supply Scheme, Gauging stations – Cost Estimate**

Item	Seqwater Estimate	SKM Estimate
Design	$5,500	$5,500
Procurement	$2,500	$2,500
Supply and Installation		
6 x Campbell Scientific CR1000 Data Logger	$25,800	$22,800
5 x water log Compressor Bubblers	$22,000	$38,800
1 x HS Shaft Encoder	$1,900	$1,900
Ancillaries (including telemetry equipment)	$6,000	$6,000
Seqwater Internal Costs	$8,000	$8,500
TOTAL	**$71,700**	**$86,000**

(Note that Seqwater has used their experience from Bromelton Weir upgrade to further increase the cost estimate from the original of $60k allowed for in the Terms of Reference)

As the variance between SKM estimate and Seqwater estimate is less than 30%, the Seqwater estimate is accepted as valid and hence efficient.

Decision making process

A detailed options analysis is scheduled to be completed in the Validation and Planning phase of Seqwater's Asset Delivery Framework, which will occur closer to the implementation phase when the project is due to be delivered and commissioned.

SKM believes this method of stream gauging (as selected by Seqwater in their cost estimate) is appropriate for the application.

5.10.7. Summary

The project is assessed as prudent, as the primary driver of the replacement of the stream gauging and telemetry 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 are consistent with prevailing market conditions.

The quality of the information provided on this project is outlined below in **Table 43**.

- **Table 43 Quality of information provided**

Section of CAPEX review	Central Lockyer Valley WSS Gauging Stations		
Project description			
Provided documentation			
Prudency			
Identified need			
Timing of asset replacement or refurbishment			
Scope of works			
Efficiency			
Scope of works			
Standards of work			
Project cost			
Decision making process			
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

The value of expenditure considered to be prudent and efficient is outlined below in **Table 44**.

- **Table 44 Project Central Lockyer Valley Water Supply Scheme Gauging Stations- Revised capital expenditure profile**

Source	Costs ($'000)		
	2022-23	2032-33	Total
Seqwater revised cost	71.7	71.7	143.4

5.10.8. Application to other projects

SKM has been asked to determine whether the results of the gauging station project reviewed in detail can be applied to four additional gauging station projects, as outlined in **Table 45**.

- **Table 45 Additional gauging station projects**

WSS/Tariff Group	Expenditure Item	Works Descriptions	Renewal Year	Item Cost ($'000)
Lower Lockyer	Gauging Stations	Replace	2023, 2033	80
Mary River	Gauging Stations	Replace	2023, 2033	140
Warrill	Gauging Stations	Replace	2023, 2033	140
Logan	Gauging Stations	Replace	2023, 2033	104

No year has been nominated in the Terms of Reference for the Logan gauging station replacement. The year for this project has been taken from Seqwater's submission to the Authority.

On the basis that the requirements of the Resource Operating Plans for the projects set out in Table 45 are similar, the findings of the Central Lockyer Valley scheme with regard to prudency can be applied to these projects. However, in the absence of more details on the number and type of

gauging stations involved SKM is unable to validate the cost estimates for these additional projects. The findings have been summarised with this proviso in **Table 46**.

- **Table 46 Application of findings to additional gauging station projects**

Parent Asset	Asset Description	Works Descriptions	Renewal Year	Item Cost ($'000)	Application possible?	Prudent and efficient
Lower Lockyer	Gauging stations	Replace	2023, 2033	80	Yes	Prudent only*
Mary River	Gauging stations	Replace	2023, 2033	140	Yes	Prudent only*
Warrill Creek	Gauging stations	Replace	2023, 2033	140	Yes	Prudent only*
Logan	Gauging stations	Replace	2023, 2033	104	Yes	Prudent only*

**costs unable to be validated*

5.11. Clarendon Diversion Access Road

5.11.1. Proposed capital expenditure

Table 47 shows the proposed cost of the Clarendon Division Access Road project.

- **Table 47 Clarendon Division Access Road – Proposed capital expenditure profile**

Source	Costs ($'000)	
	2022-23	Total
Terms of reference drawn from Seqwater's original NSP	122	122
Central Lockyer Valley Tariff Group Report	192	192

In the Central Lockyer Valley Tariff Group Report, the value of $122,000 has been derived through the combination of three line items for access roads ($39,000, $35,000 and $48,000). Seqwater has advised that this project also includes two other line items for access roads in 2022-23 at a combined total of $70,000. Each line item is understood by SKM to be for a section of the Clarendon Division Access Road. Therefore, Seqwater has submitted a total cost of $192,000 for this project.

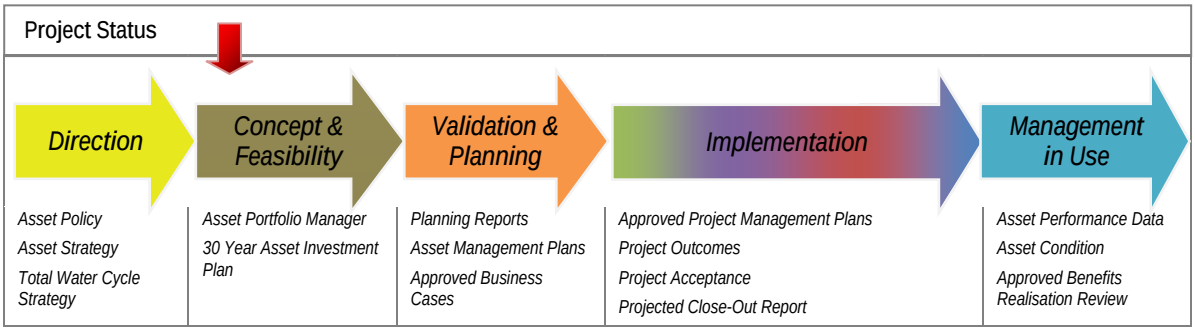
5.11.2. Project description

This project is for the renewal of the access road and the road along both sides of the Clarendon Diversion Channel. The project is to regrade and reconstruct 12.2km of 3m-wide access road. The project scope has allowed for the placement of an average of 50mm new lift of road base material. The project is a single project, occurring in the 2022-23 financial year.

SKM is not aware of any component of the costs being attributed to damage from the 2010-11 floods.

5.11.3. Project status

The project is not to be completed until 2022-23. In the Seqwater Asset Delivery Framework, the project is to be classified as pre-implementation, in the Concept and Feasibility phase, meaning prior to preliminary design. SKM considers the current position of the project in the Seqwater Asset Delivery Framework as appropriate given the value and timing of this renewal project.



The available information on this project is consistent with the current status of the project. At this stage, no detailed options analysis has been undertaken. This is scheduled to be completed in the Validation and Planning phase of Seqwater's Asset Delivery Framework at a later date, prior and closer to the Implementation phase when the project is due to be delivered and commissioned. SKM considers this approach to be in line with good industry practice as it is appropriate to undertake a more detailed assessment closer to the planned date of delivery, some ten years hence, when the condition of the existing infrastructure can be reassessed.

5.11.4. Provided documentation

The documents used for this review are:

- *2013-14 Irrigation pricing – Submission to the Queensland Competition Authority*, Seqwater, April 2012
- *Irrigation Infrastructure Renewal Projections – 2013-14 to 2046-47 – Report on Methodology*, Seqwater, April 2012
- *Central Lockyer Valley Water Supply Scheme – Network Service Plan*, Seqwater, undated
- *Irrigation Infrastructure Renewal Projections – 2013-14 to 2046-47: Report – Central Lockyer Tariff Group*, Seqwater, April 2012
- *Information Request Response – QCA Irrigation Price Review 2013-17: RFI007 Central Lockyer, Clarendon Diversion Channel – Access Road response from Seqwater,* 13 August 2012
- *SM Project Outline: Clarendon Diversion Channel – Access Road*, Seqwater, undated
- *Information Request Response – QCA Irrigation Price Review 2013-17: RFI036 Central Lockyer, Clarendon Diversion Channel – Access Road response from Seqwater,* 29 August 2012
- *SM Project Outline: Clarendon Diversion Channel – Access Road*, Seqwater, undated, updated

The provided documentation has been adequate to conduct an assessment of this project.

5.11.5. Prudency

Identified need

This project has been identified as being necessary to access and operate the Clarendon Diversion Channel. The channel supplies water between Lake Clarendon and the Redbank Creek Pump Station. The channel allows water to be supplied in either direction.

In summary, the renewal of the access road is required for operations and maintenance of the channel, and therefore is necessary to operate the Central Lockyer Valley Water Supply Scheme.

Policies and procedures

The project has been identified as part of the Irrigation Infrastructure Renewal Projections 2013-14 to 2046-47 for the Lockyer Valley Tariff Group. As identified above, the project is not due to be implemented until 2022-23 and it is currently only at the concept phase. Subsequently whilst the level of documentation available for this project is minimal, it is in line with the current status of the project. Seqwater has indicated that a formal condition assessment and detailed options analysis is scheduled to be completed more contemporaneously with the expected end of the asset life in the Validation and Planning phase of Seqwater's Asset Delivery Framework. SKM believes that the replacement of an asset based on the results of an adequate condition assessment and options analysis represent good industry practice.

SKM recommends that Seqwater undertakes a condition assessment and options analysis, prior to the implementation of the project as proposed. SKM also recommends that the above approach is suitably documented.

SKM understands that Seqwater is aiming to achieve a more proactive approach to maintenance in future. This will require Seqwater to gather detailed information on condition and failure data on similar assets, such as access roads. However, at this stage, the project is in line with Seqwater's policies and procedures.

Timing of asset replacement or refurbishment

The Clarendon Diversion Channel access road was constructed in approximately 1986, and hence is currently 26 years old. Based on this asset life, the road will be renewed when it is 36 years old.

Seqwater's standard useful asset life for roads and drainage is 30 years. The project renewal timing is slightly higher than Seqwater's standard useful asset life. Seqwater's standard asset refurbishment for roads for accessing bores is 5 to 12 years. No data is given for roads associated with other assets. SKM understands that patch maintenance has occurred; however, this has been minor, eg drainage clearing, or has been event based.

SKM considers that the useful asset life applied by Seqwater for this asset is reasonable and is in keeping with industry practice. SKM notes that the proposed project is not a complete renewal (ie replacement) of the road but rather a refurbishment of the existing road. A refurbishment of the existing road will require significantly less effort than a total renewal (ie replacement) of the road. For example, any ground works undertaken in the initial formation of the road are unlikely to be required to be undertaken again during a renewal. As such, this project would be more correctly classed as a refurbishment project rather than a renewal project even though the timing is consistent with the renewal asset life rather than the refurbishment asset life for the asset. That said, SKM has maintained the current project status as renewal in the remainder of this assessment.

SKM believes that whilst the age of an asset is a useful indicator for renewal timing, the actual timing of replacement should be based on the condition of the asset.

No documented condition assessments have been provided to SKM. A site visit was undertaken on the 17 August 2012. From inspection, the road is considered by SKM to be in a good condition and is currently suitable for operating and maintaining the channel. As such SKM considers that the timing for renewal of this asset is appropriate and adequate for the intended purpose in the absence of better and more informed asset condition information.

Scope of works

This project is for the renewal of the access road and along both sides of the Clarendon Diversion Channel.

SKM questioned the need to renew the access road and along both sides of the channel. Based on SKM's recent site visit and from satellite imagery based terrain information, the main access seems to be along the northern edge of the channel. In addition, there are frequent crossing points of the channel, for example near siphons under the roads.

Whilst Seqwater agrees that one side of the channel is being used more frequently than the other, Seqwater is of the view that vehicular access to both sides of the channel is essential. This requirement is understood to enable channel embankment condition monitoring, maintenance and operational activities.

Seqwater has identified that during the Validation and Planning phase of the project, the scope of the project will be further developed. The following expectations were identified:

- The parts of the road that are used most frequently will attract more renewal effort
- Only sections that require renewal will be renewed but the effort required at these locations will be more extensive than is outlined in the initial cost estimate
- The timing will be adjusted so that the works are undertaken when needed. Depending on the performance of the asset it may be deferred, brought forward or staged over a number of years

SKM agrees with the above expectations, in particular, the further assessment of asset condition and the subsequent timing of the works. On the basis that the scope of work will be further developed during the Validation and Planning phase, as is to be expected, the project is found to be prudent.

Conclusion

On the basis that renewal of the access road is required to operate the Central Lockyer Valley Water Supply Scheme, that the timing of the works is considered accurate and that the scope of works is reasonable, the project has been assessed as prudent.

5.11.6. Efficiency

Scope of works

As discussed above, the scope of work is considered the current best means of achieving the desired outcome of providing access for operations and maintenance. Following a condition assessment and options study, there may be opportunity to defer part of the works. SKM considers that this approach is appropriate when scheduling the replacement or refurbishment of a portfolio of assets over a twenty year period where, from a portfolio perspective there should be an approximately equal number of projects that are deferred based on condition as these are brought forward.

Standard of works

No formal standards have been used in the concept design of the access road. The minimum practical requirements include the capacity to allow access in all conditions and weather, and workplace health and safety compliance requires access to be reasonably safe for workers and contractors.

The renewal of the existing gravel surface with a similar surface is considered adequate.

Project cost

Seqwater provided an indicative budget for the refurbishment of the access road. This budget breakdown is outlined below in **Table 48**.

- **Table 48 Clarendon Division Access Road - Budget breakdown**

Items	Sub-Items	Costs ($)
Contract Costs		
Design	Civil	12,000
Procurement	Preparation of scope of work and RFQ	8,000
Supply and Install	Total road surface 37000m2: Rate for prelim grading, importing and placement of 50mm gravel and reforming - $2/m2	74,000
Sub-Total		**94,000**
Seqwater Internal Costs		
Work Supervision		14,000
PM Costs (15% of Contract Costs)		14,000
Sub-Total		**28,000**
TOTAL		**122,000**

Source: *SM Project Outline: Clarendon Diversion Access Road*, Seqwater, undated

Following confirmation of the overall budget, Seqwater provided an updated budget for the refurbishment of the access road. This budget breakdown is outlined below in **Table 49**.

- **Table 49 Clarendon Division Access Road - Budget breakdown - Revised**

Items	Sub-Items	Costs ($)
Contract Costs		
Design	Civil	10,000
Procurement	Preparation of scope of work and RFQ	9,000
Supply and Install	Total road surface 37000m2: Rate for prelim grading, importing and placement of 50mm gravel and reforming - $4/m2	140,000
Sub-Total		**159,000**
Seqwater Internal Costs		
Work Supervision		11,000
PM Costs (15% of Contract Costs)		23,850
Sub-Total		**34,850**
TOTAL		**193,850**

Source: *SM Project Outline: Clarendon Diversion Access Road*, Seqwater, undated, updated

SKM has undertaken a cost estimate of the access road. This estimate is presented in **Table 50**.

- **Table 50 SKM cost estimate comparison**

Item	Unit	Qty	Rate	Amount
Establishment, disestablishment and traffic control	Item	1	$10,000.00	$10,000
Grade and trim existing roadway surface and clean out table drains with motor grader	m	12,200	$5.00	$61,000
Supply, place and compact gravel surface to roadway using DTMR Class 2.2 material	m3	1,830	$85.00	$155,550
Final Trim	m2	36,600	$2.00	$73,200
Total				**$299,750**

The cost estimate for this project is $299,750 based on a 50mm gravel pavement. SKM considers the rate used for the prelim grading, importing and placement of 50mm gravel and reforming to be low.

- **Table 51 Cost estimate comparison**

Component	Seqwater estimate ($)	SKM estimate ($)	Difference (%)
Design	10,000	15,000	50%
Procurement	9,000	15,000	67%
Supply and Install	140,000	299,750	114%
Seqwater Internal Costs	34,850	45,000	29%
Total	**193,850**	**374,750**	**93%**

The SKM cost estimate for this project is $375,000, including Seqwater internal costs. This cost estimate is significantly higher than the Seqwater cost estimate. Whilst SKM finds the project to be efficient, it is recommended that the costs are reviewed as part of the ongoing development of this project, including the use of condition assessment and options analysis to confirm the scope of works.

Decision making process

As indicated above, no options analysis has been undertaken to date. This is expected to occur later in the project. SKM recommends that Seqwater undertakes an options analysis, prior to the implementation of the project as proposed. Given the straight forward nature of the project, an options analysis is not expected to significantly change the scope of works. However, consideration of any ongoing maintenance costs versus the renewal costs, may impact the timing of the project.

Conclusion

On the basis that the standards of works are acceptable and the proposed project costs are considered low, the project has been assessed as efficient.

5.11.7. Summary

The project is assessed as prudent as the access road is required to operate the Central Lockyer Valley Water Supply Scheme, the timing of the works is considered adequate and the scope of works is reasonable.

The project is assessed efficient as the scope of works is currently appropriate, although should be refined as part of the ongoing design process, the standards of works are consistent with industry practice and the revised project costs are low compared to prevailing market conditions.

The quality of the information provided on this project is outlined below in **Table 52**.

- **Table 52 Clarendon Division Access Road - Quality of information provided**

Section of CAPEX review	Clarendon Division Access Road		
Project description			
Provided documentation			
Prudency			
Identified need			
Timing of asset replacement or refurbishment			
Scope of works			
Efficiency			
Scope of works			
Standards of work			
Project cost			
Decision making process			
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

The value of expenditure considered to be prudent and efficient is outlined below in **Table 53**.

- **Table 53 Clarendon Division Access Road - Revised capital expenditure profile**

Project	Costs ($'000)	
	2022-23	Total
Clarendon Division Access Road	192	192

5.11.8. Application to other projects

The possible application of the findings to the ten additional road projects is discussed in the Warrill Creek Diversion Weir – Access Road and Hard standing project review and as such not repeated here.

5.12. Warrill Creek Diversion Weir - Access Road and Hard Standing

5.12.1. Proposed capital expenditure

Table 54 shows the proposed cost of the Warrill Creek Diversion Weir – Access Road and Hard standing project.

- **Table 54 Warrill Creek Diversion Weir – Access Road and Hard standing Project – Proposed capital expenditure profile**

Source	Costs ($'000)	
	2029	Total
Terms of reference drawn from Seqwater's original NSP	194	194
RFI008 Response Replacement Cost	194	194
RFI008 Response Renewal Cost	69.3	69.3

Seqwater initialled submitted to the Authority a total cost of $194,000 to replace the road. Following a desktop review of this project, Seqwater has revised the cost estimate downwards to $69,300 based

on renewal of the gravel surface only (rather than replacement) and used Rawlinsons 2012 estimation rates. This is discussed further below.

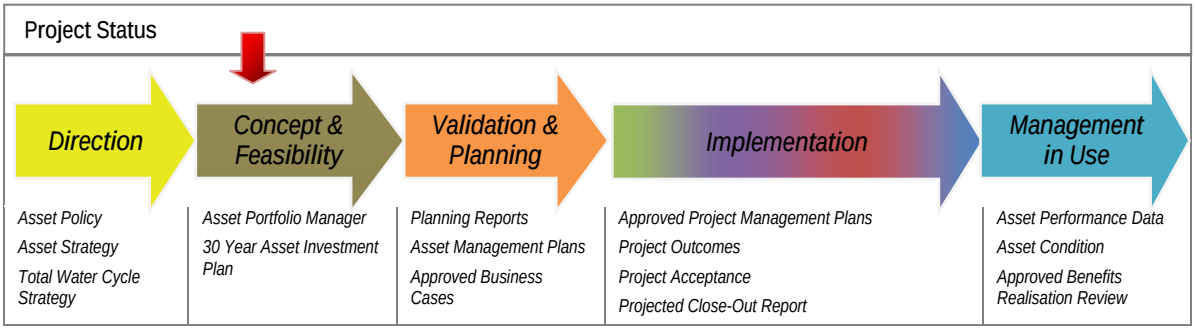
5.12.2. Project description

This project is for the renewal of the access road and hardstand at the Warrill Creek Diversion Weir. The project is to renew 700m of 4m-wide access road and 300m^2 of hardstand. The project is a single project, occurring in the 2028-29 financial year.

SKM is not aware of any component of the costs being attributed to damage from the 2010-11 floods.

5.12.3. Project status

The project is not to be completed until 2028-29. In the Seqwater Asset Delivery Framework, the project is to be classified as pre-implementation, in the Concept and Feasibility phase, meaning prior to preliminary design. SKM considers the current position of the project in the Seqwater Asset Delivery Framework as appropriate given the value and timing of this renewal project.



The available information on this project is consistent with the current status of the project. At this phase, no detailed options analysis has been undertaken. This is scheduled to be completed in the Validation and Planning phase of Seqwater's Asset Delivery Framework. SKM understands that this is due to occur at a later date, prior and closer to the Implementation phase when the project is due to be delivered and commissioned. SKM considers this approach to be in line with good industry practice as it is appropriate to undertake a more detailed assessment closer to the planned date of delivery, some 16 years hence, when the condition of the existing infrastructure can be reassessed.

5.12.4. Provided documentation

The documents used for this review are:

- *2013-14 Irrigation pricing – Submission to the Queensland Competition Authority*, Seqwater, April 2012
- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47 – Report on Methodology*, Seqwater, April 2012
- *Central Lockyer Valley Water Supply Scheme – Network Service Plan*, Seqwater, undated
- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47: Report – Central Lockyer Tariff Group*, Seqwater, April 2012

- *Information Request Response – QCA Irrigation Price Review 2013-17: RIF008 Warrill Creek Diversion Weir – Access Road and Hard Standing*, Seqwater, 8 August 2012
- *SM Project Outline: Warrill Creek Diversion Weir – Access Road and Hard Standing*, Seqwater, undated
- *Asset Assessment Form: Clarendon Diversion Baulks and Trash Screens*, Seqwater, 13 February 2012

The provided documentation has been adequate to conduct an initial review of this project.

Additional information requested from Seqwater for this review included:

- *Information Request Response – QCA Irrigation Price Review 2013-17: RIF025 Warrill Creek Diversion Weir – Access Road and Hard Standing*

A response was provided verbally during a site visit on the 16 August 2012.

5.12.5. Prudency

Identified need

This project has been identified as being necessary to operate the Warrill Valley Water Supply Scheme. The access road and hard standing provides access to the Warrill Creek Diversion Weir. This asset provides water to the Kent's Lagoon irrigation scheme which supplies over 200 irrigators. Currently the site is accessed approximately ten times a week to review instrumentation and control equipment. Access is required to the site in all weather conditions, and the road must be of suitable standard to allow this access. This Warrill Creek Diversion Weir site will continue to be in use indefinitely.

The construction of the access road and hard stand is such that periodic renewal and refurbishment is required and as such the renewal of the access road and hardstand is required to operate the Warrill Valley Water Supply Scheme.

Policies and procedures

The project has been identified as part of the Irrigation Infrastructure Renewal Projections 2013-14 to 2046-47 for the Warrill Valley Tariff Group. As identified above, the project is not due to be implemented until 2028-29 and it is currently only at the concept phase. Subsequently whilst the level of documentation available for this project is minimal, it is in line with the current status of the project. Seqwater has indicated that a formal condition assessment and detailed options analysis is scheduled to be completed more contemporaneously with the expected end of the asset life in the Validation and Planning phase of Seqwater's Asset Delivery Framework. SKM believes that the replacement of an asset based on the results of an adequate condition assessment and options analysis represent good industry practice.

SKM recommends that Seqwater undertakes a condition assessment and options analysis, prior to the implementation of the project as proposed. SKM also recommends that the above approach is suitably documented.

SKM understands that Seqwater is aiming to achieve a more proactive approach to maintenance in future. This will require Seqwater to gather detailed information on condition and failure data on similar assets, such as access roads.

Timing of asset replacement or refurbishment

The Warrill Creek Diversion Weir access road and hard standing was constructed in 1998, and hence is currently 14 years old. The renewal of the access road and hardstand is based on a 30 year asset life, which aligns to the planned renewal in 2028-29.

Seqwater's standard useful asset life for roads and drainage is 30 years. The project renewal timing is in line with Seqwater's standard useful asset life. Seqwater's standard asset refurbishment for roads for accessing bores is 5 to 12 years. No data is given for roads associated with other assets. SKM understands that corrective maintenance has occurred on the road since construction; however, there are no further details available.

SKM believes that whilst the age of an asset is a useful indicator for renewal timing, the actual timing of replacement should be based on the condition of the asset.

No documented condition assessments have been provided to SKM. A site visit was undertaken on the 16 August 2012. The road appears in a fair condition and is currently suitable for accessing the weir. SKM considers that the useful asset life applied by Seqwater for this asset is reasonable and in keeping with industry practice. As such SKM considers that the timing for renewal of these assets is appropriate and adequate for the intended purpose.

However, the condition of the road should be continued to be monitored by operators, particularly after significant wet periods. Minor potholes should be corrected as part of ongoing maintenance. If more significant potholes develop, it is recommended that the timings of the works are reviewed and, if required, the renewals date is brought forward.

Scope of works

The original scope of works for the project was to regrade and reconstruct 700m of 4m-wide access road and 300m^2 of hardstand with new 150mm pavement depth. Following a desktop review, the project costs were reduced based on renewal of the gravel surface only. The scope of works is considered to be adequate for the project.

Conclusion

On the basis that renewal of the access road and hardstand is required to operate the Warrill Valley Water Supply Scheme, that the timing of the works is considered accurate and that the scope of works is reasonable, the project has been assessed as prudent.

5.12.6. Efficiency

Scope of works

As discussed above, the scope of work is considered the best means of achieving the desired outcome of providing access to the Warrill Creek Diversion Weir.

Standard of works

No formal standards have been used in the concept design of the access road. The minimum practical requirements include the capacity to allow access in all conditions and weather, and workplace health and safety compliance requires access to be reasonably safe for workers and contractors.

The renewal of the existing gravel surface with a similar surface is considered adequate.

Project cost

The original project cost of the replacement of the road was based on 'static asset data'. SKM understands that the cost was based on the replacement book value of the asset of $194,000 as provided by SunWater. Over July 2012, Seqwater has undertaken a further desktop review of the project and has revised the cost estimate downwards to $69,300 in light of additional information. The revised estimate is based on renewal of the gravel surface only and is based on Rawlinsons 2012 estimation rates.

The revised project scope is to undertake a renewal of the existing road, rather than a complete replacement. A renewal of the existing road will require significantly less effort than a total replacement of the road. For example, any ground works undertaken in the initial formation of the road are unlikely to be required to be undertaken again during a renewal. Therefore the use of the replacement book value is not considered to be a good indication for this renewals project.

Seqwater has provided an indicative budget for the refurbishment of the access road and hardstanding. This budget breakdown is outlined below in **Table 55**.

- **Table 55 Budget breakdown**

Items	Sub-Items	Costs ($)
Contract Costs		
Design	Civil	8000
Procurement	Preparation of scope of work and RFQ	8000
Supply and Install	Total road surface 3100m2: Rate for reconstruction of road and installation of 150mm gravel pavement - $13/m2 (Rawlinsons 2012).	40,300
Sub-Total		**56,300**
Seqwater Internal Costs		
Work Supervision		5,000
PM Costs (15% of Contract Costs)		8,000
Sub-Total		**13,000**
TOTAL		**69,300**

Source: *SM Project Outline: Upper Warrill Diversion Weir Access Road*, Seqwater, undated

SKM has undertaken a cost estimate of the access road, as shown in the following table.

- **Table 56 SKM cost estimate comparison**

Item	Unit	Qty	Rate	Amount
Establishment, disestablishment and traffic control	Item	1	$10,000.00	$10,000
Grade and trim existing roadway surface with motor grader	m	700	$10.00	$7,000
Grade and trim existing hardstand surface with motor grader	m2	300	$4.00	$1,200
Supply, place and compact gravel surface to roadway using DTMR Class 2.2 material	m3	420	$85.00	$35,700
Supply, place and compact gravel surface to hardstand using DTMR Class 2.2 material	m3	45	$85.00	$3,825
Final Trim	m2	3,100	$2.00	$6,200
Total				**$63,925**

The cost estimate for this project is $79,925 based on a 150mm gravel pavement.

- **Table 57 Cost estimate comparison**

Component	Seqwater estimate ($)	SKM estimate ($)	Difference (%)
Design	8,000	4,000	-50%
Procurement	8,000	4,000	-50%
Supply and Install	40,300	63,925	59%
Seqwater Internal Costs	13,000	8,000	-38%
Total	**69,300**	**79,925**	**15%**

SKM assessed the allowance for Design, Procurement, Works supervision and Project Management. Whilst these are considered to be high compared to other Seqwater projects and standard industry practice, the overall costs are within the Seqwater revised estimate for the project are within 30% of the SKM's estimates and is therefore considered efficient.

Decision making process

As indicated above, no options analysis has been undertaken to date. This is expected to occur later in the project. SKM recommends that Seqwater undertakes an options analysis, prior to the implementation of the project as proposed. Given the straight forward nature of the project, an options analysis is not expected to significantly change the scope of works. However, consideration of any ongoing maintenance costs (for example repair of potholes) versus the renewal costs, may impact the timing of the project.

Conclusion

On the basis that the standards of works are acceptable and the revised project costs are considered accurate, the project has been assessed as efficient.

5.12.7. Summary

The project is assessed as prudent as the access road and hardstand is required to operate the Warrill Valley Water Supply Scheme, the timing of the works is considered accurate and the scope of works is reasonable.

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

SKM recommends that the Seqwater revised cost estimate of $69,300 is taken forwards to the costing model.

The quality of the information provided on this project is outlined below in **Table 58**.

- **Table 58 Quality of information provided**

Section of CAPEX review	Warrill Creek Diversion Weir – Access Road and Hard standing
Project description	
Provided documentation	
Prudency	
Identified need	
Timing of asset replacement or refurbishment	
Scope of works	
Efficiency	
Scope of works	
Standards of work	
Project cost	
Decision making process	

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

Additional information will be required for future stages of the project, for example, prior to implementation, SKM would expect to see more detail on the scope of works, including a completed options analysis and condition assessment.

The value of expenditure considered to be prudent and efficient is outlined below in **Table 59**.

- **Table 59 Cost estimate comparison**

Project	Seqwater estimate ($)	SKM estimate ($)	Difference (%)
Access Road and Hard standing	69,300	79,925	15%

5.12.8. Application to other projects

SKM has been asked to determine whether the results of the two road projects reviewed in detail can be applied to ten additional road projects.

SKM understands Seqwater has undertaken further desktop review of the other roads renewals projects in the renewals projections. The majority of these are low value periodic refurbishment projects that would comprise a regrade and compaction of the road on a 5, 10 or 15 yearly basis, depending on the historical renewal frequency and usage. SKM believes that the results of the Warrill Creek Diversion Weir – Access Road review cannot be applied to these projects, as they are different in nature (minor periodic refurbishment versus replacement/renewal). For example, the large reduction in capital expenditure for the Warrill Creek Diversion Weir – Access Road resulted from a change in scope of works from replacement to renewal of the existing road. This would not apply to these refurbishment schemes. However, the Clarendon Division Access Road works are similar in nature to these refurbishment projects and therefore the results of this project, which was found to be prudent and efficient, could apply.

Of the ten additional road projects, four projects are replacement projects that anticipate significant placement and compaction of new road base material. According to Seqwater, these four projects also use replacement cost data transferred from SunWater, as follows:

- Clarendon Diversion Access to Weir – approx 300m $24k
- Clarendon Dam Access Roads – approx 300m $20k
- O'Reilly's Weir Access Rd – approx 400m $30k
- Pie Creek PS Access Rd – approx 400m Gravel and 100m concrete at the river bank $81k

SKM has reviewed the proposed project costs based on the limited information available and without visual inspection of the assets. The estimates for the roads are as follows:

Table 60 Cost estimates for other access roads

Expenditure Item	Seqwater Estimated Cost ($)	SKM Estimated Cost ($)	Difference ($)
Clarenden Diversion Access to Weir	24,000	23,300	-3%
Clarenden Dam Access Roads	20,000	23,300	17%
Pie Creek PS Access Rd	81,000	32,000-92,000	-60% to 13%
O'Reilly's Weir Access Rd	30,000	26,900	-10%

SKM concludes that for the three (presumed) gravel tracks the cost estimates are within 20% of SKM's estimate and are therefore considered efficient. The cost estimates are based on similar assumptions to those outlined in the detailed review of the Warrill Creek access road and hardstanding.

Developing a cost estimate for the Pie Creek PS Access Rd is more difficult because the price will depend on the condition of the existing concrete and whether it can be replaced with bitumen. On the basis that the existing concrete is required to be removed from site and the concrete is to be replaced, the costs are within 30% of SKM's estimate.

In summary, SKM considers that the findings of prudency and efficiency for the Clarendon Division Access Road can be applied to the low value periodic refurbishment projects. For the four replacement projects, based on the limited information provided, the costs are considered by SKM to be of the right order of magnitude as such SKM believes the findings of prudency and efficiency could also be applied to these projects. As for the two projects reviewed in detail, SKM recommends that Seqwater undertakes a condition assessment and options analysis, prior to the implementation of all access road projects.

- **Table 61 Application to other projects**

Parent Asset	Asset Description	Works Descriptions	Renewal Year	Item Cost ($'000)	Application possible?	Prudent and efficient
Clarendon Diversion	Access Road	Refurbish	2016, 2021, 2026, 2031, 2036	50	Yes	Yes
Clarendon Diversion	Access Road to Weir R/Bk	Replace	2024	24	Yes	Yes
Atkinson Dam	Main Wall Embankment	Refurbish	2023, 2024	42	Yes	Yes
Clarendon Dam	Access Roads	Replace	2024	20	Yes	Yes
Clarendon Diversion	Turn Outs	Refurbish	2016, 2026, 2036	15	Yes	Yes
Clarendon Diversion	Access Road to Weir R/Bk	Refurbish	2020, 2035	10	Yes	Yes
Atkinson Dam	Access Road & Car park	Refurbish	2018	10	Yes	Yes
Bromelton Weir	Road Amtd 113.2km	Refurbish	2018, 2038, 2028, 2033	60	Yes	Yes
Pie Creek Pump Station	Access Road	Replace	2033	81	Yes	Yes
L1 Distribution	O'Reilly Weir R/Bank Access Road	Replace	2029	30	Yes	Yes

5.13. Calico Creek Channel and Pie Creek Main Channel Air Valves

5.13.1. Proposed capital expenditure

Table 62 shows the proposed replacement costs of the Calico Creek Channel and Pie Creek Main Channel Air Valves.

- **Table 62 Pie Creek Air Valves – Proposed capital expenditure profile**

Source	Costs ($'000)	
	2022-23	Total
Terms of reference drawn from Seqwater's original NSP	269	269
Pie Creek Tariff Group Report	269	269

5.13.2. Project description

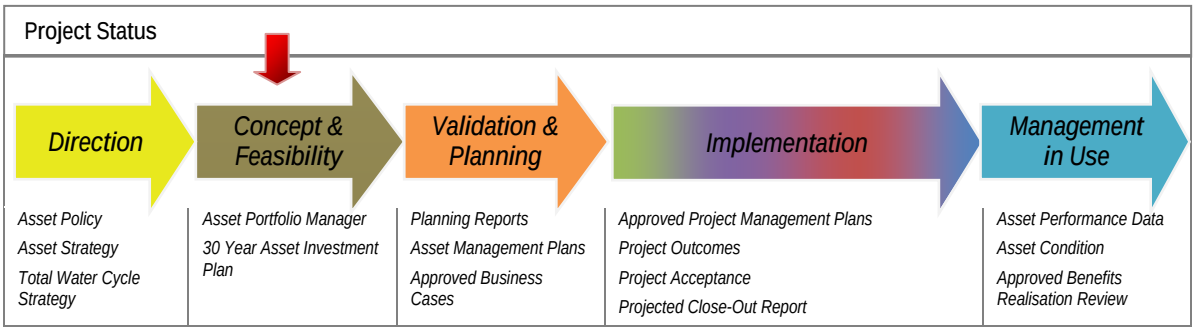
The Calico Creek Channel and Pie Creek Main Channel Air Valves expenditure item involves the replacement of 26 air valves, which are at the end of their design life, installed along an asbestos cement pipe within the Pie Creek Water Supply Scheme. The valves vary in size (1 inch, 3 inch and 6 inch) and assist with protecting the pipe against collapse and facilitate efficient operation. This project is a single expenditure project as opposed to a rolling program expenditure project, occurring in the 2022-23 financial year.

Information initially submitted to the Authority by Seqwater identified that 26 air valves were in need of replacement in 2022-23; however information subsequently provided by Seqwater in response to a request for information indicated that 31 air valves were to be replaced. Upon SKM seeking clarification of the number of air valves to be replaced, Seqwater stated that *"The budget was developed on 26 air valves. More recent information indicates that 5 valves may have been missed. For your purposes, the RFI should have said "26"."*

SKM is not aware of any component of the costs being attributed to damage from the 2010-11 floods.

5.13.3. Project status

Seqwater states that as the project is not to commence until 2022-23 and that the project is to be classified as in the Concept and Feasibility phase of the Seqwater Asset Delivery Framework. SKM considers the current position in the Seqwater Asset Delivery Framework as appropriate given the value and timing of this refurbishment project.



The available information on this project is consistent with the current status of the project. At this stage, no detailed options analysis has been undertaken. Seqwater has advised that detailed options analysis is scheduled to be completed in the Validation and Planning phase of Seqwater's Asset Delivery Framework. SKM understands that this analysis is due to occur prior and closer to the Implementation phase when the project is due to be delivered and commissioned. SKM considers this approach to be in line with good industry practice as it is appropriate to undertake a more detailed assessment closer to the planned date of delivery, some 10 years hence, when the condition of the existing infrastructure can be reassessed.

5.13.4. Provided documentation

The documents used for this review are:

- *2013-14 Irrigation pricing – Submission to the Queensland Competition Authority*, Seqwater, April 2012
- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47 – Report on Methodology*, Seqwater, April 2012
- *Mary Valley Water Supply Scheme – Network Service Plan*, Seqwater, undated
- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47: Report – Pie Creek Tariff Group*, Seqwater, April 2012
- *Information Request Response – QCA Irrigation Price Review 2013-17: Pie Creek WSS, Pie Creek Channel – Air Value*, Seqwater, 10 August 2012
- *SM Project Outline: Pie Creek and Calico Creek Pipelines Air Valves*, Seqwater, undated

- *ACV200 Air Control Valves – Technical Application Guide,* Nelson Irrigation Corporation, undated
- *Design 34923B – Mary Valley Irrigation Area, Pie Creek Diversion – 27" Rising Main, 6" Dia. Double Air Valve,* no author, undated
- *Design 34927 – Mary Valley Irrigation Area, Pie Creek Diversion, 3" Double Air Valve for M.S.C.L Pipeline,* no author, undated
- *Design 35202 – Mary Valley Irrigation Area, Pie Creek Diversion, 3" Air Valve at 4"808',* no author, undated
- *Design 51701 – Mary Valley Irrigation Area, Pie Creek Diversion, 1" Air Valve,* no author, undated

Limited information has been provided on the Calico Creek Channel and Pie Creek Main Channel Air Valves expenditure item, however as the project is in the Concept and Feasibility phase this is not unexpected.

5.13.5. Prudency

Identified need

This project has been identified as being necessary to operate the Pie Creek Tariff Group. This need is not supported by any specific documentation or legislative requirement however Seqwater states that the air valves are installed to protect against pipe collapse as well as to ensure efficient pipe operation.

Air valves allow unwanted air out of the pipe while containing the pipe's fluids within the pipe during operation. Air in pipes can result in poor flow efficiency, water hammer problems, poor pressure control, damaged pumps and broken pipes. Air valves can also admit air into the pipes as they are being emptied, preventing a vacuum condition which could collapse the pipe. The use of air valves is a necessity for irrigation systems to operate smoothly.

The nature of air valves is such that their periodic replacement is required to operate the Pie Creek Tariff Group.

Policies and procedures

The project has been identified as part of the Irrigation Infrastructure Renewal Projections 2013-14 to 2046-47 for the Pie Creek Tariff Group. As identified above, the project is not due to be implemented until 2022-23 and it is currently only at the Concept and Feasibility phase. Subsequently whilst the level of documentation available for this project is minimal, it is in line with the current status of the project. Seqwater has indicated that a formal condition assessment and detailed options analysis is scheduled to be completed more contemporaneously with the expected date of planned replacement in the Validation and Planning phase of Seqwater's Asset Delivery Framework. SKM believes that the replacement of an asset based on the results of an adequate condition assessment and options analysis represent good industry practice.

SKM recommends that Seqwater undertakes a condition assessment and options analysis, prior to the implementation of the project as proposed. SKM also recommends that the planned approach and justification of the timing of refurbishment is suitably documented.

SKM understands that Seqwater is aiming to achieve a more proactive approach to maintenance in the future. This will require Seqwater to gather detailed information on condition and failure data on similar assets. SKM considers that this proposed approach is appropriate and in keeping with good

industry practice and as such SKM would endorse such an initiative. This could include the development of an asset management guideline based on the life of the asset, the most efficient timing of renewals, which in conjunction with an understanding of the site specific risks, would allow the clear prioritisation of assets for future renewals.

Timing of asset replacement or refurbishment

The Calico Creek Channel and Pie Creek Main Channel Air Valves were installed in 1972, and hence are currently 40 years old. The renewal of the air valves is based on a 50 year asset life, which aligns to the planned renewal in 2022-23.

Seqwater's standard useful asset life for air valves is 50 years. The project renewal timing is in line with Seqwater's standard useful asset life. The Australian Taxation Office's TR 2012/2 identifies the effective life of valves associated with 'Irrigation water providers' as 40 years, which is similar to the standard useful asset life adopted by Seqwater. When transferred over from SunWater asset data for air valves indicated a 30 year useful life. Seqwater states that *'a sample inspection and discussion with operational staff in 2011 indicated the assets had not yet failed.'* Based on the findings that the assets were still in fair condition and have no history of failure, the decision was made by Seqwater to revise the standard useful asset life to 50 years. Based on industry experience SKM considers that a useful life of 50 years is appropriate for air valves and in keeping with industry practice.

No documented condition assessments have been provided to SKM. However, Seqwater has stated that visual inspections found that the valves were still in fair condition and not yet in need of replacement.

The useful asset life adopted by Seqwater for this asset type is reasonable and in keeping with industry practice. SKM has reviewed this Seqwater's asset management methodology and considers that the approach adopted is appropriate for the type of asset and therefore the renewal timing is reasonable.

Scope of works

Seqwater states that the scope of works is the supply and installation of 26 x 100 mm air valves, and the replacement of risers, on asbestos concrete gravity pipelines. Seqwater advised that the 1 inch galvanised steel risers are fitted to the main pipe using a tapping band and the 3 inch and 6 inch galvanised steel risers are fabricated into the asbestos pipe and that the risers are likely to be in very poor condition after what will have been 60 years of operational service. It is reasonable to assume that the risers would have a similar standard life to the valves. However, SKM would expect a condition assessment of the risers to be conducted prior to proceeding with the proposed scope of works to determine if replacement is required.

Seqwater advises that no options analysis has been completed as yet as the project is in the Concept and Feasibility phase and will be completed in the Validation and Planning phase. Without an options analysis having been completed it is not possible to determine definitively that the replacement of the air valves is the best means of achieving the desired outcome, however based on the current information the scope of works is considered to be adequate for the project.

Conclusion

On the basis that replacement of the air valves is required to operate the Pie Creek Tariff Group, the timing of the works is considered accurate and the scope of works is reasonable, the project has been assessed as prudent.

5.13.6. Efficiency

Scope of works

As discussed above, the completion of options analysis is required before it can be determined if the scope of work is the best means of ensuring the proper operation air valves. However, Seqwater's proposal to replace like with like is reasonable, given the type of asset.

Standard of works

Seqwater has not provided sufficient information to determine the standards of works that the refurbishment is to be completed to. Given the nature of the asset the replacement of the existing valves with modern equivalents is considered appropriate.

Project cost

Seqwater has provided an indicative budget for the refurbishment of the air valves. This budget breakdown is outlined below in **Table 63**.

- **Table 63 Budget breakdown**

Items	Sub-Items	Costs ($)
Contract Costs		
Design	Civil	10,000
	Mechanical	-
	Electrical	-
	Control	-
Procurement	Preparation of scope of work and RFQ	8,500
Supply and Install	78 x DN375 DICL Gibaults	92,400
	26 x DN375 x DN30 SO/L DICL Tee	40,000
	26 x DB80 DF air valve isolator	13,000
	26 x DN100 air valve	21,700
	Site establishment	5,000
	Asbestos removal and disposal	30,000
Sub-Total		**220,600**
Seqwater Internal Costs		
Work Supervision		15,000
PM Costs (15% of Contract Costs)		33,000
Sub-Total		**48,000**
TOTAL		**268,600**

Source: *SM Project Outline: Pie Creek and Calico Creek Pipelines Air Valves*, Seqwater, undated

Seqwater indicates that the budget is accurate to ± 30%. This level of accuracy is appropriate for a project in the Concept and Feasibility phase. Seqwater advised that the cost estimate was developed on the basis that the entire fleet of air valves were being replaced with 100 mm air valve and that

there is a requirement to replace the riser as well. The materials cost elements were determined in consultation with a likely supplier and component costs known from similar projects.

SKM has undertaken a cost estimate for the supply and install costs, based on recently completed projects and industry experience. SKM would expect the total overhead costs associated with the project to be up to 25% of the contract costs for a project with a value greater than $100,000 but less than 1 million. SKM's estimate is provided and contrasted with Seqwater's cost estimate in **Table 64**.

- **Table 64 Cost estimate comparison**

Component	Seqwater estimate ($)	SKM estimate ($)	Difference (%)
Design	10,000	8,063	-19%
Procurement	8,500	6,047	-29%
Supply and Install	202,100	161,261	-20%
Seqwater Internal Costs	48,000	26,205	-45%
Total	**268,600**	**201,576**	**-25%**

SKM assessed the allowance for design, procurement and Seqwater internal costs. Whilst these are considered to be high compared to other Seqwater projects and standard industry practice, the overall costs are within the Seqwater estimate for the project are within 30% of the SKM's estimates and is therefore considered efficient.

Decision making process

As indicated above, no options analysis has been undertaken to date. This is expected to occur later in the project. SKM recommends that Seqwater undertakes an options analysis prior to the implementation of the project as proposed. However, given the nature of the project, an options analysis is not expected to significantly change the scope of works.

SKM would expect that during the options analysis the timing of the replacement of the pipeline in relation to the timing of the replacement of the air valves would be taken into consideration. Seqwater's standard useful asset life for pipelines is 80 years. SKM understands that this is a generic standard useful asset life applied for all pipe materials. Based on recent work, SKM would expect the useful asset life for an asbestos cement pipeline to be 60 years. Given that this is 10 years beyond the current proposed timing, based on useful service life for the replacement of the air valves, SKM recommends that a detailed condition assessment of the pipeline be completed prior to an options analysis being undertaken.

Conclusion

On the basis that the standards of works are appropriate and the revised project costs are considered accurate, the project has been assessed as efficient.

5.13.7. Summary

The project is assessed as prudent as the air valves are required to operate the Pie Creek Tariff Group, that the timing of the works is considered appropriate and that the scope of works is reasonable.

The project is assessed efficient as the scope of works is appropriate, the standards of works are consistent with industry practice and the revised project costs are consistent with SKM's estimate for such works.

The quality of the information provided on this project is outlined below in **Table 65**. Additional and complete information on the decision making process would close out the information gap highlighted in the table. However this is not required for SKM to complete its review.

Table 65 Quality of information provided

Section of CAPEX review	Creek Channel and Pie Creek Main Channel Air Valves		
Project description			
Provided documentation			
Prudency			
Identified need			
Timing of asset replacement or refurbishment			
Scope of works			
Efficiency			
Scope of works			
Standards of work			
Project cost			
Decision making process			
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

Additional information will be required for future stages of the project, for example, prior to implementation, SKM would expect to see more detail on the scope of works, including a completed options analysis and condition assessment.

5.13.8. Application to other projects

SKM has been asked to determine whether the results of the air valve project reviewed in detail can be applied to seven additional air valve projects, as outlined in **Table 66**.

- **Table 66 Additional air valve projects**

Parent Asset	Asset Description	Works Descriptions	Renewal Year	Item Cost ($'000)
Lake Dyer Diversion	Lake Dyer Diversion- Air Valve	Refurbish	2014, 2034	12
L1 Distribution	Buaraba Creek Supply Pipeline Air Valve 1 at 24.40m	Replace	2018	6
L1 Distribution	Buaraba Creek Supply Pipeline Air Valve 2 at 1770.30m	Replace	2018	6
Upper Warrill Diversion	Double Air Valves-2829m, 3342m	Replace	2025	21
Upper Warrill Diversion	Double Air Valves at 10911.60m	Replace	2025	11
Upper Warrill Diversion	Double Air Valves at 273m	Replace	2025	11
L1 Distribution	Buaraba Creek Supply Pipeline Double Air Valve 1 at 1551.40m	Replace	2018	1

One of the additional projects is a refurbishment project that is different in nature to the replacement project that was reviewed. SKM believes that the results from the Creek Channel and Pie Creek Main Channel Air Valves review cannot be applied to this project.

The other five projects are replacement projects; however based on the limited information available (ie no valve diameter information) it is not possible to determine replacement cost estimates. If Seqwater has followed the same process for the development of the projects and the cost estimates then the findings from the Creek Channel and Pie Creek Main Channel Air Valves review may be applied to these projects.

- **Table 67 Application of findings to additional air valve projects**

Parent Asset	Asset Description	Works Descriptions	Renewal Year	Item Cost ($'000)	Application possible?	Prudent & efficient?
Lake Dyer Diversion	Lake Dyer Diversion- Air Valve	Refurbish	2014, 2034	12	No	N/A
L1 Distribution	Buaraba Creek Supply Pipeline Air Valve 1 at 24.40m	Replace	2018	6	Yes	Yes
L1 Distribution	Buaraba Creek Supply Pipeline Air Valve 2 at 1770.30m	Replace	2018	6	Yes	Yes
Upper Warrill Diversion	Double Air Valves-2829m, 3342m	Replace	2025	21	Yes	Yes
Upper Warrill Diversion	Double Air Valves at 10911.60m	Replace	2025	11	Yes	Yes
Upper Warrill Diversion	Double Air Valves at 273m	Replace	2025	11	Yes	Yes
L1 Distribution	Buaraba Creek Supply Pipeline Double Air Valve 1 at 1551.40m	Replace	2018	1	Yes	Yes

5.14. Somerset Dam Inlet and Outlet Works

5.14.1. Proposed capital expenditure

Table 68 shows the proposed cost of the Somerset Dam Inlet and Outlet Works Project.

- **Table 68 Somerset Dam Inlet and Outlet Works – Proposed capital expenditure profile**

Source	Costs ($'000)	
	2025-26	Total
Terms of reference drawn from Seqwater's original NSP	3,251	3,251

5.14.2. Project description

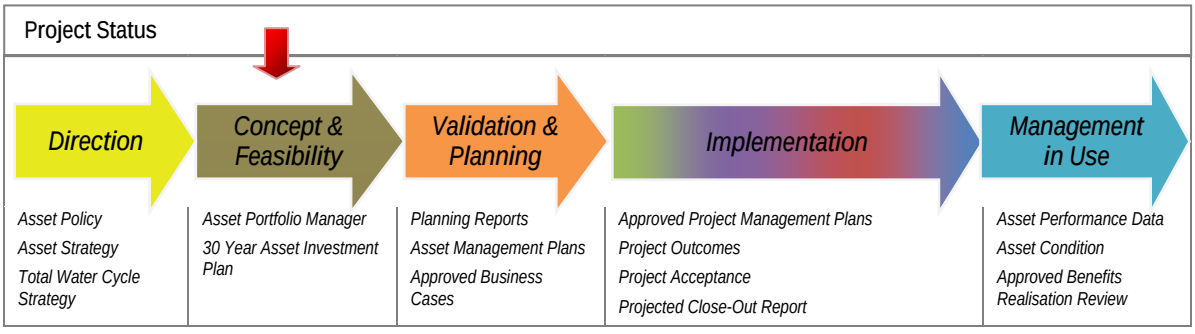
The Somerset Dam Inlet Screen structures comprise two reinforced concrete structures that are approximately 35m high, 16m wide and 8m proud of the upstream face of the dam. They are located in front of the cone valve inlets. The structures are fully submerged when the dam is at full supply capacity.

The scope of refurbishment will depend on the nature of the deterioration when the project is carried out and could range from refurbishment of the concrete surfaces through to demolition and replacement of the structure. The refurbishment methodology will require detailed options analysis to be conducted due to the complex nature of delivering the work. Methodology options may include timing the work to coincide with low dam levels, draining the dam to provide dry access, undertaking the work using industrial divers or constructing coffer structures.

SKM is not aware of any component of the costs being attributed to damage from the 2010-11 floods.

5.14.3. Project status

The expenditure for this project is programmed for the 2025-26 financial year. In the Seqwater Asset Delivery Framework, the Concept and Feasibility stage is classified as pre-implementation meaning prior to the preliminary design. SKM considers the current position of the project in the Seqwater Asset Delivery Framework as appropriate given the value and timing of this renewal project.



Documentation available for review includes asset valuation and condition assessments undertaken by Cardno in 2010. SKM considered the level of documentation available to be consistent with the current position of the project.

5.14.4. Provided documentation

The documents used for this review are:

- *Information Request Response – QCA Irrigation Price Review 2013-17: RFI010 Somerset Dam – Trash Screen Structures*, Seqwater, 10 August 2012
- *Valuation of Dams & Weirs as at June 2010*, Cardno, July 2010

Additional information requested from Seqwater for this review included:

- Condition assessments
- Breakdown of the valuation/cost estimate

5.14.5. Prudency

Identified need

Seqwater identified the Somerset Dam Inlet Screen structures as essential to the safe operation of Somerset Dam as they house the trash screens, which protect the outlet structures from fouling with debris. The upkeep of the Inlet Screen Structures is relevant to Seqwater's obligations with respect to Dam Safety legislation and regulatory requirements. Specifically, Somerset Dam is a reportable dam for the purposes of compliance with the *Water Safety (Safety and Reliability) Act 2008*.

In summary the prudency of the replacement of the Somerset dam Inlet Screen structure is two-fold: the replacement is required to operate Somerset Dam and is therefore necessary to operate the Central Brisbane River Water Supply Scheme and to fulfil legal obligations for the operation of reportable dams.

Policies and procedures

The project has been identified as part of the Irrigation Infrastructure Renewal Projections 2013-14 to 2046-47 for the Central Brisbane Tariff Group. As identified above, the project is not due to be implemented until 2025-26 and it is currently only at the concept phase. Subsequently whilst the level of documentation available for this project is minimal, it is in line with the current status of the project. Seqwater has indicated that a formal condition assessment and detailed options analysis is scheduled to be completed more contemporaneously with the expected end of the asset life in the Validation and Planning phase of Seqwater's Asset Delivery Framework. SKM believes that the replacement of an asset based on the results of an adequate condition assessment and options analysis represent good industry practice.

SKM recommends that Seqwater undertakes a condition assessment and options analysis, prior to the implementation of the project as proposed. SKM also recommends that the above approach is suitably documented.

Timing of asset replacement or refurbishment

The Somerset Dam, including the Inlet Screen structure was constructed in 1955, and hence is currently 57 years old. The renewal of the inlet structure is based on a 70 year asset life, which aligns to the planned renewal in 2026-27.

Seqwater's standard useful asset life for dam civil infrastructure is 200 years. However, within the *Valuation of Dams & Weirs report* (Cardno, 2010) a specific asset life of 70 years has been used for the Somerset Dam Inlet Structure.

SKM believes that whilst the age of an asset is a useful indicator for renewal timing, the actual timing of replacement should be based on the condition of the asset, and the risk of the asset failing.

The inlet structure is below the water line on the upstream face of the dam. Hence, the structure is not readily accessible for inspection and the undertaking of condition assessments. Seqwater noted in its response to SKM's requests for information that condition assessments will be undertaken prior to the proposed construction works.

SKM understood the timing for the works is largely determined by the remaining asset life. Seqwater advised that the timing of the works would coincide with the date of regulated upgrade of the dam, set for 2025. The regulatory upgrade is likely to require major upgrade to the downstream protection works of the dam. Combining the refurbishment of inlet structure and the regulated upgrade is likely to provide cost efficiencies for the construction works.

In SKM's opinion, relying on a specified asset life to program refurbishment is cursory. The asset life of a concrete structure predominantly submerged in water will depend on a range of factors including concrete mix design, the depth of cover to reinforcement (how far from the surface of the concrete the reinforcing bars are), wetting and drying cycles, and the salinity of the water. SKM's recommended approach, generally, is to use prescribed condition assessments and risk of failure of a particular asset to inform the need and timing of asset refurbishment.

SKM noted that whilst the exact scope of work is yet to be fully defined, if replacement of the inlet is required, dry working conditions is highly preferable. Using divers or submersibles for construction could prove impracticable and would certainly increase funding requirements. Hence, taking the opportunity to complete the work at the same time as the regulatory upgrade, (when water levels are likely to be lower) would lead to beneficial cost savings.

Scope of works

As noted previously, the scope of work will depend on the nature of the deterioration found from condition assessment surveys. This can range from the patch repair of the concrete beams and columns through to demolition and complete replacement.

SKM accepted that, at this stage, the scope of work is not defined, primarily as the work is expected to be undertaken 13 years into the future. Seqwater's approach to assume the full replacement cost for the Somerset Dam Inlet structure is conservative but nonetheless prudent.

Conclusion

On the basis that renewal of Somerset Dam Inlet Screen structure is required to safely operate the Somerset Dam and hence, Central Brisbane River Water Supply Scheme, that the timing of the works is considered reasonable and that the scope of works is reasonable at this stage, the project has been assessed as prudent.

5.14.6. Efficiency

Scope of works

As discussed above, the scope of works is considered adequate for this stage in the project.

Standard of works

The minimum practical requirements for the inlet screen structure include the capability to prevent debris from entering the dam inlet under all conditions. If debris were to become lodged in the inlet structure this may prevent Seqwater from opening and closing the cone valves, which are the primary means of conveying water downstream. The specific standards will depend on the exact scope of works (eg refurbishment versus replacement).

Project cost

The project cost is based on the replacement cost of the asset as noted in *Valuation of Dams & Weirs report* (Cardno, 2010), with indexation applied. A breakdown of this cost was not available. However, the Cardno report states that the valuation methodology was based on numerous factors including asset registers, drawings, data books, condition reports, site inspections and recent contract and estimation data.

SKM prepared a comparative cost estimate as shown in **Table 69**.

- **Table 69 Somerset Dam Inlet and Outlet Works – Comparative capital expenditure profile**

Items	Sub-Items	Costs ($)
Direct costs		
Design	Civil	320,000
Preliminaries	Contractor preliminaries and site establishment	60,000
Supply and construct	Supply to site and construct coffer dam around each inlet structure. Allow 10m high, 5m top width, 3:1 side batters, 200m length each intake, total of 80,000m3 @ $156/m3	1,248,000
Demolish	Demolish and cart existing concrete structure 256/m3 @ $164/m3	42,000
Supply and construct	Supply and construct new concrete inlet structure. Assume 1m x 1m beams (8No. x 8m, 4No.x 16m) and columns (4No. x 35m) 134m @ $540m	144,000
Sub-Total		**1,814,000**
Indirect costs		
Permitting, approvals, procurement @ 20%		389,000
Risk @ 20% of direct costs		389,000
Supervision/owners engineer role		150,000
PM Costs		50,000
Sub-Total		**978,000**
TOTAL		**2,792,000**

Source: Rawlinsons Australian Construction Handbook 2011 (indexed), Advancement of Cost Engineering International Practice Note 10S-90.

SKM's comparative cost estimate includes a contingency allowance that reflects the unknown items at this stage of the project. The inclusion of such items in a cost estimate is reflective of good engineering practice. The SKM cost estimate has an allowance for risk of 20%. Undertaking construction works on the upstream face of a dam attracts significant risks, specifically: latent conditions; the potential for flooding; additional insurance requirements; and geotechnical issues.

We note that risk and contingency have not been included within other comparative cost estimates, in SKMs opinion it is good engineering practice (as represented by the Association of Advancement of Cost Engineering International) for these items to be included in cost estimates given that the level of project definition is very low at this stage. As further studies, optioneering and investigations are completed by Seqwater it is expected that risk and contingency sums will reduce.

As previously stated, cost savings could be achieved if the works are undertaken at the same time as the regulated upgrade of the dam, when the lake level is lower. However, these works will be undertaken on the upstream side of the dam and it would be necessary to protect the works with a coffer dam (temporary earth dam) around each inlet, in the event of flooding in the Somerset catchment irrespective of the level of the dam at the time of the project.

The Seqwater estimate for the project is within 30% of the SKM's estimates and is therefore considered efficient.

Decision making process

As indicated above, no option analysis has been undertaken to date. This is expected to occur later in the project. SKM recommends that Seqwater undertakes an options analysis prior to implementation of the project as proposed. Given the complexity of the project the available options will be strongly informed by the condition assessment survey and evaluation of risk.

Conclusion

On the basis that the scope of works, standards of work and project costs are considered accurate for a project at this level of definition the project has been assessed as efficient.

5.14.7. Summary

The project is assessed as prudent as the operation of the Somerset Dam is required to operate the Central Brisbane River Water Supply Scheme and fulfil legal requirements, that the timing of the works is considered accurate and that the scope of works is reasonable for this level of project definition, the project has been assessed as prudent.

The scope of works, standards of work and project costs are considered accurate for a project at this level of definition the project has been assessed as efficient.

SKM considers that Seqwater's revised cost estimate of $3,251,000 is prudent and efficient.

The quality of the information provided on this project is outlined below in **Table 70**.

- **Table 70 Quality of information provided**

Section of CAPEX review	Somerset Dam Inlet and Outlet Works
Project description	
Provided documentation	
Prudency	
Identified need	
Timing of asset replacement or refurbishment	
Scope of works	
Efficiency	
Scope of works	
Standards of work	
Project cost	
Decision making process	

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

Whilst information regarding the timing, scope of works, standards of work, project cost and decision making process was sparse or missing, SKM considered the level of information provided to be consistent with a project at this stage of planning.

5.14.8. Application to other projects

No other Outlet Works projects have been identified for the Regulatory Period.

5.15. Clarendon Diversion - Trash Screens

5.15.1. Proposed capital expenditure

Table 71 shows the proposed cost of the refurbishment of the Clarendon Diversion Trash Screens.

- **Table 71 Clarendon Diversion Trash Screens – Proposed capital expenditure profile**

Source	Costs ($'000)					
	2014-15	2019-20	2024-25	2029-30	2034-35	Total
Terms of reference drawn from Seqwater's original NSP	10	10	10	10	10	50
Central Lockyer Valley Tariff Group Report	10	10	10	10	10	50

5.15.2. Project description

The Clarendon Diversion Trash Screens expenditure item involves the periodic refurbishment of the corrosion protection on the trash screens to ensure ongoing serviceability. The purpose of the trash screens is to protect the pumps within the Redbank Pump Station from damage arising from debris entering the pumps and to prevent the pump well from becoming fouled with debris. The Redbank Pump Station transfers water between the Redbank Creek and Lake Clarendon.

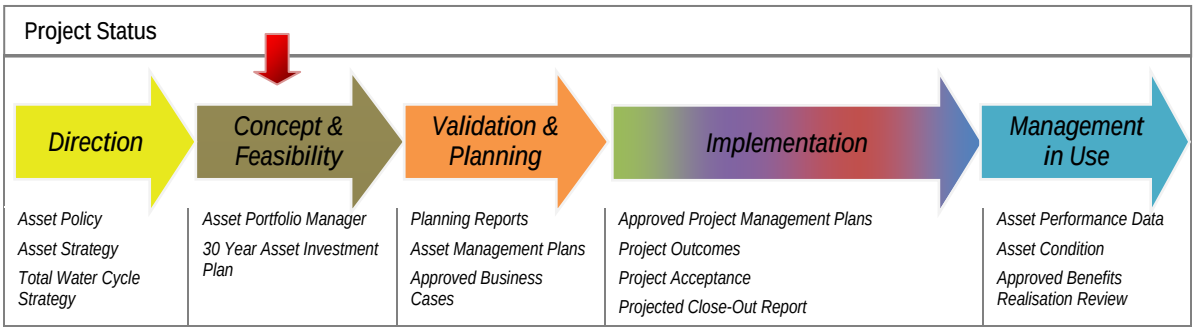
The refurbishment involves the removal of the screens from the pump well, preparation of the surface and application of a 2-pac epoxy paint. The project is a recurring project, occurring initially the 2014-

15 financial year and then every five years, depending on condition assessments as assessed from time to time between planned refurbishments.

SKM is not aware of any component of the costs being attributed to damage from the 2010-11 floods.

5.15.3. Project status

Seqwater states that as the project is not to be carried until 2014-15 in the first instance, and every five years thereafter, that the project is in the Concept and Feasibility phase of the Seqwater Asset Delivery Framework. SKM considers the current position of the project in the Seqwater Asset Delivery Framework as appropriate given the relatively low value and non-complex nature of the project.



The available information on this project is consistent with the current status of the project. At this stage, no detailed options analysis has been undertaken. This is scheduled to be completed in the Validation and Planning phase of Seqwater's Asset Delivery Framework. SKM understands that this is due to occur at a later date, prior and closer to the Implementation phase when the project is due to be delivered and commissioned.

SKM considers this approach to be in line with good industry practice as it is appropriate to undertake a more detailed assessment closer to the planned date of delivery when the condition of the existing infrastructure can be reassessed. For a project of this size ($10,000), SKM would anticipate that validation and planning documentation would be produced in 2013-14, ie a year before implementation. Seqwater may want to consider a consolidated business case for similar assets.

5.15.4. Provided documentation

The documents used for this review are:

- *2013-14 Irrigation pricing – Submission to the Queensland Competition Authority*, Seqwater, April 2012
- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47 – Report on Methodology*, Seqwater, April 2012
- *Central Lockyer Valley Water Supply Scheme – Network Service Plan*, Seqwater, undated
- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47: Report – Central Lockyer Tariff Group*, Seqwater, April 2012
- *Information Request Response – QCA Irrigation Price Review 2013-17: RIF011 Central Lockyer, Clarendon Diversion Trash Screens*, Seqwater, 12 August 2012
- *SM Project Outline: Clarendon Diversion Channel Inlet trash screens*, Seqwater, undated

- *Asset Assessment Form: Clarendon Diversion Baulks and Trash Screens*, Seqwater, 13 February 2012
- *Information Request Response – QCA Irrigation Price Review 2013-17: RFI029 Clarendon Diversion Trash Screens*, Seqwater, 27 August 2012

Limited information has been provided on the Clarendon Diversion Trash Screens expenditure item, however as the project is in the Concept and Feasibility stage this is not unexpected.

5.15.5. Prudency

Identified need

This project has been identified as being necessary to operate the Central Lockyer Valley Water Supply Scheme. This need is not supported by any specific or particular documentation however the trash screens protect the pumps from damage and prevent the pump well from becoming fouled with debris, which is good practice. Failure of the screens during pump operation may damage the pumps which could result in an inability to harvest water. The Redbank Pump Station transfers water between the Redbank Creek and Lake Clarendon. Water is transported from Redbank Creek to Lake Clarendon in high rainfall events which result in the overtopping of the weirs along Lockyer Creek. Water is transported back to Redbank Creek from Lake Clarendon when the level in the Lockyer and Redbank Creeks has dropped. The trash screens are necessary for reliable operation of the Central Lockyer Valley Water Supply Scheme.

The nature of the set up of the trash screen, being submerged under water in a high flow river, is such that the periodic refurbishment and renewal of the trash screen is required and therefore necessary for the continued operation of the Central Lockyer Valley Water Supply Scheme.

Policies and procedures

The project has been identified as part of the Irrigation Infrastructure Renewal Projections 2013-14 to 2046-47 for the Central Lockyer Valley Tariff Group. As identified above, the project is not due to be implemented, in the first instance, until 2014-15 and it is currently only at the concept phase. Consequently, whilst the level of documentation available for this project is minimal, it is in line with the current status of the project. Seqwater has indicated that a formal condition assessment and detailed options analysis is scheduled to be completed more contemporaneously with the expected date of planned refurbishment in the Validation and Planning phase of Seqwater's Asset Delivery Framework. SKM believes that the refurbishment of an asset based on the results of an adequate condition assessment and options analysis represent good industry practice.

SKM recommends that Seqwater undertakes a condition assessment and options analysis, prior to the implementation of the project as proposed. SKM also recommends that the planned approach and justification of the timing of refurbishment is suitably documented.

Timing of asset replacement or refurbishment

The Clarendon Diversion Trash Screens were installed in 1993, and hence are currently 19 years old. Seqwater's standard useful asset life for trash screens in water pump stations has not yet been determined however the standard useful asset life for trash racks in dams is 70 years. Seqwater's standard asset refurbishment for trash screens in water pump stations is 5 years, compared to 10 years for trash screens in dams.

Seqwater advised that refurbishment of the screens has not been undertaken since they were handed over from SunWater and that information regarding the prior maintenance history, by SunWater, was not available. Based on industry experience SKM considers that a useful life of 30 years is appropriate for trash screens in water pump stations or channels, due to potentially high flow conditions and debris, and that a refurbishment period of 5 is also appropriate and in keeping with industry practice.

The 'Asset Assessment Form' indicates that no detailed inspection of the trash screens at the Clarendon Diversion has been undertaken as they are submerged and require removal by a crane. Seqwater stated that a formal condition assessment will be conducted *"more contemporaneously with the expected end of the asset life"*. Seqwater advises that the timing for the inspection and refurbishment, as required, of the trash screens is based on a frequency that allows for intervention before significant corrosion of the screens can develop. SKM considers that the useful asset life applied by Seqwater for this asset is reasonable and in keeping with industry practice. As such SKM considers that the timing for refurbishment of this asset is appropriate and adequate for the intended purpose.

The timing of the inspection and refurbishment, as required, of the trash screens is consistent with Seqwater's methodology. SKM has reviewed Seqwater's asset management methodology and considers that the approach adopted is appropriate for the type of asset and that the refurbishment period timing is reasonable.

Scope of works

The scope of works, for each occurrence of the expenditure, is to remove the three trash screens, inspect and clean the screens, patch and paint the screens as required and reinstall the screens. Seqwater states that the project scope of 'patch painting' has been determined based on experience in managing a fleet of approximately 70 sets of trash screens at dams, water treatment plants and pump stations and that it is considered the most likely scope based on the age, material and service environment of the screens and also draws on the operational staff's most recent knowledge of the screens condition. As Seqwater has not specifically defined what 'patch painting' entails, SKM have assumed the approach is consistent with AS/NZS 2312:2002 for refurbishment of painted steel infrastructure. This includes stripping the screens down to bare metal only in those areas that exhibit rust then applying primer and undercoat to those areas, then finally a top coat to the entire screen. Seqwater has confirmed that this is in line with the intent of the project except that the 'final top coat will usually only be applied to the area that is patched with an overlap to an intact section of paintwork'.

Seqwater advises that no options analysis has been completed as yet as the project is in the Concept and Feasibility phase and will be completed in the Validation and Planning phase. Without an options analysis having been completed it is not possible to determine definitively that the refurbishment of the trash screens is the best means of achieving the desired outcome, however based on the current information the scope of works is considered to be adequate for the project.

From work previously undertaken, we consider that AS/NZS 2312:2002 is an appropriate basis for assessing the severity of corrosion on coated steel surfaces. This standard recommends refurbishment when greater than 2% of the surface coating has been damaged, exposing the steel surface. We understand that this amount of damage generally occurs within the 5 to 6 years after installation. We consider this approach to be appropriate and based on good engineering practice as

defined in the standard. Seqwater advised that the standard of work will be specified during the Validation and Planning phase but the procedures in AS/NZS 2312:2002 are likely to be followed.

Conclusion

On the basis that refurbishment of the trash screens is required to operate the Central Lockyer Valley Water Supply Scheme, that the timing of the works is considered accurate and that the scope of works is reasonable, the project has been assessed as prudent.

5.15.6. Efficiency

Scope of works

As discussed above, the completion of an options analysis is required before it can be determined if the scope of work is the best means of maintaining operability. However, as the refurbishment period is in line with industry standards and the intended process of patch painting is standard practice, SKM considers that the scope of works is appropriate. SKM would expect this to include a discussion of refurbishment versus replacement.

Standard of works

Seqwater has not provided sufficient information to determine the standards of works that the refurbishment is to be completed to. Given the nature of the asset the refurbishment with epoxy paint is considered appropriate.

Project cost

Seqwater has provided an indicative budget for the refurbishment of the trash screens. This budget breakdown is outlined below in **Table 72**.

- **Table 72 Budget breakdown**

Items	Sub-Items	Costs ($)
Contract Costs		
Design	Mechanical	500
Procurement	Preparation of scope of work and RFQ	500
Supply and Install	Removal, clean, patch paint as required and reinstallation of 3 x trash screens	6,500
	Crane hire, removal and replacement	1,000
Sub-Total		**8,500**
Seqwater Internal Costs		
Work Supervision		500
PM Costs (15% of Contract Costs)		1,000
Sub-Total		**1,500**
TOTAL		**10,000**

Source: *SM Project Outline: Clarendon Diversion Channel Inlet trash screens*, Seqwater, undated

Seqwater indicates that the budget is accurate to ± 30%. This level of accuracy is appropriate for a project in the Concept and Feasibility phase. Seqwater advises that the cost estimate was developed with regard to the experience of undertaking similar projects previously.

SKM has undertaken a cost estimate for the supply and install costs for the refurbishment of the trash screens, based on industry experience. SKM would expect the total overhead costs associated with

the project to be up to 30% of the contract costs for a project with a value less than $100,000. SKM's estimate is provided and contrasted with Seqwater's cost estimate in **Table 73**.

Table 73 Cost estimate comparison

Component	Seqwater estimate ($)	SKM estimate ($)	Difference (%)
Design	500	531	6%
Procurement	500	531	6%
Supply and Install			
Removal, clean, patch paint as required and reinstallation of 3 x trash screens	6,500	7,350	13%
Crane hire, removal and replacement	1,000	1,500	50%
Seqwater Internal Costs	1,500	1,593	6%
Total	**10,000**	**11,505**	**15%**

SKM assessed the allowance for design, procurement and Seqwater internal costs. Whilst these are considered to be high compared to other Seqwater projects and standard industry practice, the overall costs are within the Seqwater estimate for the project are within 30% of the SKM's estimates and is therefore considered efficient.

Decision making process

As indicated above, no options analysis has been undertaken to date. This is expected to occur later in the project. SKM recommends that Seqwater undertakes options analysis, prior to the implementation of the project as proposed. However, given the nature of the project, an options analysis is not expected to significantly change the scope of works.

Conclusion

On the basis that the standards of works are appropriate and the project costs are considered reasonable, the project has been assessed as efficient.

5.15.7. Summary

The project is assessed as prudent as the refurbishment of the trash screens are required to operate the Central Lockyer Valley Water Supply Scheme, the timing of the works is considered appropriate and the scope of works is reasonable.

The project is assessed efficient as the scope of works is appropriate, the standards of works are consistent with industry practice and the revised project costs are consistent with SKM's estimate for such works.

The quality of the information provided on this project is outlined below in **Table 74**.

- **Table 74 Quality of information provided**

Section of CAPEX review	Clarendon Diversion Trash Screens
Project description	
Provided documentation	
Prudency	
Identified need	
Timing of asset replacement or refurbishment	
Scope of works	
Efficiency	
Scope of works	
Standards of work	
Project cost	
Decision making process	

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

Additional information will be required for future stages of the project, for example, prior to implementation, SKM would expect to see more detail on the scope of works, including a completed options analysis and condition assessment.

5.15.8. Application to other projects

SKM has been asked to determine whether the results of the trash screen project reviewed in detail can be applied to nine additional trash screen projects, as outlined in **Table 75**.

- **Table 75 Additional trash screen projects**

Parent Asset	Asset Description	Works Descriptions	Renewal Year	Item Cost ($'000)
Atkinson Dam	Trash Screens	Replace	2030	45
Somerset Dam	Trash Screens	Replace	2026	1,399
Borumba Dam	Trashracks	Replace	2035	11
Morton Vale Reticulation	Trash Screen	Refurbish	2015	18
Maroon Dam	Intake Trash Screens	Refurbish	2030	36
Somerset Dam	Spares in Sand Blasting Shed for Refurbishment	Replace	2026	175
Wivenhoe Dam	Trash Rack	Refurbish	2016	80
Kent's Lagoon Diversion Weir	Trash Screen	Replace	2035	5
Upper Warrill Diversion	Trash Screen at inlet	Replace	2025	3

As shown by **Table 75** the projects range significantly in cost (from $3,000 to $1.4 million). In addition there a number of variables associated with the trash screens such as design, size, location (ie pump station, weir, dam), site specific conditions (ie flow of creek/river/dam). Of the similar trash screen projects, six are replacement projects that are differ in nature to the low value, periodic refurbishment

project that was reviewed. SKM consider that it is not possible to extrapolate the findings from a refurbishment project to a replacement project as the two activities are very different in scope.

Further, without information on the age of the three assets being refurbished, the time since the last refurbishment and the size of the assets, it is not possible to comment definitively on the prudency and efficiency of these projects. However, if Seqwater has followed a similar process as for the Clarendon Diversion Trash screen in determining the timing of the refurbishment and cost estimate to the work then it is likely that, upon review, these three additional refurbishment projects would be deemed to be prudent and efficient.

Table 76 Application of findings to additional trash screen projects

Parent Asset	Asset Description	Works Descriptions	Renewal Year	Item Cost ($'000)	Application possible?	Prudent and efficient
Atkinson Dam	Trash Screens	Replace	2030	45	No	N/A
Somerset Dam	Trash Screens	Replace	2026	1,399	No	N/A
Borumba Dam	Trashracks	Replace	2035	11	No	N/A
Morton Vale Reticulation	Trash Screen	Refurbish	2015	18	Yes	Yes
Maroon Dam	Intake Trash Screens	Refurbish	2030	36	Yes	Yes
Somerset Dam	Spares in Sand Blasting Shed for Refurbishment	Replace	2026	175	No	N/A
Wivenhoe Dam	Trash Rack	Refurbish	2016	80	Yes	Yes
Kent's Lagoon Diversion Weir	Trash Screen	Replace	2035	5	No	N/A
Upper Warrill Diversion	Trash Screen at inlet	Replace	2025	3	No	N/A

5.16. Central Lockyer Valley and Mary Valley Metering

5.16.1. Proposed capital expenditure

Table 77 shows the proposed cost of the water metering requirements in the Central Lockyer Valley and Mary Valley water supply schemes.

- **Table 77 Central Lockyer Valley and Mary Valley Metering – proposed capital expenditure profile**

Source		Costs per year ($000s)			
	Year Range	2013-14-2014-15	2015-16-2021-22	2022-23-2035-36	Total
Seqwater's Initial Submission – Irrigation Infrastructure Renewal Projections	Central Lockyer	0	0	1007	**1007**
	Mary Valley	0	0	523	**523**
	Pie Creek	0	0	140	**140**
Seqwater's Revised Submission	Central Lockyer	264	1176	490	**1930**
	Mary Valley	198	392	252	**842**
	Pie Creek	70	0	70	**159**

The above costs show the values within Seqwater's initial submissions (*Irrigation Infrastructure Renewal Projections - 2013/14 to 2046/47,* Seqwater, April 2012) and those subsequently provided to the Authority, when a different approach was taken to recovering metering costs. The figures subsequently provided to the Authority are consistent with Seqwater's business case for this project.

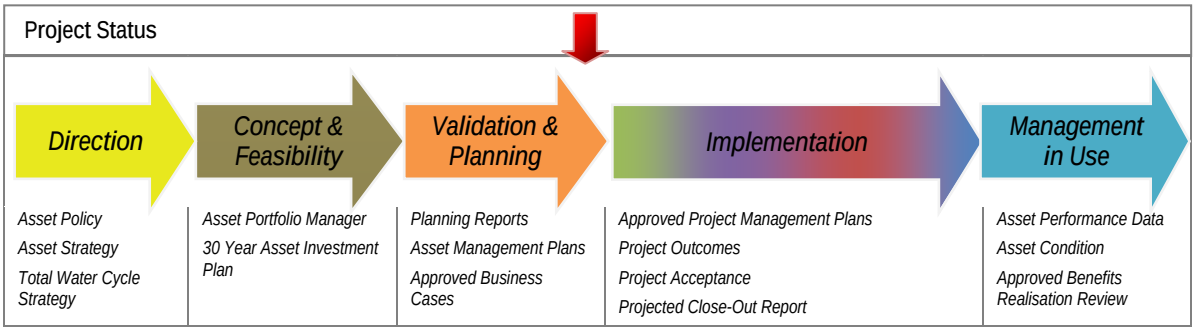
5.16.2. Project description

This review concerns the replacement of water meters within the Central Lockyer Valley and Mary Valley water supply schemes. The irrigation schemes provide for the supply of bulk untreated water to irrigation and commercial customers. Customers in these schemes are metered so as to record the volume of water taken. This metering is required for management of water supplies, reporting and billing purposes. This project concerns the renewal of water meters in the Central Lockyer Valley and Mary Valley Water Supply Schemes. Seqwater has advised that they have two types of meters: river meters and groundwater meters. Most meters are river meters with groundwater meters only in the Central Lockyer Valley Water Supply Scheme.

In the Mary Valley Water Supply Scheme, Seqwater proposes to spend $1 million and $1.9 million in the Central Lockyer Valley Water Supply Scheme.

5.16.3. Project status

The project is to be commenced in 2012-13 as a rolling program of renewals. In the Seqwater Asset Delivery Framework, the project is classified as pre-implementation, in the Validation and Planning stage. SKM considers the current position in the Seqwater Asset Delivery Framework as appropriate given the value and timing of this renewal project.



The available information on this project is consistent with the current status of the project. In line with Seqwater's procedures, a number of business cases have been developed. SKM considers the documentation developed to be in line with good industry practice.

5.16.4. Provided documentation

The documents used for this review are:

- *2013-14 Irrigation pricing – Submission to the Queensland Competition Authority*, Seqwater, April 2012
- *Central Lockyer Valley Water Supply Scheme – Network Service Plan*, Seqwater, undated
- *Irrigation Infrastructure Renewal Projections – 2013/14 to 2046/47: Report – Central Lockyer Tariff Group*, Seqwater, April 2012
- *Information Request Response – QCA Irrigation Price Review 2013-17: RIF032 Additional Projects*, Seqwater, 29 August 2012
- *Business Case(Medium Projects) Irrigation Customer Meter Renewal,* Seqwater, Version 1.0 8/06/12
- *Business Case(Medium Projects) Irrigation Customer Meter Renewal,* Seqwater, Version 2.0 12/07/12
- *Information Request Response – QCA Irrigation Price Review 2013-17: RFI035 River Meters and Groundwater Meters,* Seqwater, 29 August 2012
- *RFI035 Central Lockyer metered offtakes inspected* (excel spreadsheet), Seqwater, undated
- *RFI035 Lower Lockyer metered offtakes inspected* (excel spreadsheet), Seqwater, undated
- *RFI035 Warrill Valley meter offtakes inspected* (excel spreadsheet), Seqwater, undated
- *RFI035 Meters Purchase Order,* Seqwater, February 2012
- *RFI035 Meters Contractor Invoice,* Hayes Welding and Fabrication, May 2012

The provided documentation has been adequate to conduct an assessment of this project.

5.16.5. Prudency

Identified need

The water meters are required to operate the Central Lockyer Valley and Mary Valley Water supply schemes, as outlined in the relevant Resource Operations Licence or Interim Resource Operations Licence.

All the Seqwater's water supply schemes have an associated Resource Operations Licence or Interim Resource Operations Licence issued by the environmental regulator. The Mary Valley Water Supply Scheme is managed by a Resource Operations Licence. The Resource Operations Licence requires Seqwater, the license holder, to undertake monitoring and reporting in accordance with the Resource Operations Plan. The Resource Operations Plans require the license holder to record the total volume of water taken by each water user. For example Mary River Resource Operations Plan Chapter 13, Part 3 Sect 212 states:

> *The resource operations licence holder must record the total volume of water taken by each water user for each zone as follows—*
>
> *c) the total volume of water taken each quarter*
> *d) the total volume of water entitled to be taken at any time; and*
> *e) the basis for determining the total volume of water entitled to be taken any time.*

The Central Lockyer Valley Water Supply Scheme is managed by an Interim Resource Operations Licence. Where the scheme is operated under an Interim Resource Operations Licence, a Resource Operations Plan is yet to be developed. In these schemes the Interim Resource Operations Licence specifies the requirement to measure water taken by water users. For example the Central Locker Valley Water Supply Scheme Interim Resource Operations Licence requires that:

> *The Licensee must:*
>
> *a) Implement and maintain a water quantity monitoring program, in accordance with the Department of Natural Resources and Water water monitoring procedures and protocols specified by the Chief Executive from time to time, which measures and records:*
> *i. diversions of water by each customer of the Licensee; diversions to channel distribution systems; diversions to watercourses used for water distribution and drainage; aggregate use by water users from each channel distribution system; water use for each grouping of interim water allocation in SCHEDULE 2.1; and releases from distribution systems to supplement watercourses or for other purposes; on a quarterly basis.*

Therefore in order to comply with these monitoring requirements Seqwater must install a working water meter for each active water user (customer). Seqwater must record actual water used through each meter.

In addition, Seqwater has identified health and safety as a driver, as per the following extract from the business case:

> *The Work Health and Safety Act 2011 requires elimination of risks to health and safety, so far as is reasonably practicable; and if it is not reasonably practicable to eliminate risks to health and safety, to minimise those risks so far as is reasonably practicable. The location and arrangement of Seqwater's irrigation water meters are such that reading and maintaining those meters is a risk to the health and safety of Seqwater employees and contractors.*

Seqwater has identified the health and safety risks associated with the location of the meters on steep and uneven slopes. Many of the meters are installed low on stream banks. There is a high risk of slips, trips and falls as the ground is uneven, steep and often concealed by tall grass. There is also a

heightened risk of snake bite as the stream banks are good snake habitat and the snakes are concealed by the long grass.

In summary, operational water meters are required to operate the Central Lockyer Valley and Mary Valley water supply schemes and therefore renewal of these meters is prudent. SKM agrees that the minimisation of health and safety risks is another legitimate driver for the project.

Policies and procedures

In the identification of this project, Seqwater has undertaken the following processes:

- Condition assessment of meters within the Central Lockyer Valley, Warrill Valley and Lower Lockyer Valley water supply schemes
- Development of a business case for replacement of meters within all areas, including options assessment, consideration of risk and cost assessments, including NPV calculations

The above processes are in line with Seqwater's standard procedures and SKM considers them to follow good industry practice.

SKM notes that the focus of the audit of meters within the Central Lockyer Valley, Warrill Valley and Lower Lockyer Valley water supply schemes was condition, but in undertaking the audit it became apparent to Seqwater that many of the meter installations were risky from a workplace health and safety perspective. Unfortunately this assessment was not specifically recorded at the time. It is noted that the assessments for the Warrill Valley and Lower Lockyer Valley water supply schemes also contains assessment of the 'criticality' of the meter. SKM recommends that future meter audits also incorporate consideration of risk, both business and health and safety, and that this is suitably documented.

Timing of asset replacement or refurbishment

The *Business Case (Medium Projects) Irrigation Customer Meter Renewal* makes a specific recommendation for the replacement of meters within the 2012-13 fiscal year, however Option 2 within this report outlines the proposed program for meter replacements.

Meters required to be replaced due to high or extreme health and safety risks are prioritised. The business case identifies 95 meters to be replaced per year for the first 3 years of the programme, including 20 in the Central Lockyer Valley Water Supply Scheme and 15 within the Mary Valley Water Supply Scheme. Meters required to be replaced requiring a modification of the installation infrastructure to meet with manufacturer's recommendations are given a lower priority, 70 meters are to be replaced annually over the following seven years of the program. From 2022-23 onwards, 70 meters are to be replaced annually as part of ongoing renewals.

No information has been provided on the current age of the assets to be replaced. Seqwater's standard useful asset life for water meters is 15 years (refer to Seqwater's *Report on Methodology,* Appendix C,). Seqwater's standard asset refurbishment for water meters is unspecified (refer to Seqwater's *Report on Methodology,* Appendix D). In the provided business case, a 20 year useful asset life is assumed. SKM believes the standard asset life of 15 to 20 years to be reasonable and in keeping with industry practice.

SKM has reviewed the outcomes of the condition assessment provided. The reviewed sites have been allocated a condition score as follows:

- Condition 1 – As new
- Condition 2 – Requires maintenance to restore design service capability
- Condition 3 – Required refurbishment to restore design service capability
- Condition 4 – Beyond economic repair
- Condition 5 – Asset has failed

SKM notes that in the metering audit for the Central Lockyer Valley Water Supply Scheme, 466 meters were recorded. Of these, 56% are noted as used.

- **Table 78 Summary of condition assessment for meters within the Central Lockyer Valley Water Supply Scheme**

Condition Rating	Number of meters	Number of meters listed as being in use
Condition 1 – As new	0	0
Condition 2 – Requires maintenance to restore design service capability	1	1
Condition 3 – Required refurbishment to restore design service capability	76	52
Condition 4 – Beyond economic repair	339	199
Condition 5 – Asset has failed	52	16
Total	**468**	**268**

It is noted that the vast majority of meters (over 80%) are rated as condition 4 or 5, and therefore require replacement, as opposed to refurbishment. This percentage is similar for river and groundwater meters. Of the 33 channel meters, 31 are listed as condition 3, although as noted above, channel meters form the smallest percentage of all meters.

No condition assessment has been undertaken for the Mary Valley Water Supply Scheme, but given the similar conditions recorded across the three areas investigated, it is likely that many meters within the Mary Valley Water Supply Scheme are also in poor condition. Seqwater has stated that advice from operational staff combined with the experience of condition from the audited schemes has been used to predict the meter renewal requirements in the unaudited schemes.

SKM visited a number of metering sites as part of this investigation. In addition, a number of photos were provided of poor metering installations. This evidence supports the need to replace the existing meters, including the need to reposition meters at locations that represent a health and safety risk to new locations that do not place operators at risk. The evidence also supports the need to provide an adequate pipework configuration to achieve the most accurate reading.

On the basis that the majority of meters are recorded as either not working or beyond economic repair, SKM supports the need to replace rather than refurbish the existing meters.

Timing – meter replacement driven by health and safety

As noted above, Seqwater has undertaken a condition audit of meters in the Central Lockyer Valley, Lower Lockyer Valley and Warrill Valley Water Supply Schemes. As the audit did not specifically capture the number of meters to be replaced from a health and safety perspective, this number has been estimated based on the experience of the inspection and advice from the scheme operators.

SKM believes that it is good industry practice to mitigate health and safety risks as a priority. It is recommended that the extreme risk sites are prioritised first, and then the high risk sites are prioritised based on the age and condition of the meter. SKM considers the three year program to replace meters representing a health and safety risks, 95 meters a year, to be reasonable and achievable, given the business as usual program of replacing 5% of meters (35 meters) a year.

Timing – meter replacement driven by need to meet manufacturer's guidelines

As noted above, meters required to be replaced to modify installation to meet with manufacturer's recommendations are given a lower priority. In Seqwater's business case, it is stated that "*of the meter installations that were in use less than 10% were installed in accordance with the manufacturer's recommendations*". This statement is supported by SKM's site visits and photographic evidence.

The result of meters not being installed according to manufacturer's guidelines is that the accuracy of the meter is likely to be lower than could otherwise be achieved. Due to the nature of reporting meter faults, an under reading is unlikely to be reported. In addition, if an irrigator challenges the accuracy of a new meter, Seqwater will have limited grounds to enforce the reading if it is demonstrably installed incorrectly.

The business case states that the "*meter fleet is old*". No information has been provided to SKM on the age profile of the existing meters. SKM recommends that Seqwater records the date of installation, and hence age, of the meters (where possible for existing meters and certainly for new installations) and uses this information, in conjunction with the condition assessments of the meter and the meter installation, to prioritise the replacement works.

The number of meters to be replaced has been investigated. The business case states that "*the low number of active water licences is partially due to the low water availability during the dry period before 2008. It is likely that some of these inactive licenses will become active now that there is improved water availability. For planning purposes a fleet of 700 active water meters has been assumed across all water supply schemes*." SKM only has partial information on the total number of meters and number of meters in use. For the Central Lockyer Valley Water Supply Scheme, currently 56% are noted as used. This supports Seqwater's assumption that of the approximately 1,400 water entitlements in these water supply schemes, approximately 700 entitlements are in active use. For planning purposes a fleet of 700 active water meters has been assumed across all water supply schemes.

Seqwater plans to replace 70 meters a year to modify installation to meet with manufacturer's recommendations over the following seven years of the program. The number of meters to be replaced is shown in **Table 79**.

Table 79 Number of meters replaced

Replacement driver	Annual Replacement of Meters	Years	Total number of meters replaced
Health and safety	95	3	285
Meet manufacturer's guidelines	70	7	490
Total			**775**

Table 79 highlights that the total number of meters to be replaced exceeds the current estimate of the fleet of 700 active water meters. This may be due to an allowance for the fleet to increase over time as part of a re-uptake of water licences; however, this is not specifically stated by Seqwater and no justification has been provided for this assumption.

In summary, SKM finds the first six years of the programme to be prudent, but no supporting information is provided for the renewal of meters in addition to the estimated active fleet, hence the final 75 meters are found not to be prudent.

The business case identifies the split of meters between the five areas for the 2012-13 financial year. The Central Lockyer Valley Water Supply Scheme contains 21% of meters to be replaced, the Mary Valley and Pie Creek Water Supply Scheme, 20% of meters. On the assumption that this split is consistent for all years, this results in a reduction of 15 meters from each area.

Timing – meter replacement driven by ongoing renewal

Whilst it is noted that the business case provides recommendations for the 2012-13 year only, it provides a strategy for ongoing meter replacement. Option 2 of the business case allows for the ongoing renewal of meters on the assumption of 10% per annum. On the basis that the fleet of at least 700 active water meters will have been replaced during the first 10 years of the program, and the useful asset life of the meters is 15 to 20 years, there should be no planned replacements until after these assets have passed their useful lives. As such, SKM find the renewal of meters from 2022-23 to 2027-28 not to be prudent. In addition, if after this date meters are renewed within a similar program (70 meters a year, for ten years from 2027-28 to 2037-38) meter replacement costs will not be required from 2038-39 onwards until the second set of replacement meters start to reach the end of their serviceable life. SKM notes that costs have been allocated up to 2035-36.

SKM notes that the timing of meter replacement is likely to be subject to many changes over the next 24 years, and as such, the costs associated with these replacements are likely to change. However, based on the current proposed program of meter replacements, these costs should be updated to reflect the best available information.

Scope of works

Seqwater intends to replace the existing meters with a meter arrangement that meets both health and safety and manufacture's guidelines. SKM supports this high level scope of works as the best means of achieving the desired outcome of providing a flow measurement to meet the requirements of the Mary River Resource Operations Plan and the Central Lockyer Valley Interim Resource Operations Licence. SKM also supports Seqwater's decision to replace the existing meters with relatively low cost mechanical meters. As the selection of meters is a complex issue, further commentary is provided below.

The metering of non-urban water is discussed within a number of documents, including National Water Initiative agreement. In June 2004, Queensland became a signatory to the National Water Initiative. Under this agreement, the Commonwealth, State and Territory governments agreed (among other things) to develop and apply a national meter specification and national meter standard. In order to establish national metering standards as required by the National Water Initiative agreement, the National Framework for Non-urban Water Metering Policy was developed. The National Policy includes requirements and specifications for non-urban water meters. To assist with implementation

of the National Framework the Queensland Government developed the Queensland State Implementation Plan for Non-Urban Water Metering.

The Queensland State Implementation Plan sets out the targets for the installation of new meters and replacement of existing meters as follows:

- All new meters installed from 1 July 2010 will comply with the National Framework.
- Existing meters that are within the ±5% tolerance limits may be deemed to be compliant.
- All existing non compliant meters shall be upgraded progressively according to the significance of the metering installation, as follows:
  i. *Largest bulk water meters:* all non-compliant meters on river flow control works or offtakes to irrigation networks of 5000ML/year or more capacity to be replaced with compliant meters by 30 June 2014;
  ii. *Smaller bulk water meters:* all non-compliant meters on river flow control works or offtakes to irrigation networks of less than 5000ML/year capacity to be replaced with compliant meters by 30 June 2016;
  iii. *Other meters not in irrigation networks:* all other non-compliant meters used to extract water directly from rivers or aquifers (i.e. not within an irrigation network) to be replaced by 30 June 2016;
  iv. *All other existing meters:* all other non-compliant meters to be replaced with conforming meters at the end of the expected life of the meter or by 30 June 2020, whichever occurs first.

Over the course of this project, Seqwater has developed two business cases. The first business case was developed based on meeting the requirements of the National Water Initiative; the second business case was developed excluding the requirements of the National Water Initiative. Seqwater engineering analysis is that mechanical meters will have difficulty meeting approval requirements of the National Water Initiative. Therefore, installation of magnetic flow (magflow) meters is likely to be required.

Seqwater has considered two main options for metering: the replacement of the existing meters with a similar mechanical meter and the replacement of the meters with magflow meters. Both meters require minimum pipework configuration standards, eg a number of pipe lengths both upstream and downstream of the meter to reduce the effects of turbulent flow within the pipeline.

Seqwater calculated the NPV costs over 20 Years for the two meter types as follows:

- Magflow $8,380
- Mechanical Meter $5,650

SKM investigated whether a magflow meter would be more appropriate for high usage customers, on the basis that a more reliable meter may increase revenue. SKM has concluded that installation of magflow meters on these grounds is not justified as there are very few high use irrigators and the usage changes frequently.

Seqwater provided the following simplified analysis of the annual usage in 2010-11 in the Central Lockyer Valley. It is noted that a recorded usage of 0ML may indicate the meter does not work rather than no water is provided.

- **Table 80 Central Lockyer Valley - annual usage in 2010-11**

Usage	0 ML	0 – 10 ML	10 – 50 ML	50 – 100 ML	> 100 ML
Customers	277	78	93	17	3
Est. total annual Revenue (Part B) per Customer ($32/ML)	$0	$150* (5 ML)	$960 (30 ML)	$2400 (75 ML)	$6400 (200 ML)

*Note: this information is taken from information provided by Seqwater. SKM believes this figure should be $160.

Customers in the Central Lockyer Valley are required to pay minimum charges regardless of water usage. This is equal to approximately 8 ML usage ($258). Therefore customers owning approximately 350 of the 468 meters in the scheme paid a bill based on minimum charges rather than water usage.

In addition, Seqwater has stated that reliable information regarding high use meters is not available. Usage varies over time depending on water availability and individual operational decisions by the irrigators. Usage is not necessarily linked to licence volumes as the irrigator can trade water with other licence holders. A meter that has high usage now may not be a high use meter in the future.

SKM understands that meters that are linked to a high volumetric water allocation and are in poor condition will be given a high priority. SKM agrees that this is good industry practice.

The *Queensland State Implementation Plan for Non-Urban Water Metering* (State of Queensland (Department of Environment and Resource Management) 2010) states that "*Under the Water Act 2000, Water Regulation 2002 or amended resource operations licence, all non-urban meters shall comply with the national metering standards by 30 June 2020, unless otherwise exempted*."

Seqwater has stated that "*the Implementation Plan does not appear to have legislative force*." Seqwater is not planning on meeting the National Water Initiative requirement at this time as the program is unfunded by government.

SKM understands that the need to meet the National Water Initiative requirements is a contentious issue, with significant financial consequences. A recommendation on the need to follow the National Water Initiative requirements is considered to be outside of the brief of this report. However, SKM understands that Ministerial Direction specifies that capital costs associated with the adoption of a national metering standard are not to be recovered. As such, SKM supports Seqwater's analysis that magflows would only be justifiable if National Water Initiative compliance was required and concludes that the use of mechanical meters is appropriate.

Seqwater has stated that every renewed meter installation will be considered individually prior to renewal to ensure the most appropriate installation is provided. This is because there is significant variability in each installation and the customer's needs must also be considered. SKM agrees that this is necessary and recommends that whilst standard designs should be used where possible (to achieve efficiency of design and consistency in operations) these will need to be adapted for individual sites.

SKM recommends that where appropriate and where of minimum or no cost, the requirements of the National Water Initiative are considered, as way of future proofing the meter sites, should the decision be taken to adopt National Water Initiative requirements in future.

Conclusion

On the basis of the timing of the works, the project has been assessed as partially prudent. The need to replace meters and modify installations to comply with manufacturer's recommendations and for ongoing renewal has been found to be only prudent for certain years.

- **Table 81 Summary of prudency**

Year	Activity	No. of Meters	Prudent?
2012-13 - 2014-15 (3 Years)	Address WH&S Issues	95 per Annum	Prudent
2015-16 - 2021-22 (7 Years)	Replace meters and modify installations to comply with manufacturer's recommendations	70 per Annum	Partially prudent, no justification of increase to fleet numbers hence 70 replacement meters per annum are found to be prudent for the first 6 years of the program but none for the 7th year of the program
2022-23 onwards	Ongoing renewal (10% per annum)	70 per Annum	Partially prudent, meter replacement not required for all years

5.16.6. Efficiency

Scope of works

As discussed above, SKM considers the scope of works as the best means of achieving the desired outcome of providing a flow measurement to meet the requirements of the Mary River Resource Operations Plan and the Central Lockyer Valley Interim Resource Operations Licence.

Standard of works

As discussed above, the National Water Initiative agreement sets out the national priorities and targets for the installation of new meters and replacement of existing meters. Seqwater has currently indicated that it will not be following the National Water Initiative agreement.

In addition to the National Water Initiative agreement, there is a technical specification for non-urban water meters. The Australian Standards for non-urban water meters standards (initially released as technical specifications) are administered by Standards Australia, and consist of best practice guidelines designed to ensure meters are installed and maintained to perform to an acceptable standard. Australian Technical Specifications *ATS 4747 Meters for Non-Urban Supply* currently includes:

- Part 1: Glossary of Terms
- Part 2: Specification of meters for closed conduits fully charged
- Part 3: Specification of open channel meters
- Part 5: Installation, commissioning and maintenance of meters for closed conduits fully charged
- Part 6: Installation and commissioning of open channel meters
- Part 8: Code of practice for in-service metrological assurance of non-urban water meters in full flowing pipes (closed conduit in-service compliance)

- Part 9: Code of practice for in-service metrological assurance of non-urban water meters in open channels and partially filled pipes (open channel in-service compliance).

The specifications are being reviewed, after which they will be republished as Australian Standards.

SKM recommends that Seqwater reviews the Australian Technical Specifications (or subsequent Australian Standard) as part of the ongoing design within the next phase of the metering project.

Project cost

The project costs are presented in **Table 82**.

Table 82 Proposed program costs

Year	Activity	No. of Meters	Cost per Meter	Annual Cost
2012-13 – 2014-15 (3 Years)	Address WH&S Issues	95 per Annum	$6,600	$627,000
2015-16 - 2021-22 (7 Years)	Replace Meters and modify installations to comply with manufacturer's recommendations	70 per Annum	$5,600	$392,000
2022-23 onwards	Ongoing renewal (10% per annum)	70 per Annum	$1,600	$112,000

SKM understands that five meter installations were renewed in the Lower Lockyer Valley Water Supply Scheme during 2011-12. The cost per meter was approximately $8,000 excluding procurement and project management costs. SKM understands that these meters were particularly problematic and were Seqwater's highest priority to rectify. This work was procured through a competitive tender process. A copy of the purchase order and contractor's invoice was provided by Seqwater. It is noted that whilst the values agree there is a minor mismatch with the wording of the contractors invoice (pumps rather than meters).

Seqwater anticipates that not all meters will be as difficult to rectify and that increased meter numbers will improve the efficiency of the work therefore the estimate of $6,600 per meter is considered adequate.

SKM's estimate

Seqwater has provided a breakdown of the cost estimate for the replacement costs. This is shown in **Table 83**.

Table 83 Cost estimation - cost per meter

Items	Sub-Items	Cost
Design / Consultants		$0
Parts / Equipment	New flow meter	$600
Contractors / Construction	Installation and materials	$4,000
Sub-total		**$4,600**
Management Costs		
Planning (incl. Strategic Maintenance consultation and writing detailed scope and PMP)		$250
Community and Landholder Consultation		$450
Site Inspections (allowing on average three visits)		$450

Items	Sub-Items	Cost
RFQ's, Evaluations and contractor selection		$150
Flow Meter procurement		$200
Administration (incl. PO requests, prog. reporting (possibly X-Info Connect) and gaining PO approvals etc)		$200
Contractor Management (incl. WH&S, Quality, consultations and site visits (these last two already costed in items 2 & 3 above))		$150
Commissioning (incl. site inspections and close out report)		$150
Sub-total		**$2,000**
Total per meter		**$6,600**

SKM has estimated the costs of a single meter installation based on Seqwater's proposed standard installation. The cost for the flow meter is based on a range of market quotations, and the other cost components have been estimated by SKM from historic costs for similar projects. Seqwater propose to purchase all meters from a single supplier and to engage a single contractor to install all meters. Seqwater should be able to negotiate a lower cost than SKM's estimate for flow meters and their installation when purchasing these in bulk. The summary of the cost comparison is shown in **Table 84**.

Table 84 Cost estimation comparison

Items	Sub-Items	Seqwater	SKM	Difference
Parts / Equipment	New flow meter	$600	$875	46%
Contractors / Construction	Installation and materials	$4,000	$5,700	43%
Sub-total		**$4,600**	**$6,575**	**43%**
Management Costs		$2,000	$1,600	-20%
Total		**$6,600**	**$8,175**	**24%**

Seqwater's lower estimate may be caused by its intent to purchase meters in bulk. However, meter costs form only a small part of the overall meter installation costs. In addition, each meter installation will have to be tailored to meet site specific conditions, so there will be some minor variation in the assets required at each site. SKM considers that the cost difference between bulk purchasing and single purchasing of meters and the cost savings arising from appointing a single contractor on the overall project costs will be of the order of the difference between SKM's estimate and Seqwater's estimate, as the total variance between the SKM estimate and the Seqwater estimate is less than 30%, the Seqwater estimate is accepted as valid and hence efficient.

SKM notes that for the irrigators who pay the minimum charges regardless of water usage ($258) the payback period for the initial installation exceeds the life of the meter. This is not the case with the cost associated with the ongoing renewal of the meters ($1,600 per meter); however the costs are still significant.

Third party estimates

As part of the *Queensland State Implementation Plan for Non-Urban Water Metering* (State of Queensland (Department of Environment and Resource Management) 2010, a cost estimate was produced to replace meters for the Water Service Providers (WSPs).

Table 85 Estimated new meter requirements for WSPs

WSP Number	Number of meters	Estimated cost	Calculated cost per meter
SunWater	1100	$13,000,000	$11,818
QLD Bulk Water Auth. (Seqwater)	**140**	**$1,500,000**	**$10,714**
Other WSPs (various sizes)	150	$2,500,000	$16,667
Total	1390	$17,000,000	$12,230

(Source: Table 2: Estimated new meter requirements for WSPs, *Queensland State Implementation Plan for Non-Urban Water Metering* (State of Queensland (Department of Environment and Resource Management) 2010)

It is noted that the above costs are higher than those proposed by Seqwater.

Decision making process

Seqwater has undertaken a detailed decision making process as outlined in its business case. This incorporates options assessment, including consideration of the 'business as usual' approach, includes a consideration of risk and also incorporates cost assessments, including NPV calculations.

Conclusion

Given that the standards of works are acceptable and the proposed project costs are considered reasonable, the project has been assessed as efficient.

5.16.7. Summary

On the basis of the timing of the works, the project has been assessed as partially prudent. The need to replace meters and modify installations to comply with manufacturer's recommendations and for ongoing renewal has been found to be only prudent for certain years.

Given that the standards of works are acceptable and the proposed project costs are considered reasonable, the project has been assessed as efficient. The quality of the information provided on this project is outlined below in **Table 86**.

- **Table 86 Quality of information provided**

Section of CAPEX review	Central Lockyer Valley and Mary Valley Metering		
Project description			
Provided documentation			
Prudency			
Identified need			
Timing of asset replacement or refurbishment			
Scope of works			
Efficiency			
Scope of works			
Standards of work			
Project cost			
Decision making process			
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

The value of expenditure considered to be prudent and efficient is outlined below in **Table 87**.

- **Table 87 Central Lockyer Valley and Mary Valley Metering - Revised capital expenditure profile**

Source		Costs ($'000)*			
	Year Range	2013-14-2014-15	2015-16-2021-22	2022-23-2035-36	Total
SKM proposed revised costs	Central Lockyer	264	997	317	**1,578**
	Mary Valley	198	330	158	**687**
	Pie Creek	40	67	29	**136**

*Note: the costs above are the sum of costs within the indicated range of years

5.16.8. Application to other projects

The majority of this review has been based on the business cases provided by Seqwater, which cover the following areas:

- Mary Valley Water Supply Scheme
- Pie Creek Distribution System
- Central Lockyer Valley Water Supply Scheme
- Lower Lockyer Valley Water Supply Scheme
- Warrill Valley Water Supply Scheme
- Logan River Water Supply Scheme
- Cedar Pocket Dam Water Supply Scheme

Seqwater's total proposed expenditure is outlined in **Table 88**.

Table 88 Metering for all areas

Source	Costs ($000s)*				
	WSS	2013-14-2014-15	2015-16-2021-22	2022-23-2035-36	Total
Seqwater proposed costs	Central Lockyer	264	1176	490	1,930
	Mary Valley	198	392	252	842
	Pie Creek	40	77	42	159
	Logan	132	238	154	524
	Lower Lockyer	316	154	224	694
	Morton Vale	0	119	42	161
	Cedar Pocket	14	42	28	84
	Warrill Valley	290	546	336	1,172
	Total				**5,566**

*Note: the costs above are the sum of costs within the indicated range of years

SKM considers that the above findings can be applied to the above areas. The provided business cases do not deal with the metering of the Central Brisbane River Water Supply Scheme. Metering of that scheme will be the subject of a separate business case.

Table 89 Application of findings to metering projects

Project	Application possible?	Prudent and efficient
Upper Mary Valley Water Supply Scheme	Yes	Partially prudent and efficient
Pie Creek Water Supply Scheme	Yes	Partially prudent and efficient
Central Lockyer Water Supply Scheme	Yes	Partially prudent and efficient
Lower Lockyer Valley Water Supply Scheme	Yes	Partially prudent and efficient
Central Brisbane River Water Supply Scheme	No	N/A
Warrill Valley Water Supply Scheme	Yes	Partially prudent and efficient
Logan River Water Supply Scheme	Yes	Partially prudent and efficient
Cedar Pocket Dam Water Supply Scheme	Yes	Partially prudent and efficient

The value of expenditure considered to be prudent and efficient is outlined below in **Table 90**. A full breakdown of the costs is included in **Appendix B**.

Table 90 Metering for all areas - revised capital expenditure profile

Source	Costs ($000s)*				
	WSS	2013-14-2014-15	2015-16-2021-22	2022-23-2035-36	Total
SKM proposed revised costs	Central Lockyer	264	997	317	1,578
	Mary Valley	198	330	158	687
	Pie Creek	40	67	29	136
	Logan	132	196	101	429
	Lower Lockyer	317	134	144	595
	Morton Vale	0	101	29	130
	Cedar Pocket	13	34	14	61
	Warrill Valley	290	465	216	971
	Total				**4,586**

*Note: the costs above are the sum of costs within the indicated range of years

5.17. Overall Summary

A sample of 12 projects planned to be undertaken during the 20 year annuity renewals period were selected by the Authority as a representative sample of the capital expenditure program for Seqwater Irrigation Schemes. We have assessed these 12 projects against the Authority's definitions of prudency, in particular the relevant driver and the decision making process, and efficiency, including the identified need for the project, proposed timing of implementation, scope of work, standards of service and the project costs.

Of the 12 capital expenditure projects assessed, 10 were assessed as both prudent and efficient, with the exceptions being the L1 Distribution Observation Bores and the Central Lockyer and Mary Valley Metering Projects. The L1 Distribution Observation Bores Project was found not to be prudent as the bores are not required to operate the Lower Lockyer Valley Water Supply Scheme. The Central Lockyer and Mary Valley Metering Project was found to be only partially prudent, as meter replacements are only required for some of the proposed years.

For four of the projects, during the review process a revised cost has been established. This revised cost has found to be efficient.

The summary of the outcomes are included below in **Table 91**.

- **Table 91 Sample project summary - revised capital expenditure profile ($'000)**

	Expenditure Item	Item Cost ($'000)	Prudent	Efficient	Revised Cost ($'000)
1	Cedar Pocket Dam - Telemetry	68	Prudent	Efficient	68
2	Bromelton Weir - Telemetry	105	Prudent	Revised cost efficient	70
3	Clarendon Dam - Embankment (Main Dam)	312	Prudent	Efficient	312
4	L1 Distribution - Observation Bores	344	Not prudent	Efficient	0
5	Clarendon Diversion - Control Equipment	174	Prudent	Efficient	174
6	Central Lockyer - Gauging Stations	120	Prudent	Revised cost efficient	143.4
7	Clarendon Diversion - Access Road	122	Prudent	Efficient	122
8	Warrill Creek Diversion Weir - Access Road & Hard Standing	194	Prudent	Revised cost efficient	69.3
9	Calico Creek Channel/Pie Ck Main Channel – Various Air Valves	269	Prudent	Efficient	269
10	Somerset Dam - Inlet Screens & Trash Racks - Structural Walls, Columns & Beams	3,251	Prudent	Efficient	3,251
11	Clarendon Diversion - Trash Screens	50	Prudent	Efficient	50
12	Central Lockyer and Mary Valley Metering	1,670	Prudent	Revised cost efficient	2,484

5.18. Application to other projects

In addition to the expenditure items selected for detailed analysis, a number of other expenditure items were identified from the ten asset classes.

The following table identifies where SKM believes the findings of prudency and efficiency can be generalised across a particular asset class to determine the likely prudency and efficiency of total expenditure in that class.

- **Table 92 Summary of possible application of findings**

Project	Application possible?	Prudent	Efficient	Cost ($'000)
Telemetry				
Wivenhoe Dam - Telemetry	No	N/A	N/A	N/A
Maroon Dam – Telemetry	No	N/A	N/A	N/A
Clarendon Dam – Telemetry	Yes	Yes	Yes	70
Atkinson Dam - Telemetry	Yes	Yes	Yes	70
Embankment				
Clarendon Dam - Earthworks/Formation	No	N/A	N/A	N/A
Cedar Pocket Dam – Embankment	No	N/A	N/A	N/A
Borumba Dam - Embankment	No	N/A	N/A	N/A
Observation Bores				
Central Lockyer – Observation Boreholes	Yes	Yes	Yes	200
Atkinson Dam – Observation Bores (15)	Yes	Yes	Yes	75
Control Equipment				
Clarendon Diversion - Control Equipment	Yes	Yes	Yes	137
Pie Creek Pump Station - Control Equipment	Yes	Yes	Yes	123
Clarendon Diversion - Control Equipment	Yes	Yes	Yes	26
Atkinson Dam - Spillway Control Structure	Yes	Yes	Yes	20
Atkinson Dam - Spillway Control Structure	Yes	Yes	Yes	15
Atkinson Dam - Spillway Control Structure	Yes	Yes	Yes	15
Warrill Creek Diversion Weir - Control Equipment	Yes	Yes	Yes	98
L1 Distribution - Buaraba Ck Diversion Channel Gate Control Equipment	Yes	Yes	Yes	12
Borumba Dam - Control Equipment	Yes	Yes	Yes	14
Moogerah Dam - Control Equipment	Yes	Yes	Yes	21
Gauging Stations				
L1 Distribution - Gauging Stations - Lower Lockyer	Yes	Yes	N/A	N/A
Mary River - Gauging Stations	Yes	Yes	N/A	N/A
Warrill Ck - Gauging Station	Yes	Yes	N/A	N/A
Logan River - Gauging Stations	Yes	Yes	N/A	N/A
Roads				
Clarendon Diversion - Access Road	Yes	Yes	Yes	50
Clarendon Diversion - Access Road to Weir R/Bk	Yes	Yes	Yes	24
Atkinson Dam - Main Wall Embankment	Yes	Yes	Yes	42
Clarendon Dam - Access Roads	Yes	Yes	Yes	20
Clarendon Diversion - Turn Outs	Yes	Yes	Yes	15
Clarendon Diversion - Access Road to Weir R/Bk	Yes	Yes	Yes	10
Atkinson Dam - Access Road & Car park	Yes	Yes	Yes	10
Bromelton Weir – Road Amtd 113.2km	Yes	Yes	Yes	60
Pie Creek Pump Station - Access Road	Yes	Yes	Yes	81
L1 Distribution - O'Reilly Weir R/Bank Access Road	Yes	Yes	Yes	30

Project	Application possible?	Prudent	Efficient	Cost ($'000)
Air Valves				
Lake Dyer Diversion - Air Valve	No	N/A	N/A	N/A
L1 Distribution - Buaraba Creek Supply Pipeline Air Valve 1 at 24.40m	Yes	Yes	Yes	6
L1 Distribution - Buaraba Creek Supply Pipeline Air Valve 2 at 1770.30m	Yes	Yes	Yes	6
Upper Warrill Diversion - Double Air Valves-2829m, 3342m	Yes	Yes	Yes	21
Upper Warrill Diversion - Double Air Valves at 10911.60m	Yes	Yes	Yes	11
Upper Warrill Diversion - Double Air Valves at 273m	Yes	Yes	Yes	11
L1 Distribution - Buaraba Creek Supply Pipeline Double Air Valve 1 at 1551.40m	Yes	Yes	Yes	1
Trash Screens				
Atkinson Dam - Inlet Screens & Trash Racks - Trash Screens	No	N/A	N/A	N/A
Somerset Dam - Trashracks	No	N/A	N/A	N/A
Borumba Dam - Trash Screens	No	N/A	N/A	N/A
Morton Vale Reticulation - Trash Screen	Yes	Yes	Yes	18
Maroon Dam - Intake Trash Screens	Yes	Yes	Yes	36
Somerset Dam - Inlet Screens & Trash Racks - Spares in Sand Blasting Shed for Refurbishment	No	N/A	N/A	N/A
Wivenhoe Dam - Inlet Screens & Trash Rack - Trash Rack	Yes	Yes	Yes	80
Kent's Lagoon Diversion Weir - Trash Screen	No	N/A	N/A	N/A
Upper Warrill Diversion - Trash Screen at inlet	Yes	N/A	N/A	N/A

Table 92 indicates that for the majority of the project the findings from the detailed investigation can be applied to projects within the same assets class.

The general reasons for not being able to apply the findings from the detailed project reviews are as follows:

- The scope of works was significantly different to the project reviewed
- The scope of works was undefined and the cost profile indicated that the works were significantly different to the project reviewed (eg large one off project compared to a minor reoccurring spend)

5.19. Summary of information provision

For the assessment of prudency and efficiency of capital expenditure requests for information were issued to Seqwater to provide detailed information on the items within the sample. A total of 42 requests for information were submitted to Seqwater. Responses to the vast majority of these requests were received within the required timeframe and all received prior to the production of this report. In addition, a number of site visits were undertaken to meet with local Seqwater resources, to provide SKM with a greater understanding of projects and to facilitate the provision of the specific information required. For all projects, sufficient documentation was provided to complete an assessment of prudency and efficiency.

It is acknowledged that there was a short timeframe in which to provide the required information. Seqwater staff cooperated extensively to respond to requests and queries and this commitment is appreciated.

The adequacy of the information provided is illustrated in **Table 93**. The level of detail provided has been assessed based on the current status of the project. As outlined in **Section 5.3**, the majority of the projects (10 of the 12 selected) are within the concept and feasibility phase. The documentation for these projects in minimal, as is to be expected for projects within this phase. As these projects progress, it is expected that additional information would be available, eg business cases, options reports.

- **Table 93 Seqwater capital expenditure information adequacy**

Section of CAPEX review	Cedar Pocket Dam - Telemetry	Bromelton Weir - Telemetry	Clarendon Dam - Embankment (Main Dam)	L1 Distribution - Observation Bores	Clarendon Diversion - Control Equipment	Central Lockyer - Gauging Stations	Clarendon Diversion - Access Road	Warrill Creek Diversion Weir - Access Road & Hard Standing	Calico Creek Channel/Pie Ck Main Channel – Various Air Valves	Somerset Dam - Inlet Screens & Trash Racks - Structural Walls, Columns & Beams	Clarendon Diversion - Trash Screens	Central Lockyer and Mary Valley Metering
Project description												
Provided documentation												
Prudency												
Identified need												
Timing of asset replacement or refurbishment												
Scope of works												
Efficiency												
Scope of works												
Standards of work												
Project cost												
Decision making process												

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

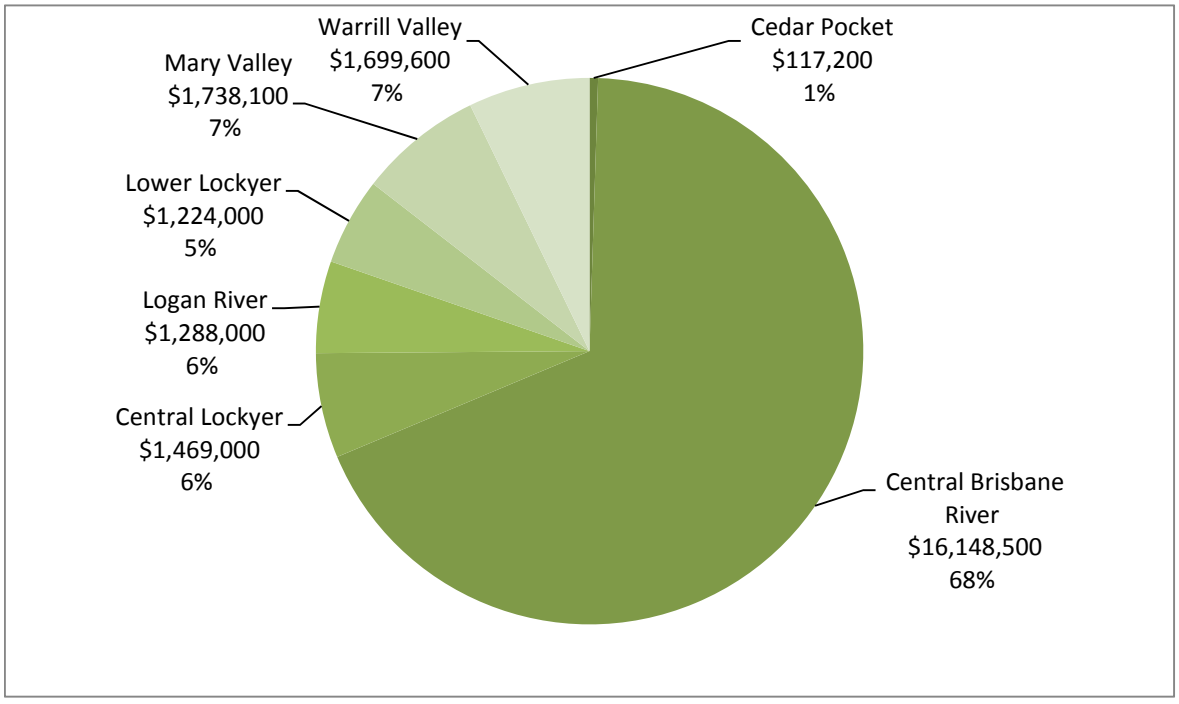
6. Operational expenditure

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

- Overview of operational expenditure
- Selected sample
- Overview of prudency and efficiency reviews of Seqwater's operational expenditure
- Detailed prudency and efficiency reviews of the selected sample
- Summary and recommendations

6.1. Overview of operating expenditure

The breakdown of Seqwater's proposed operational expenditure for the 2013-14 to 2016-17 financial years by water service scheme can be seen in **Figure 11**. Over half of this expenditure is attributed to the Central Brisbane River Water Supply Scheme, with all of the other schemes having relatively minor proposed expenditure. This expenditure will be recovered from irrigators and urban/industrial customers.



Source: Seqwater 2013-14 to 2016-17Irrigation Price Review, Seqwater, April 2012. Note this is based on Seqwater's original submission.

- **Figure 11 Operational expenditure by water supply scheme**

6.1.1. Selected sample

The Authority selected 12 operational expenditure items for detailed analysis as shown below in **Table 94**.

- **Table 94 Operational expenditure items for detailed review ($'000)**

	Operating Expenditure Item	QCA TOR Value $'000 (2013-14)	Portion of Total WSS Direct Operating Costs (%)*	Final NSP Value $'000 (2013-14)
1	Cedar Pocket Dam Operations - Direct Labour and Contractors	49.0	75	51.4
2	Central Brisbane Operations - Materials and Other	1,528.7	19	1,132.4^
3	Central Brisbane Operations - Direct Labour and Contractors	3,143.1	49	3,212.7
4	Central Lockyer Repairs and Maintenance - Planned	320.9	41	313.5
5	Central Lockyer Repairs and Maintenance - Unplanned	131.1	17	128.1
6	Logan Operations - Direct Labour	408.8	56	418.4
7	Lower Lockyer Operations - Direct Labour	225.5	30	265.8
8	Lower Lockyer Operations - Materials and Other	236.4	32	199.5^
9	Mary Valley Operations - Direct Labour	420.6	48	429.1
10	Morton Vale Operations - Direct Labour	25.0	98	25.0
11	Pie Creek Repairs and Maintenance - Planned	48.8	49	52.5
12	Warrill Valley Operations - Materials and Other	314.0	30	271.0^
TOTAL		**6,851.9**	**54.7**	**6,499.4**

* *% have been rounded to nearest whole number.*

^ *The NSP value does not include costs of materials, only 'other' whereas the QCA Terms of Reference value includes expenditure on materials as well as 'other'.*

Note: Total WSS Direct Operating Costs include the cost of operations, repairs and maintenance, rates and relevant dam safety costs. It excludes non-direct costs (which are not being re-examined), non-infrastructure costs, insurance and working capital.

Source: Terms of Reference: Seqwater Irrigation Price Review 2013-17 – Assessment of Capital and Operating Expenditure, Queensland Competition Authority, June 2012

In addition, the Authority requested SKM conduct a review of the prudency and efficiency of two further historical operating expenses, being:

- Recreation Maintenance – $230,186 in the Mary Valley in 2008-09 and 2010-11
- Repair & Maintenance – Unplanned of $67,187 in Pie Creek in 2008-09 and 2010-11

Based on these values, SKM requested Seqwater to provide detailed information to enable SKM to assess their prudency and efficiency. SKM also conducted a number of interviews with Seqwater management and staff to understand Seqwater's operating model and cost allocation method. Site visits were also arranged to various Seqwater assets.

Subsequent to Seqwater responding to SKM's request for information, SKM was informed that Seqwater had revised its proposed operating costs, leading to higher costs in most cases. However, the information Seqwater had provided to SKM did not include this increase. SKM understands that the increases was mainly due to the inclusion of additional labour costs for infrastructure maintenance that was not included in SKM's request for information which was in accordance with the Authority's sample stipulated operations costs. In Seqwater's operating model, operations are distinct from maintenance and costs are assigned to either operations or maintenance.

6.2. Overview of prudency and efficiency

In assessing if the proposed expenditure is prudent, SKM sought information that indicated that there was an identified need. Expenditure is prudent if the expenditure:

a) is necessary to operate the Water Supply Scheme or tariff group

b) results from a legal or compliance obligation or

c) is required to fulfil regulatory obligation such as those specified in a Resource Operation Plan or Interim Resource Operations Licence

For expenditure to be efficient, it must represent the least-cost means of providing the requisite level of service within the relevant regulatory framework. 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, it is necessary to have regard to the conditions prevailing in relevant markets, historical trends in operating expenditure and the potential for efficiency gains or economies of scale.

Table 95 shows an overview of the final assessment made for each selected operational expenditure items prudency and efficiency. A full summary with recommendations for each project can be found in the following sections of this report.

Table 95 Overview of prudency and efficiency of selected operational expenditure items

	Operating Expenditure item	QCA TOR Value $'000 (2013-14)	Portion of Total WSS Direct Operating Costs (%) +	Prudent	Efficient
1	Cedar Pocket Dam WSS Operations - Direct Labour and Contractors	49.0	75	Prudent	Not efficient
2	Central Brisbane River WSS Operations - Materials and Other	1,528.7	19	Prudent	Efficient
3	Central Brisbane River WSS Operations - Direct Labour and Contractors	3,143.1	49	Prudent	Not efficient
4	Central Lockyer Valley WSS Repairs and Maintenance - Planned	320.9	41	Prudent	Efficient*
5	Central Lockyer Valley WSS Repairs and Maintenance - Unplanned	131.1	17	Prudent	Efficient*
6	Logan River WSS Operations - Direct Labour	408.8	56	Prudent	Not efficient

	Operating Expenditure item	QCA TOR Value $'000 (2013-14)	Portion of Total WSS Direct Operating Costs (%) +	Prudent	Efficient
7	Lower Lockyer Valley WSS Operations - Direct Labour	225.5	30	Prudent	Not efficient
8	Lower Lockyer Valley WSS Operations - Materials and Other	236.4	32	Prudent	Efficient
9	Mary Valley WSS Operations - Direct Labour	420.6	48	Prudent	Not efficient
10	Morton Vale Pipeline Operations - Direct Labour	25.0	98	Prudent	Not efficient
11	Pie Creek Repairs and Maintenance - Planned	48.8	49	Prudent	Not efficient
12	Warrill Valley WSS Operations - Materials and Other	314.0	30	Prudent	Not efficient

\+ *% have been rounded to nearest whole number.*

*Seqwater identified an error in its original submission in which costs associated with Mount Crosby were included in the Central Lockyer budget. Following the removal of the Mount Crosby costs, the operational expenditure for both planned and unplanned repairs and maintenance for Central Lockyer was found to be efficient.

The operating expenditure reviews can be separated into three distinct categories: labour, maintenance and materials.

- Labour – the review focused on the wages and salaries[4], the number or proportion of full time equivalents (FTEs) allocated, overtime allocation and historical trends
- Maintenance – the review of both planned and unplanned maintenance focused on forecast budgets in comparison to historical expenditure, in addition to the method used in completing maintenance work with either Seqwater personnel or contractors, and the selection and management of contractors undertaking work
- Materials and other – the review focused on plant and fleet costs, water sampling costs and other costs including chemicals and electricity

Historical costs

An overview of the final assessment of the prudency and efficiency of the historical operational expenditure items is shown in **Table 96**. A full summary with recommendations for these projects can be found in the following sections of this report.

- **Table 96 Overview of prudency and efficiency of selected historical operational expenditure items**

Operating Expenditure item	Value $'000	Prudent	Efficient
Mary Valley Recreation Maintenance 2008-09	110.6	Prudent	Not efficient
Mary Valley Recreation Maintenance 2010-11	123.3	Prudent	Efficient
Pie Creek Repairs and Maintenance - Unplanned 2008-09	31.0	Prudent	Not efficient
Pie Creek Repairs and Maintenance - Unplanned 2010-11	36.1	Prudent	Efficient

[4] Included in wages and salaries are oncosts which includes the statutory costs like superannuation, annual and long service leave, leave-loading, payroll tax, workers compensation and variable bonus. Some of these components do not apply to all employees (eg leave loading apply only to EBA staff).

Just prior to the submission of this Final Report, Seqwater indicated to SKM that certain cost information had been identified in Seqwater's accounting systems which may result in changes to SKM's estimates of efficient operating costs. These relate to historical costs which were not included in earlier data provided to SKM for analysis and review. This information however was identified too late for SKM to consider.

Further analysis

As a result of the further information identified by Seqwater, the Authority subsequently commissioned SKM to undertake further analysis of six operating expenditure items to include the information that Seqwater was able to supply. These items include:

- Cedar Pocket Labour
- Logan Labour
- Lower Lockyer Labour
- Mary Valley Labour
- Morton Vale Labour
- Pie Creek Maintenance

Further discussions were held with Seqwater to review this additional information. SKM found that had the information been made available earlier, the recommendations would have been different. In particular SKM has found the reduced value for Mary Valley WSS to be efficient and hence recommends its acceptance. The revised recommendations for these six operating expenditure items are shown in **Table 97**.

- **Table 97 Revised operating expenditure recommendations**

Project	SKM Recommended Values $'000 (2012-13)	SKM Recommended Values $'000 (2013-14)
Cedar Pocket Dam Water Supply Scheme Labour cost	44,178	45,945
Logan River Water Supply Scheme Labour cost	306,130	318,375
Lower Lockyer Valley Water Supply Scheme Labour cost	248,097	258,021
Mary River Water Supply Scheme Labour cost	224,495	233,475
Morton Vale Distribution System Labour cost	36,019	37,460
Repairs and maintenance – Planned, Pie Creek	50,500	52,500

6.3. Direct Labour and Contractors, Cedar Pocket Dam Water Supply Scheme

The Cedar Pocket Dam Water Supply Scheme services only irrigators. These customers are supplied from the Cedar Pocket Dam and a downstream measuring weir.

6.3.1. Proposed operating expenditure

Table 98 shows the proposed cost of the operating expenditure item Direct Labour, Cedar Pocket Dam Water Supply Scheme within the 2013-14 budget. Also shown are the actual-budgeted operating costs for 2011-12 and 2012-13.

- **Table 98 Direct Labour, Cedar Pocket Dam Water Supply Scheme – Proposed operating expenditure profile**

Source	Actual Costs ($'000) 2011-12	Budgeted Costs ($'000) 2012-13	Original Forecast Costs ($'000) 2013-14	Revised Forecast Costs ($'000) 2013-14
Terms of reference drawn from Seqwater's original NSP and Seqwater responses to RFIs	16.1	44.2	45.9	46.1

2013-14 labour cost for Cedar Pocket Dam has been escalated from the budgeted 2012-13 base forecast of $44,172 by 4%. The 2012-13 base forecast was built up from a zero base (ie using a bottom up method). While this review was to assess the costs related to direct labour and contractors, Seqwater has informed SKM that there are no contractor costs included in their forecasts. Accordingly, this review relates to internal Seqwater staff costs only.

Subsequent to our review, SKM was provided with additional information indicating the Seqwater has provided a revised submission that increased the original forecast from $45,939 to $46,100. No further information was however provided to support this increase in labour cost forecast.

6.3.2. Operating item description

The labour resources required to operate the Cedar Pocket Dam Water Supply Scheme mainly relate to the operation of assets such as Cedar Pocket Dam (including the catchment and the surrounding areas associated with the dam). Seqwater noted in its response to SKM's request for information that the cost forecast for Cedar Pocket Dam Water Supply Scheme Operations for 2013-14 is $45,939 rather than the $49,000 that the Authority had initially been advised for labour and contractors in Seqwater's submission. Another $3,000 had been budgeted for materials rather than contractors which may have been included in the initial estimate provided to the Authority.

6.3.3. Provided documentation

The documents used for this review are:

- *Seqwater, 2013-14 Irrigation Pricing, Submission to the Queensland Competition Authority, July 2012*
- *Seqwater, Cedar Pocket Dam Water Supply Scheme, Network Service Plan*
- *Seqwater, Information Request Response – QCA Irrigation Price Review 2013-17, RFI 012, Cedar Pocket Dam WSS, Operations – Direct Labour, 14 Aug 2012*
- *Seqwater, Budget 2012-13, Salaries and Wages, Dam Operations*
- *Seqwater, Budget 2012-13, Salaries and Wages, Group Support*
- *Seqwater, Opex – Irrigation Updated YTD.xlsx*
- *Seqwater, Opex – Irrigation Salaries Queries.xlsx*
- *Seqwater Enterprise Bargaining Certified Agreement 2009 - 2012*

SKM notes that, while the Cedar Pocket Dam does not have any public areas open for recreational usage, it does have areas associated with the dam that are maintained. To assist with undertaking the review of costs, SKM had requested from Seqwater evidence of historical costs for contracted area maintenance including the cost of mowing services. In Seqwater's operating structure Catchment Services is responsible for the maintenance of the areas surrounding the dams. While

Catchment Services (Group Support) had charged against Cedar Pocket Dam for the provision of some labour services in the past, this cost has not been included in any forecast. While the reason is not clear, the cost of maintaining the areas surrounding the dam may have been included with other operating expenditure categories like repairs and maintenance rather than identified as labour costs.

6.3.4. Prudency

Cedar Pocket Dam is a referable dam under the Water Supply (Safety and Reliability) Act 2008. To adequately satisfy Seqwater's regulatory obligations at Cedar Pocket Dam, labour resources are needed to comply with various legislative requirements including obligations relating to dam safety and dam management.

Consequently the operating expenditure item is seen as prudent.

6.3.5. Efficiency

For expenditure to be efficient it must represent the least-cost means of providing the requisite level of service within the relevant regulatory framework.

Evaluation of costs

Labour cost for Cedar Pocket Dam Water Supply Scheme has been estimated by escalating the budgeted 2012-13 base forecast of $44,172 by 4%. The 2012-13 base forecast was built up from a zero base (bottom up method). Seqwater initially provided the forecasts from 2013-14 through to 2016-17 for review.

Seqwater's operating cost projections of labour are not based on any water demand cost drivers but are rather based on the 2012-13 budget. In SKM's view, the method for the development of budget costs based on previous budget is not satisfactory as actual costs may vary significantly from budget. SKM prefers that forecast costs be based on actual costs, taking into consideration the trend exhibited by recent actual expenditure. Seqwater has indicated that the budgeted cost is typically higher than actual (or recorded) costs because of unforeseen events or incorrect recording of time by staff. In SKM's view, while this could explain some variations, this cannot be the reason why there is an almost 3 fold increase in costs. Accordingly, additional information relating to actual historical expenditure was sought from Seqwater.

SKM notes that the budget information provided here is not consistent with other information supplied by Seqwater its response to SKM's Request of Information (RFI) although the difference is small. We have been informed that the actual expenditure values are correct as incurred. SKM understands that this information inconsistency is due to the fact that Seqwater has updated its original submission and that the 2012-13 budget amount in **Table 99** is consistent with the revised cost forecast. SKM confirms that this is indeed the case. However, no further details have been provided and SKM's detailed review below is limited to the available information provided by Seqwater which is consistent with their original cost forecast.

- **Table 99 Cedar Pocket Dam Water Supply Scheme Labour Costs**

Cedar Pocket Dam WSS	2009-10 Actual ($)	2010-11 Actual ($)	2011-12 Actual ($)	2011-12 Budget ($)	2012-13 Budget ($)
Employee Costs	48,696	15,933	16,149	-	44,325

SKM also sought from Seqwater information regarding the estimated quantity of FTEs assigned to the assets. The information provided by Seqwater is shown below in **Table 100**. The information provided by Seqwater in this case is consistent with original submission to the Authority rather than its revised submission. Overall, the proposed budget of $45,939 for labour cost for 2013-14 is significantly higher than the historical actual expenditure of 2010-11 and 2011-12 although about 10% less than the actual 2009-10 labour cost.

- **Table 100 2012-13 Cedar Pocket Dam Water Supply Scheme Labour Costs Budget**

Cost item	Salaries & Wages Applied ($)
Total Labour Cost	**44,178**

SKM understands that Seqwater has applied the full cost of the Dam Operators to the Cedar Pocket Dam Water Supply Scheme while adjusting the base salary and on-cost for these operators. This is different from the way costs had been presented to SKM for the other water supply schemes. The data presented in this manner has made it difficult to compare and comment directly. Seqwater indicated that these operators are budgeted to allocate the following percentage of time to the Cedar Pocket Dam Water Supply Scheme.

- Dam Operations Officer 1 5%
- Dam Operations Officer 2 40%
- Dam Operations Supervisor 20%

Delivery of service

The labour reviewed in this sample is provided by Seqwater staff. Dam operations are the only contributor to direct labour operating costs. Dam operations are responsible for operating, maintaining and monitoring its water source infrastructure.

Dam operations must meet the regulatory requirements under various Acts including those relating to Dam Safety, Flood Management, Resource Operating Plans, and providing sufficient water to meet standards of service.

Dam operations are relatively labour intensive and the expenditure is required to:

- deliver services to irrigation customers in terms of information and management and delivery of irrigation service
- develop systems to monitor water flows to manage water sources, floods and regulations
- develop flood operations centre
- undertake data management to ensure compliance on a wide variety of water management areas
- ensure security and safety at water sources in meeting regulatory and community standards
- develop system operating plans for the operation of dams, weirs, bores and other water sources

Cedar Pocket Dam is an unmanned site located approximately 45 minute drive from the Pie Creek Depot where the staff member who operates the dam is based. The site is also sometimes serviced by staff based at Borumba Dam approximately 1hour and 15mins away.

The dam is attended at least 3 times a week by a staff member whose duties vary depending on the state of the storage. As a minimum the operator will carry out a dam safety inspection which involves walking the embankment, checking equipment and recording data from dam instruments. A dam safety inspection takes on average 1.5 to 2.5 hours.

The frequency of these inspections increases as spillway discharges increase and as directed by the Seqwater Dam Safety Team. An operator is required to take visual readings of instruments to verify automated equipment and to act as an early warning for potential dam safety emergencies. The data gathered from instruments at the dam must be reported both internally and externally. It takes 2.5 hours per week to input the data and 1 hour to validate the data.

The Cedar Pocket Dam ROP requires Seqwater to notifying customers when their allocations are effectively topped up by spillway flows. Water ordering across the system is ad hoc and the system has to be monitored by the operator which involves the operator monitoring flows in certain sections of the system by eye as the only flow gauge is at the head of the system.

All meters in the system must be read quarterly which involves driving and walking to metering locations. Meter reading takes one operator 1 to 2 days and may take longer during wet conditions.

In Seqwater's operating model, Group Support (catchment management) has responsibility for the development and delivery of catchment maintenance services for all operational assets. The team of rangers and bio security officers ensures that asset management plans, processes, systems and practices are implemented in accordance with relevant regulatory requirements. In its forecast of costs however, Seqwater has not provided any labour costs associated with Group Support or Catchment Management. This could be due to a change in the way the allocation has been made with such costs included under *Repairs and Maintenance* or other related categories. However, SKM cannot be certain that this is the case.

When SunWater managed these facilities prior to the transfer of the infrastructure to Seqwater, the dam operators were responsible for daily maintenance activities like mowing and minor repairs. Under Seqwater's operating model, these maintenance activities have been separated from dam operations and Group Support has been made responsible for provision of these services. Seqwater has informed SKM that grounds maintenance activities such as slashing and mowing are now managed by the rangers and much of this activity is contracted out to third parties from their panel of contractors. In addition, Seqwater has endeavoured to separate operations and maintenance activities between the operations and maintenance teams such that the minor asset maintenance previously undertaken by the operators is now only undertaken by the maintenance teams or their contractors.

Efficiencies and economies of scale

The services provided by the operators of the dam, water treatment plant and irrigation scheme are likely to be difficult to contract to third party operators given that they are small and the operators are required to know their assets intimately. These operators also do not allocate all their time to the Cedar Pocket Dam Water Supply Scheme but also provide services to other dams and water supply schemes within the Seqwater region including assets belonging to the Mary Valley Water Supply Scheme (including Pie Creek).

SKM conducted a series of interviews and discussions with Seqwater's operating staff at the dams. From these discussions there is certainly anecdotal evidence that indicate a systemic underutilisation of operational staff, due to changes in working practices, as this issue arose at many (if not all) of the dam sites visited. The dam operating staff believe that they were more fully utilised under the SunWater operating model when they were responsible for some minor maintenance of the dam and surrounding facilities including ground maintenance. With the transfer of the assets to Seqwater and the consequent change in operating model, discussions with the dam operators indicate that their work load has reduced. However, Seqwater has advised that this is not the case and that "although their work activities have changed, they remain fully occupied". Seqwater has submitted that while the dam operators responsibility for maintenance work was reduced, often this was counter balanced by the increase in the number of assets that they were responsible for as well as increased health and safety, and reporting requirements, The operators views may also have been influenced by a preference to engage in physical activity and that they do not view desktop, computer related work as "real work" leading them to perhaps hold the view that they were more fully occupied when they were employed by SunWater when they were not engaged in such desktop activities.

Group Support (rangers) is responsible for managing contracts for ground maintenance, of which there are two. One is for dam grounds maintenance and the other is for catchment grounds maintenance. Because of the slope of the ground, specialised equipment is required. This together with the remoteness of the dam determines the ground maintenance costs.

Seqwater has submitted that a significant amount of time is required for data input and validation. However, SKM understands that Cedar Pocket Dam is equipped with telemetry equipment and only the tailwater flow the below the spillway needs to be monitored manually.

Benchmarking

The data provided by Seqwater for Cedar Pocket Dam Water Supply Scheme does not allow SKM to directly comment on the reasonableness of the labour costs. However based on the cost data submitted for the Mary Valley Water Supply Scheme, which utilises the same operators, SKM is of the view that the rates applied are reasonable. SKM has also compared the labour costs for dam operators and supervisor with its database of labour rates and finds then consistent with internal benchmarks.

From our discussions with the Operations Supervisor, SKM understands that under normal circumstances, to comply with dam safety requirements, an onsite inspection of the dam is required 3 times a week. Given the distance from other Seqwater assets, SKM estimates that the onsite dam inspection could take 2.5 hours, three times a week.

When water releases are required for irrigation purposes, a visit every day to manage the release and check water levels at the dam may be required. Given the distance of the dam from the operating base where the operators are located, and based on SKM's discussion with the Operations Supervisor, SKM expects that it would take approximately 3 hours to manage the release and check water levels per visit. SKM expects that a visit for the sole purpose of managing releases may occur 2 times a week, on average. Therefore, 0.35 FTEs are required to operate the Cedar Pocket Dam (ie 2.5 to 3 hours five days a week on average). We acknowledge that some excess capacity may be necessary during normal operations to address peak requirements. Outside peak requirements, this excess may thus be utilised in non-core activity like minor maintenance work. However, performing some maintenance activities may not necessarily result in improved efficiency at the Cedar Pocket

Dam given its remote location as there would be a requirement for resources and equipment to travel long distances. This would thus incur additional costs which may result in local contractors being able to undertake the work more efficiently.

Seqwater also indicated that time is spent away from the dam to manage ROP compliance activities, and other activities including managing staff, quarterly meter readings and recording data and customer contacts. These activities are largely undertaken by the Dam Operations Supervisor.

6.3.6. 2013-14 Labour Cost Forecast

While there is a large increase in the 2012-13 budget of labour cost from the labour cost incurred in 2010-11 and 2011-12, the budget for 2012-13 is about 10% less than that incurred in 2009-10. While the documents submitted to SKM do not detail the reasons for this expenditure pattern, SKM understands from its discussions with Seqwater that the years of 2010-11 and 2011-12 may be unusual with first the drought and its end in 2010-11 and subsequently the floods of 2011-12. Labour resources had been allocated more to manage the drought asset and subsequently the floods rather than irrigation asset like Cedar Pocket Dam Water Supply Scheme. With the return to normal weather patterns expected and thus a requirement for irrigation water releases, the expected labour costs are more likely to reflect costs incurred in the years prior to 2010-11.

Seqwater has allowed for 0.65 FTE in its budget. This comprises of:

- Dam Operations Officer 1 5%
- Dam Operations Officer 2 40%
- Dam Operations Supervisor 20%

In SKM's view, dam operations would require 0.35 FTE. Assuming that only 5% of the Dam Operations Supervisor's time is spent on dam operations and the remainder on other activities including managing ROP compliance requirements, managing staff, meter readings and customer contacts, the allocation of costs to the Cedar Pocket Dam WSS is over estimated by 0.15FTE.

To reflect efficient costs, SKM has recommended an efficient labour allocation of 0.35 FTE. To arrive at this allocation SKM has recommended reducing Dam Operations Officer 1 and 2's allocation to a total of 30% with the Supervisor contributing 5%. The resulting an allocation to Cedar Pocket Dam Operations is as follows:

- Dam Operations Officer 1 3%
- Dam Operations Officer 2 27%
- Dam Operations Supervisor 5%

In addition, SKM accepts that the other 15% of Dam Operations Supervisor's time for his other supervisory activities is efficient. The resulting allocation recommended for the Water Supply Scheme is thus:

- Dam Operations Officer 1 3%
- Dam Operations Officer 2 27%
- Dam Operations Supervisor 20%

The recommended labour cost budget for Cedar Pocket Dam Water Supply Scheme is shown in **Table 101**.

- **Table 101 2012-13 Adjusted Cedar Pocket Dam Water Supply Scheme Labour Costs Allocation Budget with 4% escalation applied for 2013-14**

Dam operations	Salaries & Wages Applied ($)
Total Labour Cost for 2012-13	**37,707**
Total Labour Cost for 2013-14 (Escalated at 4% on 2012-13 costs)	**39,215**

6.3.7. Policies and procedures

Contracts for external service providers for mowing services are placed with the various panel contractors in the various Seqwater regions. Contracts with panel contracts have been established based on Seqwater's procurement policy which SKM reviewed as part of a previous review exercise for the Queensland Competition Authority. The procurement policy review has been reproduced in the body of this report for completeness. The panels are refreshed every three to four years.

6.3.8. Summary

The operating expenditure item is assessed as prudent as the need for the expenditure has been demonstrated.

The operating expenditure is assessed as not efficient as the operating expenditure in support of regulated service delivery is not consistent with industry practice and the costs do not represent the least-cost means of providing the requisite level of service within the relevant regulatory framework.

The quality of the information provided on this cost item is outlined below in **Table 102**.

- **Table 102 Quality of information provided**

Section of OPEX review	Direct Labour Cedar Pocket Dam Water Supply Scheme
Operating item description	
Provided documentation	
Prudency	
Efficiency	
Evaluation of costs	
Delivery of service	
Market conditions	N/A
Efficiencies and economies of scale	
Benchmarking	
Policy and procedures	

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

Seqwater will need to address the following information shortfall to rectify the non-green items above:

- Evidence of historical costs for contracted dam area maintenance including the cost of mowing services
- Reconcile the budget information supplied in its revised submission to the Authority with its response to SKM's RFIs
- Information regarding any efficiency targets set for productivity improvements

SKM considers that the labour allocation applied to the Cedar Pocket Dam Water Supply Scheme is excessive and is not efficient. SKM has recommended reducing the allocation of time to Cedar Pocket Dam Water Supply Scheme to reduce the labour costs budget for Cedar Pocket Dam Water Supply Scheme in 2012-13 to $28,113. This should then be escalated by 4% to form the 2013-14 budget of $39,215.

The value of labour expenditure considered to be efficient is outlined below in **Table 103**.

- **Table 103 Direct Labour, Cedar Pocket Dam Water Supply Scheme - Revised operating expenditure profile**

Project	Costs ($) 2013-14
Cedar Pocket Dam Water Supply Scheme Labour cost	39,215

6.3.9. Application to other operational expenditure items

While the findings of this review may be applicable to other expenditure items submitted by Seqwater not subject to detailed review, care should be taken given the relatively small size of the Cedar Pocket Dam Water Supply Scheme. It may also only be applicable to dam operations in other water supply schemes rather than those that include significant Group Support expenditure.

6.3.10. Further analysis

As a result of the further information identified by Seqwater just prior to finalising our analysis, the Authority subsequently commissioned SKM to undertake further analysis of direct labour costs in Cedar Pocket Dam WSS. Further discussions were held with Seqwater to review this additional information. The issues raised include:

- While 0.35FTE is indeed a reasonable number to use during times when the dam is spilling which was the case over the last two years of wet weather, greater resources are required when dry weather requires water releases from the dam. In this case, daily visit are required. A breakdown of the time spent for the various activities was provided to SKM. This estimated the time spent for travelling to the Cedar Pocket Dam at 1.5 hours per return trip. A normal inspection would take approximately 2 hours and would occur three times a week. During dry periods when water releases are required, the operator will be required to make daily trips to undertake and monitor the releases. This operation will take 2.5 hours.
- The telemetry equipment at the location is unreliable and manual measurements are required to both calibrate and confirm the telemetry reading.[5] Due to the small size of the dam, it is critical to ensure that water is released in the most efficient manner to satisfy customers' water needs. As such it is necessary to ensure the measurements are accurate and thus manual check readings

[5] Seqwater (in the renewal forecasts) envisages that the current manual telemetry will be replaced by an automated system in 2020-21. Once the automated system is installed, operational labour costs will likely decrease.

are required. Also down stream flows at the measuring flume can only be done manually as no telemetry equipment is available to monitor downstream flows. Seqwater has allocated 3.5 hours per week to this task.

- In total Seqwater has estimated that the activities at Cedar Pocket Dam would require 29.5 hours per week as illustrated below.

Table 104 Seqwater Estimated Labour Requirements at Cedar Pocket Dam Water Supply Scheme

Activity	Details	Time
Dam safety inspections/Water releases and monitoring	Travel time: • 1.5 hours (return travel) x 5 trips per week Inspection time: • 2 hours (average of 1.5 hours to 2.5 hours duration) x 3 times per week Release and monitoring time: • 2.5 hours per visit x 5 visits per week average per year	Travel time: • 7.5 hours/week Inspection time: • 6 hours/week Release and monitoring time: • 12.5 hours/week Total: 26 hours/week
Data input and validation	2.5 hours average for input plus 1 hour average for validation	3.5 hours/week
	Total	**29.5 hours per week**

By taking advantage of overlapping activities, Seqwater has estimated that it is able to utilise 0.65 FTE for dam operations and water management.

SKM reviewed this information and accepted that its earlier recommendation did not fully include all the time required to manage releases during dry weather as this activity did not occur during the last two years when the dam was continually spilling. Seqwater also indicated that an average of 3.5 hours is required weekly for data input and validation. While SKM views this requirement as excessive if it relates only to dam operations, SKM recognises that this also includes time required for meter reading. Seqwater has advised that "slow computer response time, which is a product of the IT infrastructure and the remoteness of the location, is (the) main driver for the amount of time taken" for data input.

Taking this into consideration and assuming that in a "normal" year, the dam spills 50% of the time while the other 50% of time requires daily visits to release water, we conclude that 0.6FTE is required. This is illustrated in the following calculations.

Table 105 Seqwater Estimated Labour Requirements at Cedar Pocket Dam Water Supply Scheme

	Time Required	
Activity	**Spilling**	**Release required**
Travel (including return)	4.5 hr (3 visits per week at 1.5 hr)	10.5 hr (7 visits per week at 1.5 hr)
Site inspections	6 hr (3 visits per week at 2 hr)	
Dam release (incl inspections)		17.5 hr (7 visits per week at 2.5 hr)

	Time Required	
Activity	**Spilling**	**Release required**
Weekly data input	3.5 hours (1 visit at 3.5 hours)	3.5 hours (1 visit at 3.5 hours)
Total weekly	14	31.5
Proportion of year	50%	50%
Average hrs required per week		22.75
FTE required		0.60

The estimate of the 50% spilt between the dam spilling and not spilling is consistent with an estimate provided to SKM during our discussion with Seqwater's Lead Dam Operator that over a "normal" year, a dam operator is likely to visit the site on average about 5 times a week. Although there are only a limited number of customers taking irrigation water from this dam, SKM has been informed that orders for water are made very shortly after the dam stops spilling, This is because the customers include farmers with very limited water storage facilities and dairy farms that require water on a daily basis.

SKM has thus revised its recommendation for the Cedar Pocket Dam, direct labour cost to reflect the allocation of 0.6 FTE. This is shown in **Table 106**.

- **Table 106 2012-13 Revised recommended Cedar Pocket Dam Water Supply Scheme Labour Costs Allocation Budget with 4% escalation applied for 2013-14**

Dam Operations	Salaries & Wages Applied ($)
Total Labour Cost for 2012-13	**42,774**
Total Labour Cost for 2013-14 (Escalated at 4% on 2012-13 levels)	**44,485**

While SKM considers that 0.6 FTE reflects an efficient operating cost of Cedar Pocket Dam WSS. Seqwater submits that costs are allocated across its portfolio of assets including the Mary Valley and Pie Creek WSS. By reducing the allocation of 0.65 FTE to 0.6 FTE to Cedar Pocket Dam WSS, Seqwater submits that it will be unable to recover 0.05 FTE that is dedicated to irrigation assets. Given that the difference is small and relatively immaterial, SKM recommends that the Authority accepts the cost allocation proposed by Seqwater. The recommended revised value of labour expenditure is shown below in **Table 107**.

- **Table 107 Direct Labour, Cedar Pocket Dam Water Supply Scheme - operating expenditure profile**

Project	Costs ($) 2013-14
Cedar Pocket Dam Water Supply Scheme Labour cost	45,945

6.4. Materials and Other, Central Brisbane River Water Supply Scheme

The Central Brisbane River Water Supply Scheme supplies water to approximately 134 customers holding medium priority entitlements including, the SEQ Water Grid Manager, irrigation users, Ipswich City Council, Somerset Regional Council, Lowood and District Gold Club, Water Grid Manager and

The Glamorgan Vale Water Board. These customers are supplied by a number of assets in the scheme including:

- Wivenhoe Dam
- Somerset Dam
- Kirkleigh and Wivenhoe (Recreation) WTPs
- Mount Crosby Weir
- Approximately133 km of regulated watercourse

6.4.1. Proposed operating expenditure

Table 108 shows the proposed cost of the operating expenditure item materials and other, Central Brisbane River Water Supply Scheme within the 2013-14 budget. Also shown are the actual/estimated operating costs for 2011-12 and 2012-13.

- **Table 108 Materials and other, Central Brisbane River Water Supply Scheme – proposed operating expenditure profile**

Source	Actual Costs ($'000) 2011-12	Forecast Costs ($'000) 2012-13	Forecast Costs ($'000) 2013-14
Terms of Reference drawn from Seqwater's original NSP			1,529.0
Final NSP Value^		1,104.7	1,132.4
Opex – Irrigation Updated YTD 'Materials and Contractors' only	583.8	1,137.2	
Opex – Irrigation Updated YTD 'Materials and Contractors' plus 'Other'	1,693.4	2,387.1	

^ *NSP value does not include costs of materials, only 'other' whereas the QCA Terms of Reference value includes expenditure on materials as well as 'other'.*

The costs provided in the Authority's Terms of Reference are drawn from Seqwater's original NSP but are not consistent with the values in the NSP. This is because NSP listed costs for activities classed as 'other' only whereas the Authority included costs for materials associated with the Central Brisbane River Water Supply Scheme. As such Seqwater advised that expenditure items stated in the Authority's Terms of Reference cannot be directly related back to Seqwater's NSP submission making direct comparison difficult. SKM has endeavoured to reconcile theses differences as discussed below.

In 'Opex – Irrigation Updated YTD', there are two potential methods for determining the total costs listed including either considering the costs listed under the heading 'Materials and Contractors', or consolidating both the costs listed under the 'Materials and Contractors' and 'Other'. Neither method produces costs consistent with those listed in the Terms of Reference. Further, year to date costs for 2011-12 at 30 June 2012 were listed in 'Opex – Irrigation Updated' at $583,819, compared to a budget of $1,137,195.

There is inconsistency between costs listed in the documents provided - that is, the Terms of Reference, the revised opex summary and 'Opex - Irrigation Updated YTD'.

6.4.2. Operating item description

Materials and other expenses are required for dam operations, recreational water treatment plant operation, group support and catchment services in addition to water quality monitoring. Definitions for these activities relevant to irrigation operation and maintenance are provided below.

Dam Operations: Dam Operations must meet the regulatory requirements under various Acts including those relating to dam safety, flood management, resource operating plans, and providing sufficient water to meet standards of service. Key outputs are management of dams to ensure safe operation during normal water releases and flood releases, monitoring and ensuring dam safety compliance, maintain releases from dams to meet demand, meeting resource operation plan compliance, delivering water to irrigation customers, and ensuring water related data is recorded and stored.

Recreational water treatment plant operations: With respect to irrigation services specifically, limited to managing the recreation water treatment plants which service visitors to the recreation sites located at the dams or water storages.

Group support and catchment services: The team ensures that asset management plans, processes, systems and practices are implemented in accordance with relevant regulatory requirements including environmental protection laws and land ownership laws. This team also contributes to the effective development, implementation and management of the reporting systems within Seqwater's Water Delivery Group, as well as the management of third party access and event approval at Seqwater sites and locations.

Water quality monitoring: The central role of the Water Quality team is to manage Seqwater's risk in relation to water quality. The core functions and activities of the Water Quality Team are Catchment and Water Treatment Plant monitoring, Laboratory and data management services and Drinking Water Quality Management.

6.4.3. Provided documentation

The documents used for this review are:

- *Information Request Response, RFI013,Materials and Other Central Brisbane River WSS, Seqwater, 14/08/2012*
- *Operational Cost Report for 2012-13, Seqwater*
- *Opex – Irrigation Updated YTD.xls, Seqwater*
- *RFI013 Attachment Lower Lockyer Schedule of Info*
- *RFI013 Attachment Lower Lockyer Fleet*
- *Opex – Irrigation Queries*
- *Seqwater Irrigation Opex Methodology – Brief, Seqwater, 04/09/2012*
- *Opex summary (461146_1).xlsx, Seqwater, 04/09/2012*

Initial information provided by Seqwater outlined costs associated with materials and other, and the method for budget calculation. Discussions with Seqwater staff during project interviews provided further information, and resulted in identification of a number of additional information sources that were subsequently requested.

Additional information requested from Seqwater for this review included:

- Breakdown of water quality monitoring costs, including a breakdown of contractor sampling charges and monitoring program
- DERM water quality sampling and reporting guidelines
- Business Case for returning water quality sampling in-house
- HACCP Plan for a recreational water treatment plant
- Method for calculating the fleet allocation budget

All requested information was provided by Seqwater and utilised in this review.

6.4.4. Prudency

Operating the water supply scheme, and achieving compliance in practice with legislation and the Resource Operating Plan, requires Seqwater to consume materials and supplies.

The materials and supplies required to operate the Central Brisbane River Water Supply Scheme predominantly relate to the operation of assets such as Somerset and Wivenhoe Dams (including the catchment and the recreation areas associated with the dams) and the Wivenhoe recreation water treatment plant.

Seqwater is subject to numerous regulatory obligations, including under legislation and the relevant Resource Operating Plan. Both Wivenhoe and Somerset Dams are referable dams under the *Water Supply (Safety and Reliability) Act 2008*. The precise regulatory obligations providing a requirement for labour resources vary according to the operational team in question. Compliance requirements driving expenditure on materials and other include:

- Dam Operations: Market Rules requirements, water ownership and water use legislation, water information reporting requirements, dam safety and reliability legislation
- Catchment Services: environmental protection legislation, recreation responsibilities, catchment management responsibilities, land ownership legislation
- Water Treatment Operations: Market Rules requirements, recreation responsibilities. Materials and consumables are required to operate the dams
- Water Quality – WQ Monitoring Expenses: There is no requirement under the Water Act for Seqwater to provide water of a certain quality or monitor the quality of irrigation water. However under the resource operating plans and licences subordinate to the Water Act, Seqwater is required to monitor water quality in storages, releases and recreational areas. At recreation sites Seqwater incurs expenses for fulfilling water quality monitoring requirements. At the Wivenhoe recreational water treatment plant water quality monitoring requirements are defined in the Hazard Analysis and Critical Control Point (HACCP) Plan for the plant. The HACCP plan is subordinate to the Drinking Water Quality Management Plan which is a requirement under the Water Supply (Safety and Reliability) Act.

SKM understands that Seqwater is not required, under legislation or under the Resource Operating Plan, to provide potable water at the recreation facilities, including to camp sites. However SKM understands that, following a risk assessment, Seqwater has determined that all water that it provides for human consumption should be of potable water standards. SKM considers that Seqwater's policy

in this area is reasonable taking into account the impact on reputation arising from not adopting this policy.

Consequently the operating expenditure item has been assessed as prudent.

6.4.5. Efficiency

For expenditure to be efficient it must represent the least-cost means of providing the requisite level of service within the relevant regulatory framework.

Evaluation of costs

A breakdown in costs was provided in response to SKM's request for further information (RFI019) and is displayed in **Table 109**.

- **Table 109 Materials and other costs breakdown**

Expense	Breakdown	2012-13 forecast costs	2013-14 forecast costs
Dam Operations – Materials & Consumables – Somerset Dam	Minor equipment and consumables	$15,000	$15,600
	Clean up and housekeeping - Somerset Hydro	$10,000	$10,400
Dam Operations – Materials & Consumables – Wivenhoe Dam	Safety Surveillance - minor materials	$10,000	$10,400
	Dam Safety - equipment	$2,000	$2,080
	Minor equipment and consumables for emergent works and operational repairs	$30,000	$31,200
	Fish Mngt project mgr	$10,000	$10,400
	Provision for minor expenses	$10,000	$10,400
	ROP Compliance - Admin & support	$1,000	$1,040
	Irrigation Admin & Support	$50,000	$52,000
	Monitoring equipment for water quality and meters	$35,000	$36,400
	ROP compliance - Nerang ROP	$100	$104
	Stanwell hydro contract billing	$2,000	$2,080
	Licences for software	$50,000	$52,000
Dam Operations – Equipment Hire – Wivenhoe Dam	Hire of equipment for operational work	$15,000	$15,600
Dam Operations – Energy Fixed – Somerset Dam	Nil	$20,000	$20,500
Dam Operations – Energy Fixed – Wivenhoe Dam	Nil	$230,000	$235,750
Dam Operations – Plant & Fleet Hire Internal – Somerset Dam	See **Table 188**	$29,741	$30,931
Dam Operations – Plant & Fleet Hire Internal – Wivenhoe Dam	See **Table 188**	$49,980	$51,979
Dam Operations – WQ Monitoring Expenses – Wivenhoe Dam	Water samples	$5,000	$5,200
	Water samples	$12,000	$12,480
	Routine testing	$3,000	$3,120
	Water samples	$5,000	$5,200
	Unscheduled testing	$200	$208
	Water samples	$11,000	$11,440
	Water samples	$5,000	$5,200

Expense	Breakdown	2012-13 forecast costs	2013-14 forecast costs
Dam Operations – Property Management – Wivenhoe Dam	Security	$10,000	$10,400
	Security during flood releases to manage visitors and traffic control	$65,000	$67,600
	Security during flood releases to manage visitors and traffic control	$50,000	$52,000
Dam Operations – Portable Equipment – Wivenhoe Dam	Minor maintenance	$20,000	$20,800
Group Support – Materials & Consumables – Somerset Dam	Rec Maintenance	$20,000	$20,800
	Ground Maintenance	$10,000	$10,400
Group Support – Materials & Consumables – Wivenhoe Dam	Minor material and consumables for repairs and maintenance	$30,000	$31,200
	Consumables and materials for onsite workshop	$10,000	$10,400
Group Support – Energy Fixed – Wivenhoe Dam	Energy costs for rec grounds	$10,000	$10,250
Group Support – Property Management – Somerset Dam	Recreation Maintenance - Security Patrols	$20,000	$20,800
Group Support – Property Management – Wivenhoe Dam	Security	$30,000	$31,200
Group Support – Cleaning – Wivenhoe Dam	Cleaning	$10,000	$10,400
Group Support – Other Chemicals – Somerset Dam	Weed control chemicals	$20,000	$20,800
Group Support – Plant & Fleet Hire Internal – Somerset Dam	See Table 114	$105,887	$110,122
Group Support – Plant & Fleet Hire Internal – Wivenhoe Dam	See Table 114	$128,132	$133,257
Water Quality – WQ Monitoring Expenses – Somerset Dam	Water samples	$18,680	$19,427
	Routine Testing	$52,000	$54,080
	Unscheduled testing	$6,240	$6,490
	Event Testing	$14,560	$15,142
Water Quality – WQ Monitoring Expenses – Wivenhoe Dam	Water samples	$17,060	$17,742
	Routine testing	$56,368	$58,623
	Unscheduled testing	$2,080	$2,163
	Event Testing	$14,560	$15,142
Water Quality – WQ Monitoring Expenses – Wivenhoe Rec WTP	Routine testing	$46,500	$48,360
	Unscheduled Testing	$3,500	$3,640
	Events testing	$4,000	$4,160
Infrastructure Maintenance – Materials & Consumables – Somerset Dam	Somerset Dam Scheduled Maintenance	$13,443	$13,981
	Somerset Dam Reactive Maintenance	$7,716	$8,025
	Somerset Dam Planned Maintenance	$7,361	$7,655
Infrastructure Maintenance – Materials & Consumables – Wivenhoe Dam	Wivenhoe Dam Scheduled Maintenance	$15,051	$15,653
	Wivenhoe Dam Reactive Maintenance	$641	$667
	Raw WPS Esk Reactive Maintenance	$50	$52
	Wivenhoe Dam Planned Maintenance	$718	$747

The 2013-14 forecast costs have been determined by escalating 2012-13 forecast costs by a factor of 4%, with the exception of energy fixed, which has been escalated at 2.5%. The application of a 4%

escalation factor to previous budgets is considered appropriate, albeit potentially on the high side, considering the Reserve Bank of Australia's inflation target of 2-3%. SKM considers the 2.5% escalation factor for energy to be reasonable.

The breakdown of costs provided in response to SKM's request for further information (RFI013) total to $1,438,891 for 2013-14, which is approximately 6.3% less than the $1,529,000 listed in the Terms of Reference. However, the difference between the two is acknowledged in Seqwater's response to SKM's request for information (RFI013) in which Seqwater states *'In the attached Schedules of Information, note that all cost types have been explained, except where a type of cost (by natural account description) did not exceed $10,000 at any asset location in the relevant WSS'* and further that *'this threshold was applied for the purposes of fast-tracking this RFI response and also for the purposes of materiality, given that these costs are yet to be apportioned between irrigation services and urban water supply purposes'*. Given that costs in excess of $10,000 and in some cases below $10,000 have been explained, and that the costs detailed account for approximately 93.7% of the budget for materials and other for Central Brisbane River Water Supply Scheme, SKM considers that the breakdown of costs included in the terms of reference are appropriate.

The breakdown of costs included in Seqwater's response to SKM's request for information (RFI013) included a number of costs that SKM does not consider as belonging within the materials and other category. These costs are for infrastructure maintenance and security contractors, as shown in **Table 110**. SKM therefore considers these costs to be not applicable to materials and other, and has removed them from the materials and other budget for the Central Brisbane River Water Supply Scheme.

- **Table 110 Costs not applicable to materials and other**

Expense	Description	Further detail supplied by Seqwater	2012-13	2013-14
Dam Operations – Property Management – Wivenhoe Dam	Security	During flood releases security is required for managing public safety including traffic control, site security, fish management, etc.	$10,000	$10,400
	Security during flood releases to manage visitors and traffic control		$65,000	$67,600
	Security during flood releases to manage visitors and traffic control	Expected to decrease as years go by	$50,000	$52,000
Group Support – Property Management – Wivenhoe Dam	Security	Somerset and Wivenhoe recreation areas are gated for security and public safety. Security providers are contracted to patrol the areas and open and-or close the gates at each site.	$30,000	$31,200
Property Management – Somerset Dam	Recreation Maintenance - Security Patrols	The budgets were based on 2011-12 actuals and YTD trend for the 2011-12 year.	$20,000	$20,800
Infrastructure Maintenance – Materials & Consumables – Somerset Dam	Somerset Dam Scheduled Maintenance	Budget based on past 3 years expenditure	$13,443	$13,981
	Somerset Dam Reactive Maintenance	Based on prior year actual expenditure	$7,716	$8,025
	Somerset Dam Planned Maintenance	Based on prior year actual expenditure	$7,361	$7,655
Infrastructure Maintenance –	Wivenhoe Dam Scheduled Maintenance	Based on past 3 years expenditure	$15,051	$15,653

Expense	Description	Further detail supplied by Seqwater	2012-13	2013-14
Materials & Consumables – Wivenhoe Dam	Wivenhoe Dam Reactive Maintenance	Based on prior year actual expenditure	$641	$667
	Raw WPS Esk Reactive Maintenance		$50	$52
	Wivenhoe Dam Planned Maintenance	Based on prior year actual expenditure	$718	$747

A more detailed review of the cost breakdown is provided in the sections below.

Dam Operations: The breakdown of costs provided by Seqwater identifies costs for dam operations including materials and consumables, energy costs in addition to plant and fleet hire. Further breakdown of expenditure on equipment and consumables was provided in Seqwater's response to RFI013, which along with budget calculation method, are shown in **Table 111** below.

- **Table 111 Breakdown of Dam Operations costs**

Expense	Description	Further detail supplied by Seqwater	2013-14 forecast
Materials & Consumables – Somerset Dam	Minor equipment and consumables	2012-13 budget based on 2010-11 actuals (2011-12 actuals incomplete at time of budget)	$15,600
	Clean up and housekeeping - Somerset Hydro	2012-13 budget based on 2010-11 actuals (2011-12 actuals incomplete at time of budget)	$10,400
Materials & Consumables – Wivenhoe Dam	Safety Surveillance - minor materials	2012-13 budget based on 2010-11 actuals (2011-12 actuals incomplete at time of budget)	$10,400
	Dam Safety - equipment	2012-13 budget based on 2010-11 actuals (2011-12 actuals incomplete at time of budget)	$2,080
	Minor equipment and consumables for emergent works and operational repairs	2012-13 budget based on 2010-11 actuals (2011-12 actuals incomplete at time of budget)	$31,200
	Fish Mngt project mgr	Based on previous costs for project manager for lungfish management, works downstream, research	$10,400
	Provision for minor expenses	2012-13 budget based on 2010-11 actuals (2011-12 actuals incomplete at time of budget)	$10,400
	ROP Compliance - Admin & support	Commutative estimates for administration costs for all schemes put into Wivenhoe costs.	$1,040
	Irrigation Admin & Support	Nil	$52,000
	Monitoring equipment for water quality and meters	Nil	$36,400
	ROP compliance - Nerang ROP	2012-13 budget based on 2010-11 actuals (2011-12 actuals incomplete at time of budget)	$104
	Stanwell hydro contract billing	Nil	$2,080
	Licences for software	Nil	$52,000
Equipment Hire – Wivenhoe Dam	Hire of equipment for operational work	2012-13 budget based on 2010-11 actuals (2011-12 actuals incomplete at time of budget)	$15,600
Energy Fixed – Somerset Dam	Nil	2012-13 budget based on 2010-11 actuals (2011-12 actuals incomplete at time of budget)	$20,500

Expense	Description	Further detail supplied by Seqwater	2013-14 forecast
Energy Fixed – Wivenhoe Dam	Nil	2012-13 budget based on 2010-11 actuals (2011-12 actuals incomplete at time of budget)	$235,750
Plant & Fleet Hire Internal – Somerset Dam	See Table 188	Budget Calculated by Fleet Manager based on vehicle estimated costs and fuel used	$30,931
Plant & Fleet Hire Internal – Wivenhoe Dam	See Table 188	Budget Calculated by Fleet Manager based on vehicle estimated costs and fuel used	$51,979
WQ Monitoring Expenses – Wivenhoe Dam	Water samples	These are costs for WQ sampling as required for a number of areas of ROP compliance	$5,200
	Water samples		$12,480
	Routine testing		$3,120
	Water samples		$5,200
	Unscheduled testing		$208
	Water samples		$11,440
	Water samples		$5,200
Portable Equipment – Wivenhoe Dam	Minor maintenance	Budget Calculated by Fleet Manager based on vehicle estimated costs and fuel used	$20,800

No further information is provided on items classified in the Expenses column **Table 111** as 'materials and consumables' or 'equipment hire'.

The Seqwater Irrigation Opex Methodology, states that '*for the purposes of forecasting electricity for its 2012-13 dam operations budget, 2010-11 actual costs were used as 2011-12 actuals were incomplete at the time the budget was prepared. The electricity budgets for recreation facilities were based on 2010-11 actual expenditure and year to date trends in 2011-12 actual expenditure*'. No further breakdown of electricity budgets was provided.

Plant and fleet hire internal costs were further broken down, as included in **Table 112**. The fleet allocation budget is determined by calculating a representative annual lease charge, which is calculated on whole of life costs excluding fuel, oil and tyres, assuming an average vehicle life of 120,000km or five years. The budge for fuel is calculated based on historical expenditure.

- **Table 112 Dam Operations plant and fleet costs**

Location	Fleet / Plant Type	Description	Fleet Allocation Budget ($)	Fuel Allocation Budget ($)
Somerset Dam	Vehicle	Ford Ranger 4x4 Utility	9,900	4,189
	Vehicle	Ford Ranger Space Cab	9,900	5,371
Wivenhoe Dam	Vehicle	Ford Range EL 4x4 Utility	12,400	2049
	Vehicle	Ford Ranger XL 4x4 Space Cab	12,900	4,207
	Vehicle	Ford Ranger XL 4x4 Utility	12,400	2,016
	Vehicle	Toyota Aurion	8,760	5,708

Wivenhoe dam has approximately 12.5 FTEs operational staff assigned to the dam while Somerset has two. When considering the number of personnel across both Dam Operations and Group Support, SKM considers the number of vehicles allocated to be reasonable.

With regards to fuel allocation, utilising a fuel efficiency of 10km/L for all vehicles and fuel cost of 155 cents per litre (cpl), the fuel allocation budget provides for between 13,000 km and 37,000 km per annum. During site visits, Seqwater operational personnel confirmed that they drove approximately 30,000 km per year. SKM considers the fuel allocation budget for vehicles to be reasonable.

There is a minor difference between both Dam Operations plant and fleet hire costs listed in Seqwater's response to SKM's request for further information (RFI013) and associated attachments. However, this difference is approximately 0.27% of the fleet cost, and SKM considers that the difference is not significant.

Group Support: Group support costs are broken into a number of categories including materials and consumables, energy fixed, cleaning, other chemicals in addition to plant and fleet hire as shown in **Table 113**.

- **Table 113 Breakdown of Group Support costs**

Expense	Description	Further detail supplied by Seqwater	2013-14 forecast
Materials & Consumables – Somerset Dam	Rec Maintenance	The budgets were based on 2011-12 actuals and YTD trend for the 2011-12 year.	$20,800
	Ground Maintenance	Somerset has a workshop on site. Costs relate to consumables and materials associated with the ongoing operation of the workshop and its equipment.	$10,400
Materials & Consumables – Wivenhoe Dam	Minor material and consumables for repairs and maintenance	The budgets were based on 2011-12 actuals and YTD trend for the 2011-12 year.	$31,200
	Consumables and materials for onsite workshop	Wivenhoe Dam has a workshop on site. Costs relate to consumables and materials associated with the ongoing operation of the workshop and its equipment.	$10,400
Energy Fixed – Wivenhoe Dam	Energy costs for rec grounds	The budgets were based on 2011-12 actuals and YTD trend for the 2011-12 year.	$10,250
Cleaning – Wivenhoe Dam	Cleaning rec facilities	The budgets were based on 2011-12 actuals and YTD trend for the 2011-12 year.	$10,400
Other Chemicals – Somerset Dam	Weed control chemicals	The budgets were based on 2011-12 actuals adjusted for known differences in the weed control program	$20,800
Plant & Fleet Hire Internal – Somerset Dam	See Table 114	Budget Calculated by Fleet Manager based on vehicle estimated costs and fuel used	$110,122
Plant & Fleet Hire Internal – Wivenhoe Dam	See Table 114	Budget Calculated by Fleet Manager based on vehicle estimated costs and fuel used	$133,257

No further information is provided on items classified in **Table 113** as materials and consumables, cleaning or other chemicals.

The Seqwater Irrigation Opex Methodology, states that '*for the purposes of forecasting electricity for its 2012-13 dam operations budget, 2010-11 actual costs were used as 2011-12 actuals were incomplete at the time the budget was prepared. The electricity budgets for recreation facilities were based on 2010-11 actual expenditure and year to date trends in 2011-12 actual expenditure*'. No further breakdown of electricity budgets was provided.

Plant and fleet hire internal costs were further broken down, as included in **Table 114**.

- **Table 114 Group Support plant and fleet costs**

Location	Fleet / Plant Type	Description	Fleet Allocation Budget	Fuel Allocation Budget
Somerset Dam	Vehicle	Toyota Landcruiser 4x4 Utility	$12,720	$6,545
	Tractor / Mower	David Brown 1210	$2,400	$920
	Tractor / Mower	Kubota Tractor	$2,400	$1,195
	Watercraft	Polycraft	$7,680	$3,469
	Watercraft	Polycraft centre console	$7,680	$3,604
	Watercraft	Noosa Cat Australia 2300	$22,800	$2,400
	Vehicle	Toyota Hilux 4x4 Dual Cab	$9,720	$5,917
	Tractor / Mower	Kubota Tractor	$2,400	$1,268
	Vehicle	Ford Ranger Space Cab	$9,800	$5,379
Wivenhoe Dam	Vehicle	Toyota Landcruiser Workmate	$12,720	$4,479
	Vehicle	Toyota Landcruiser LC Workmate	$8,400	$7,922
	Vehicle	Nissan Patrol ST 4x4 Utility	$10,440	$5,051
	Truck	Isuzu FRR550	$15,800	$3,019
	Tractor / Mower	Kubota Tractor	$2,400	$749
	Tractor / Mower	New HollandTC35	$2,400	$730
	Tractor / Mower	Kubota Tractor	$2,400	$400
	Tractor / Mower	Kubota Tractor	$2,400	$1,837
	Tractor / Mower	John Deere 8120	$10,200	$6,875
	Watercraft	Yamaha Waverunner Jetski	$2,400	$1,026
	Watercraft	Stessco Bass Boat	$7,500	$750
	Forklift	2005 Toyota 450K8-H	$5,500	$1,787
	Vehicle	Ford Ranger 4x4 Utility	$9,900	$3,280

Wivenhoe dam has approximately 12.5 full time equivalent staff assigned to operate the dam while Somerset has two. Considering these staffing levels, the number of fleet and plant items assigned to the dams is reasonable.

With regards to fuel allocation, utilising a fuel efficiency of 10km/L for all vehicles and fuel cost of 155 cents per litre (cpl), the fuel allocation budget provides for between 21,000 km and 51,000 km per annum. During site visits, Seqwater operational personnel confirmed that they drove approximately 30,000 km per year. SKM considers the fuel allocation budget for vehicles to be reasonable.

With regards to fleet and plant types and numbers, SKM assesses the use of vehicles, tractor / mowers, forklift and watercraft to be reasonable, particularly considering the utilisation inferred from the fuel allocations. SKM has insufficient information to assess the appropriateness of the number of vehicles assigned to Dam Operations.

SKM has insufficient information to assess the fleet allocation budget.

Water Quality Monitoring: Cost breakdowns for water quality monitoring are provided for Somerset Dam in **Table 115**, Wivenhoe Dam in **Table 116** and Wivenhoe Dam recreational water treatment plant in **Table 117**. These costs are in addition to the water quality monitoring included in the budget

for Dam Operations. Supporting documentation demonstrating the base costs and requirements for sampling at both the dam and recreational water treatment plant have been provided. These documents included rates for contractor water sampling and analysis and an example HACCP Plan.

- **Table 115 Somerset Dam water quality monitoring costs**

Item	2012-13	2013-14
Water sampling	$18,680	$19,427
Routine testing	$52,000	$54,080
Unscheduled testing	$6,240	$6,490
Event testing	$14,560	$15,142

- **Table 116 Wivenhoe Dam water quality monitoring costs**

Item	2012-13	2013-14
Water sampling	$17,060	$17,742
Routine testing	$56,368	$58,623
Unscheduled testing	$2,080	$2,163
Event testing	$14,560	$15,142

- **Table 117 Wivenhoe Dam recreational water treatment plant water quality monitoring costs**

Item	2012-13	2013-14
Routine testing	$46,500	$48,360
Unscheduled Testing	$3,500	$3,640
Events testing	$4,000	$4,160

Delivery of service

Dam Operations: The expenditure for dam operations consists of equipment and consumables utilised in emergency dam safety works and operational repairs, energy costs, and plant and fleet costs associated with dam operations.

Materials and consumables are purchased on an as needed basis for operational repairs and emergency works, while some equipment is hired. The budget for materials and consumables purchase and equipment hire has been calculated by escalating historical expenditure at 4%.

Electricity is supplied externally. The budget for 2013-14 was determined by escalating the 2010-11 historical spend. During the 2012-13 Grid Service Charges[6] review SKM assessed electricity costs as prudent and efficient. Providing that the method of obtaining electricity has not changed since the 2012-13 Grid Service Charges review, SKM considers electricity costs efficient. It is noted that the electricity prices may be underestimated in the 2013-14 budget, given the circa 10% increase in energy costs arising from the implementation of the Carbon Energy Pricing Mechanism. Seqwater personnel have confirmed that the electricity budget does not include costs associated with the purchase of green energy, and further that material carbon pricing issues relate to Grid assets only, as the consumption of irrigation assets is small.

[6] Grid Service Charges 2012-13 Phase 2 – Assessment of Prudency and Efficiency of Operating and Capital Costs – Seqwater, Rev 3, 28/06/2012

Fleet costs are the costs associated with internal hire of six plant and fleet items from the Seqwater fleet in addition to fuel allocation as listed in **Table 112**. The budget for fleet and fuel allocation is determined by Seqwater's Fleet Manager.

Group Support: Expenditure for Group Support consists of materials and consumables, energy fixed, cleaning of recreational facilities, other chemicals in addition to plant and fleet hire which are conducted by Seqwater staff.

Equipment and consumables and chemicals are also purchased on an as needed basis for operational repairs and emergency works. The budget for equipment and consumables, cleaning and chemicals has been calculated by escalating historical expenditure at 4%.

Electricity is supplied externally. The budget for 2013-14 was determined by escalating the 2010-11 historical spend. During the 2012-13 Grid Service Charges[7] review SKM assessed electricity costs as prudent and efficient. Providing that the method of obtaining electricity has not changed since the 2012-13 Grid Service Charges review, SKM considers electricity costs efficient. It is noted that the electricity prices may be underestimated in the 2013-14 budget, given the circa 10% increase in energy costs arising from the implementation of the Carbon Energy Pricing Mechanism. SKM understands that on 25 May 2012, Seqwater received advice from the Queensland Government confirming its decision to discontinue all existing state-based carbon reduction schemes to ensure agencies were not subject to overlapping of State and Federal obligations when the Clean Energy Pricing Mechanism was introduced on 1 July 2012. Seqwater therefore concluded that costs associated with the purchase of green energy should be removed from the recommended 2012-13 Grid Service Charges. SKM has sought confirmation from Seqwater that the forecast budgets for electricity take into consideration removal of the additional premium incurred in purchasing green energy.

Fleet costs are the costs associated with internal hire of 22 plant and fleet items from the Seqwater fleet in addition to fuel allocation as listed in **Table 114**. The budget for fleet and fuel allocation is determined by Seqwater's Fleet Manager.

Catchment Services: No costs for catchment services have been listed in the breakdown of costs.

Water Treatment Operations: No costs for water treatment operations have been listed in the breakdown of costs.

Water Quality Monitoring: Water quality monitoring costs for the Central Brisbane River Water Supply Scheme are associated with water quality monitoring of Wivenhoe and Somerset Dams in addition to the Wivenhoe Dam recreational water treatment plant.

While under the Water Act there is no requirement for Seqwater to provide water of a certain quality to irrigation users, under the resource operating plans and licenses subordinate to the Act Seqwater is required to monitor water quality in storages, releases and recreational areas according to the state government procedures.

Costs associated with water treatment operations are incurred from the routine verification and monitoring plan. Attachments to Seqwater's response to SKM's request for further information

[7] Grid Service Charges 2012-13 Phase 2 – Assessment of Prudency and Efficiency of Operating and Capital Costs – Seqwater, Rev 3, 28/06/2012

(RFI013) identifies that the verification and monitoring plan outlines the '*monitoring requirements defined in the HACCP Plan for the Wivenhoe recreational water treatment plant'*, which is '*subordinate to the Drinking Water Quality Management Plan required under the Water Supply (Safety and Security) Act*'. Further, with regards for that the budget for monitoring of water at the Wivenhoe recreational water treatment plant, the response to RFI013 attachment states '*the cost is directly derived from the routine verification monitoring plan*'. The response to RFI013 attachment identifies that the water quality monitoring budget is derived by a bottom up calculation method, utilising the water quality monitoring requirements defined under the HACCP and set contract prices.

Water quality sampling comprises collection and analysis of water samples. Currently routine sampling and analysis for both the Wivenhoe and Somerset Dams and the Wivenhoe recreational water treatment plant is undertaken by an external contractor selected by public tender. The contract is for a five year term beginning in 2011. During interviews, Seqwater personnel identified the performance of the contractor in collecting water samples from dams and catchments, including Wivenhoe and Somerset Dams, as being unsatisfactory, and that there are terms to terminate some or all of the contract. In particular, there are concerns regarding the contractor's workplace health and safety performance, operation of vehicles and watercraft by staff, and low staff retention. Seqwater personnel are currently developing a business case to terminate the dam water quality sample collection portion of the contract and return this sampling in house. SKM has reviewed the draft business case to returning dam water quality sampling in-house and considers it to be robust.

SKM assesses the budget for costs associated with materials and other for the Central Brisbane River Water Supply Scheme to be efficient, with the exception of:

- Fleet allocation budget for Dam Operations and Group Support

For both of these items there is insufficient information to enable a complete review, in particular, the method utilised by the Seqwater Fleet Manager in assigning fleet allocation and fuel budgets.

SKM notes that the results of the business case to return dam and catchment water quality sampling submission may be of interest in future reviews.

Market conditions

The contract for completing water quality sampling and analysis was awarded following a public tender process that was conducted in accordance with the State Procurement Policy. SKM concludes that the rates for water quality sampling and analysis for Central Brisbane River Water Supply Scheme is therefore efficient.

No information regarding the quantity of electricity to be utilised or the unit rates for its supply was available for this review. However, energy costs have been developed by escalating historical cost information. 2012-13 Grid Service Charges review SKM found the energy unit prices paid by Seqwater to be reflective of current market prices and hence efficient. SKM consequently finds the energy costs for the Lower Lockyer Valley Water Supply Scheme to be efficient.

No information has been provided to allow assessment of the materials and consumables, equipment hire, cleaning, and other chemicals. However, future costs have been calculated by escalating past expenditure. SKM therefore considers them to be efficient.

Efficiencies and economies of scale

No economies of scale have been identified for fleet and plant in addition to materials and consumables, equipment hire, cleaning, and other chemicals.

During interviews with Seqwater personnel, it was identified that outsourcing of the water quality sampling was undertaken to gain efficiency. This however has not fully been realised due to the abovementioned performance issues of the contractor. The current investigations into returning the dam and catchment water quality monitoring aspects of the contract may provide benefits to Seqwater.

It must be noted however that Seqwater has significantly reduced the budget for non-routine sampling and analysis after identifying that the budget for non-routine sampling and analysis was in excess of actual expenditure.

No information regarding source or unit rates for electricity supply specific to Central Brisbane River Water Supply Scheme was available for this review. SKM is therefore unable to assess the efficiencies and economies of scale with respect to market conditions.

Benchmarking

Costs for the fleet and plant aspects of materials and other for the Central Brisbane River Water Supply Scheme have been calculated by the Seqwater Fleet Manager. In calculating the costs associated with the operation of plant and fleet, Seqwater has applied a cost of 155 cents per litre (cpl) for fuel. In comparison, the RACQ lists the retail Brisbane unleaded fuel price for April 2012 as 148.8cpl for unleaded and 153.8 cpl for diesel. While the Seqwater unit fuel cost is higher than retail costs for both unleaded and diesel, this is not unreasonable and may potentially be a result of an applied safety factor or inefficiencies of supply of the small volume of fuel required by Seqwater. In calculating the fleet allocation budget, Seqwater has adopted an average vehicle life of 120,000 km or five years. This adopted life is similar to that utilised by the South East Queensland Distribution Retailer Entities, and is therefore considered to be reasonable.

The contract for water quality sampling was awarded in accordance with the State Procurement Policy by an open tender process. Further, the water sampling program has been developed in accordance with resource operating plans, licenses and for the recreational water treatment plant, in accordance with the plant's HACCP Plan. SKM therefore considers the costs associated with the water sampling programs as reasonable.

There is insufficient information to benchmark the Dam Operations budget for materials and consumables and equipment and the Group Support budget for materials and consumables, cleaning, and other chemicals. However, the costs for these items were calculated by escalating historical expenditure and are therefore considered reasonable.

6.4.6. Policies and procedures

The contractor for water quality sampling and analysis was selected through a public tender process, which was conducted in accordance with the State Procurement Policy. As such SKM considers the procedures applied for water quality sampling to be appropriate.

Plant and fleet is provided internally through Seqwater's Fleet Manager with the budget for fuels, tyres and oil being based on historical expenditure, and with the fleet allocation budget calculated utilising appropriate vehicle replacement criteria.

Insufficient information has been supplied to assess the policies and procedures utilised in arranging the supply of electricity.

6.4.7. Summary

The operating expenditure item is assessed as prudent as the need for the expenditure has been demonstrated.

The operating expenditure is assessed efficient as the scope is appropriate, the operating expenditure in support of regulated service delivery is consistent with industry practice and the costs are consistent with prevailing market conditions.

However, SKM queried the inclusion of a number of items to the materials and other the cost group as they were considered as potentially belonging to alternative cost groups of direct labour and contractor in addition to repairs and maintenance. These items are highlighted in **Table 118** below. In response, Seqwater stated that "*the groups of costs reported in the NSP (Table 3.1) are Labour, Contractors and Materials and Other, with security contractors being classed under 'other' in the NSP".* This is different to the classification adopted by the Authority in its Terms of Reference, where it has separated expenditure under materials and other and expenditure under labour and contractors. SKM considers that it may be appropriate for further reviews for Seqwater and the Authority to discuss and agree upon appropriate budget categories for allocating expenditure items.

Nevertheless, SKM considers the costs detailed in **Table 118** to be necessary for the operation of the Central Brisbane Water Supple Scheme, and therefore are assessed as reasonable.

Table 118 Summary of costs not applicable to materials and other

Expense	Description	2012-13	2013-14
Dam Operations – Property Management – Wivenhoe Dam	Security	$10,000	$10,400
	Security during flood releases to manage visitors and traffic control	$65,000	$67,600
	Security during flood releases to manage visitors and traffic control	$50,000	$52,000
Group Support – Property Management – Wivenhoe Dam	Security	$30,000	$31,200
Property Management – Somerset Dam	Recreation Maintenance - Security Patrols	$20,000	$20,800
Infrastructure Maintenance – Materials & Consumables – Somerset Dam	Somerset Dam Scheduled Maintenance	$13,443	$13,981
	Somerset Dam Reactive Maintenance	$7,716	$8,025
	Somerset Dam Planned Maintenance	$7,361	$7,655
Infrastructure Maintenance – Materials & Consumables – Wivenhoe Dam	Wivenhoe Dam Scheduled Maintenance	$15,051	$15,653
	Wivenhoe Dam Reactive Maintenance	$641	$667
	Raw WPS Esk Reactive Maintenance	$50	$52
	Wivenhoe Dam Planned Maintenance	$718	$747

All other costs in this operating expenditure budget have been assessed by SKM as efficient.

The quality of the information provided on this project is outlined below in **Table 119**.

- **Table 119 Quality of information provided**

Section of OPEX review	Materials and other, Central Brisbane River		
Operating item description			
Provided documentation			
Prudency			
Efficiency			
Evaluation of costs			
Delivery of service			
Market conditions			
Efficiencies and economies of scale			
Benchmarking			
Policy and procedures			
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

The value of any expenditure considered to be prudent or efficient is outlined below in **Table 120**.

- **Table 120 Materials and other, Central Brisbane – revised operating expenditure profile**

Project	Costs ($'000) 2012-13	Costs ($'000) 2013-14
Terms of reference drawn from Seqwater's original NSP		1,529.0
Final NSP Values^	1,104.7	1,132.4
SKM's proposed budget for 'other'	1,104.7	1,132.4
SKM's proposed budget for materials and other	1,470.2	1,529.0

^ *The NSP value does not include costs of materials, only 'other' whereas the QCA Terms of Reference value includes expenditure on materials as well as 'other'.*

6.4.8. Application to other projects

SKM has been asked to determine whether the results of the materials and other costs reviewed in detail can be applied to costs for other water supply schemes. The major finding from this review has been that costs included in the 'material and other budget' have been allocated to different categories by the Authority and Seqwater. SKM considers that this difference in allocation of costs between the Authority and Seqwater is likely to have occurred in these budget categories for other water supply schemes.

6.5. Direct labour, Central Brisbane River Water Supply Scheme

The Central Brisbane River Water Supply Scheme supplies water to approximately 134 customers holding medium priority entitlements, and 278,725ML to the main high priority customer, the SEQ Water Grid Manager. These customers are comprised of:

- 131 irrigation customers – 6,771ML of medium priority water allocation
- Ipswich City Council – 65ML of medium priority water allocation
- Somerset Regional Council – 15ML of medium priority water allocation

- Lowood and District Golf Club – 40ML of medium priority water allocation
- Seqwater – 25ML of High Class A priority water allocation and 150 medium priority water allocation
- WGM – 278,725ML of High Class A priority water allocation and
- The Glamorgan Vale Water Board (a customer of the WGM) – 250ML of High Class A water allocation

These customers are supplied from a number of assets within this scheme including Wivenhoe Dam and Somerset Dam (including the catchments and the recreation areas associated with these dams), and the Kirkleigh and Wivenhoe (Recreation) WTPs, Mount Crosby Weir and includes approximately133 km of regulated watercourse.

6.5.1. Proposed operating expenditure

Table 121 shows the proposed cost of the operating expenditure item Direct Labour and Contractors, Central Brisbane within the 2013-14 budget. Also shown are the actual/budgeted operating costs for 2011-12 and 2012-13.

- **Table 121 Direct Labour and Contractors, Central Brisbane – Proposed operating expenditure profile**

Source	Actual Costs ($'000) 2011-12	Budgeted Costs ($'000) 2012-13	Original Forecast Costs ($'000) 2013-14	Revised Forecast Costs ($'000) 2013-14
Terms of reference drawn from Seqwater's original NSP and Seqwater responses to RFIs	2,767.3	3,022	3,143	3,213

The 2013-14 labour cost for Central Brisbane has been escalated from the budgeted 2012-13 base forecast of $393,000 by 4%. The 2012-13 base forecast was built up from a zero base (ie using a bottom up method). This category of costs relates to direct labour and contractors only.

Subsequent to our review, SKM was provided with additional information indicating the Seqwater has provided a revised submission that increased the original forecast from $3.1 million to $3.2 million. No further information has however been provided to support this increase in labour cost forecast. Seqwater further informed SKM that the additional amount of $67,000 relates to maintenance staff labour costs. These were not included in the RFI because the Authority sample referred to "Operations" which does not include maintenance in the Seqwater model.

6.5.2. Operating item description

The labour resources required to operate the Central Brisbane Water Supply Scheme mainly relate to the operation of assets such as the Somerset and Wivenhoe Dams (including the catchment and the recreation areas associated with the dam) and the Kirkleigh and Wivenhoe (Recreation) Water Treatment Plant. The proposed costs for these operating expenditure items include:

- Somerset Dam – Operations $219,000
- Wivenhoe Dam – Operations $1,479,000
- Somerset Dam – Catchment Services $582,000

- Wivenhoe Dam – Catchment Services $447,000
- Wivenhoe Dam – Incident & Emergency $263,000
- Kirkleigh (Rec) WTP Ops $72,000
- Wivenhoe (Rec) WTP Ops $80,000

Seqwater has not provided any costs for contractors as the sample was made up of Seqwater direct labour costs only. Consequently there are no contractor costs to disclose.

6.5.3. Provided documentation

The documents used for this review are:

- *Seqwater, 2013-14 Irrigation Pricing, Submission to the Queensland Competition Authority, April 2012*
- *Seqwater, Central Brisbane Water Supply Scheme, Network Supply Scheme*
- *Seqwater, Information Request Response – QCA Irrigation Price Review 2013-17, RFI 014, Central Brisbane WSS, Operations – Direct Labour and Contractors, 14 Aug 2012*
- *Seqwater, Budget 2012-13, Salaries and Wages, Dam Operations*
- *Seqwater, Budget 2012-13, Salaries and Wages, Group Support*
- *Seqwater, Opex – Irrigation Updated YTD.xlsx*
- *Seqwater Enterprise Bargaining Certified Agreement 2009 - 2012*

6.5.4. Prudency

Wivenhoe and Somerset Dams are referable dams under the Water Supply (Safety and Reliability) Act 2008. To adequately satisfy Seqwater's regulatory obligations at these and other relevant assets, labour resources are needed to undertake:

- Dam Operations: to meet Market Rules requirements, water ownership and water use legislation, water information reporting requirements, dam safety and reliability legislation
- Incident & Emergency: to comply with dam safety and reliability legislation
- Catchment Services: to meet environmental protection legislation, recreation responsibilities, catchment management responsibilities, land ownership legislation
- Water Treatment Operations: to meet Market Rules requirements and recreation responsibilities

Consequently the operating expenditure item is seen as prudent.

6.5.5. Efficiency

For expenditure to be efficient it must represent the least-cost means of providing the requisite level of service within the relevant regulatory framework.

Evaluation of costs

Labour cost for Central Brisbane has been estimated by escalating the budgeted 2012-13 base forecast of $3,022,000 by 4%. The 2012-13 base forecast was built up from a zero base (bottom up method). Seqwater initially provided the forecasts from 2013-14 through to 2016-17 for review.

Seqwater's operating cost projections of labour are not based on any water demand cost drivers but are rather based on the 2012-13 budget. Seqwater does not view demand as a driver of labour costs. In SKM's view, basing the labour forecast cost on a previous budget is not satisfactory as actual costs may vary significantly from budget. SKM recommends that forecast costs be based on actual incurred costs taking into account trends exhibited by recent actual expenditure, changes in working practices and changes in assets being operated. Accordingly, additional information relating to actual historical expenditure was sought by SKM.

Seqwater also informed SKM that the costs being examined do not include any maintenance labour costs as these costs have been factored into the labour budgets for maintenance. The costs reviewed in this sample relate only to operations costs.

In response to SKM's request for information, Seqwater provided historical and budgeted costs covering the period between 2009-10 and 2012-13. This is shown in **Table 122**.

Table 122 Central Brisbane Labour Costs

Central Brisbane WSS	2009-10 Actual ($)	2010-11 Actual ($)	2011-12 Actual ($)	2011-12 Budget ($)	2012-13 Budget ($)
Employee Costs	1,054,256	2,428,227	2,767,302	2,625,316	3,089,128

SKM notes that the budget information provided here is not consistent with other information supplied by Seqwater in its response to SKM's RFIs although the difference is small. We have however been informed that the actual expenditure values are correct as incurred. SKM understands that this apparent information inconsistency is due to the fact that Seqwater has updated their original submission and that the 2012-13 budget figure in **Table 122** is consistent with the revised cost forecast. SKM confirms that this is indeed the case. Seqwater informed SKM that the difference amounting to $67,000 relates to maintenance staff labour costs. These were not included in the RFI because the Authority sample referred to "Operations" which does not include maintenance in the Seqwater model. However, no further details have been provided and SKM's detailed review below is limited to the available information provided by Seqwater which is consistent with their original cost forecast and excludes the additional amount related to maintenance costs.

SKM sought from Seqwater information regarding the estimated quantity of FTEs assigned to the assets. The information provided by Seqwater is shown below in **Table 123**. The information provided in this case is consistent with the information submitted to the Authority. Overall, the proposed budget of $3,143,000 for labour cost for 2013-14 represents a growth rate of 6.5% pa since 2011-12. This is less than the 14% growth rate seen between 2010-11 and 2011-12.

Table 123 2012-13 Central Brisbane Labour Costs Budget

Service Activity	Asset	Salaries & Wages Applied ($)
Catchment Services		
	Somerset Dam	560,268
	Wivenhoe Dam	429,759
Dam Operations		
	Somerset Dam	206,006
	Wivenhoe Dam	1,419,101
Water Treatment		

Service Activity	Asset	Salaries & Wages Applied ($)
	Kirkleigh Rec WTP	69,029
	Wivenhoe Rec WTP	77,450
Incident & Emergency		
	Wivenhoe Dam	249,762
Other Incidental Costs		10,700
Total Labour Cost		**3,022,075**

Delivery of service

The labour reviewed in this sample is provided by Seqwater staff. Dam operations are the largest contributor to direct operating costs. Dam operations are responsible for operating, maintaining and monitoring Seqwater's water source infrastructure.

Dam operations must meet the regulatory requirements under various Acts including those relating to Dam Safety, Flood Management, Resource Operating Plans, and providing sufficient water to meet standards of service.

Dam operations are relatively labour intensive and the expenditure is required to:

- deliver services to irrigation customers in terms of information and management and delivery of irrigation service
- develop systems to monitor water flows to manage water sources, floods and regulations
- develop flood operations centre
- undertake data management to ensure compliance on a wide variety of water management areas
- ensure security and safety at water sources in meeting regulatory and community standards and
- develop system operating plans for the operation of dams, weirs, bores and other water sources

Group support (and catchment management) has responsibility for the development and delivery of recreation and catchment maintenance services for all operational assets. The team of rangers and bio security officers ensures that asset management plans, processes, systems and practices are implemented in accordance with relevant regulatory requirements. Seqwater also has responsibility for the ongoing management and maintenance of any recreation sites associated with the dams. While the use of Seqwater assets for recreational purposes is not a core Seqwater function, these facilities, which are a planning and operating licence condition of the assets, must be managed in a sustainable and environmentally responsible manner to ensure that Seqwater's core responsibilities and accountabilities are not adversely impacted. Under Seqwater's operating model, these maintenance activities have been separated from dam operations and Group Support has been made responsible for provision of these services.

Efficiencies and economies of scale

The dams of Central Brisbane are the largest dams in Seqwater's system and thus play a critical role in the water supply system for SE Queensland. They also play a critical role in flood control. Given the significance of these assets for Brisbane and SE Queensland, it is seen as a core activity and thus unlikely to be able to outsource the labour requirements. The services provided by the operators of the recreational water treatment plant and irrigation scheme are also likely to be difficult to contract to third party operators given that they are small and the operators are required to know their assets intimately.

Benchmarking

SKM has reviewed the pay rates of the dam operators and rangers and notes that they are consistent with other operators and rangers employed by Seqwater and are considered to be reasonable for such employees. They are also consistent with the Seqwater EBA. SKM has compared these labour costs with our internal database and find that the rates provided by Seqwater falls within the applicable benchmark range. In addition to the base salary, dam operators and rangers are paid an allowance to compensate the staff for being on-call when not on duty. This allowance can be fairly substantial given the remoteness of many of these assets.

In the 2012-13 budget Seqwater has allocated 12.5 FTEs to operate the Wivenhoe Dam. This is considered reasonable given the size of the dam. The smaller Somerset Dam is operated by 2 FTEs. This is consistent with the other dams operated by Seqwater although we understand Somerset Dam is larger than most of the other dams in Seqwater's system.

About 12 FTE (including overtime) Catchment Services staff have been allocated to the Central Brisbane Water Supply Scheme. These staff operate between both Wivenhoe and Somerset Dams and given the large areas that these assets cover, SKM recognises that a relatively large number of staff (compared to other Seqwater water supply schemes) may be required. Our discussions indicate that rangers are responsible for a number of tasks including among other things the control of feral weeds and animals, safety and security of the public when they access the area and the maintenance of the recreational sites. They are also trained to supplement dam operators during peak events as would occur during a flood. SKM noted that the estimate for overtime budgeted for Wivenhoe which accounts for over 20% of the normal time estimates is significantly greater than the overtime estimate for Somerset (13%). SKM recommends that the overtime allocated at Wivenhoe be reduced to the same proportion of normal time as at Somerset. SKM also queried the inclusion of the cost of the camp manager at Somerset. Instead of allocating the cost of the camp manager to irrigators, SKM would recommend that the cost of the camp manager be recovered from users of the campsite which would be consistent with normal commercial campsite operations. SKM understands that the Ministerial Direction notice requires all recreation costs to be included in the scheme's cost and the revenue received from users of the campsites is offset against the scheme costs. This arrangement however is inefficient and would potentially cross subsidise campsite users.

In contrast with other water supply schemes, where most of the effort for maintaining the recreational area is performed by contractors and the rangers' responsibility is to manage the contract and to ensure that the work in carried out, the rangers at Somerset and Wivenhoe do most of this work with little out sourced to contractors. The duties are also wider than the recreation areas and include the whole catchment where they also undertake mowing, slashing and controlled burns. Such activities at Central Brisbane Water Supply Scheme are not outsourced to contractors.

SKM also views that the overall numbers of dam operators is appropriate given that some excess capacity may be necessary during normal operations to address peak requirements. As mentioned, outside peak requirements, this excess may thus be utilised in non-core activity like mowing and minor maintenance work when such peak events are not present. However, the current operating model does not take advantage of this capacity but rather incurs extra maintenance contracting costs, in SKM's view, unnecessarily and thus inefficiently.

SKM also noted that Seqwater has employed a number of other staff at Wivenhoe including a dam safety engineer, a seismic officer, compliance coordinator, business centre officer, and an operations

analyst. Given the centrality of Wivenhoe to the SE Queensland water supply system and the existence of a visitor's centre to cater to the large number of visitors to the Wivenhoe Dam, SKM has accepted the need for these additional staff.

SKM has a concern with the dam operations overtime budget at Somerset Dam. It amounts to approximately 30% of normal time cost. An overtime allocation of over $42,000 for dam operations has been provided in Seqwater's submission. Normal time Dam Operations labour costs are about $145,000 while the overtime budget is $42,100. SKM recognises that Somerset Dam is, while smaller than Wivenhoe, still relatively large in comparison with all the other dams in Seqwater's system and thus there may be a greater need for labour resources. However, we acknowledge that there may be a requirement for dam operators to respond to incidences that occur outside of normal working hours, and that work on weekends is required for dam operations with the EBA stipulating minimum overtime periods.

However, SKM does not view the overtime proposed for Catchment Services for Wivenhoe as efficient. It accounts for over 20% of normal time requirements. In contrast, the overtime for Somerset Dam accounts for about 13% of normal time cost. Given that both rangers at Wivenhoe and Somerset Dams perform the sale roles, SKM recommends allocating a similar overtime budget allocation.

The overtime that has been budgeted for the Wivenhoe dam operators and WTP operators for the Central Brisbane Water Supply Scheme is reasonable.

6.5.6. 2013-14 Labour Cost Forecast

SKM's major concerns arising from this review of Central Brisbane Water Supply Scheme is the high overtime budgeted for Catchment Services at Wivenhoe Dam. SKM has recommended that the overtime budget at Wivenhoe be reduced to the same level as Somerset Dam. While SKM is of the opinion that the cost of the Camp Manager be removed from the cost of the water supply scheme and recovered directly from users, we understand that the Ministerial Direction notice requires all recreation costs be included in the scheme cost with any revenue from the campsite included as an offset.

Another minor adjustment SKM would recommend is the allowance provided for Catchment Services at Wivenhoe Dam. Given the time allocation for the rangers and other Catchment Services staff at Wivenhoe Dam is somewhat less than 100%, SKM believes that the allowance should also reflect that time allocation. Similarly, the average time allocation for dam operators at Wivenhoe Dam is 85%. SKM thus recommends that allowances allocated to Wivenhoe Dam from Dam Operations should reflect this allocation.

The resulting labour cost forecast for Central Brisbane is shown in **Table 124**.

- **Table 124 2012-13 Adjusted Central Brisbane Labour Costs Allocation Budget with 4% escalation applied for 2013-14**

Service Activity	Asset	Salaries & Wages Applied ($)
Catchment Services		
	Somerset Dam	560,268
	Wivenhoe Dam	381,198

Service Activity	Asset	Salaries & Wages Applied ($)
Dam Operations		
	Somerset Dam	206,006
	Wivenhoe Dam	1,412,587
Water Treatment		
	Kirkleigh Rec WTP	69,029
	Wivenhoe Rec WTP	77,450
Incident & Emergency		
	Wivenhoe Dam	249,762
Other Incidental Costs		10,700
Total Labour Cost for 2012-13		**2,967,000**
Total Labour Cost for 2013-14		**3,085,680**

6.5.7. Policies and procedures

Contracts for external service providers for mowing services are based on the various panel contracts in the different Seqwater regions. These panel contracts have been procured based on Seqwater's procurement policy which SKM reviewed as part of a previous review exercise for the Authority. The procurement policy review has been reproduced in the main body of this report for completeness. The panels are refreshed every three to four years.

6.5.8. Summary

The operating expenditure item is assessed as prudent as the need for the expenditure has been demonstrated.

The operating expenditure is assessed as not efficient as the operating expenditure in support of regulated service delivery is not consistent with industry practice and the costs do not represent the least-cost means of providing the requisite level of service within the relevant regulatory framework. In particular, SKM considers that the budgeting for 1 FTE dam operator equivalent of overtime for dam operations is excessive and that a budget for overtime equivalent to 0.5 FTE is more reasonable.

The quality of the information provided on this cost item is outlined below in **Table 125**.

- **Table 125 Quality of information provided**

Section of OPEX review	Central Brisbane River Water Supply Scheme Direct Labour & Contractors
Operating item description	
Provided documentation	
Prudency	
Efficiency	
Evaluation of costs	
Delivery of service	
Market conditions	N/A
Efficiencies and economies of scale	
Benchmarking	
Policy and procedures	

Section of OPEX review	Central Brisbane River Water Supply Scheme Direct Labour & Contractors		
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

Seqwater will need to address the following information shortfall to rectify the non-green items above.

- Reasons for the high rate of overtime at Somerset dam for Dam Operations and Wivenhoe for Catchment Services
- Information regarding any efficiency targets set for productivity improvements

In SKM's view, forecast 2013-14 labour costs in the Central Brisbane River Water Supply Scheme costs may be reduced by setting overtime at a lower level to reflect the current low utilisation of dam operating staff. No reasons have been provided for such a high rate of overtime and unless adequate justification is provided, SKM recommends adjusting the allocation of overtime to reduce the labour costs allocated to Central Brisbane River Water Supply Scheme in 2012-13 to around just under $3 million. This should then be escalated by 4% to form the 2013-14 budget of $3.1 million.

The value of labour expenditure considered to be efficient is outlined below in **Table 126**.

- **Table 126 Direct Labour, Central Brisbane Water Supply Scheme - Revised operating expenditure profile, 2013-14**

Project	Seqwater Original Forecast ($'000)	Seqwater Revised Forecast ($'000)	SKM estimate ($'000)
Central Brisbane Water Supply Scheme labour cost	3,143	3,213	3,085.7

6.5.9. Application to other operational expenditure items

Given the size of Central Brisbane Water Supply Scheme, the importance of Wivenhoe and Somerset Dams relative to other water supply schemes and dams in Seqwater's system, SKM does not recommend applying the findings of this review to the other water supply schemes and dams. A number of the characteristics of the Central Brisbane Water Supply Scheme are unique and is not encountered in the other water supply schemes operated by Seqwater.

6.6. Repairs and Maintenance – Planned, Central Lockyer Valley Water Supply Scheme

The Central Lockyer Valley Water Supply Scheme services irrigation users, sporting clubs and associations, Lockyer Regional Council and Crowley Vale Water Board. These customers are supplied by a number of assets in the scheme including:

- Bill Gunn Dam
- Lake Clarendon
- Jordan I Weir
- Jordan II Weir
- Wilson Weir
- Clarendon Weir

- Laidley Creek Diversion Weir
- Showgrounds Weir
- Crowley Vale Weir
- Glenore Grove Weir
- Kentville Weir
- Outlet works from Laidley Creek Diversion Weir to Lake Dyer
- Diversion pipeline inlet and outlet at Lake Dyer
- Redbank Creek Pump Station and outlet works
- Lake Clarendon Pump Station and outlet works
- Outlet works from Lake Dyer Diversion Pipeline D2

The cost of repairs and maintenance – planned on the Central Lockyer Valley Water Supply Scheme refers to scheduled and planned repairs and maintenance that is completed on these weirs, off-stream storages and other assets.

6.6.1. Proposed operating expenditure

Table 127 shows the proposed cost of the operating expenditure item repairs and maintenance – planned, Central Lockyer Valley within the 2013-14 budget. Also shown are the actual/estimated operating costs for 2011-12 and 2012-13.

- **Table 127 Repairs and Maintenance – Planned, Central Lockyer Valley – Proposed operating expenditure profile**

Source	Actual Costs ($'000) 2010-11	Actual Costs ($'000) 2011-12	Estimated Costs ($'000) 2012-13	Forecast Costs ($'000) 2013-14
Terms of reference drawn from Seqwater's original NSP			309	321
Revised opex budget			120.7	125
Opex – Irrigation Updated YTD.xlsx	121	98		

Forecast costs for 2013-14 were determined by Seqwater by escalating the 2012-13 maintenance budget by a factor of 4%. The cost breakdown provided by Seqwater in response to SKM's request for information ((RFI015) totals to $320,000, which is not consistent with the costs identified in the terms of reference and at other locations set out in Seqwater's response to the request for information which references $321,000. Seqwater subsequently identified that the opex budget for Mount Crosby had erroneously been included in the cost breakdown in place of Clarendon Dam opex budget. Identification of this error resulted in Seqwater revising the opex budget for Central Lockyer Valley repairs and maintenance – planned to $125,000

The 2012-13 costs were zero base (bottom up method) for the Authority's review of Seqwater's Grid Service Charges for 2012-13. In comparison to historical maintenance costs detailed in Opex – Irrigation Updated YTD, the maintenance budget included in the terms of reference was significantly higher.

6.6.2. Operating item description

Planned maintenance is referred to as scheduled or planned maintenance in Seqwater documentation. Scheduled maintenance refers to periodic maintenance scheduled in advance while planned maintenance is maintenance undertaken to improve the condition of an asset that is operational or work arising from safety audits, environmental; audits or process improvements.

In response to SKM's request for information (RFI015) the following breakdown of costs was provided by Seqwater:

- Bill Gunn Dam, R&M Planned $18,000
- Clarendon Dam, R&M Planned $11,000
- Clarendon WPS, R&M Planned $9,000
- Clarendon Weir, R&M Planned $1,000
- Bill Gunn Dam, R&M Planned $9,000
- Clarendon Dam, R&M Planne $26,000
- Central Lockyer Valley Irrigation Scheme, R&M Planned $22,000
- Bill Gunn Dam, R&M Planned $15,000
- Clarendon Dam, R&M Planned $18,000

6.6.3. Provided documentation

The documents used for this review were:

- *Information Request Response, RFI015, Central Lockyer WSS, Repairs & Maintenance – Planned, Seqwater, 14/08/2012*
- *Operational Cost Report for 2012-13, Seqwater*
- *Opex – Irrigation Updated YTD.xls, Seqwater*
- *MMW Panel User Manual*

Initial information provided by Seqwater outlined the location of planned maintenance, method for budget calculation and workforce. Discussions with Seqwater staff during project interviews provided further information, and resulted in identification of a number of further information sources that were subsequently requested.

Additional information requested from Seqwater for this review included:

- Expenditure for dam maintenance in previous years
- Rates for the old contractor panel and the MMW Panel User Guide

The requested documents were provided by Seqwater and have been taken into account in this assessment.

6.6.4. Prudency

Operating the Central Lockyer Valley Water Supply Scheme, and achieving compliance in practice with legislation (such as dam safety obligations), requires Seqwater to properly repair and maintain the assets that it owns and operates.

The repairs and maintenance required to operate the Central Lockyer Valley Water Supply Scheme or tariff group predominantly relate to ensuring the ongoing operation and reliability of assets such as Bill Gunn and Clarendon Dams (including the catchments and the recreation areas associated with these dams), the Clarendon Weir and the Clarendon Water Pump Station. As such SKM has determined that this expenditure is prudent.

6.6.5. Efficiency

For expenditure to be efficient it must represent the least-cost means of providing the requisite level of service within the relevant regulatory framework.

Evaluation of costs

In calculating costs for the base year of 2012-13, Seqwater has applied an escalation factor of 4% to baseline costs determined for the Authority's review of Seqwater's Grid Service Charges for 2012-13. The planned portion of the maintenance budget was calculated through applying a ratio of 71:29 to split maintenance costs between planned and unplanned maintenance.

- **Table 128 Summary of repairs and maintenance – unplanned expenditure**

Year	Historical / Forecast	Unplanned Maintenance cost	Notes	Source
2010-11	Historical	$120,748	Average 2010-11 to 2011-12 historical spend is $109,500	Opex – Irrigation Updated YTD
2011-12	Historical	$98,084		Opex – Irrigation Updated YTD
2012-13	Forecast	$113,880	Calculated by escalating average historical spend	Opex – Irrigation Updated YTD
2013-14	Forecast	$118,435	Calculated by escalating average historical spend	Opex – Irrigation Updated YTD
2012-13	Forecast	$120,700		Revised opex budget
2013-14	Forecast	$125,000		Revised opex budget

As demonstrated in **Table 128** above, forecasting the average historical repairs and maintenance – planned expenditure for the Central Lockyer Valley Water Supply Scheme provides 2012-13 and 2013-14 costs of $113,880 and $118,435 respectively. These values are lower than budget forecasts listed in the revised operating expenditure budget by 6% and 5.5% for 2012-13 and 2013-14 respectively.

In their response to SKM's request for information (RFI015), Seqwater provided a breakdown on costs, as listed in **Section 6.6.1**. Of the costs provided in this response, one item, *Catchment services, Location: Bill Gunn Dam, Repairs and Maintenance (522007)* could not be located in the Operational Cost Report for 2012-13. The other items listed in the Operational Cost Report were the same as those itemised in the response.

As mentioned, in determining the 2013-14 budget for planned maintenance, Seqwater applied a 4% escalation to the 2012-13 budget. The budget was developed utilising baseline data contained in the Operational Cost Report for 2012-13 that was submitted during the Authority's review of Seqwater's Grid Service Charges for 2012-13. The application of a 4% escalation factor to previous budgets is considered appropriate, albeit potentially on the high side, considering the Reserve Bank of Australia's inflation target of 2-3%.

In interviews Seqwater staff stated that planned and reactive budgets are based on historical spends. The supplied information supports this statement, albeit with minor variations as detailed above. As such, SKM has concluded that the method of cost calculation utilised by Seqwater in determining the budget for planned maintenance for the Central Lockyer Valley Water Supply Service represents the most appropriate method for budget development, as it is based on historical expenditure. Costs are therefore assessed by SKM as being efficient.

Delivery of service

Planned maintenance is delivered through a panel of providers. Each of Seqwater's operational regions has a panel of four contractors, who have been selected through an expression of interest process for each work classification including electrical, mechanical, instrumentation, control system pipeline and civil. During interviews Seqwater personnel stated that contractors were appointed in accordance with the State Procurement Policy. The previous panel agreement ran from 2009 until 2012, whilst the new panel runs from 2012 for a period of two years, with an option for extending the panel for a further one or two year period. The new panel contains efficiencies over the previous panels including removing the allowance for contractor to charge for travel time and providing short term and long term rates.

Specific to the Central Lockyer Valley Water Supply Scheme are the W1 and W2 regions, panel rates for which are provided in **Table 129** below ($/hour). Note that contractor names have been excluded from **Table 129** to protect commercial confidentiality.

- **Table 129 Seqwater maintenance contractor panel rates 2012 – 2014**

		W1				W2			
Electrical	Short term	$90.80	$80.0	$86.2	$69.0	$90.8	$86.25	$88.0	$98.0
	Long term	$80.71	$72.0	$86.25	$66.48	$80.71	$86.25	$79.2	$98.0
Mechanical	Short term	$80.00	$90.0	$98.0	$107.2	$80.0	$90.0	$70.37	$98.0
	Long term	$75.00	$85.0	$98.0	$107.2	$80.0	$85.0	$70.37	$98.0
Instrumentation	Short term	$90.00	$108.0	$80.0	$98.0	$98.0	$104.08	$147.0	$100.0
	Long term	$81.00	$93.0	$80.0	$98.0	$98.0	$104.08	$122.0	$95.0
Control System	Short term	$168.53	$100.0	$150.0		$168.53	$168.0	$130.0	$130.0
	Long term	$149.80	$100.0	$133.0		$149.80	$153.00	$125.0	$130.0
Pipeline	Short term	$73.50	$58.0	$90.0	$70.0	$90.0	$117.0	$105.0	$58.0
	Long term	$71.00	$55.0	$85.0	$70.0	$85.0	$110.0	$100.0	$55.0
Civil	Short term	$79.00	$55.0	$80.0	$104.7	$96.50	$98.0	$90.0	$110.0
	Long term	$75.50	$55.0	$70.0	$104.7	$92.50	$92.0	$70.0	$95.0

Panel contractors are audited to determine work performance. The audit, performed by Seqwater, details performance in terms of work order completion and supply of documentation, contractor

timesheet entry and other categories as appropriate for the job. During interviews Seqwater personnel stated that audits of panel members were completed monthly.

It must be noted that during the merger of water entities, Seqwater inherited from Brisbane City Council a number of personnel and facilities required to complete maintenance for the Somerset and Wivenhoe dams. These personnel and facilities are utilised in completing maintenance, resulting in an approximately 80% of maintenance being completed in-house, with the remainder 20% being completed by contractors. Currently Seqwater is assessing the efficiency of this method for completion of maintenance. The results of this assessment would be of interest in future assessments of the efficiency of the method for undertaking maintenance. Conversely, SKM has been advised during interviews held with Seqwater staff that in Lower Lockyer Valley, 80% of maintenance is contracted out and only 20% is undertaken in house. As such SKM has restricted its analysis to the major component of contracted labour as it is unlikely that any inefficiencies in costs for maintenance carried out in house is likely to significantly impact on overall costs

Notwithstanding the above, the use of panel contractors to complete maintenance, in particular with consideration of the new panel agreement, is considered by SKM to be efficient.

Market conditions

The expression of interest process used by Seqwater in engaging contractors resulted in 106 expressions of interest across all regions. The number of contractor responses, in addition to the procurement method consistent with the State Procurement Policy has ensured that current market conditions are accurately reflected in contractor rates.

Efficiencies and economies of scale

The panel agreements include short term and long term rates. During interviews, Seqwater personnel stated that the driver behind long term rates was to realise the benefits of offering continual work. As demonstrated in **Table 129**, panel contractors generally provided both short term and long term rates.

Through the inclusion of long term and short term rates in the panel agreement Seqwater has ensured that efficiencies are available for maintenance providing continual employment to contractors. SKM considers that the inclusion of long term and short term rates in the panel agreement will result in efficiency gains being realised.

Benchmarking

Rawlinsons Australian Construction Handbook 2011 identifies contractor charge out rates for Brisbane including:

- Electrician: $83 - $88
- Mechanical services: $75 - $88
- Instrumentation: $83 - $88
- Plumber: $77 - $82

While the contractor charge out rates identified in Rawlinson's are not available for all Seqwater categories of contractor included in **Table 129**, enough information is available to provide a comparison. For long term rates, Seqwater contractor rates are within the rates listed in Rawlinson's with the exception of W2 instrumentation and W2 pipeline, and a number are lower. Seqwater's short term rates are generally higher than those listed in Rawlinson's which is not unreasonable given that

Rawlinson's rates are based on a 38 hour working week, and assumes the rate '*assumes a negotiated rate*' which '*should not be confused with the usually much higher rate charged for non-contract works*'. For the purposes of this exercise, SKM considers that comparison with rates for Brisbane is appropriate given that any locational influence on rates as contractors may apply for working in the Lockyer Valley is likely to increase rather than decrease these rates. SKM therefore considers Seqwater's maintenance panel contractor rates efficient.

SKM has not been provided with information on the times taken by contractors for individual activities or projects, and therefore is not able to comment on a sample basis of the appropriateness of time taken to complete work. However, SKM has reviewed the processes undertake by Seqwater in engaging and reviewing the activities of contractors, and has also noted the trend in historic costs for contractor activities in planned maintenance. From this, SKM considers the time taken by contractors to be efficient in the mean, and are therefore comfortable that the review processes adopted by Seqwater captures and removes unreasonable contractor charges.

SKM's estimators consider the panel rates appropriate when contrasted to SKM's database for such costs. In their assessment, SKM's estimators considered the geographical location of the assets being maintained, the method of procurement, and terms and conditions of the rates, including removal of allowance for contractors to charge travel time. SKM's estimators additionally considered the utilisation of Brisbane contractor rates as a benchmark for rates of contractors in the Lower Lockyer region. It was found that although a minor premium may be expected due to the distance from Brisbane, Lower Lockyer Valley rates should be comparable to Brisbane's due to the proximity of major regional centres of Ipswich and Toowoomba, in addition to Brisbane. Further, SKM's estimator identified the competitive tender process in addition to removal of allowance to charge for travel time as being likely to negate any premium otherwise charged by the contractor for the work location.

In the absence of sufficient information to provide this benchmarking, it is necessary to examine unit rates and past expenditure. The unit rates applied to contractors who perform planned maintenance are efficient, as contractors have been selected through a competitive tender process.

Benchmarking forecast budget expenditure against historical expenditure demonstrates that Seqwater's current repairs and maintenance is similar, though slightly higher, than the historical expenditure for the Central Lockyer Valley Water Supply Scheme.

6.6.6. Policies and procedures

Panel contractors are engaged via a panel of providers. For individual projects, the engagement of panel members is governed by the Panel User Manual. The Panel User Manuel provides guidelines to Seqwater staff in the engagement and management of maintenance and specialist services provided by the panel. The Panel User Manual additionally provides for the review of contractor performance, as identified in **Section 6.6.5**.

In the previous panel, projects under $50,000 required one written quote from a panel member, projects from $50,000 to $250,000 required a minimum of three panel member quotes and projects from $250,000 required an invitation to tender process to be completed. More stringent procedures have been included in the new panel agreement, providing further governance for the engagement of contractors. The procedures for engaging contractors under the new panel are included in **Table 130** below.

- **Table 130 Seqwater minimum quotation requirements for engaging maintenance panel contractors**

Type of Work	Number (Min.) and Type of Quotations	
	Value of Work below $100,000 (incl. GST)	Value of Work greater than $100,000 (incl. GST)
Emergency	Nil (Refer PDM for requirements)	
Non – Emergency work that is: Relatively urgent, or difficult to scope upfront, or is planned maintenance, or is very low in value (for which seeking WCQ is not feasible)	1 x QCWO (or WCQ if deemed appropriate)	3 x WCQ
Other non – Emergency work	1 x WCQ	3 x WCQ

Seqwater's Panel User Manual uses the following terms

PDM – Procurement Decision Matrix
QCWO – Quotation Compliant Work Order
WCQ – Written Contractor Quote

6.6.7. Summary

The operating expenditure item is assessed as prudent as the need for the expenditure has been demonstrated.

The operating expenditure is assessed efficient as the scope is appropriate, the operating expenditure in support of regulated service delivery is consistent with industry practice and the costs are consistent with prevailing market conditions.

The quality of the information provided on this project is outlined below in **Table 131**.

- **Table 131 Quality of information provided**

Section of OPEX review	Repairs and Maintenance – Planned, Central Lockyer Valley WSS		
Cost item description			
Provided documentation			
Prudency			
Efficiency			
Evaluation of costs			
Delivery of service			
Allocated cost			
Market conditions			
Efficiencies and economies of scale			
Benchmarking			
Policy and procedures			
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

The deficiencies in information noted in the above table would be addressed by provision of the additional information set out above.

The value of any expenditure considered to be prudent or efficient is outlined below in **Table 132**.

- **Table 132 Repairs and Maintenance – Planned, Central Lockyer Valley WSS– Revised operating expenditure profile**

Project	Costs ($'000) 2012-13	Costs ($'000) 2013-14
Repairs and maintenance – Planned, Central Lockyer Valley WSS	121	125

6.6.8. Application to other projects

SKM has been asked to determine whether the results of the repairs and maintenance – planned reviewed in detail can be applied to repairs and maintenance – planned costs for other water supply schemes. There have been no major findings from this review that can be applied to other water supply schemes other than to say that if the same processes and procedures have been applied to similar cost items for other water supply schemes then these cost items are likely to be prudent and efficient.

6.7. Repairs and Maintenance – Unplanned, Central Lockyer Valley Water Supply Scheme

The Central Lockyer Valley Water Supply Scheme services irrigation users, sporting clubs and associations, Lockyer Regional Council and Crowe Vale Water Board. These customers are supplied by a number of assets in the scheme including:

- Bill Gunn Dam
- Lake Clarendon
- Jordan I Weir
- Jordan II Weir
- Wilson Weir
- Clarendon Weir
- Laidley Creek Diversion Weir
- Showgrounds Weir
- Crowley Vale Weir
- Glenore Grove Weir
- Kentville Weir
- Outlet works from Laidley Creek Diversion Weir to Lake Dyer
- Diversion pipeline inlet and outlet at Lake Dyer
- Redbank Creek Pump Station and outlet works
- Lake Clarendon Pump Station and outlet works
- Outlet works from Lake Dyer Diversion Pipeline D2

The cost of unplanned maintenance on the Central Lockyer Valley Water Supply Scheme refers to unplanned maintenance that is completed on these weirs, off-stream storages and other assets.

6.7.1. Proposed operating expenditure

Table 133 shows the proposed cost of the operating expenditure item repairs and maintenance – unplanned Central Lockyer Valley within the 2013-14 budget. Also shown are the actual/estimated operating costs for 2011-12 and 2012-13.

- **Table 133 Repairs and maintenance – unplanned, Central Lockyer Valley WSS – proposed operating expenditure profile**

Source	Actual Costs ($'000) 2010-11	Actual Costs ($'000) 2011-12	Estimated Costs ($'000) 2012-13	Forecast Costs ($'000) 2013-14
Terms of reference drawn from Seqwater's original NSP			126	131
Revised OPEX budget			49.3	51
Opex – Irrigation Updated YTD.xlsx	49	40	44	

The forecast costs for 2013-14 were determined by Seqwater by escalating the 2012-13 maintenance budget by a factor of 4%. The cost breakdown provided by Seqwater in response to SKM's request for further information (RFI-16) totals to $133,000, which is inconsistent, but only by $2,000, with the costs identified in the terms of reference and at other locations within Seqwater's response to our request for information. Seqwater subsequently identified that the operating expenditure budget for Mount Crosby had erroneously been included in the cost breakdown in place of Clarendon Dam operating expenditure budget. Identification of this error resulted in Seqwater revising the 2013-14 operating expenditure budget for Central Lockyer Valley repairs and maintenance – unplanned to $51,000.

The 2012-13 costs were using a zero base (bottom up) method for the Authority's review of Seqwater's Grid Service Charges for 2012-13. In comparison to historical maintenance costs detailed in Opex – Irrigation Updated YTD, the maintenance budget included in the terms of reference was significantly higher.

6.7.2. Operating item description

Unplanned maintenance is referred to as reactive maintenance in Seqwater documentation, and refers to maintenance that is undertaken to reinstate the operation or performance of an asset that has ceased to operate or perform as designed.

In Response to Information Request RFI016 the below breakdown of costs is provided:

- Bill Gunn Dam, R&M Un-Planned Only: $8,000
- Clarendon Dam, R&M Un-Planned Only: $4,000
- Clarendon WPS, R&M Un-Planned Only: $4,000
- Clarendon Weir, R&M Un-Planned Only: <$1,000
- Bill Gunn Dam, R&M Un-Planned Only: $4,000
- Clarendon Dam, R&M Un-Planned Only $11,000
- Central Lockyer Valley Irrigation Scheme, R&M Un-Planned Only: $9,000
- Bill Gunn Dam, R&M Un-Planned Only: $5,000

- Clarendon Dam, R&M Un-Planned Only: $8,000

6.7.3. Provided documentation

The documents used for this review are:

- *Information Request Response, RFI016, Central Lockyer WSS, Repairs & Maintenance – Unplanned, Seqwater, 14/08/2012*
- *Operational Cost Report for 2012-13, Seqwater*
- *Opex – Irrigation Updated YTD.xls, Seqwater*
- *MMW Panel User Manual*

Initial information provided by Seqwater outlined the location of unplanned maintenance, method for budget calculation and workforce. Discussions with Seqwater staff during project interviews provided further information, and resulted in identification of a number of further information sources that were subsequently requested.

Additional information requested from Seqwater for this review included:

- Expenditure for dam maintenance in previous years
- Rates for the old contractor panel and the MMW Panel User Guide

The requested documents were provided by Seqwater.

6.7.4. Prudency

Operating the water supply schemes or tariff group, and achieving compliance in practice with legislation (such as dam safety obligations), requires Seqwater to properly repair and maintain the assets that it owns and operates.

The repairs and maintenance required to operate the Central Lockyer Valley Water Supply Service predominantly relate to ensuring the ongoing operation and reliability of assets such as Bill Gunn and Clarendon Dams including the catchments and the recreation areas associated with these dams, the Clarendon Weir and the Clarendon Water Pump Station.

Consequently the operating expenditure item has been assessed as prudent.

6.7.5. Efficiency

For expenditure to be efficient it must represent the least-cost means of providing the requisite level of service within the relevant regulatory framework.

Evaluation of costs

In calculating costs for the base year of 2012-13, Seqwater has applied an escalation factor of 4% to baseline costs determined for the Authority's review of Seqwater's Grid Service Charges for 2012-13. The planned portion of the maintenance budget was calculated through applying a ratio of 71:29 to split maintenance costs between planned and unplanned maintenance.

In the spreadsheet 'Opex – Irrigation Updated YTD', the total 2012-13 repairs and maintenance budget for the Central Lockyer Valley Water Supply Scheme is $153,279, while the actual spend for

2010-11 was $170,068 and for 2011-12 was $138,146. Using Seqwater's allocation of 29% of maintenance as unplanned maintenance, the actual unplanned maintenance spends can be calculated as $49,320 in 2010-11 and $40,063 in 2011-12.

- **Table 134 Summary of repairs and maintenance – unplanned expenditure**

Year	Historical / Forecast	Unplanned Maintenance cost	Notes	Source
2010-11	Historical	$49,320	Average 2010-11 to 2011-12 historical spend is $44,492	Opex – Irrigation Updated YTD
2011-12	Historical	$40,063		Opex – Irrigation Updated YTD
2012-13	Forecast	$46,479	Calculated by escalating average historical spend	Opex – Irrigation Updated YTD
2013-14	Forecast	$48,338	Calculated by escalating average historical spend	Opex – Irrigation Updated YTD
2012-13	Forecast	$49,300		Revised opex budget
2013-14	Forecast	$51,000		Revised opex budget

As demonstrated in **Table 134** above, forecasting the average historical repairs and maintenance – unplanned expenditure for the Central Lockyer Valley Water Supply Scheme provides 2012-13 and 2013-14 cost of $46,479 and $48,338 respectively. These values are lower than the budget forecasts listed in the revised opex budget by 6% and 5.5 % for 2012-13 and 2013-14 respectively.

In its response to SKM's information request (RFI016) Seqwater provided a breakdown on costs, as listed in **Section 6.7.1**. Of the costs provided, one item, *Catchment services, Location: Bill Gunn Dam, Repairs and Maintenance (522007)* could not be located in the Operational Cost Report for 2012-13. The other items listed in the Operational Cost Report were the same as those itemised in Seqwater's response to our information request: RFI016.

In determining the 2013-14 budget for planned maintenance, Seqwater applied a 4% escalation to the 2012-13 budget. The budget was developed utilising baseline data contained in the Operational Cost Report for 2012-13 that was submitted during the Authorities review of Seqwater's Grid Service Charges for 2012-13. The application of a 4% escalation factor to previous budgets is considered appropriate, albeit potentially on the high side, considering the Reserve Bank of Australia's inflation target of 2-3%.

In interviews, Seqwater staff stated that planned and reactive budgets are based on historical spends. The supplied information supports this statement, albeit with minor variations as detailed above. As such, SKM has concluded that the method of cost calculation utilised by Seqwater in determining the budget for planned maintenance for the Central Lockyer Valley Water Supply Service represents the most appropriate method for budget development, as it is based on historical expenditure. Costs are therefore assessed by SKM as being efficient.

Delivery of service

Unplanned maintenance is delivered through a panel of providers. Each of Seqwater's operational regions has a panel of four contractors, who have been selected through an expression of interest process for each work classification including electrical, mechanical, instrumentation, control system pipeline and civil. During interviews Seqwater personnel stated that contractors were appointed in accordance with the State Procurement Policy. The previous panel agreement ran from 2009 until

2012, whilst the new panel runs from 2012 for a period of two years, with an option for extending the panel for a further one or two year period. The new panel contains efficiencies over the previous panels including removing the allowance for contractor to charge for travel time and providing short term and long term rates.

Specific to the Central Lockyer Valley Water Supply Scheme are the W1 and W2 regions, panel rates ($/hr) for which are provided in **Table 135** below. Note that contractor names have been excluded from **Table 135** to protect commercial confidentiality.

- **Table 135 Seqwater maintenance contractor panel rates 2012 – 2014**

		W1				W2			
Electrical	Short term	$90.80	$80.0	$86.2	$69.0	$90.8	$86.25	$88.0	$98.0
	Long term	$80.71	$72.0	$86.25	$66.48	$80.71	$86.25	$79.2	$98.0
Mechanical	Short term	$80.00	$90.0	$98.0	$107.2	$80.0	$90.0	$70.37	$98.0
	Long term	$75.00	$85.0	$98.0	$107.2	$80.0	$85.0	$70.37	$98.0
Instrumentation	Short term	$90.00	$108.0	$80.0	$98.0	$98.0	$104.08	$147.0	$100.0
	Long term	$81.00	$93.0	$80.0	$98.0	$98.0	$104.08	$122.0	$95.0
Control System	Short term	$168.53	$100.0	$150.0		$168.53	$168.0	$130.0	$130.0
	Long term	$149.80	$100.0	$133.0		$149.80	$153.00	$125.0	$130.0
Pipeline	Short term	$73.50	$58.0	$90.0	$70.0	$90.0	$117.0	$105.0	$58.0
	Long term	$71.00	$55.0	$85.0	$70.0	$85.0	$110.0	$100.0	$55.0
Civil	Short term	$79.00	$55.0	$80.0	$104.7	$96.50	$98.0	$90.0	$110.0
	Long term	$75.50	$55.0	$70.0	$104.7	$92.50	$92.0	$70.0	$95.0

Panel contractors are audited to determine work performance. The audit, performed by Seqwater, details performance in terms of work order completion and supply of documentation, contractor timesheet entry and other categories as appropriate for the job. During interviews Seqwater personnel stated that audits of panel members were completed monthly.

It must be noted that during the merger of water entities, Seqwater inherited from Brisbane City Council a number of personnel and facilities required to complete maintenance for the Somerset and Wivenhoe dams. These personnel and facilities are utilised in completing maintenance, resulting in an approximately 80% of maintenance being completed in-house, with the remainder 20% being completed by contractors. Currently Seqwater is assessing the efficiency of this method for completion of maintenance. The results of this assessment would be of interest in future assessments of the efficiency of method of completing maintenance.

Notwithstanding the above, the use of panel contractors to complete maintenance, in particular with consideration of the new panel agreement, is considered by SKM to be efficient.

Market conditions

The expression of interest process used by Seqwater in engaging contractors resulted in 106 expressions of interest across all regions. The number of contractor responses, in addition to the procurement method consistent with the State Procurement Policy has ensured that current market conditions are accurately reflected in contractor rates.

Efficiencies and economies of scale

The panel agreements include short term and long term rates. During interviews, Seqwater personnel stated that the driver behind long term rates was to realise the benefits of offering continual work. As demonstrated in **Table 135**, panel contractors generally provided both short term and long term rates.

Through the inclusion of long term and short term rates in the panel agreement Seqwater has ensured that efficiencies are available for maintenance by providing continual employment to contractors. However, given the uncertainty associated with unplanned maintenance activities, it is unclear whether these efficiencies are being realised, or able to be realised in unplanned maintenance.

Benchmarking

Rawlinsons Australian Construction Handbook 2011 identifies contractor charge out rates for Brisbane including:

- Electrician: $83 - $88
- Mechanical services: $75 - $88
- Instrumentation: $83 - $88
- Plumber: $77 - $82

While the contractor charge out rates identified in Rawlinsons are not available for all Seqwater categories of contractor included in **Table 135**, enough information is available to provide a comparison. For long term rates, Seqwater contractor rates are within the rates listed in Rawlinsons with the exception of W2 instrumentation and W2 pipeline, and a number are lower. Seqwater's short term rates are generally higher than those listed in Rawlinsons which is not unreasonable given that Rawlinsons' rates are based on a 38 hour working week, and assumes the rate '*assumes a negotiated rate*' which '*should not be confused with the usually much higher rate charged for non-contract works*'. SKM therefore considers Seqwater's maintenance panel contractor rates efficient.

SKM has not been provided with information on the times taken by contractors for individual activities or projects, and therefore is not able to comment on a sample basis of the appropriateness of time taken to complete work. However, SKM has reviewed the processes undertake by Seqwater in engaging and reviewing the activities of contractors, and has also noted the trend in historic costs for contractor activities in planned maintenance. From this, SKM considers the time taken by contractors to be efficient in the main, and SKM is assured that the review processes adopted by Seqwater captures and removes unreasonable contractor charges.

SKM's estimators consider the panel rates appropriate when contrasted to SKM's database for such costs. In their assessment, SKM's estimators considered the geographical location of the assets being maintained, the method of procurement, and terms and conditions of the rates, including removal of allowance for contractors to charge travel time. SKM's estimators additionally considered the utilisation of Brisbane contractor rates as a Benchmark for rates of contractors in the Lower Lockyer region. It was found that although a minor premium may be expected due to the distance from Brisbane, Lower Lockyer Valley rates should be comparable to Brisbane's due to the proximity of major regional centres of Ipswich and Toowoomba, in addition to Brisbane. Further, SKM's estimator identified the competitive tender process in addition to removal of allowance to charge for travel time as being likely to negate any premium otherwise charged by the contractor for the work location.

Due to the nature of costs associated with unplanned maintenance budgets, in that they are unknown until they occur, it is not possible to benchmark the costs of unplanned maintenance against other unplanned maintenance costs. Additionally, as Seqwater applies the same split between planned and unplanned maintenance costs it is difficult to benchmark between Seqwater assets. In the absence of sufficient information to provide this benchmarking, it is necessary to examine unit rates and past expenditure. The unit rates applied to contractors who perform unplanned maintenance are considered to be efficient, as contractors have been selected through a competitive tender process.

Benchmarking forecast budget expenditure against historical expenditure demonstrates that Seqwater's current unplanned maintenance budget is similar, though slightly higher, than the historical expenditure for the Central Lockyer Valley Water Supply Scheme.

6.7.6. Policies and procedures

Panel contractors are engaged via a panel of providers. For individual projects, the engagement of panel members is guided by the Panel User Manual. The Panel User Manuel provides guidelines to Seqwater staff in the engagement and management of maintenance and specialist services provided by the Panel. The Panel User Manual additionally provides for the review of contractor performance, as identified in **Section 6.6.5**.

In the previous panel, projects under $50,000 required one written quote from a Panel member; projects from $50,000 to $250,000 required a minimum of three Panel member quotes and projects $250,000 required an invitation to tender process to be completed. More stringent procedures have been included in the new Panel agreement, providing further governance for the engagement of contractors. The procedures for engaging contractors under the new panel are included in **Table 136**.

- **Table 136 Seqwater minimum quotation requirements for engaging maintenance panel contractors**

Type of Work	Number (Min.) and Type of Quotations	
	Value of Work below $100,000 (incl. GST)	Value of Work greater than $100,000 (incl. GST)
Emergency	Nil (Refer PDM for requirements)	
Non – Emergency work that is: Relatively urgent, or difficult to scope upfront, or is planned maintenance, or is very low in value (for which seeking WCQ is not feasible)	1 x QCWO (or WCQ if deemed appropriate)	3 x WCQ
Other non – Emergency work	1 x WCQ	3 x WCQ

Seqwater's Panel User Manual uses the following terms

PDM – Procurement Decision Matrix
QCWO – Quotation Compliant Work Order
WCQ – Written Contractor Quote

6.7.7. Summary

The operating expenditure item is assessed as prudent as the need for the expenditure has been demonstrated.

The operating expenditure is assessed efficient as the scope is appropriate, the operating expenditure in support of regulated service delivery is consistent with industry practice and the costs are consistent with prevailing market conditions.

The quality of the information provided on this project is outlined below in **Table 137**.

- **Table 137 Quality of information provided**

Section of OPEX review	Central Lockyer Valley WSS Unplanned maintenance		
Operating item description			
Provided documentation			
Prudency			
Efficiency			
Evaluation of costs			
Delivery of service			
Market conditions			
Efficiencies and economies of scale			
Benchmarking			
Policy and procedures			
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

The value of any expenditure considered to be prudent or efficient is outlined below in **Table 138**.

- **Table 138 Repairs and Maintenance – Unplanned, Central Lockyer Valley Water Supply Scheme– Revised operating expenditure profile**

Project	Costs ($'000) 2012-13	Costs ($'000) 2013-14
Repairs and maintenance – Unplanned, Central Lockyer Valley WSS	49.3	51.0

6.7.8. Application to other projects

SKM has been asked to determine whether the results of the repairs and maintenance – unplanned reviewed in detail can be applied to repairs and maintenance – unplanned costs for other water supply schemes. There have been no major findings from this review that can be applied to other water supply schemes other than to say that if the same processes and procedures have been applied to similar cost items for other water supply schemes then these cost items are likely to be prudent and efficient.

6.8. Direct labour, Logan River Water Supply Scheme

The Logan River Water Supply Scheme services a number of irrigators, a small number of industrial customers and the SEQ Water Grid Manager. These customers are supplied from a number of assets within this scheme including Maroon Dam, Bromelton Weir, Wyaralong Dam, Bromelton Off Stream Storage, Cedar Grove Weir and South Maclean Weir. Seqwater has proposed that only costs

associated with Maroon Dam, Bromelton Weir and Maclean Weir be allocated to irrigation customers on the basis that

- The other storages were constructed specifically for the purpose of supplying water to secure essential (urban) supplies in SEQ.
- Irrigators have not enjoyed an increase in nominal volumes arising from the construction of these storages. That is, the nominal volume of irrigation WAE were unaffected from the construction of these storages
- Irrigators (as holders of medium priority WAE) did not benefit in terms of increased reliability from these storages

6.8.1. Proposed operating expenditure

Table 139 shows the proposed cost of the operating expenditure item Direct Labour, Logan River Water Supply Scheme within the 2013-14 budget. Also shown are the actual/estimated operating costs for 2011-12 and 2012-13.

- **Table 139 Direct Labour, Logan River Water Supply Scheme – Proposed operating expenditure profile**

Source	Actual Costs ($'000) 2011-12	Budgeted Costs ($'000) 2012-13	Original Forecast Costs ($'000) 2013-14	Revised Forecast Costs ($'000) 2013-14
Terms of reference drawn from Seqwater's original NSP and Seqwater responses to RFIs	238.4	393	409	418.4

2013-14 Labour cost for Logan River Water Supply Scheme has been escalated from the budgeted 2012-13 base forecast of $393,000 by 4%. The 2012-13 base forecast was built up from a zero base (bottom up). This category of costs relates to internal Seqwater staff costs only.

Subsequent to our review, SKM was provided with additional information indicating the Seqwater has provided a revised submission that increased the original forecast from $409,000 to $418,400. No further information has however been provided to support this increase in labour cost forecast. Seqwater further informed SKM that the additional amount relates to maintenance staff labour costs. These were not included in the RFI because the Authority sample referred to "Operations" which does not include maintenance in the Seqwater model.

6.8.2. Operating item description

The labour resources required to operate the Logan River Water Supply Scheme mainly relate to the operation of assets such as Maroon Dam (including the catchment and the recreation areas associated with the dam) and the Maroon (Recreation) Water Treatment Plant. The proposed costs for these operating expenditure items include:

- Maroon Dam Operations $199,000
- Logan River Irrigation Scheme $143,000
- Maroon Dam Catchment services $56,000
- Maroon Recreation (Boonah Kalbah) WTP $11,000

6.8.3. Provided documentation

The documents used for this review are:

- *Seqwater, 2013-14 Irrigation Pricing, Submission to the Queensland Competition Authority, April 2012*
- *Seqwater, Logan River Water Supply Scheme, Network Supply Scheme*
- *Seqwater, Information Request Response – QCA Irrigation Price Review 2013-17, RFI 017, Logan River WSS, Operations – Direct Labour, 14 Aug 2012*
- *Seqwater, Budget 2012-13, Salaries and Wages, Dam Operations*
- *Seqwater, Budget 2012-13, Salaries and Wages, Group Support*
- *Seqwater, Opex – Irrigation Updated YTD.xlsx*

SKM also requested evidence of historical costs for contracted recreational area maintenance including the cost of mowing services. While some information was provided for this for 2008-09 and 2009-10, SKM understands that a change in classification in mowing services (perhaps to Vegetation Management Services or General Maintenance Services) resulted in the non-identification of costs for this aspect of operating expenditure for subsequent years.

6.8.4. Prudency

Maroon Dam is a referable dam under the Water Supply (Safety and Reliability) Act 2008. To adequately satisfy Seqwater's regulatory obligations at Maroon Dam, labour resources are needed to undertake

- Dam Operations: to meet Market Rules requirements, water ownership and water use legislation, water information reporting requirements, dam safety and reliability legislation.
- Catchment Services: to meet environmental protection legislation, recreation responsibilities, catchment management responsibilities, land ownership legislation.
- Water Treatment Operations: to meet Market Rules requirements and recreation responsibilities.

Consequently the operating expenditure item is seen as prudent.

6.8.5. Efficiency

For expenditure to be efficient it must represent the least-cost means of providing the requisite level of service within the relevant regulatory framework.

Evaluation of costs

Labour cost for Logan River Water Supply Scheme has been estimated by escalating the budgeted 2012-13 base forecast of $393,000 by 4%. The 2012-13 base forecast was built up from a zero base (bottom up method). Seqwater initially provided the forecasts from 2013-14 through to 2016-17 for review.

Seqwater's operating cost projections of labour are not based on any water demand cost drivers but are rather based on the 2012-13 budget. Seqwater does not view demand as a driver of labour costs. In SKM's view, basing the labour forecast cost on a previous budget is not satisfactory as actual costs may vary significantly from budget. SKM recommends that forecast costs be based on actual incurred costs taking into account trends exhibited by recent actual expenditure, changes in working

practices and changes in assets being operated. Accordingly, additional information relating to actual historical expenditure was sought by SKM.

Seqwater also informed SKM that the costs being examined to not include any maintenance labour costs as these costs have been factored into the labour budgets for maintenance. The costs reviewed in this sample relate only to operations costs.

In response to SKM's request for information, Seqwater provided historical and budgeted costs for labour between 2009-10 and 2012-13. This is shown in **Table 140**. We note that this information differs from that supplied in the Seqwater response to SKM's RFI.

- **Table 140 Logan River Water Supply Scheme Labour Costs**

Logan River WSS	2009-10 Actual ($)	2010-11 Actual ($)	2011-12 Actual ($)	2011-12 Budget ($)	2012-13 Budget ($)
Employee Costs	89,738.37	248,866.71	238,431.01	362,469.46	402,315.15

SKM also sought from Seqwater information regarding the estimated quantity of FTEs assigned to the assets. The information provided by Seqwater is shown below in **Table 141**. The information provided in this case is consistent with the information submitted to the Authority.

- **Table 141 2012-13 Logan River Water Supply Scheme Labour Costs Budget**

Service Activity	Salaries & Wages Applied ($)
Group Support	53,876
Dam Operations	190,441
Water Treatment	10,508
Logan Irrigation Scheme	137,260
Total Labour Cost	**392,085**

Delivery of service

The labour reviewed in this sample is provided by Seqwater staff. Dam operations are the largest contributor to direct operating costs. Dam operations are responsible for operating and monitoring its water source infrastructure.

Dam operations must meet the regulatory requirements under various Acts including those relating to Dam Safety, Flood Management, Resource Operating Plans, and providing sufficient water to meet standards of service.

Dam operations are relatively labour intensive and the expenditure is required to:

- Deliver services to irrigation customers in terms of information and management and delivery of irrigation service
- Develop systems to monitor water flows to manage water sources, floods and regulations
- Develop flood operations centre
- Undertake data management to ensure compliance on a wide variety of water management areas
- Ensure security and safety at water sources in meeting regulatory and community standards and
- Develop system operating plans for the operation of dams, weirs, bores and other water sources

Group support (and catchment management) has responsibility for the development and delivery of recreation and catchment maintenance services for all operational assets. The team of rangers and bio security officers ensures that asset management plans, processes, systems and practices are implemented in accordance with relevant regulatory requirements. Seqwater also has responsibility for the ongoing management and maintenance of any recreation sites associated with the dams. While the use of Seqwater assets for recreational purposes is not a core Seqwater function, these facilities, which are a planning and operating licence condition of the assets, must be managed in a sustainable and environmentally responsible manner to ensure that Seqwater's core responsibilities and accountabilities are not adversely impacted. When SunWater managed these recreation facilities prior to the transfer of the infrastructure to Seqwater, the dam operators were also responsible for their daily maintenance like mowing and minor repairs. Under Seqwater's operating model, these maintenance activities have been separated from dam operations and Group Support has been made responsible for provision of these services. Seqwater has informed SKM that grounds maintenance activities such as slashing and mowing are now managed by the rangers and much of this activity is contracted out to third parties from their panel of contractors. In addition, Seqwater has endeavoured to separate operations and maintenance activities between the operations and maintenance teams such that the minor asset maintenance previously undertaken by the operators is now only undertaken by the maintenance teams or their contractors.

Efficiencies and economies of scale

The services provided by the operators of the dam, water treatment plant and irrigation scheme are likely to be difficult to contract to third party operators given that they are small and the operators are required to know their assets intimately. These operators also do not allocate all their time to the Logan River Water Supply Scheme but also provide services to other dams and water supply schemes within the southern Seqwater region including assets belonging to the Warrill Water Supply Scheme.

SKM conducted a series of interviews and discussions with Seqwater's operating staff at the dams. From these discussions there is certainly anecdotal evidence that indicate a systemic underutilisation of operational staff, due to changes in working practices, as this issue arose at many (if not all) of the dam sites visited. The dam operating staff believe that they were more fully utilised under the SunWater operating model when they were responsible for some minor maintenance of the dam and surrounding facilities including the recreational areas. With the transfer of the assets to Seqwater and the consequent change in operating model, these dam operators have had their work load reduced and that of the rangers increased to now manage the maintenance of the recreational facilities associated with the dams. These discussions have indicated to SKM that the dam operators have possibly a capacity to undertake at least 20% to 30% more work while the rangers responsible for the maintenance of the recreational facility are fully (perhaps even over) utilised. As a result, these rangers are often not able to undertaken the maintenance work themselves but rather have to contract for third party contractors to undertake the grounds maintenance work (mainly mowing of the lawn associated with the recreational facilities and slashing of verges and access routes). Information from Seqwater provided to SKM regarding the cost of mowing service allocated to the Logan River Water Supply Scheme while not fully detailed for 2010-11 indicates that just under $10,000 was paid to the mowing contractor in 2009-10. If this service is reclassified as part of dam operations and brought (back) under the responsibility of the dam operator, this will more fully utilise the dam operator, reduce the work load of the rangers in managing the mowing contractor and save on contractor costs. Under this arrangement, the rangers could maintain responsibility responsible for

managing/supervising the mowing or ensuring the mowing is done albeit with the dam operators carrying out the task rather than contractors. However whether this arrangement would potentially improve efficiency is debatable given that additional costs would be incurred in procuring equipment which would be left idle most of the time. Also while the dam operators have indicated a preference for such type of work (physical and hands-on type of tasks) requiring them to undertake such tasks may result in the neglect of other (less preferred) tasks like the reporting and monitoring tasks they currently undertake requiring desk based and computer related activities.

Benchmarking

SKM has reviewed the pay rates of the operators and rangers and notes that the pay rates are consistent with other operators and ranges employed by Seqwater in other areas and are considered to be reasonable for such employees. While the almost 2 FTE's that are allocated to Maroon Dam is considered excessive in light of the identified under utilisation, the allocation would be appropriate if Seqwater brought back in-house the mowing contract and allowed the dam operators to undertake minor maintenance work in the facility.

About 0.7 FTE rangers have been allocated to Logan River Water Supply Scheme. Our discussions indicate that rangers are fully utilised and they are also trained to supplement dam operators during peak events as would occur during a flood.

SKM also views that the overall numbers of dam operators is appropriate given that some excess capacity may be necessary during normal operations to address peak requirements. As mentioned, outside peak requirements, this excess may thus be utilised in non-core activity like mowing and minor maintenance work when such peak events are not present. However, the current operating model does not take advantage of this capacity but rather incurs extra maintenance contracting costs, in SKM's view, unnecessarily and thus inefficiently.

An overtime allocation of $52,000 for dam operations has been provided in Seqwater's submission. Seqwater has informed SKM that on-call allowances have been included in this allocation. Actual overtime costs are budgeted to be $27,700 while allowances are $24,600. This amounts to about20% of normal dam operations labour cost. In SKM's opinion this is a reasonable (if on the high side) budget for overtime. Similarly, overtime of $7,500 has been allocated for the WTP operator at Boonah Kalbah. The WTP operator is only expected to spend 3% of the time at this facility with a normal time cost of $3,000. Overtime is thus expected, by Seqwater, to account for more than twice as much. Even if allowances are factored in, the overtime (plus allowance) budget for Boonah Kalbah is high. SKM recommends that the overtime allowance for Boonah Kalbah be reduced to a nominal $1,000 whilst recognising that this still represents over 30% of normal time cost.

6.8.6. 2013-14 Labour Cost Forecast

Of greater concern to SKM is the large increase in the 2012-13 budget of labour cost from the labour cost incurred in 2010-11 and 2011-12. No reasons have been provided in any of the documents from Seqwater to explain the 65% cost increase.[8] While there may be an argument that as Seqwater set labour budgets in an integrated manner for all the water supply schemes, the annual allocation of an individual scheme may change; SKM would not expect an increase in labour expenditure from less than $240,000 in 2011-12 to almost $400,000 in 2012-13. Overall Seqwater expects a 14% increase in labour expenditure for its irrigation business. This is shown in **Table 142**.

[8] Seqwater has subsequently acknowledged that labour costs for Logan may have been over-estimated

- **Table 142 2009-10 to 2012-13 Logan River Water Supply Scheme and Seqwater Labour Costs**

Logan WSS	Employee Costs					% increase 2011-12 to 2012-13
	2009-10 Actual ($)	2010-11 Actual ($)	2011-12 Actual ($)	2011-12 Budget ($)	2012-13 Budget ($)	
Logan	89,738	248,867	238,431	362,469	392,086	65%
Seqwater	1,802,969	3,780,608	4,185,252	3,968,741	4,784,302	14%

SKM is of the opinion that this proposed increase in the 2012-13 budget for the Logan River Water Supply Scheme is excessive and recommends that the Logan 2012-13 budget be reduced to the average of the previous two Logan River Water Supply Scheme budgeted. This will result in a 2013-14 budget of approximately $253,000 after applying an increase that reflects the overall Seqwater employee cost increase for 2012-13. To arrive at this estimate, SKM has adjusted the percentage of labour allocated to the Logan River Water Supply Scheme for 2012-13 and then factored a 4% adjustment consistent with Seqwater's wage inflation expectations. This is shown in **Table 143**.

- **Table 143 2012-13 Adjusted Logan River Water Supply Scheme Labour Costs Allocation Budget with 4% escalation applied for 2013-14**

Service Activity	Salaries & Wages Applied ($)
Group Support	33,859
Dam Operations	116,772
Water Treatment	2,890
Logan Irrigation Scheme	90131
Total Labour Cost 2012-13	**243,652**
Total Labour Cost 2013-14 (escalated from 2012-13 at 4%)	**253,398**

With the recommended reduction in labour cost forecast, SKM also recommend limiting the overtime budget for the Logan River Irrigation scheme to 20% of normal time costs, consistent with the overtime budget for dam operators.

6.8.7. Policies and procedures

Contracts for external service providers for mowing services are based on the various panel contractors in the various Seqwater regions. These panel contracts have been procured based on Seqwater procurement policy which SKM reviewed as part of a previous review exercise for the Queensland Competition Authority. The procurement policy review has been reproduced in this report for completeness. The panels are refreshed every three years.

6.8.8. Summary

The operating expenditure item is assessed as prudent as the need for the expenditure has been demonstrated.

The operating expenditure is assessed as not efficient as the operating expenditure in support of regulated service delivery is not consistent with industry practice and the costs do not represent the least-cost means of providing the requisite level of service within the relevant regulatory framework.

The quality of the information provided on this cost item is outlined below in **Table 144**.

- **Table 144 Quality of information provided**

Section of OPEX review	Logan River WSS Direct Labour
Operating item description	
Provided documentation	
Prudency	
Efficiency	
Evaluation of costs	
Delivery of service	
Market conditions	N/A
Efficiencies and economies of scale	
Benchmarking	
Policy and procedures	

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

Seqwater will need to address the following information shortfall to rectify the non-green items above.

- Reasons for the high rate of overtime
- Information regarding any efficiency targets set for productivity improvements.

In SKM's view, forecast 2013-14 labour costs in the Logan River Water Supply Scheme costs may be reduced by setting overtime at a lower level to reflect the current low utilisation of dam operating staff. The overtime allocated for the WTP staff should also be lower given the low normal working hours time allocation to the asset.

SKM considers that the labour cost increase applied to Logan is excessive. No reasons have been provided for such an increase and as such SKM recommends reducing the allocation of time to Logan to reduce the labour costs budget for Logan River Water Supply Scheme in 2012-13 to around $243,650. This should then be escalated by 4% to form the 2013-14 budget of $253,400.

The value of labour expenditure considered to be efficient is outlined below in **Table 145**.

- **Table 145 Direct Labour, Logan River Water Supply Scheme - Revised operating expenditure profile**

Project	Costs ($'000) 2013-14
Logan River WSS labour cost	253.4

6.8.9. Application to other operational expenditure items

While care must be taken, the findings of this review may be applicable to other labour cost items from other water supply schemes submitted by Seqwater not subject to detailed review. SKM

believes that the Logan River Water Supply Scheme has similar characteristics to other water supply schemes in Seqwater's system and thus the issues faced are likely to be similar.

6.8.10. Further analysis

As a result of the further information identified by Seqwater just prior to finalising our analysis, the Authority subsequently commissioned SKM to undertake further analysis on the direct labour cost at the Logan River WSS. Further discussions were held with Seqwater to review this additional information. The issues raised include

- Evidence was presented that indicated that the overtime estimated for dam operators at Maroon Dam is required. This was due to the requirement for 7 days a week monitoring for dam safety requirements as well as minimum time provisions in the EBA that stipulates that a minimum of 2 hours of overtime on Saturdays at time and a half and 3 hours on Sundays at two times normal wages. This accounts for approximately 0.24FTE or 19.5% of the normal time labour costs proposed by Seqwater. In SKM's view, monitoring of dam safety would normally take around 1.5 hr to 2 hours, based on our discussions with various operators. However, the hours provided for overtime on weekends are the minimum given the provisions of the EBA.
- Seqwater indicated that the cost of supervising infrastructure maintenance was not provided to SKM for the initial analysis as this was not captured in their financial system as a labour expense. Seqwater has provided costs for 2012-13 that are similar to the level of costs in 2011-12 for the work required to supervise maintenance contractors for its infrastructure.
- The costs for the WTP at Boonah Kalbah provided to SKM earlier were incorrect. The operator at Boonah Kalbah is required to travel every day from Beaudesert to Maroon to ensure that the WTP is operating is the desired manner. This impacts on the overtime required as the plant requires attention seven days a week.
- Seqwater also indicated that prior to the change of ownership from SunWater of the Logan and Warrill schemes in July 2008, the duties of the operations staff in the schemes included mowing and maintaining the recreation areas and tending the recreation water treatment plants. Mowing activities extended to the vegetation management of the scheme's weir's, diversion regulating structures and the irrigation channel's for both mowing and herbicide application. These activities occupied a minimum of 30% of the operators' time with the management of water treatment facilities making up a large proponent of after hours activities. The lawns of the recreation areas were kept to a higher standard than was necessary which reflected the personality of the lead operator rather than corporate objectives. The work was performed across the two schemes by 5 FTEs.

  When these schemes came under Seqwater's ownership, the recreation area responsibilities passed to other parts of the organisation. The Group Support rangers took responsibility for mowing and maintaining the recreation areas while the water treatment plants came under the control of Water Treatment Operations group. The former SunWater scheme operators became part of the Dam Operations group and their scope of work was redefined with a greater emphasis on surveillance and monitoring and more focussed asset management responsibilities. The Dam Operations group also became responsible for the new Wyaralong Dam, Bromelton Dam and Cedar Grove Weir, each of which, with the exception of Bromelton Dam, has a fishway. Bromelton Dam incorporates a Raw Water Pumping Station from the Logan River which is used to harvest natural stream flows to Bromelton Dam. The RWPS is operated and maintained by the Dam Operation team. The number of FTEs was reduced from 5 to 4.35 across the Logan and

Warrill schemes for the core scheme management. This reduction correlates with the reduction in responsibilities and change of emphasis to dam safety and asset management practices.

The remaining difference in dam operators' time (between when SunWater operated the scheme and when Seqwater took over responsibility) has been accounted for by increased responsibility regarding health and safety and reporting. These areas of responsibilities are new and have taken a significant amount of time given that the dam operators were unfamiliarity with these requirements. SKM also understands that a highter amount of training has to be carried out on an annual basis, than was the case under Sunwater, to maintain their proficiency. SKM was provided with a chart showing the number of training activities that dam operators (and others) are required to undertake (on a continuous basis), which does indicate a significant burden on time arising from training.

- Evidence was also presented that Catchment Services costs for 2011/12 was understated due to a disciplinary issue that resulted in the suspension of a senior ranger during that year and his subsequent dismissal. That position was not replaced in 2011/12 but will be replaced by 2013/14.
- Seqwater however also acknowledged that it had re-examined the allocation of staff time across the Logan and Warrill assets and has developed new allocation percentages resulting in a reduction in budgeted costs at Logan for 2012-13 falling to $321,500 from $418,400.

SKM reviewed this information and accepted that its earlier recommendation did not take into consideration these factors as they were not presented to SKM at the time. Given the requirement of weekend manning of dam operations together with minimum time provisions of the EBA, SKM accepts that the overtime benchmarks it applied to dam operators are too low. Accordingly SKM has revised the overtime benchmarks for dam operations.

SKM is of the opinion that the proposed 2012-13 labour budget (reduced to $321,500) for the Logan River Water Supply Scheme is slightly excessive and recommends that the 2012-13 budget be reduced to reflect the 2011/12 labour cost at the Logan River Water Supply Scheme after taking into consideration the additional cost of infrastructure maintenance. In SKM's view an appropriate level of labour cost is approximately $306,000 in 2012-13 which will result in the 2013-14 budget of approximately $318,000 after applying an increase that reflects the overall Seqwater employee cost increase for 2012-13. To arrive at this estimate, SKM has adjusted the percentage of labour allocated to the Logan River Water Supply Scheme for 2012-13 and then factored a 4% adjustment consistent with Seqwater's wage inflation expectations. The resulting revised recommended labour cost for Logan River WSS is shown in **Table 146**.

- **Table 146 Revised Logan River Water Supply Scheme Labour Costs Allocation Budget with 4% escalation applied for 2013-14**

Service Activity	Salaries & Wages Applied ($)
Group Support	38,075
Dam Operations	150,574
Water Treatment	26,071
Logan Irrigation Scheme	91,412
Total Labour Cost 2012-13	**306,132**
Total Labour Cost 2013-14 (2012-13 costs escalated at 4%)	**318,377**

As a result of the additional information, the value of labour expenditure considered to be efficient is outlined below in **Table 147**.

- **Table 147 Revised Direct Labour, Logan River Water Supply Scheme - operating expenditure profile**

Project	Costs ($'000) 2013-14
Logan River WSS labour cost	318,4

6.9. Direct labour, Lower Lockyer Valley Water Supply Scheme

The Lower Lockyer Valley Water Supply Scheme services mainly irrigators supplied from a number of assets within this scheme including Atkinson Dam, Buaraba Creek Diversion Weir, Brightview Weir, Sippels Weir, Potters Weir, O'Reillys Weir and various channels and pipelines.

6.9.1. Proposed operating expenditure

Table 148 shows the proposed cost of the operating expenditure item Direct Labour, Lower Lockyer Valley Water Supply Scheme within the 2013-14 budget. Also shown are the actual/estimated operating costs for 2011-12 and 2012-13.

- **Table 148 Direct Labour, Lower Lockyer Valley Water Supply Scheme – Proposed operating expenditure profile**

Source	Actual Costs ($'000) 2011-12	Budgeted Costs ($'000) 2012-13	Original Forecast Costs ($'000) 2013-14	Revised Forecast Costs ($'000) 2013-14
Terms of reference drawn from Seqwater's original NSP and Seqwater responses to RFIs	282.3	216	226	265.8

The 2013-14 labour cost for Lower Lockyer Valley Water Supply Scheme has been escalated from the budgeted 2012-13 base forecast of $216,000 by 4%. The 2012-13 base forecast was built up from a zero base (bottom up). This category of costs relates to internal Seqwater staff costs only.

Subsequent to our review, SKM was provided with additional information indicating the Seqwater has provided a revised submission that increased the original forecast from $226,000 to $266,000. No further information has however been provided to support this increase in labour cost forecast. Seqwater further informed SKM that the additional amount relates to maintenance staff labour costs. These were not included in the RFI submitted to SKM because the Authority sample referred to "Operations" which does not include maintenance in the Seqwater model.

6.9.2. Operating item description

The labour resources required to operate the Lower Lockyer Valley Water Supply Scheme mainly relate to the operation of assets such as Atkinson Dam (including the catchment and the recreation areas associated with the dam) and the Atkinson (Recreation) Water Treatment Plant. The proposed 2013-14costs for these operating expenditure items include:

- Atkinson Dam – Operations $168,000
- Atkinson Dam – Catchment Services $40,000

- Atkinson (Rec) WTP Ops (Nth) $18,000

6.9.3. Provided documentation

The documents used for this review are:

- *Seqwater, 2013-14 Irrigation Pricing, Submission to the Queensland Competition Authority, April 2012*
- *Seqwater, Lower Lockyer Valley Water Supply Scheme, Network Supply Scheme*
- *Seqwater, Information Request Response – QCA Irrigation Price Review 2013-17, RFI 018, Lower Lockyer Valley WSS, Operations – Direct Labour, 14 Aug 2012*
- *Seqwater, Budget 2012-13, Salaries and Wages, Dam Operations*
- *Seqwater, Budget 2012-13, Salaries and Wages, Group Support*
- *Seqwater, Opex – Irrigation Updated YTD.xlsx*
- *Seqwater Enterprise Bargaining Certified Agreement 2009 - 2012*

SKM also requested evidence of historical costs for contracted recreational area maintenance including the cost of mowing services. While some information was provided for this for 2008-09 to 2011-12, SKM understands that a change in classification in mowing services (possibly leading it to be included in the General Maintenance Contracts) resulted in the non-identification of costs for this aspect of operating expenditure budget for subsequent years.

6.9.4. Prudency

Atkinson Dam is a referable dam under the Water Supply (Safety and Reliability) Act 2008. To adequately satisfy Seqwater's regulatory obligations at Atkinson Dam, labour resources are needed to undertake:

- Dam Operations: to meet Market Rules requirements, water ownership and water use legislation, water information reporting requirements, dam safety and reliability legislation
- Catchment Services: to meet environmental protection legislation, recreation responsibilities catchment management responsibilities, land ownership legislation
- Water Treatment Operations: to meet and recreation requirements

Consequently the operating expenditure item is seen as prudent.

6.9.5. Efficiency

For expenditure to be efficient it must represent the least-cost means of providing the requisite level of service within the relevant regulatory framework.

Evaluation of costs

Labour cost for Lower Lockyer Valley Water Supply Scheme has been estimated by escalating the budgeted 2012-13 base forecast of $216,000 by 4%. The 2012-13 base forecast was built up from a zero base (bottom up method). Seqwater initially provided the forecasts from 2013-14 through to 2016-17 for review.

Seqwater's operating cost projections of labour are not based on any water demand cost drivers but are rather based on the 2012-13 budget. Seqwater does not view demand as a driver of labour costs.

In SKM's view, basing the labour forecast cost on a previous budget is not satisfactory as actual costs may vary significantly from budget. SKM recommends that forecast costs be based on actual incurred costs taking into account trends exhibited by recent actual expenditure, changes in working practices and changes in assets being operated. Accordingly, additional information relating to actual historical expenditure was sought by SKM.

Seqwater also informed SKM that the costs being examined to not include any maintenance labour costs as these costs have been factored into the labour budgets for maintenance. The costs reviewed in this sample relate only to operations costs.

In response to SKM's request for information, Seqwater provided historical and budgeted costs between 2009-10 and 2012-13. This is shown in **Table 149**.

- **Table 149 Lower Lockyer Valley Water Supply Scheme Labour Costs**

Lower Lockyer Valley WSS	2009-10 Actual ($)	2010-11 Actual ($)	2011-12 Actual ($)	2011-12 Budget ($)	2012-13 Budget ($)
Employee Costs	216,899	293,489	282,340	103,515	255,540

SKM also sought from Seqwater information regarding the estimated quantity of FTEs assigned to the assets. The information provided by Seqwater is shown below in **Table 150**. The information provided in this case appears consistent with the information submitted to the Authority. Overall, the budget of $216,000 for labour cost for 2012-13 is consistent with the historical expenditure.

- **Table 150 2012-13 Lower Lockyer Valley Labour Cost Budget**

Service Activity	Salaries & Wages Applied ($)
Group Support	38,380
Dam Operations	161,325
Water Treatment	17,095
Total Labour Cost	**216,800**

Seqwater had advised SKM that cost reductions applied to dam operator and Scheme Supervisor are for time spent on other schemes/activities not part of the Lower Lockyer Valley Water Supply Scheme. Information from Seqwater indicates that these costs have been transferred to the Morton Vale system. In addition to the base salary, dam operators and rangers are paid an allowance to compensate the staff for being on-call when not on duty. This allowance can be fairly substantial given the remoteness of many of these assets.

Delivery of service

The labour reviewed in this sample is provided by Seqwater staff. Dam operations are the largest contributor to direct operating costs. Dam operations are responsible for operating, maintaining and monitoring its water source infrastructure.

Dam operations must meet the regulatory requirements under various Acts including those relating to Dam Safety, Flood Management, Resource Operating Plans, and providing sufficient water to meet standards of service.

Dam operations are relatively labour intensive and the expenditure is required to:

- Deliver services to irrigation customers in terms of information and management and delivery of irrigation service
- Develop systems to monitor water flows to manage water sources, floods and regulations
- Develop flood operations centre
- Undertake data management to ensure compliance on a wide variety of water management areas
- Ensure security and safety at water sources in meeting regulatory and community standards
- Develop system operating plans for the operation of dams, weirs, bores and other water sources

Group support (and catchment management) has responsibility for the development and delivery of recreation and catchment maintenance services for all operational assets. The team of rangers and bio security officers ensures that asset management plans, processes, systems and practices are implemented in accordance with relevant regulatory requirements. Seqwater also has responsibility for the ongoing management and maintenance of any recreation sites associated with the dams. While the use of Seqwater assets for recreational purposes is not a core Seqwater function, these facilities, which are a planning and operating licence condition of the assets, must be managed in a sustainable and environmentally responsible manner to ensure that Seqwater's core responsibilities and accountabilities are not adversely impacted. When SunWater managed these recreation facilities prior to the transfer of the infrastructure to Seqwater, the dam operators were also responsible for daily maintenance activities like mowing and minor repairs. Under Seqwater's operating model, these maintenance activities have been separated from dam operations and Group Support has been made responsible for provision of these services. Seqwater has informed SKM that grounds maintenance activities such as slashing and mowing are now managed by the rangers and much of this activity is contracted out to third parties from their panel of contractors. In addition, Seqwater has endeavoured to separate operations and maintenance activities between the operations and maintenance teams such that the minor asset maintenance previously undertaken by the operators is now only undertaken by the maintenance teams or their contractors.

Efficiencies and economies of scale

The services provided by the operators of the dam, water treatment plant and irrigation scheme are likely to be difficult to contract to third party operators given that they are small and the operators are required to know their assets intimately. These operators also do not allocate all their time to the Lower Lockyer Valley Water Supply Scheme but also provide services to other dams and water supply schemes within the Seqwater region including assets belonging to the Central Lockyer Valley Water Supply Scheme such as the Morton Vale Pipeline.

SKM conducted a series of interviews and discussions with Seqwater's operating staff at the dams. From these discussions there is certainly anecdotal evidence that indicate a systemic underutilisation of operational staff, due to changes in working practices, as this issue arose at many (if not all) of the dam sites visited. The dam operating staff believe that they were more fully utilised under the SunWater operating model when they were responsible for some minor maintenance of the dam and surrounding facilities including ground maintenance of the recreational areas. With the transfer of the assets to Seqwater and the consequent change in operating model, these dam operators have had their work load reduced. SKM notes that Seqwater has advised that "there was an additional FTE assisting the operations for both Lockyer Valley schemes during the SunWater ownership. This person left SunWater shortly before the change of ownership and was not replaced". Consequently

Seqwater considers that "the loss of responsibilities and reduction in work load has been cancelled by the loss of one FTE".

While the message arising from discussions with dam operators that due to loss of responsibilities and reduction in work load, they were on average 20 to 30% underutilised. Seqwater has provided evidence that this perception is inaccurate. Seqwater maintains that the dam operators are fully occupied due to their taking on additional resposnibilites to replace those lost including higher health and safety and continuous training requirements from the time when Sunwater was responsible for the dam.

Some of these areas of new responsibilities have taken a significant amount of time given the dam operators' unfamiliarity with these requirements and often reporting of data takes potentially longer than necessary given the state and speed of Seqwater's data communications which is a reflection of the remote location of the assets. SKM was also shown a chart of the number of training activities that dam operators (and others) are required to undertake (on a continuous basis) to maintain their proficiency. These training requirements cover both operation work as well as health and safety requirements like working in confined spaces and working at heights. To fulfil these requirements does appear to impose a significant burden on time. However, SKM expects that the time associated with these new activities and with the additional training requirements will reduce in future years as the dam operators become familiar with the new duties (such as data entry) and as the dam operators progreass through the training programs.

As a consequence of the reduction of Dam Operators responsibility to undertake maintenance work, the workload of the rangers has increased to now manage the maintenance of the recreational facilities associated with the dams. As a result, these rangers are often not able to undertaken the maintenance work themselves but rather have to contract for third party contractors to undertake the grounds maintenance work (mainly mowing of the lawn associated with the recreational facilities and slashing of verges and access routes). Information from Seqwater provided to SKM regarding the cost of mowing service allocated to the Lower Lockyer Valley Water Supply Scheme indicates that about $7,500 was paid to the mowing contractor in 2010-11. If this service is reclassified as part of dam operations and brought (back) under the responsibility of the dam operator, this will more fully utilise the dam operators reduce the work load of the rangers in managing the mowing contractor and save on the contract cost. Under this arrangement, the rangers could maintain responsibility for managing/supervising the mowing or ensuring the mowing is done albeit with the dam operators carrying out the task rather than contractors. However whether this arrangement would potentially improve efficiency is debatable given that additional costs would be incurred in procuring equipment which would be left idle most of the time. Also while the dam operators have indicated a preference for such type of work (physical and hands-on type of tasks) requiring them to undertake such tasks may result in the neglect of other (less preferred) tasks such as the reporting and monitoring tasks they currently undertake requiring desk based and computer related activities.

Benchmarking

SKM has reviewed the pay rates for the rangers and operatoes and notes that they are consistent with other operators and rangers employed by Seqwater. From internal benchmarking, SKM considers them to be reasonable for such employees. They are also consistent with the Seqwater EBA. In the 2012-13 budget Seqwater has allocated 1.2 FTEs to operating the Atkinson Dam. SKM considers this to be reasonable although it is likely, based on our discussions with various dam operators, that better use of this resource is likely to be possible if Seqwater brought back in-house

the mowing contract and allowed the dam operators to undertake minor maintenance work in the facility.

About 0.5 FTE rangers have been allocated to Lower Lockyer Valley Water Supply Scheme. Our discussions indicate that rangers are fully utilised and they are also trained to supplement dam operators during peak events as would occur during a flood.

SKM also views that the overall numbers of dam operators is appropriate given that some excess capacity may be necessary during normal operations to address peak requirements. As mentioned, outside peak requirements, this excess may thus be utilised in non-core activity like mowing and minor maintenance work when such peak events are not present. However, the current operating model does not take advantage of this capacity but rather incurs extra maintenance contracting costs, in SKM's view, unnecessarily and thus inefficiently.

An overtime allocation of almost $47,000 for dam operations has been provided in Seqwater's submission. This is almost 60% of one normal dam operations labour cost ie 0.6 FTE. As can be seen in **Table 150**, normal time Dam Operations labour costs are about $81,500 while the overtime budget is $46,800. With the current under utilisation of dam operators, SKM questions the need for such a large amount of overtime. While SKM acknowledges that there may be a requirement for dam operators to respond to incidences that occur outside of normal working hours, allocating the equivalent of more than an extra FTE to such events is in SKM's opinion excessive. As such, SKM has recommended that overtime allowance be reduced to about 15% of normal time labour cost.

In addition, allowances of $39,800 have been budgeted fully allocated to the Lower Lockyer ValleyWater Supply Scheme. Given that the dam operators have only 40% of their time allocated to this scheme, SKM recommends that a similar proportion of allowances be allocated to Lower Lockyer Valley Water Supply Scheme.

In contrast, the overtime of $2,400 that has been budgeted for the WTP operator at Atkinson Dam is reasonable. The WTP operators are only expected to spend 5% of their time at this facility with a normal time cost of about $15,000. Overtime is thus expected to account for another $2,400 or about 16% of normal time cost.

6.9.6. 2013-14 Labour Cost Forecast

The major issue in this review of Lower Lockyer Valley Water Supply Scheme is the high overtime budgeted for Dam Operations at Atkinson Dam. Unless additional information is provided, we recommend its reduction to 20% of normal time cost. The resulting labour cost forecast for Lower Lockyer Valley Water Supply Scheme is shown **Table 151**.

- **Table 151 2012-13 Adjusted Lower Lockyer Valley Water Supply Scheme Labour Costs Allocation Budget with 4% escalation applied for 2013-14**

Service Activity	Salaries & Wages Applied ($)
Group Support	38,380
Dam Operations	106,878
Water Treatment	17,096
Total Labour Cost for 2012-13	**162,354**
Total Labour Cost for 2013-14	**168,848**

6.9.7. Policies and procedures

Contracts for external service providers for mowing services are based on the various panel contractors in the various Seqwater regions. These panel contracts have been procured based on Seqwater's procurement policy which SKM reviewed as part of a previous review exercise for the Queensland Competition Authority. The procurement policy review has been reproduced in this report for completeness. The panels are refreshed every three to four years.

6.9.8. Summary

The operating expenditure item is assessed as prudent as the need for the expenditure has been demonstrated.

The operating expenditure is assessed as not efficient as the operating expenditure in support of regulated service delivery is not consistent with industry practice and the costs do not represent the least-cost means of providing the requisite level of service within the relevant regulatory framework.

The quality of the information provided on this cost item is outlined below in **Table 152**.

- **Table 152 Quality of information provided**

Section of OPEX review	Direct Labour Lower Lockyer Valley WSS		
Operating item description			
Provided documentation			
Prudency			
Efficiency			
Evaluation of costs			
Delivery of service			
Market conditions	N/A		
Efficiencies and economies of scale			
Benchmarking			
Policy and procedures			
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

Seqwater will need to address the following information shortfall to rectify the non-green items above.

- Reasons for the high rate of overtime
- Information regarding any efficiency targets set for productivity improvements

In SKM's view, forecast 2013-14 labour costs in the Lower Lockyer Valley Water Supply Scheme costs may be reduced by setting overtime at a lower level to reflect the current low utilisation of dam operating staff. No reasons have been provided for such a high rate of overtime and unless adequate justification is provided, SKM recommends adjusting the allocation of overtime to reduce the labour costs allocated to Lower Lockyer Valley Water Supply Scheme in 2012-13 to around $160,000. This should then be escalated by 4% to form the 2013-14 budget of $167,000.

The value of labour expenditure considered to be efficient is outlined below in **Table 153**.

- **Table 153 Direct Labour, Lower Lockyer Valley Water Supply Scheme - Revised operating expenditure profile**

Project	Costs ($'000) 2013-14
Lower Lockyer Valley WSS labour cost	168.8

6.9.9. Further analysis

As a result of the further information identified by Seqwater just prior to finalising our analysis, the Authority subsequently commissioned SKM to undertake further analysis on the direct labour cost at the Lower Lockyer WSS. Further discussions were held with Seqwater to review this additional information. The main issue raised by Seqwater was in relation to overtime and allowances estimated for dam operations. Seqwater provided a list of activities that relate to the scheme's overtime. These include:

- Record dam levels and weather data at Atkinson Dam
- Security check of Atkinson Dam wall, pump station, office, recreation area and workshop
- Check distribution channels and clean weeds from trash racks and gates
- Check Brightview Weir and Sippels Weir to ensure sufficient water flowing in the channels as no water ordering is in place
- Check O'Reilly's Weir to monitor releases to minimise wastage and
- Check some strategic release gates in channels to ensure the gates are not operated by unauthorised persons.

In particular, evidence was presented that indicated that the overtime estimated for dam operators at Atkinson Dam is required. This was due to the requirement for 7 days a week monitoring for dam safety requirements[9] as well as minimum time provisions in the EBA that stipulates that a minimum of 3 hours of overtime on Saturdays at time and a half and at two times normal wages on Sunday. This results in 10.5 hours of overtime a week and based on a 38 hour week, it accounts for 0.28FTE.

Seqwater also indicated that the cost of supervising infrastructure maintenance was not provided to SKM for the initial analysis as this was not captured in their financial system as a labour expense. Seqwater has provided costs for 2012-13 that are similar to the level of costs in 2011-12 for the work required to supervise maintenance contractors for its infrastructure.

Based on these estimates, SKM is of the opinion that the appropriate allocation for overtime at Lower Lockyer would amount to approximately 30% of the operator's salary and oncost. This is shown in the revised cost budget in **Table 154**.

- **Table 154 2012-13 Revised Lower Lockyer Valley Water Supply Scheme Labour Costs Allocation Budget with 4% escalation applied for 2013-14**

Service Activity	Salaries & Wages Applied ($)
Group Support	38,380
Dam Operations	153,881
Water Treatment	55,836

[9] The Queensland Dam Safety Regulator has adopted the ANCOLD dam safety guidelines and expects Seqwater to monitor its dams under those guidelines. The guidelines require daily monitoring as the best practice standard which Seqwater has adopted. The Dam Safety Regulator is satisfied with Seqwater's approach.

Service Activity	Salaries & Wages Applied ($)
Total Labour Cost for 2012-13	**248,097**
Total Labour Cost for 2013-14 (2012-13 costs escalated by 4%)	**258,021**

SKM notes that Seqwater has also present to SKM, during our further discussion, a revised budget for dam operators' allowances of $14,000 for the Lower Lockyer WSS. This is not dis-similar to SKM's estimate. SKM thus did not make any further adjustments for the recommended allowance budget. The revised direct labour cost estimate for the Lower Lockyer WSS is shown in **Table 155**.

- **Table 155 Revised Direct Labour, Lower Lockyer Valley Water Supply Scheme - operating expenditure profile**

Project	Costs ($'000) 2013-14
Lower Lockyer Valley WSS labour cost	258

6.9.10. Application to other operational expenditure items

While care must be taken, the findings of this review may be applicable to other labour cost items from other water supply schemes submitted by Seqwater not subject to detailed review. SKM believes that the Lower Lockyer Valley Water Supply Scheme has similar characteristics to other water supply schemes in Seqwater's system and thus the issues faced are likely to be similar.

6.10. Materials and Other, Lower Lockyer Valley Water Supply Scheme

The Lower Lockyer Valley Water Supply Scheme services irrigation users. These customers are supplied by a number of assets in the scheme including:

- Atkinson Dam
- Buramba Creek Diversion Weir
- Brightview Weir
- Sippels Weir
- Potters Weir
- O'Reillys Weir
- Channels and pipelines

6.10.1. Proposed operating expenditure

Table 156 shows the proposed cost of the operating expenditure item Materials and Other, Lower Lockyer Valley Water Supply Scheme within the 2013-14 budget. Also shown are the actual-estimated operating costs for 2011-12 and 2012-13.

- **Table 156 Materials and Other, Lower Lockyer Valley Water Supply Scheme – Proposed operating expenditure profile**

Source	Actual Costs ($'000) 2011-12	Estimated Costs ($'000) 2012-13	Forecast Costs ($'000) 2013-14
QCA Terms of Reference drawn from Seqwater's original NSP			236
Seqwater NSP value^		194.6	199.5

Source	Actual Costs ($'000) 2011-12	Estimated Costs ($'000) 2012-13	Forecast Costs ($'000) 2013-14
Information Request Response RFI019			236.4
Opex – Irrigation Updated YTD 'Materials and Contractors' only	103.5	43	35.3
Opex – Irrigation Updated YTD 'Materials and Contractors' plus 'Other'	288.4	131.8	194.5

^ *The NSP value does not include costs of materials, only 'other' whereas the QCA Terms of Reference value includes expenditure on materials as well as 'other'.*

The costs provided in the Authority's Terms of Reference are drawn from Seqwater's original NSP but are not consistent with the values in the NSP. This is because NSP listed costs for activities classed as 'other' only whereas the Authority included costs for materials associated with the Lower Lockyer Valley Water Supply Scheme. However, the costs provided in the Terms of Reference are consistent with those listed by Seqwater in response to SKM's request for further information (RFI019). In 'Opex – Irrigation Updated YTD', there are two potential methods for determining the total costs listed including either considering the costs listed under the heading 'Materials and Contractor', or consolidating both the costs listed under the 'Materials and Contractor' and 'Other'. Neither method produces costs consistent with those listed in the Terms of Reference, although average costs determined by adding 'Materials and Contractor' and 'Other' are within approximately 8% of the forecast costs contained in the terms of reference when escalated at 4%.

6.10.2. Operating item description

Materials and other expenses are required for dam operations, recreational water treatment plant operation, group support and catchment services in addition to water quality monitoring. Definitions for these activities relevant to irrigation operation and maintenance are provided below.

Dam Operations: Dam Operations must meet the regulatory requirements under various Acts including those relating to dam safety, flood management, resource operating plans, and providing sufficient water to meet standards of service. Key outputs are management of dams to ensure safe operation during normal water releases and flood releases, monitoring and ensuring dam safety compliance, maintain releases from dams to meet demand, meeting resource operation plan compliance, delivering water to irrigation customers, and ensuring water related data is recorded and stored.

Recreational water treatment plant operation: With respect to irrigation services specifically, limited to managing the recreation water treatment plants which service visitors to the recreation sites located at the dams or water storages within the Lower Lockyer Valley Water Supply Scheme.

Group support and catchment services: The team ensures that asset management plans, processes, systems and practices are implemented in accordance with relevant regulatory requirements including environmental protection laws and land ownership laws. This team also contributes to the effective development, implementation and management of the management and reporting systems within Seqwater's Water Delivery Group, as well as the management of third party access and event approval at Seqwater sites and locations.

Water quality monitoring: The central role of the Water Quality team is to manage Seqwater's risk in relation to water quality. The core functions and activities of the Water Quality Team are Catchment and Water Treatment Plant monitoring, Laboratory and data management services and Drinking Water Quality Management

6.10.3. Provided documentation

The documents used for this review are:

- *Information Request Response, RFI019,Materials and Other Lower Lockyer WSS, Seqwater, 14/08/2012*
- *Operational Cost Report for 2012-13, Seqwater*
- *Opex – Irrigation Updated YTD.xls, Seqwater*
- *RFI019 Attachment Lower Lockyer Schedule of Info*
- *RFI019 Attachment Lower Lockyer Fleet*
- *Opex – Irrigation Queries*
- *Seqwater Irrigation Opex Methodology – Brief, Seqwater, 04/09/2012*
- *Central Lockyer Lower Lockyer – Jayam Tennakoon Reply 20120402, Seqwater, 02/04/2012*
- *Opex summary (461146_1).xlsx, Seqwater, 04/09/2012*

Initial information provided by Seqwater outlined costs associated with materials and other, and the method for budget calculation. Discussions with Seqwater staff during project interviews provided further information, and resulted in identification of a number of additional information sources that were subsequently requested.

Additional information requested from Seqwater for this review included:

- Breakdown of water quality monitoring costs, including a breakdown of contractor sampling charges and monitoring program
- DERM water quality sampling and reporting guidelines
- Business Case for returning water quality sampling in-house
- HACCP Plan for a recreational water treatment plant
- Method for calculating the fleet allocation budget

All requested information was provided by Seqwater and utilised in this review.

6.10.4. Prudency

Operating the water supply scheme or tariff group, and achieving compliance in practice with legislation and the Resource Operating Plan for the water supply scheme, requires Seqwater to consume materials and supplies.

The materials and supplies required to operate the Lower Lockyer Valley Water Supply Scheme or tariff group predominantly relate to the operation of assets such as Atkinson Dam (including the catchment and the recreation areas associated with the dam) and the Atkinson Dam (Recreation) WTP.

Seqwater is subject to numerous regulatory obligations, including under legislation and the relevant Resource Operating Plan. For example, Atkinson Dam is a referable dam under the *Water Supply (Safety and Reliability) Act 2008*. The precise regulatory obligations providing a requirement for labour resources vary according to the operational team in question. Compliance requirements driving expenditure on materials and other for the Lower Lockyer Valley Water Supply Scheme include:

- Dam Operations: Market Rules requirements, water ownership and water use legislation, water information reporting requirements, dam safety and reliability legislation
- Catchment Services: environmental protection legislation, recreation responsibilities, catchment management responsibilities, land ownership legislation
- Water Treatment Operations: Market Rules requirements, recreation responsibilities. Materials and Consumables are required to operate Atkinson Dam in the Lower Lockyer Valley Water Supply Scheme
- Water Quality – WQ Monitoring Expenses: There is no requirement under the Water Act for Seqwater to provide water of a certain quality or monitor the quality of irrigation water. However under the resource operating plans and licences subordinate to the Water Act, Seqwater is required to monitor water quality in storages, releases and recreational areas. At recreation sites Seqwater incurs expenses for fulfilling water quality monitoring requirements. At the Atkinson recreational water treatment plant water quality monitoring requirements are defined in the HACCP Plan for the plant. The HACCP plan is subordinate to the DWQMP which is a requirement under the Water Supply (Safety and Reliability) Act.

SKM understands that Seqwater is not required, under legislation or under the Resource Operating Planto provide potable water at the recreation facilities, including to camp sites. However SKM understands that following a risk assessment, Seqwater has determined that all water that it provides for human consumption should be to potable water standards. SKM considers that Seqwater's policy in this area is reasonable taking into account the impact on reputation arising from not adopting this policy.

Consequently the operating expenditure item has been assessed as prudent.

6.10.5. Efficiency

For expenditure to be efficient it must represent the least-cost means of providing the requisite level of service within the relevant regulatory framework.

Evaluation of costs

A breakdown in costs was provided in response to SKM's request for further information (RFI019) and is displayed in **Table 157**.

- **Table 157 Materials and other costs breakdown**

Expense	Breakdown	2012-13 forecast costs	2013-14 forecast costs
Dam operations – materials & consumables – Atkinson Dam	Nil	$15,000	$15,600
Dam operations – energy fixed – Atkinson Dam	Nil	$35,000	$35,875
Group support – plant & fleet hire internal –	See Table 188	$52,089	$54,173

Expense	Breakdown	2012-13 forecast costs	2013-14 forecast costs
Atkinson Dam			
Group support – materials & consumables - Atkinson Dam		$10,000	$10,400
		$5,000	$5,200
Water quality – WQ monitoring expenses – Atkinson Dam	Water sampling	$24,560	$25,542
	Routine testing	$20,800	$21,632
	Unscheduled sampling	$1,680	$1,747
	Event testing	$8,320	$8,653
Water quality – WQ monitoring expenses – Atkinson Rec WTP	Nil	$41,500	$43,160

The 2013-14 forecast costs have been determined by escalating 2012-13 forecast costs by a factor of 4%, with the exception of energy fixed, which has been escalated at 2.5%. The application of a 4% escalation factor to previous budgets is considered appropriate, albeit potentially on the high side, considering the Reserve Bank of Australia's inflation target of 2-3%. SKM considers the 2.5% escalation factor for energy to be reasonable.

The breakdown of costs provided in response to SKM's request for further information (RFI019) total to $221,982 for 2013-14, which is 6% less than the $236,400 listed in the Terms of Reference. However, the difference between the two is acknowledged in Seqwater's response to SKM's request for information (RFI019) in which Seqwater states *'In the attached Schedules of Information, note that all cost types have been explained, except where a type of cost (by natural account description) did not exceed $10,000 at any asset location in the relevant WSS'* and further that *'This threshold was applied for the purposes of fast-tracking this RFI response and also for the purposes of materiality, given that these costs are yet to be apportioned between irrigation services and urban water supply purposes'*. Given that costs in excess of $10,000 and in some cases below $10,000 have been explained, and that the costs detailed account for approximately 94% of the budget for materials and other for Central Lockyer Valley Water Supply Scheme, SKM considers that the breakdown of costs included in the Terms of Reference are appropriate. A more detailed review of the broken down costs is provided in the sections below.

Dam Operations: The breakdown of costs provided by Seqwater identifies costs for dam operations including materials and consumables, energy fixed in addition to plant and fleet hire. During interviews Seqwater personnel identified expenses associated with equipment and consumables as including oils, fuels, equipment and cleaning products, which are purchased on an as needed basis. No further breakdown of expenditure on equipment and consumables was provided, however budgets were calculated based on historical expenditure from 2010-11.

The Seqwater Irrigation Opex Methodology, states that '*for the purposes of forecasting electricity for its 2012-13 dam operations budget, 2010-11 actual costs were used as 2011-12 actuals were incomplete at the time the budget was prepared. The electricity budgets for recreation facilities were based on 2010-11 actual expenditure and year to date trends in 2011-12 actual expenditure*'. No further breakdown of electricity budgets was provided.

Plant and fleet hire internal costs were further broken down, as included in **Table 158**. The fleet allocation budget is determined by calculating a representative annual "lease" charge, which is

calculated on whole of life costs excluding fuel, oil and tyres, assuming an average vehicle life of 120,000km or five years. The budge for fuel is calculated based on historical expenditure.

- **Table 158 2012-13 Dam Operations plant and fleet costs**

Fleet / Plant Type	Description	Fleet Allocation Budget	Fuel Allocation Budget
Vehicle	Toyota Hilux SR 4x4 Space Cab	$9,300	$5,057
Watercraft	Quintrex Explorer	$7,680	$80
Vehicle	Ford Ranger 4x4 utility	$8,400	$4,354
Vehicle	Ford Ranger XL 4x2 Dual Cab	$9,720	$4,313
Tractor / Mower	Kubota Front Deck 3060 Mower	$2,400	$640

There is a minor difference between both Dam Operations plant and fleet hire costs listed in Seqwater's response to SKM's request for further information (RFI019) and associated attachments. However this difference is approximately 0.27% of the fleet cost, and SKM considers that the difference is not significant.

The Lower Lockyer Valley Water Supply Scheme has approximately 2.5 FTEs operational staff assigned to it. When considering the number of personnel assigned to the water supply scheme, SKM considers the number of vehicles allocated to be reasonable.

With regards to fuel allocation, utilising a fuel efficiency of 10km/L for all vehicles and fuel cost of 159.981 cents per litre (cpl), the fuel allocation budget provides for between approximately 28,000 km and 33,000 km per annum. During site visits, Seqwater operational personnel confirmed that they drove approximately 30,000 km per year. SKM considers the fuel allocation budget for vehicles to be reasonable.

Group Support: Costs for Group Support identified in the breakdown of costs are for minor materials and consumables for repairs and maintenance. Group support costs are broken into two items, with 2013-14 budgets of $10,400 and $5,200 for work order A-0007364 and A-0007363 respectively. No further information is provided on these work orders, except a statement that the budgets were based on 2011-12 expenditure. 'Central Lockyer Lower Lockyer – Jayam Tennakoon Reply 20120402.xls' lists the 2011-12 budget for work order A-0007364 as $10,300 and work order A-0007363 as $5,000, with actual expenditure for 2011-12 listed as $0 for each work order. It is noted in this spread sheet that the increase in budget of work order A-0007364 and A-0007363 coincides with the reduction to zero of a number of other cost categories, however no correlation between the increase and decrease of budgets is obvious.

Water Quality Monitoring: Cost breakdowns for water quality monitoring are provided for Atkinson Dam in **Table 159** and Atkinson Dam recreational water treatment plant in **Table 160**. Supporting documentation demonstrating the base costs and requirements for sampling at both the dam and water treatment plant have been provided. These documents included rates for contractor water sampling and analysis and an example HACCP Plan.

- **Table 159 Atkinson Dam water quality monitoring costs**

Item	2012-13 data	2013-14 (2012-13 escalated)
Water sampling	$24,560	$25,542
Routine testing	$20,800	$21,632
Unscheduled testing	$1,680	$1,747
Event testing	$8,320	$8,653

- **Table 160 Atkinson Dam recreational water treatment plant water quality monitoring costs**

Item	2012-13 data	2013-14 (2012-13 escalated)
Routine testing	$35,000	$36,400
Unscheduled testing	$3,500	$3,640

Delivery of service

Dam Operations: The expenditure for dam operations consists of equipment and consumables utilised in emergency dam safety works and operational repairs, energy costs, and plant and fleet costs associated with dam operations.

During interviews Seqwater personnel identified expenses associated with equipment and consumables as including oils, fuels, equipment and cleaning products, which are purchased on an as needed basis by Seqwater staff with a budget of 15,600 for 2013-14. Equipment and consumables are also purchased on an as needed basis for operational repairs and emergency works. The budget for equipment and consumables has been calculated by escalating historical expenditure at 4%.

Electricity is supplied externally. The budget for 2013-14 was determined by escalating the 2010-11 historical spend. During the 2012-13 Grid Service Charges[10] review SKM assessed electricity costs as prudent and efficient. Providing that the method of obtaining electricity has not changed since the 2012-13 Grid Service Charges review, SKM considers electricity costs efficient. It is noted that the electricity prices may be underestimated in the 2013-14 budget, given the circa 10% increase in energy costs arising from the implementation of the Carbon Energy Pricing Mechanism. SKM understands that on 25 May 2012, Seqwater received advice from the Queensland Government confirming its decision to discontinue all existing state-based carbon reduction schemes to ensure agencies were not subject to overlapping of State and Federal obligations when the Clean Energy Pricing Mechanism was introduced on 1 July 2012. Seqwater therefore concluded that costs associated with the purchase of green energy should be removed from the recommended 2012-13 Grid Service Charges. SKM has sought confirmation from Seqwater that the forecast budgets for electricity take into consideration removal of the additional premium incurred in purchasing green energy.

Fleet costs are the costs associated with internal hire of five plant and fleet items from the Seqwater fleet in addition to fuel allocation as listed in **Table 158**. The budget for fleet and fuel allocation is determined by Seqwater's Fleet Manager.

Group Support: Expenditure for Group Support consists of minor material and consumables for repairs and maintenance which are conducted by Seqwater staff. In relation to this expenditure,

[10] Grid Service Charges 2012-13 Phase 2 – Assessment of Prudency and Efficiency of Operating and Capital Costs – Seqwater, Rev 3, 28/06/2012

Seqwater stated that '*Wivenhoe staff perform the recreation maintenance work directly. Material and consumables include mulch, landscaping supplies, cleaning supplies, paint, gas, hardware, timber etc'*. SKM considers these items appropriate for the maintenance of facilities at Wivenhoe Dam.

Catchment Services: No costs for catchment services have been listed in the breakdown of costs.

Water Treatment Operations: No costs for water treatment operations have been listed in the breakdown of costs.

Water Quality Monitoring: Water quality monitoring costs for the Lower Lockyer Valley Water Supply Scheme are associated with water quality monitoring of Atkinson Dam in addition to the Atkinson Dam recreational water treatment plant.

While under the Water Act there is are no requirement for Seqwater to provide water of a certain quality to irrigation users, under the resource operating plans and licenses subordinate to the Act Seqwater is required to monitor water quality in storages, releases and recreational areas according to the state government procedures.

Costs associated with water treatment operations are incurred from the routine verification and monitoring plan. Attachments to Seqwater's response to SKM's request for further information (RFI019) identifies that the verification and monitoring plan outlines the '*monitoring requirements defined in the HACCP Plan for the Atkinson recreational water treatment plant'*, which is '*subordinate to the Drinking Water Quality Management Plan required under the Water Supply (Safety and Security) Act*'. Further, with regards for that the budget for monitoring of water at the Atkinson recreational water treatment plant, the RFI attachment states '*the cost is directly derived from the routine verification monitoring plan*'. The RFI attachment identifies that the water quality monitoring budget is derived by a bottom up calculation method, utilising the water quality monitoring requirements defined under the HACCP and set contract prices.

Water quality sampling comprises collection and analysis of water samples. Currently routine sampling and analysis for both the Atkinson Dam and Atkinson recreational water treatment plant is undertaken by an external contractor selected by public tender. The contract is for a five year term beginning in 2011. During interviews, Seqwater personnel identified the performance of the contractor in collecting water samples from dams and catchments, including Atkinson Dam, as being unsatisfactory, and that there are terms to terminate some or all of the contract. In particular, there are concerns regarding the contractor's workplace health and safety performance, operation of vehicles and watercraft by staff, and low staff retention. Seqwater personnel are currently developing a business case to terminate the dam water quality sample collection portion of the contract and return this sampling in house. SKM has reviewed the draft business case to returning dam water quality sampling in-house.

SKM assesses the budget for costs associated with materials and other for the Lower Lockyer Valley Water Supply Scheme to be efficient.

SKM notes that the results of the business case to return dam and catchment water quality sampling submission may be of interest in future reviews.

Market conditions

The contract for completing water quality sampling and analysis was awarded following a public tender process that was conducted in accordance with the State Procurement Policy. SKM concludes that the rates for water quality sampling and analysis for Lower Lockyer Valley Water Supply Scheme is therefore efficient.

No information regarding the quantity of electricity to be utilised or the unit rates for its supply was available for this review. However, energy costs have been developed by escalating historical cost information. 2012-13 Grid Service Charges review SKM found the energy unit prices paid by Seqwater to be reflective of current market prices and hence efficient. SKM consequently finds the energy costs for the Lower Lockyer Valley Water Supply Scheme to be efficient.

No information has been provided to allow assessment of the equipment and consumables. However, future costs have been calculated by escalating past expenditure. SKM therefore considers them to be efficient.

Efficiencies and economies of scale

No economies of scale have been identified for fleet and plant in addition to materials and consumables. During interviews with Seqwater personnel, it was identified that outsourcing of the water quality sampling was undertaken to gain efficiency. This however has not fully been realised due to the abovementioned performance issues of the contractor. The current investigations into returning the dam and catchment water quality monitoring aspects of the contract may provide benefits to Seqwater.

It must be noted however that Seqwater have significantly reduced the budget for non-routine sampling and analysis after identifying that the budget for non-routine sampling and analysis was in excess of actual expenditure.

No information regarding source or unit rates for electricity supply was available for this review. SKM is therefore unable to assess the efficiencies and economies of scale with respect to market conditions.

Benchmarking

Costs for the fleet and plant aspects of materials and other for the Lower Lockyer Valley Water Supply Scheme have been calculated by the Seqwater Fleet Manager. In calculating the costs associated with the operation of plant and fleet, Seqwater has applied a cost of 159.981 cents per litre (cpl) for fuel. In comparison, the RACQ lists the retail Brisbane unleaded fuel price for April 2012 as 148.8cpl for unleaded and 153.8 cpl for diesel. While the Seqwater unit fuel cost is higher than retail costs for both unleaded and diesel, this is not unreasonable and may potentially be a result of an applied safety factor or inefficiencies of supply of the small volume of fuel required by Seqwater. In calculating the fleet allocation budget, Seqwater has adopted an average vehicle life of 120,000 km or five years. This adopted life is similar to that utilised by the South East Queensland Distribution Entities, and is therefore considered to be reasonable.

The contract for water quality sampling was awarded in accordance with the State Procurement Policy by an open tender process. Further, the water sampling program has been developed in accordance with resource operating plans, licenses and for the recreational water treatment plant, in

accordance with the plant's HACCP Plan. SKM therefore considers the costs associated with the water sampling programs as reasonable.

There is insufficient information to benchmark the 2013-14 $15,600 budget for Dam Operations materials and consumables. However, this budget was calculated by escalating historical expenditure and is therefore considered reasonable.

There is insufficient information to benchmark the $15,600 for Group Support materials and consumables.

6.10.6. Policies and procedures

The contractor for water quality sampling and analysis was selected through a public tender process, which was conducted in accordance with the State Procurement Policy. As such SKM considers the procedures applied for water quality sampling to be appropriate.

Plant and fleet is provided internally through Seqwater's Fleet Manager with the budget for fuels, tyres and oil being based on historical expenditure, and the fleet allocation budget calculated utilising appropriate vehicle replacement criteria.

Insufficient information has been supplied to assess the policies and procedures utilised in arranging the supply of electricity.

6.10.7. Summary

The operating expenditure item is assessed as prudent as the need for the expenditure has been demonstrated.

The operating expenditure is assessed efficient as the scope is appropriate, the operating expenditure in support of regulated service delivery is consistent with industry practice and the costs are consistent with prevailing market conditions.

The quality of the information provided on this project is outlined below in **Table 161**.

Table 161 Quality of information provided

Section of OPEX review	Materials and Other, Lower Lockyer Valley WSS		
Operating item description			
Provided documentation			
Prudency			
Efficiency			
Evaluation of costs			
Delivery of service			
Market conditions			
Efficiencies and economies of scale			
Benchmarking			
Policy and procedures			
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

The value of any expenditure considered to be prudent and efficient is outlined below in **Table 162**.

- **Table 162 Materials and Other, Lower Lockyer Valley Water Supply Scheme – Revised operating expenditure profile**

Project	Costs ($'000) 2012-13	Costs ($'000) 2013-14
Terms of Reference (materials and other)		236.4
Seqwater NSP^	194.6	199.5
SKM's proposed budget for 'other'	194.6	199.5
SKM's proposed budget for materials and other	227.3	236.4

^ *The NSP value does not include costs of materials, only 'other' whereas the QCA Terms of Reference value includes expenditure on materials as well as 'other'.*

6.10.8. Application to other projects

SKM has been asked to determine whether the results of the materials and other costs reviewed in detail can be applied to materials and other costs for other water supply schemes. There have been no major findings from this review that can be applied to other water supply schemes other than to say that if the same processes and procedures have been applied to similar cost items for other water supply schemes then these cost items are likely to be prudent and efficient.

6.11. Direct Labour, Mary Valley Water Supply Scheme

The Mary Valley Water Supply Scheme services mainly irrigators, the Gympie Regional Council, some industrial customers and the SEQ Water Grid manager. These customers are supplied from a number of assets within this scheme including Borumba Dam (including the catchment and the recreational areas associated with the dam), the Imbil Weir and the Borumba (Recreation) water treatment plant.

6.11.1. Proposed operating expenditure

Table 163 shows the proposed cost of the operating expenditure item Direct Labour, Mary Valley within the 2013-14 budget. Also shown are the actual-estimated operating costs for 2011-12 and 2012-13.

- **Table 163 Direct Labour, Mary Valley Water Supply Scheme – Proposed operating expenditure profile**

Source	Actual Costs ($'000) 2011-12	Budget Costs ($'000) 2012-13	Original Forecast Costs ($'000) 2013-14	Revised Forecast Costs ($'000) 2013-14
Terms of Reference drawn from Seqwater's original NSP and Seqwater responses to RFIs	316.3	405	421	429

The original forecast for 2013-14 labour cost for the Mary Valley Water Supply Scheme has been escalated from the budgeted 2012-13 base forecast of $405,000 by 4%. The 2012-13 base forecast was built up from a zero base (ie bottom up method). This category of costs relates to internal Seqwater staff costs only.

Subsequent to our review, SKM was provided with additional information indicating the Seqwater has provided a revised submission that increased the original forecast from $421,000 to $429,100. No further information was, however, provided to support this increase in labour cost forecast.

6.11.2. Operating item description

The labour resources required to operate the Mary Valley Water Supply Scheme mainly relate to the operation of assets such as Borumba Dam (including the catchment and the recreation areas associated with the dam) and the Borumba (Recreation) Water Treatment Plant. The proposed costs for these operating expenditure items include:

- Borumba Dam – Operations $224,000
- Mary Irrigation Scheme $71,000
- Borumba Dam – Catchment Services $49,000
- Borumba (Rec) WTP Ops $78,000

These costs are consistent with Seqwater's original forecast of labour costs for the Mary Valley Water Supply Scheme. No updates have been provided to SKM for Seqwater's revised budget forecast.

6.11.3. Provided documentation

The documents used for this review are:

- *Seqwater, 2013-14 Irrigation Pricing, Submission to the Queensland Competition Authority, April 2012*
- *Seqwater, Mary Valley Water Supply Scheme, Network Service Plan*
- *Seqwater, Information Request Response – QCA Irrigation Price Review 2013-17, RFI 020, Mary Valley WSS, Operations – Direct Labour, 14 Aug 2012*
- *Seqwater, Budget 2012-13, Salaries and Wages, Dam Operations*
- *Seqwater, Budget 2012-13, Salaries and Wages, Group Support*
- *Seqwater, Opex – Irrigation Updated YTD.xlsx*
- *Seqwater, Opex – Irrigation Salaries Queries.xlsx*
- *Seqwater Enterprise Bargaining Certified Agreement 2009 - 2012*

SKM also requested evidence of historical costs for contracted recreational area maintenance including the cost of mowing services. While some information was provided for this for 2008-09 to 2011-12, SKM understands that a change in classification in mowing services (possibly leading it to be included in the General Maintenance Contracts) resulted in the non-identification of costs for this aspect of operating expenditure budget for subsequent years.

6.11.4. Prudency

Borumba Dam is a referable dam under the Water Supply (Safety and Reliability) Act 2008. To adequately satisfy Seqwater's regulatory obligations at Borumba Dam, labour resources are needed to undertake:

- Dam Operations: to meet Market Rules requirements, water ownership and water use legislation, water information reporting requirements, dam safety and reliability legislation

- Catchment Services: to meet environmental protection legislation, recreation responsibilities, catchment management responsibilities, land ownership legislation
- Water Treatment Operations: to meet Market Rules requirements and recreation responsibilities

Consequently the operating expenditure item is seen as prudent.

6.11.5. Efficiency

For expenditure to be efficient it must represent the least-cost means of providing the requisite level of service within the relevant regulatory framework.

Evaluation of costs

Labour cost for Mary Valley Water Supply Scheme has been estimated by escalating the budgeted 2012-13 base forecast of $405,000 by 4%. The 2012-13 base forecast was built up from a zero base (bottom up method). Seqwater initially provided the forecasts from 2013-14 through to 2016-17 for review.

Seqwater's operating cost projections of labour are not based on any water demand cost drivers but are rather based on the 2012-13 budget. In SKM's view, this method for the development of budget costs is not satisfactory as actual costs may vary significantly from budget. SKM prefers that forecast costs be based on actual costs, taking into consideration the trend exhibited by recent actual expenditure. Accordingly, additional information relating to actual historical expenditure was sought from Seqwater.

In response to SKM's request for information, Seqwater provided historical and budgeted costs between 2009-10 and 2012-13. SKM notes that the budget information provide here is not consistent with other information supplied by Seqwater in its response to SKM's Request for Information (RFI) although the difference is small. We have been informed that the actual expenditure values are correct as incurred. SKM understands that this apparent information inconsistency is due to the fact that Seqwater has updated their original submission and that the 2012-13 budget (as outlined in **Table 164** below) is consistent with the revised cost forecast. SKM confirms that this is indeed the case.

However, no further details have been provided and SKM's detailed review below is limited to the available information provided by Seqwater which is consistent with their original budget forecast.

- **Table 164 Mary Valley Water Supply Scheme Labour Costs**

Mary Valley WSS	2009-10 Actual ($)	2010-11 Actual ($)	2011-12 Actual ($)	2011-12 Budget ($)	2012-13 Budget ($)
Employee Costs	211,708	308,476	316,265	453,077	412,645

SKM also sought from Seqwater information regarding the estimated quantity of FTEs assigned to the assets. The information provided by Seqwater is shown below in **Table 165**. The information provided in this case is consistent with the information submitted to the Authority. Overall, the originally proposed budget of $421,000 for labour costs for 2013-14 is significantly higher than the historic actual expenditure in 2010-11 (a $112,524 or 36.5% increase) and 2011-12 (a $104,735 or 33.2% increase).

- **Table 165 2012-13 Mary Valley Water Supply Scheme Labour Costs Budget**

Service Activity	Salaries & Wages Applied ($)
Catchment Services	47,117
Dam Operations	211,978
Water Treatment Plant Operations	72,150
Overtime	2,400
Mary Irrigation Schemes	66,793
Incidentals - Protective Items	4,000
Total Labour Cost	**404,438**

Seqwater had advised SKM that reductions applied to the cost of Dam Operator and WTP Operations are for time expected to be spent by dam operators on other schemes/activities not part of the Mary Valley scheme. The Operations Supervisor's time is allocated between Mary Valley, Pie Creek and Cedar Pocket.

SKM also notes that about $13,500 of a Dam Operator's costs has been transferred to Pie Creek[11].

Delivery of service

The labour reviewed in this sample is provided by Seqwater staff. Dam operations are the largest contributor to direct operating costs. Dam operations are responsible for operating, maintaining and monitoring water source infrastructure.

Dam operations must meet regulatory requirements including those relating to Dam Safety, Flood Management, and Resource Operating Plans which are in addition to providing sufficient water to meet standards of service.

Dam operations are relatively labour intensive and the expenditure is required to:

- deliver services to irrigation customers in terms of information and management and delivery of irrigation services
- develop systems to monitor water flows to manage water sources, floods and regulations
- develop flood operations centre
- undertake data management to ensure compliance on a wide variety of water management areas
- ensure security and safety at water sources in meeting regulatory and community standards
- develop system operating plans for the operation of dams, weirs, bores and other water sources

Group support (and catchment management) has responsibility for the development and delivery of recreation and catchment maintenance services for all operational assets. The team of rangers and bio security officers ensures that asset management plans, processes, systems and practices are implemented in accordance with relevant regulatory requirements. Seqwater also has responsibility for the ongoing management and maintenance of any recreation sites associated with the dams. While the use of Seqwater assets for recreational purposes is not a core Seqwater function, these

[11] *Opex – Irrigation Salaries Queries.xlsx*

facilities, which are a planning and operating licence condition of the assets, must be managed in a sustainable and environmentally responsible manner to ensure that Seqwater's core responsibilities and accountabilities are not adversely impacted. When SunWater managed these recreation facilities prior to the transfer of the infrastructure to Seqwater, the dam operators were also responsible for daily maintenance activities like mowing and minor repairs. Under Seqwater's operating model, these maintenance activities have been separated from dam operations and Group Support has been made responsible for provision of these services. Seqwater has informed SKM that grounds maintenance activities such as slashing and mowing are now managed by the rangers and much of this activity is contracted out to third parties from their panel of contractors. In addition, Seqwater has endeavoured to separate operations and maintenance activities between the operations and maintenance teams such that the minor asset maintenance previously undertaken by the operators is now only undertaken by the maintenance teams or their contractors.

Efficiencies and economies of scale

The services provided by the operators of the dam, water treatment plant and irrigation scheme are likely to be difficult to contract to third party operators given that they are small and the operators are required to know their assets intimately. These operators also do not allocate all their time to the Mary Valley Water Supply Scheme but also provide services to other dams and water supply schemes within the Seqwater region including assets belonging to the Cedar Pocket Dam Water Supply Scheme.

SKM conducted a series of interviews and discussions with Seqwater's operating staff at the dams. From these discussions there is certainly anecdotal evidence that indicate a systemic underutilisation of operational staff, due to changes in working practices, as this issue arose at many (if not all) of the dam sites visited. Seqwater advised SKM that with the change in duties between SunWater's operating model and Seqwater's operations, the dam operators had picked up other duties to fill the void. This included increased monitoring and inspections. Nevertheless, the dam operating staff believed that they were more fully utilised under the SunWater operating model when they were responsible for some minor maintenance of the dam and surrounding facilities including ground maintenance of the recreational areas. With the transfer of the assets to Seqwater and the consequent change in operating model, these dam operators have had their work load reduced.

However, the workload of the rangers has increased to now manage the maintenance of the recreational facilities associated with the dams. These discussions have indicated to SKM that the dam operators have possibly a capacity to undertake at least 20% to 30% more work while the rangers responsible for the maintenance of the recreational facility are fully (perhaps even over) utilised. Also SKM notes that not all Dam Operators may necessarily be underutilised and that this estimate of 20% - 30% underutilisation is an estimated level of average utilisation. Seqwater also submits that "while his (Dam Operator's) duties had changed, he was fully utilised although with different duties". These additional duties include increased health and safety, and reporting requirements, SKM considers that the Dam Operator's views may also have been influenced by a preference to engage in physical activity and that the Dam Operators do not view desktop, computer related work as "real work" leading them to perhaps hold the view that they were more fully occupied when they were employed by SunWater when they were not engaged such desktop activities.

Some of these areas of new responsibilities have taken a significant amount of time given the Dam Operators' unfamiliarity with these requirements and often reporting of data takes potentially longer than necessary given the state and speed of Seqwater's data communications which is a reflection of

the remote location of the assets in the Mary River scheme. SKM was also shown a chart of the number of training activities that dam operators (and others) are required to undertake (on a continuous basis) to maintain their proficiency. These training requirements cover both operation work as well as health and safety requirements like working in confined spaces and working at heights. To fulfil these requirements does appear to impose significant burden on time.

While the rangers are responsible for the maintenance work, they are often not able to undertaken the maintenance work themselves but rather have to contract for third party contractors to undertake the grounds maintenance work (mainly mowing of the lawn associated with the recreational facilities and slashing of verges and access routes). Information from Seqwater provided to SKM regarding the cost of mowing and slashing services allocated to the Mary Valley Water Supply Scheme indicates that about $10,000 was paid to the mowing contractor in 2008-09.[12] If this service is reclassified as part of dam operations and brought (back) under the responsibility of the dam operator, this will more fully utilise the dam operators, reduce the work load of the rangers in managing the mowing contractor and save on the contract cost. Under this arrangement, the rangers could maintain responsibility for managing/supervising the mowing or ensuring the mowing is done albeit with the dam operators carrying out the task rather than contractors. However whether this arrangement would potentially improve efficiency is debatable given that additional costs would be incurred in procuring equipment which would be left idle most of the time. Also while the dam operators have indicated a preference for such type of work (physical and hands-on type of tasks) requiring them to undertake such tasks may result in the neglect of other (less preferable) tasks like the reporting and monitoring tasks they currently undertake requiring desk based and computer related activities.

Benchmarking

SKM has reviewed the salaries paid to operators and rangers for the Mary Vally Water Supply Scheme and found them consistent with salaries paid to operators and rangers elsewhere in Seqwater and consistent with SKM's internal benchmarks.

Approximately 0.6 FTE rangers have been allocated to Mary Valley Water Supply Scheme. Our discussions indicate that rangers are fully utilised and they are also trained to supplement dam operators during peak events as would occur during a flood.

Seqwater has allowed 0.8 FTE to Borumba Dam although the Operations Supervisor also allocates a significant amount of time to this dam. Although Seqwater has indicated that 100% of this supervisor's time is allocated to Borumba Dam, the reduction applied appears to suggest that only about 70% of the full cost is applied to Borumba Dam. SKM thus takes this to mean that the 100% applying to the Operations Supervisor is applied to the labour costs after the Operations Supervisor's base salary has been reduced and not to his full Base Salary.

SKM views that the overall numbers of dam operators is appropriate given that some excess capacity may be necessary during normal operations to address peak requirements. As mentioned, outside peak requirements, this excess may be utilised in non-core activity like mowing and minor maintenance work when such peak events are not present. However, the current operating model does not take advantage of this capacity but rather incurs extra maintenance contracting costs, in SKM's view, unnecessarily and thus inefficiently.

[12] In subsequent years, classification appears to have changed in some instances with SKM only able to identify about $4,000 of mowing and slashing expenditure in 2009-10, about $6,800 in 2010-11 and $1,565 in 2011-12.

An overtime allocation of $19,000 for dam operations has been provided in Seqwater's submission. This is equivalent to 15% of the normal dam operations labour cost allocated. Allowances account for a further $21,000. In SKM's view these allocations provisions are reasonable.

SKM also notes that the dam operators at Borumba Dam are also responsible for operating infrastructure downstream (eg Imbil Weir) in the Mary River Water Supply Scheme and operating the Cedar Pocket Dam Water Supply Scheme. Analysing the proportion of time spent by these operators indicates that the dam operators' costs has been over-allocated across the three asset groups after taking into account the reduction applied (that is, their total labour costs allocation is greater than 100%) . This assessment does not include the overtime allowance that is separately provided for.

Seqwater has advised SKM that its employee costs will be re-cast based on an updated allocation of time. This however has not yet been received by SKM.

The Mary Valley has a larger number of WTP operators compared to other water supply schemes although each operator only allocates 7.5% of their time to the Marry Valley Water Supply Scheme. In total the scheme accounts for just less than one WTP FTE. The pay rates of the operators are consistent with other operators and rangers employed by Seqwater and are considered to be reasonable for such employees. They are also consistent with the Seqwater EBA. Based on our discussions with the operators on the ground, this allocation is reasonable although better use of the dam operator is likely to be possible if Seqwater brought back in-house the mowing contract and allowed the dam operators to undertake minor maintenance work in the facility.

In contrast to the high overtime allocated for dam operators, the overtime of $2,400 that has been budgeted for the WTP operator at Borumba Dam is reasonable and represents about 3% of normal time costs.

6.11.6. 2013-14 Labour Cost Forecast

Of concern to SKM, though, is the large increase in the 2012-13 budget of labour cost from the labour cost incurred in 2010-11 and 2011-12. No reasons have been provided in any of the documents from Seqwater to explain the circa 28% cost increase. While there may be an argument that as Seqwater set labour budgets in an integrated manner for all water supply schemes, the annual allocation of an individual scheme may change. However, SKM would not expect an increase in labour expenditure from less than $320,000 in 2011-12 to over $405,000 in 2012-13 (or $412,000 in other sources of information provided to SKM). Also the unsuitability of using the 2012-13 budget as the base to forecast the 2013-14 budget is highlighted by the large (i.e. $136,812) under spend of the 2011-12 actual against the 2011-12 budget.

- **Table 166 2009-10 to 2012-13 Mary Valley Water Supply Scheme and Seqwater Labour Costs**

	Employee Costs					% increase 2011-12 (actual) to 2012-13 (budget)
	2009-10 Actual ($)	2010-11 Actual ($)	2011-12 Actual ($)	2011-12 Budget ($)	2012-13 Budget ($)	
Mary Valley	211,708	308,476	316,265	453,077	405,000	28%
Seqwater	1,802,969	3,780,608	4,185,252	3,968,741	4,784,302	14%

SKM has recommended that the 2012-13 budget be adjusted to reflect the percentage increase in labour cost between 2010-11 and 2011-12. This recommendation was developed by adjusting the percentage of time allocated by each of the staff to the assets of the Mary Valley Water Supply Scheme. Also an adjustment to the percentage of time allocated to Borumba and the irrigation scheme has been made to account for the over allocation of the dam operators' time. The resulting labour cost forecast for Mary Valley Water Supply Scheme is shown **Table 167**.

- **Table 167 2012-13 Adjusted Mary Valley Water Supply Scheme Labour Costs Allocation Budget with 4% escalation applied for 2013-14**

Activity/cost item	Salaries & Wages Applied ($)
Catchment Services	42,080
Dam Operations	177,083
WTP Ops	62,151
Overtime	2,400
Mary Irrigation Schemes	49,199
Incidentals - Protective Items	4,000
Total Labour Cost For 2012-13	**336,913**
Total Labour Cost For 2013-14	**350,390**

- *Percentages have been rounded to nearest decimal.*

6.11.7. Policies and procedures

Contracts for external service providers for mowing services are placed with the various panel contractors in the various Seqwater regions. Contracts with panel contracts have been established based on Seqwater's procurement policy which SKM reviewed as part of a previous review exercise for the Queensland Competition Authority. The procurement policy review has been reproduced in the body of this report for completeness. The panels are refreshed every three to four years.

6.11.8. Summary

The operating expenditure – direct labour cost item is assessed as prudent as the need for the expenditure has been demonstrated.

The operating expenditure – direct labour cost item has been assessed as not efficient as the operating expenditure in support of regulated service delivery is not consistent with industry practice. In addition, the costs do not represent the least-cost means of providing the requisite level of service within the relevant regulatory framework.

The quality of the information provided on this cost item is outlined below in **Table 168**.

- **Table 168 Quality of information provided**

Section of OPEX review	Direct Labour, Mary Valley Water Supply Scheme
Operating item description	
Provided documentation	
Prudency	

Section of OPEX review	Direct Labour, Mary Valley Water Supply Scheme		
Efficiency			
Evaluation of costs			
Delivery of service			
Market conditions	N/A		
Efficiencies of scale			
Benchmarking			
Policy and procedures			
Legend	Sufficient documentation	Minor issues - conflicting documentation	No documentation - major issues with documentation

Seqwater will need to address the following information shortfall to rectify the non-green items above.

- Reasons to explain the circa 28% labour cost increase
- Update the information supplied in its response to SKM's RFIs to be consistent with its revised submission to the Authority
- Information regarding any efficiency targets set for productivity improvements

In SKM's view, forecast 2013-14 labour costs in the Mary Valley Water Supply Scheme costs may be reduced by setting overtime at a lower level to reflect the current low utilisation of dam operating staff.

SKM considers that the labour cost increase applied to the Mary Valley is excessive. No reasons have been provided for such an increase and as such SKM has recommended reducing the allocation of time to reduce the labour costs budget for Mary Valley Water Supply Scheme in 2012-13 to $324,250. This should then be escalated by 4% to form the 2013-14 budget of $337,000.

The value of labour expenditure considered to be efficient is outlined below in **Table 169**.

- **Table 169 Direct Labour, Mary Valley Water Supply Scheme - Revised operating expenditure profile (2013-14)**

Project	Seqwater Original Forecast ($'000)	Seqwater Revised Forecast ($'000)	SKM estimate ($'000)
Mary Valley WSS Labour cost	421	429	350

6.11.9. Further analysis

Seqwater subsequently revised the budget allocation for the Mary Valley. As a result of the further information identified by Seqwater, the Authority subsequently commissioned SKM to undertake further analysis the direct labour cost at the Mary Valley WSS. Further discussions were held with Seqwater to review this additional information. The re-allocation of budgeted resources was undertaken by Seqwater following an assessment of SKM's initial review which identified a number of over-estimations in Seqwater's earlier proposal. This resulted in Seqwater's estimate of the value of the Mary Valley labour cost budget to be reduced from an initial forecast of $421,000 (revised to $429,000) to $224,000. The reduced budget is below SKM's initial estimate of $350,000

The main reasons for this reduction was the lower allocation of Catchment Services to levels similar to that seen in the last two years and significant reduction in the time allocated to the Mary Valley by the dam operators. The allocation of costs by the WTP operators remains the same.

In Seqwater's initial proposal, the allocation for rangers' time at the Mary Valley was set at 30%. This was subsequently found to be excessive. In the revised proposal, Seqwater has reduced this allocation to 18.5%. This better reflects the historical actual time allocation to this scheme. The result of this reallocation means that the initial budgeted cost estimate for Catchment Services for the Mary Valley of over $47,000 has been reduced to $29,000. Given that this revised allocation of time spent by the rangers is based on the historical proportion of time, rather than simply a projected estimate of the time expected to be spent in this scheme, SKM is of the view that this allocation is a better estimate.

The dam operators' costs have also been reduced significantly. New information from Seqwater indicated that in its previous estimate, the allocation of cost for dam operations was also too high. However, this was because the estimates were based on historical costs that included both Pie Creek WSS and Cedar Pocket WSS employee costs as well as costs from Mary Valley WSS. Seqwater also found that its previous estimate of historical costs included some indirect costs. These costs related to time spent by various managers for management activities that, although relating to the Mary Valley WSS, are better characterised as indirect costs. When these costs are removed, the historical costs for 2010-11 and 2011-12 were estimated by Seqwater to be approximately $50,000 lower than previously reported historical costs. The reduction in dam operations labour costs allocated to the Mary Valley WSS also led to a reduction in the overtime and allowance allocated to this scheme. Overtime is now expected to account for approximately 26% of the operator's normal time cost. This is within SKM's estimate of a reasonable overtime for dam operations.

SKM has reviewed these new costs and their allocation and conclude that this is a better estimate of the likely resources required to operate the Mary Valley WSS and recommends its acceptance as efficient. This estimate also provides a better estimate than SKM's previous view which was based on over-inflated historical costs. The revised budget for the Mary Valley WSS is shown in **Table 170**.

- **Table 170 2012-13 Revised Mary Valley Water Supply Scheme Labour Costs Allocation Budget with 4% escalation applied for 2013-14**

Activity/cost item	Salaries and Wages Applied
Catchment Services	29,055
Dam Operations	112,683
WTP Ops	72,150
Overtime	2,400
Infrastructure maintenance	8,206
Total Labour Cost For 2012-13	**224,494**
Total Labour Cost For 2013-14	**233,474**

The estimated cost of $224,500 is escalated by 4% to arrive at the 2013-14 budget. SKM thus recommends the revised direct labour cost of $233,500 for the Mary Valley for 3013-14. This is shown in **Table 171**.

- **Table 171 Revised Direct Labour, Mary Valley Water Supply Scheme - operating expenditure profile (2013-14)**

Project	Seqwater Original Forecast ($'000)	Seqwater Revised Forecast ($'000)	Revised estimate ($'000)
Mary Valley WSS Labour cost	421	429	233.5

6.11.10. Application to other operational expenditure items

While care must be taken, the findings of this review may be applicable to other labour cost items from other water supply schemes submitted by Seqwater not subject to detailed review. SKM believes that the Mary Valley Water Supply Scheme has similar characteristics to other water supply schemes in Seqwater's system and thus the issues faced are likely to be similar.

6.12. Direct Labour, Morton Vale Distribution System

The Morton Vale Distribution System relates to the operation of the Morton Vale Water Main (Pipeline) System.

6.12.1. Proposed operating expenditure

Table 172 shows the proposed cost of the operating expenditure item Direct Labour, Morton Vale within the 2013-14 budget. Also shown are the actual/budgeted operating costs for 2011-12 and 2012-13.

- **Table 172 Direct Labour and Contractors, Morton Vale – Proposed operating expenditure profile**

Source	Actual Costs ($) 2011-12	Budgeted Costs ($) 2012-13	Forecast Costs ($) 2013-14
Terms of reference drawn from Seqwater's original NSP and Seqwater responses to RFIs	813	23,996	24,956

The 2013-14 labour cost for the Morton Vale Distribution System has been escalated from the budgeted 2012-13 base forecast of $23,994 by 4%. The 2012-13 base forecast was built up from a zero base (using a bottom up method). This category of costs relates to internal Seqwater staff costs only.

6.12.2. Operating item description

The labour resources required to operate the Morton Vale Distribution System mainly relate to the operation of Morton Vale Water Main (Pipeline) System.

6.12.3. Provided documentation

The documents used for this review are:

- *Seqwater, 2013-14 Irrigation Pricing, Submission to the Queensland Competition Authority, July 2012*
- *Seqwater,* Central Lockyer Valley *Water Supply Scheme, Network Service Plan*

- *Seqwater, Information Request Response – QCA Irrigation Price Review 2013-17, RFI 021, Morton Vale WSS, Operations – Direct Labour, 14 Aug 2012*
- *Seqwater, Budget 2012-13, Salaries and Wages, Dam Operations*
- *Seqwater, Opex – Irrigation Updated YTD.xlsx*
- *Seqwater, Opex – Irrigation Salaries Queries.xlsx*

6.12.4. Prudency

The Morton Vale Pipeline System is required to meet water ownership and water use legislation and water information reporting requirements. Consequently the operating expenditure item is seen as prudent.

6.12.5. Efficiency

For expenditure to be efficient it must represent the least-cost means of providing the requisite level of service within the relevant regulatory framework.

Evaluation of costs

Labour cost for Morton Vale has been estimated by escalating the budgeted 2012-13 base forecast of $23,996 by 4%. The 2012-13 base forecast was built up from a zero base (bottom up method). Seqwater initially provided the forecasts from 2013-14 through to 2016-17 for review.

Seqwater's operating cost projections of labour are not based on any water demand cost drivers but are rather based on the 2012-13 budget. In SKM's view, basing the labour forecast cost on a previous budget is not satisfactory as actual costs may vary significantly from budget. SKM recommends that forecast costs be based on actual incurred costs taking into account trends exhibited by recent actual expenditure, changes in working practices and changes in assets being operated and maintained. Accordingly, additional information relating to actual historical expenditure was sought by SKM.

In response to SKM's request for information, Seqwater provided historical and budgeted costs covering the period between 2009-10 and 2012-13. This is shown in **Table 173**.

- **Table 173 Morton Vale Distribution System Labour Costs**

Morton Vale Distribution System	2008-09 Actual ($)	2009-10 Actual ($)	2010-11 Actual ($)	2011-12 Actual ($)	2012-13 Budget ($)
Employee Costs	2,782	1,111	2,167	813	23,996

Seqwater indicated to SKM that the budget is set on the basis of the time operators would normally be expected to spend on Morton Vale. Whilst the actual expenditure will be different each year, the average over the price path is expected to be consistent. SKM agrees with this approach however SKM is of the opinion that this will only explain some of the differences seen in Seqwater's 2012-14 budget rather than the almost 30 fold increase between 2011-12 actual expenditure and the 2013-14 budget. SKM is also concerned that over the last three years, the maximum actual expenditure is less than $2,800 (2008-09). Over the last four years, average actual expenditure does not approach anywhere close to the budget for 2012-13.

SKM also sought from Seqwater information regarding the estimated quantity of FTEs assigned to the assets. The information provided by Seqwater is shown below in **Table 174**. Overall, the proposed

budget of $24,000 for labour cost for 2013-14 is significantly higher, by circa 2000%, than the historical actual expenditure of the three preceding years.

- **Table 174 2012-13 Morton Vale Distribution System Labour Costs Budget**

Position Description	Salaries & Wages ($)
Supervisor and operator costs total	23,996

No further explanation has been provided regarding these costs.

Delivery of service

Seqwater states that 100% of direct labour for the Morton Vale Pipeline is provided by Seqwater staff.

Efficiencies and economies of scale

No efficiencies or economies of scale have been identified.

Benchmarking

The information provided by Seqwater regarding Morton Vale does not enable SKM to undertake any benchmarking analysis. Seqwater has provided the cost of the two labour resources responsible for this system. However, there is no information of the time that has been allocated to this pipeline or the rates of the resources allocated.

6.12.6. 2013-14 Labour Cost Forecast

Seqwater indicated to SKM that the historical expenditure reported for the Morton Vale Distribution System is not accurate and does not include much of the actual expenditure incurred on the system. This is because the times spent by Seqwater's staff at this system had been allocated to other areas. If this is the case SKM is then unable to confirm that the forecast expenditure sought by Seqwater is efficient as the information required is not available to SKM. SKM is thus unable to verify any of the information provided and comment on the reasonableness of the forecast costs based on historical costs. Nevertheless, the amount sought by Seqwater of almost $25,000 for labour cost for this system is approximately equivalent to 0.35 FTE. For a single pipeline system, 0.35FTE is likely to be excessive. On this basis, SKM is of the opinion that that less than 0.1FTE would be required. This would amount to no more than $7,000.

To justify this cost forecast, Seqwater will be required to collect and supply sufficient historical information that will provide a level of assurance that the forecasts is reasonable. Seqwater is unable to do this at this stage. Policies and procedures

No policies and procedures have been provided for SKM's review related to labour resources for the Morton Vale Pipeline.

6.12.7. Summary

The operating expenditure item is assessed as prudent as the need for the expenditure has been demonstrated. However the budgeted expenditure for 2012-13 has been assessed as not efficient given the significant (20 fold) increase in historic costs and lack of documented information to support such an increase.

The quality of the information provided on this cost item is outlined below in **Table 175**.

- **Table 175 Quality of information provided**

Section of OPEX review	Direct Labour, Morton Vale Distribution System		
Operating item description			
Provided documentation			
Prudency			
Efficiency			
Evaluation of costs			
Delivery of service			
Market conditions			
Efficiencies and economies of scale			
Benchmarking			
Policy and procedures			
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

Seqwater will need to provide more detailed information regarding the Morton Vale Pipeline in order for the budgets proposed to be properly validated including

- Reasons for the large increase in expenditure budget for 2012-13
- Reasons for the continuation of the high budget for 2013-14 and beyond
- What drives labour costs for the asset
- The amount of time spent by its staff on this asset and the labour rates applied.
- Information regarding any efficiency targets set for productivity improvements
- Any policies and procedures relating to the operations and maintenance of the Morton Vale Pipeline that impacts on the use of labour

In SKM's view, forecast 2013-14 labour costs in the Morton Vale Distribution System costs are seen as inefficient. Actual historical information supply is inaccurate. Given this lack of information, SKM estimates that given the limited coverage of this system, only 0.1FTE would be required to operate the Morton Vale Pipeline System. This is reflected in **Table 176**.

- **Table 176 Direct Labour, Morton Vale Distribution System - Revised operating expenditure profile**

Project	Seqwater Forecast ($)	SKM estimate ($)
Morton Vale Distribution System labour cost	24,996	7,000

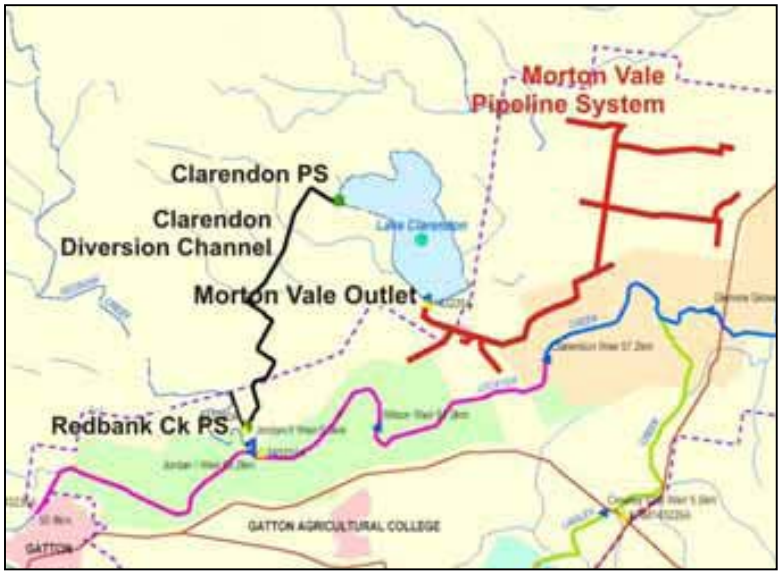
6.12.8. Further analysis

Seqwater subsequently identified information that indicated that historical actual costs for Morton Vale had been allocated to the Central Lockyer Scheme by Seqwater. The Authority as a result, subsequently commissioned SKM to undertake further analysis of the direct labour cost at the Morton Vale Distribution System.

During the discussions with Seqwater, it became clear to SKM that while historical costs had been allocated to the Central Lockyer system, extracting the Morton Vale portion of these costs was not

possible as the data did not separately identify Morton Vale as the location of any of these costs. SKM then sought to assess the likely work required for the system.

The Morton Vale Pipeline Distribution System consists of 15.5 km of concrete and PVC pipes that diminish in diameter as the distance from the supply source increases. The design of the system aims to provide a minimum residual head at the customer's offtake point of 1m and an equivalent flow rate of 0.75 L/s/ha.



The main activities relating to the Morton Vale system requires operators to

- Manage enquiries from farmers
- Monitoring the system to ensure that the environment is free from weed and to read the meters
- Meter readings are conducted every quarter. There are approximately 50 active meters and work activities also include checking the associated air valves and isolating valves.
- Surveillance of the pipeline which requires driving the length of the pipeline to monitor flows into the pipeline and leaks in the pipeline. This activity also entails checks on the various valves including:
  - 42 air values
  - 13 scour valves and
  - 14 isolating valve
- Inspection of air valves for leaks
- Monthly checks on the equipment and generator at the Clarendon Dam outlet. Every quarter, an electrical contractor is also engaged to conduct a safety check.

As part of this re-assessment of costs, Seqwater has increased its proposed allocation of labour cost to the Morton Vale Distribution System to $43,322 (from $24,996). This is based on an allocation of 0.4FTE to this system. The allocation is shown in **Table 177**.

- **Table 177 Revised Proposed 2012-13 Morton Vale Distribution System Labour Costs Budget**

Position Description	Salaries & Wages ($)
Total labour cost	43,322

SKM held a number of discussions with various Seqwater staff in relation to the activities at the Morton Vale Distribution System. We established that the monthly activities of pipeline inspection and equipment checks at the Clarendon Dam outlet would require about 1 week of the operator's time. This would include the time required to spray weeds in the vicinity of the pipeline equipment. Occasionally the Scheme Supervisor will also be required in attendance as the work for occupation health and safety reasons would need at least two people to be present (eg when a test run on the generator is conducted or when other heavy equipment is tested).

The quarterly exercise of meter reading requires between 2.5 to 3 days including the time required for the submission of data. This may include engagement with farmers and the checking that the meter and associated equipment are in good functioning order.

Based on these discussions, SKM concurs with Seqwater that the time allocated to Morton Vale Distribution System is appropriate.

In our discussions, SKM also inquired about the need for overtime at the Morton Vale Distribution System. We established that there is little requirement for overtime at this scheme perhaps only 2 to 3 times a year of weekend work if a leak is identified during the week end that requires urgent correction. As a result, SKM is of the opinion that the overtime and allowances assigned to the Morton Vale System is over estimated. Assuming three events requiring overtime occurs at the scheme, SKM estimates that an allocation of approximately $1,500 per year is sufficient. While SKM acknowledges that as the pipeline gets older, such overtime events are likely to increase, for the next two years, we do not see this increase occurring to an extent beyond the 3 events allowed for. Accordingly, SKM recommends the revised 2012-13 budget of $36,000 for the Morton Vale Distribution System labour cost shown in **Table 178**.

- **Table 178 Revised Recommended 2012-13 Morton Vale Distribution System Labour Costs Budget**

Position Description	Salaries & Wages ($)
Total labour cost for 2012-13	36,019
Total labour cost for 2013-14 (2012-13 cost escalated by 4%)	37,460

The estimated cost of $36,000 is escalated by 4% to arrive at the 2013-14 budget. SKM thus recommends the revised direct labour cost of $37,500 for the Mary Valley for 3013-14. This is shown in **Table 179**.

- **Table 179 Revised Direct Labour, Morton Vale Distribution System - operating expenditure profile**

Project	Seqwater Forecast ($)	SKM estimate ($)
Morton Vale Distribution System labour cost	43,322	37,460

6.12.9. Application to other operational expenditure items

Given the unrepresentative nature of the Morton Vale Pipeline System, SKM does not recommend applying the findings of this review to the other water supply schemes and dams.

6.13. Repairs and Maintenance – Planned, Pie Creek Distribution System

The Pie Creek Distribution System is a tariff group of the Mary Valley Water Supply Scheme. Pie Creek Distribution System constitutes a series of channels and pipes with water being pumped from the Mary River. Customers are supplied by a number of assets including:

- Calico Creek Channel
- Calico Creek Pipeline
- McIntosh Channel
- McIntosh Creek Pipeline
- Pie Creek Main Channel
- Pie Creek Pipeline
- Pie Creek Pump Station
- Rising main
- Flowmeters

6.13.1. Proposed operating expenditure

Table 180 shows the proposed cost of the operating expenditure item repairs and maintenance – planned, Pie Creek within the 2013-14 budget. Also shown are the actual operating costs for 2011-12 and 2012-13.

- **Table 180 Repairs and Maintenance – Planned, Pie Creek Actual and Proposed Operating Expenditure Profile**

Source	Actual Costs ($'000) 2010-11	Actual Costs ($'000) 2011-12	Estimated Costs ($'000) 2012-13	Forecast Costs ($'000) 2013-14
Terms of reference drawn from Seqwater's original NSP			47	49
Revised opex summary			56.2	52.5
Opex – Irrigation Updated YTD.xlsx	25.6	14.2	50.5	

Subsequent to its original submission, Seqwater increased the proposed cost for repairs and maintenance - planned for the Pie Creek Distribution System. The cost breakdown provided by Seqwater in response to SKM's request for information (RFI022) totals $48,792 in 2013-14 which is consistent with the costs outlined in the terms of reference.

The forecast costs for 2013-14 were determined by Seqwater by escalating the 2012-13 maintenance budget by a factor of 4%. The 2012-13 costs were zero based (bottom up method) for the Authority's review of Seqwater's Grid Service Charges for 2012-13. The estimated budget for future repairs and maintenance – planned as provided in Opex – Irrigation Updated YTD is similar to that listed in the terms of reference. However, when compared to the actual historical expenditure, the budget

included in the terms of reference is approximately 200% and 350% higher than historic actual spends for 2010-11 and 2011-12 respectively.

6.13.2. Operating item description

Seqwater's asset maintenance program refers to scheduled or planned maintenance. Scheduled maintenance refers to periodic maintenance scheduled in advance and designed to minimise deterioration of an asset's condition and/or performance. Planned maintenance is undertaken to improve the condition of an asset to a required level and is operational in the immediate term or is in response to work arising from safety audits, environmental audits or process improvements.

In Seqwater's response to SKM's request for information (RFI022) the following breakdown of costs was provided:

- Pie Creek Pump Station, R&M Planned Only: $48,792 (in 2013-14)

6.13.3. Provided documentation

The documents used for this review are:

- *Information Request Response, RFI022, Pie Creek WSS, Repairs & Maintenance – Planned, Seqwater, 14/08/2012*
- *Operational Cost Report for 2012-13, Seqwater*
- *Opex – Irrigation Updated YTD.xls, Seqwater*
- *MMW Panel User Manual*

Initial information provided by Seqwater outlined the location of planned maintenance, method for budget calculation and workforce. Discussions with Seqwater staff during project interviews provided further information, and resulted in the identification of a number of further information sources that were subsequently requested.

Additional information requested from Seqwater for this review included:

- Rates for the old contractor panel and the MMW Panel User Guide

The requested documents were provided by Seqwater.

6.13.4. Prudency

Operating the water supply scheme or tariff group, and achieving compliance in practice with legislation (such as dam safety obligations), requires Seqwater to properly repair and maintain the assets that it owns and operates.

The repairs and maintenance required to operate Pie Creek Distribution System predominantly relate to ensuring the ongoing operation and reliability of the Pie Creek Pump Station

Consequently the operating expenditure item has been assessed as prudent.

6.13.5. Efficiency

For expenditure to be efficient it must represent the least-cost means of providing the requisite level of service within the relevant regulatory framework.

Evaluation of costs

In determining the original NSP 2013-14 budget, Seqwater applied a 4% escalation to the 2012-13 maintenance budget. The budget was developed utilising baseline data contained in the Operational Cost Report for 2012-13 that was submitted during the Authority's review of Seqwater's Grid Service Charges for 2012-13. The application of a 4% escalation factor to previous budgets is considered appropriate, albeit potentially on the high side, considering the Reserve Bank of Australia's inflation target of 2-3%. However, this method for budget determination relies on the accuracy of previously conducted budget calculation exercises, and does not consider the actual costs that have been incurred.

In the spreadsheet 'Opex – Irrigation Updated YTD', the total 2012-13 repairs and maintenance budget for the Pie Creek Distribution System is $71,078, while the actual spend for 2010-11 was $36,046 and for 2011-12 was $20,024. Using Seqwater's allocation of 71% of maintenance as planned maintenance, the actual planned maintenance spends can be calculated as $25,593 in 2010-11 and $14,299 in 2011-12. Applying an escalation factor of 4% to the average planned maintenance expenditure between 2010-11 and 2011-12 of $19,911 provides forecasts of $20,707 for 2012-13 and $21,536 for 2013-14. These values are significantly lower than budget forecasts of $47,000 and $49,000 listed in the terms of reference for 2012-13 and 2013-14 respectively. The repairs and maintenance – planned budget included in the terms of reference is approximately 250% higher than historical expenditure.

In the Information Request Response to RFI022 Seqwater provided a breakdown on costs, as listed in **Section 6.13.1**.

In interviews Seqwater staff stated that planned and reactive budgets are based on historical spends. However, the supplied information does not support this statement.

The method of cost calculation utilised by Seqwater in determining the budget for planned maintenance for the Pie Creek Distribution System does not represent the most appropriate method, as it does not consider the actual historic spend. SKM has therefore concluded that the 2012-13 and 2013-14 budgeted costs are not efficient.

Delivery of service

Planned maintenance is delivered through a panel of providers (that is, contractors). Each of Seqwater's operational regions has a panel of four contractors, who have been selected through an expression of interest process for each work classification including electrical, mechanical, instrumentation, control system pipeline and civil. During interviews Seqwater personnel stated that contractors were appointed in accordance with the State Procurement Policy. The previous panel agreement ran from 2009 until 2012, whilst the new panel runs from 2012 for a period of two years, with an option for extending the panel for a further one or two year period. The new panel contains efficiencies over the previous panels including removing the allowance for a contractor to charge for travel time and providing short term and long term rates.

Specific to the Pie Creek Distribution System are the N1 and N2 regions, panel rates for which are provided in **Table 181** below. Note that contractor names have been excluded from **Table 181** to protect commercial confidentiality.

- **Table 181 Seqwater maintenance contractor panel rates 2012 – 2014**

		N1 ($)				N2 ($)			
Electrical	Short term	90.80	80.00	86.25	99.00	90.80	80.00	86.25	99.00
	Long term	80.71	72.00	86.25	86.00	80.71	72.00	86.25	86.00
Mechanical	Short term	96.00	98.00	80.00	90.00	96.00	70.37	98.00	90.00
	Long term	82.00	98.00	75.00	85.00	82.00	70.37	98.00	85.00
Instrumentation	Short term	108.00	80.00	98.00	104.08	108.00	98.00	104.08	90.00
	Long term	93.00	80.00	98.00	104.08	93.00	98.00	104.08	81.00
Control System	Short term	168.53	100.00	150.00		168.53	150.00	130.00	130.00
	Long term	149.80	100.00	133.00		149.80	133.00	130.00	125.00
Pipeline	Short term	85.00	58.00	90.00	70.00	58.00	90.00	70.00	121.00
	Long term	80.00	55.00	85.00	70.00	55.00	85.00	70.00	108.90
Civil	Short term	70.00	55.00	121.00	98.00	55.00	121.00	109.70	110.00
	Long term	67.00	55.00	110.00	92.00	55.00	110.00	109.70	95.00

Panel contractors are audited to determine work performance. The audit, performed by Seqwater, details performance in terms of work order completion and supply of documentation, contractor timesheet entry and other categories as appropriate for the job. During interviews Seqwater personnel stated that audits of panel members were completed monthly.

It must be noted that during the merger of water entities, Seqwater inherited from Brisbane City Council a number of personnel and facilities required to complete maintenance for the Somerset and Wivenhoe Dams. These personnel and facilities are utilised in completing maintenance, resulting in an approximately 80% of maintenance being completed in-house, with the remainder 20% being completed by contractors. Currently Seqwater is assessing the efficiency of this method for completion of maintenance. The results of this assessment would be of interest in future assessments of the efficiency of method of completing maintenance.

Notwithstanding the above, the use of panel contractors to complete maintenance, in particular with consideration of the new panel agreement, is efficient.

Market conditions

The expression of interest process used by Seqwater in engaging contractors resulted in 106 expressions of interest across all regions. The number of contractor responses, in addition to the procurement method consistent with the State Procurement Policy has ensured that current market conditions are accurately reflected in contractor rates.

Efficiencies and economies of scale

The panel agreements include short term and long term rates. During interviews, Seqwater personnel stated that the driver behind long term rates was to realise the benefits of offering continual work. As demonstrated in **Table 181**, panel contractors generally provided both short term and long term rates.

Through the inclusion of long term and short term rates in the panel agreement Seqwater has ensured that efficiencies are available for maintenance providing continual employment to contractors. SKM considers that the inclusion of long term and short term rates in the panel agreement will result in efficiency gains being realised.

Benchmarking

Rawlinsons Australian Construction Handbook 2011 identifies contractor charge out rates for Brisbane including:

- Electrician: $83 - $88
- Mechanical services: $75 - $88
- Instrumentation: $83 - $88
- Plumber: $77 - $82

While the contractor charge out rates identified in Rawlinsons are not available for all Seqwater categories of contractor included in **Table 181**, enough information is available to provide a comparison. For long term rates, Seqwater contractor rates are within the rates listed in Rawlinsons with the exception of one N1 and one N2 Mechanical panel member, two N1 and two N2 panel contractors, one N1 plumber and two N2 plumbers. Additionally, a number of contractor rates are lower than those listed in Rawlinsons. Seqwater's short term rates are often higher than those listed in Rawlinsons which is not unreasonable given that Rawlinsons' rates are based on a 38 hour working week, and assumes the rate '*assumes a negotiated rate*' which '*should not be confused with the usually much higher rate charged for non-contract works*'.

SKM has not been provided with information on the times taken by contractors for individual activities or projects, and therefore is not able to comment on a sample basis of the appropriateness of time taken to complete work. However, SKM has reviewed the processes undertake by Seqwater in engaging and reviewing the activities of contractors, and has also noted the trend in historic costs for contractor activities in planned maintenance. From this, SKM considers the time taken by contractors to be efficient in the mean, and are therefore comfortable that the review processes adopted by Seqwater captures and removes unreasonable contractor charges

SKM's estimators consider the panel rates appropriate when contrasted to SKM's database for such costs. In their assessment, SKM's estimators considered the geographical location of the assets being maintained, the method of procurement, and terms and conditions of the rates, including removal of allowance for contractors to charge travel time. SKM's estimators additionally considered the utilisation of Brisbane contractor rates as a Benchmark for rates of contractors in the Lower Lockyer region. It was found that although a minor premium may be expected due to the distance from Brisbane, Lower Lockyer Valley Water Supply Scheme rates should be comparable to Brisbane's due to the proximity of major regional centres of Ipswich and Toowoomba, in addition to Brisbane. Further, SKM's estimator identified the competitive tender process in addition to removal of allowance to charge for travel time as being likely to negate any premium otherwise charged by the contractor for the work location.

SKM therefore considers Seqwater's maintenance panel contractor rates efficient.

Benchmarking forecast budget expenditure against historical expenditure demonstrates that Seqwater's current repairs and maintenance – planned budget is approximately 350% of the historical expenditure for the Pie Creek Distribution System.

6.13.6. Policies and procedures

Panel contractors are engaged via a panel of providers. For individual projects, the engagement of panel members is guided by the Panel User Manual. The Panel User Manuel provides guidelines to Seqwater staff in the engagement and management of maintenance and specialist services provided by the panel.

In the previous panel, projects under $50,000 required one written quote from a panel member, projects from $50,000 to $250,000 required a minimum of three panel member quotes and projects greater than $250,000 required an invitation to tender to be completed. More stringent procedures have been included in the new panel agreement, providing further governance for the engagement of contractors. The procedures for engaging contractors under the new panel are included in **Table 182** below.

- **Table 182 Seqwater minimum quotation requirements for engaging maintenance panel contractors**

Type of Work	Number (Min.) and Type of Quotations	
	Value of Work below $100,000 (incl. GST)	Value of Work greater than $100,000 (incl. GST)
Emergency	Nil (Refer PDM for requirements)	
Non – Emergency work that is: Relatively urgent, or difficult to scope upfront, or is planned maintenance, or is very low in value (for which seeking WCQ is not feasible)	1 x QCWO (or WCQ if deemed appropriate)	3 x WCQ
Other non – Emergency work	1 x WCQ	3 x WCQ

Seqwater's Panel User Manual uses the following terms

PDM – Procurement Decision Matrix
QCWO – Quotation Compliant Work Order
WCQ – Written Contractor Quote

6.13.7. Summary

The operating expenditure item is assessed as prudent as the need for the expenditure has been demonstrated.

The operating expenditure is assessed not efficient as the operating expenditure in support of regulated service delivery is not consistent with historical costs.

It is recommended that sufficient additional information is provided by Seqwater to enable a complete assessment. This information should include:

- Detailed information justifying the difference between historical expenditure and proposed future planned maintenance expenditure

The quality of the information provided on this project is outlined below in **Table 183**.

- **Table 183 Quality of information provided**

Section of OPEX review	Repairs and Maintenance – Planned, Pie Creek		
Operating item description			
Provided documentation			
Prudency			
Efficiency			
Evaluation of costs			
Delivery of service			
Market conditions			
Efficiencies and economies of scale			
Benchmarking			
Policy and procedures			
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

The value of any expenditure considered to be prudent or efficient, based on averaged historic costs, escalated by 4% is outlined below in **Table 184**.

- **Table 184 Repairs and Maintenance – Planned, Pie Creek – Revised operating expenditure profile**

Project	Costs ($'000) 2012-13	Costs ($'000) 2013-14
Repairs and maintenance – Planned, Pie Creek	20.7	21.5

6.13.8. Further analysis

As a result of the further information identified by Seqwater, the Authority subsequently commissioned SKM to undertake further analysis on the Pie Creek planned repairs and maintenance costs. Further discussions were held with Seqwater to review this additional information. Seqwater provided information and evidence that the 2011-12 budget for Pie Creek repairs and maintenance of $106,000 (plan and unplanned) included an amount of $60,000 which was initially expected to be undertaken by the Infrastructure Maintenance group. Instead, the work was carried out by the Asset Development group. However, these costs were not captured in the earlier information provided to SKM. This happened because the Asset Development group, which undertakes capital works, was excluded from the report in the erroneous understanding they had no operating expenditure. Including this expenditure in the total expenditure for 2011-12 for Repairs and Maintenance should have occurred. This would have resulted in approximately $80,000 (instead of $20,000) being reported to SKM. This accords with the 2012-13 budget of $71,000 for Repairs and Maintenance (planned and unplanned). Applying the planned and unplanned split (71%:29%) would result in the $50,500 budget for planned repairs and maintenance budgeted for Pie Creek.

SKM has established that this is indeed the case and that the budget for 2012-13 did include an amount reflecting the actual 2011-12 expenditure that included the $60,000 that was not previously provided to SKM. Including this actual expenditure into our analysis indicates that the proposed budget of $50,500 is efficient and SKM recommends that the proposed Pie Creek planned repairs and maintenance budget be accepted as shown in **Table 185**.

- **Table 185 Revised Repairs and Maintenance – Planned, Pie Creek – operating expenditure profile**

Project	Costs ($'000) 2012-13	Costs ($'000) 2013-14
Repairs and maintenance – Planned, Pie Creek	50.5	52.5

6.13.9. Application to other projects

SKM has been asked to determine whether the results of the repairs and maintenance – planned reviewed in detail can be applied to repairs and maintenance – planned costs for other schemes.

It is expected that each budget will include costs for repairs and maintenance – planned. If the method for calculating other budgets for repairs and maintenance - planned for other water supply schemes is similar to that for Pie Creek Distribution System, the results of the review of repairs and maintenance (planned) for Pie Creek Distribution System can be applied to other schemes/distribution systems.

6.14. Materials and Other, Warrill Valley Water Supply Scheme

The Warrill Valley Water Supply Scheme consists of bulk water supply assets to supply water to irrigation users and the SEQ Water Grid Manager. Water is supplied to users directly from the river systems. Assets in the system include:

- Moogerah Dam
- Upper Warrill Diversion Weir
- Kents Lagoon Diversion Weir
- Aratula Weir
- Warrill Creek Diversion Weir
- West Branch Warrill Diversion Weir
- Churchbank Weir
- Railway Weir
- Gauging Stations
- Gravity Diversions
- Upper Warrill Diversion pipeline and channel

6.14.1. Proposed operating expenditure

Table 186 shows the proposed cost of the operating expenditure item Materials and Other, Warrill Valley within the 2013-14 budget. Also shown are the actual/estimated operating costs for 2011-12 and 2012-13.

- **Table 186 Materials and Other, Warrill Valley – Proposed operating expenditure profile**

Source	Actual Costs ($'000) 2010-11	Actual Costs ($'000) 2011-12	Estimated Costs ($'000) 2012-13	Forecast Costs ($'000) 2013-14
Terms of Reference drawn from Seqwater's original NSP				314
Final NSP value^			305.7	271

Source	Actual Costs ($'000) 2010-11	Actual Costs ($'000) 2011-12	Estimated Costs ($'000) 2012-13	Forecast Costs ($'000) 2013-14
Information Request Response RFI023				314
Opex – Irrigation Updated YTD 'Materials and Contractors' only	229	193	56	
Opex – Irrigation Updated YTD 'Materials and Contractors' plus 'Other'	324	321	317	

^ *The NSP value does not include costs of materials, only 'other' whereas the QCA Terms of Reference value includes expenditure on materials as well as 'other'.*

The costs provided in the Authority's Terms of Reference are drawn from Seqwater's original NSP but are not consistent with the values in the NSP. This is because NSP listed costs for activities classed as 'other' only whereas the Authority included costs for materials associated with the Warrill Valley Water Supply Scheme. However, the costs provided in the Terms of Reference are consistent with those listed by Seqwater in response to SKM's request for further information (RFI023). In 'Opex – Irrigation Updated YTD', there are two potential methods for determining the total costs listed including either considering the costs listed under the heading 'Materials and Contractor', or consolidating both the costs listed under the 'Materials and Contractor' and 'Other'. Neither method produces costs consistent with those listed in the terms of reference, although average costs determined by adding 'Materials and Contractor' and 'Other' are within approximately 7% of the forecast costs contained in the terms of reference when escalated at 4%.

6.14.2. Operating item description

Materials and other expenses are required for dam operations, recreational water treatment plant operation, group support and catchment services in addition to water quality monitoring. Definitions for these activities relevant to irrigation operation and maintenance are provided below.

Dam Operations: Dam Operations must meet the regulatory requirements under various Acts including those relating to dam safety, flood management, resource operating plans, and providing sufficient water to meet standards of service. Key outputs are management of dams to ensure safe operation during normal water releases and flood releases, monitoring and ensuring dam safety compliance, maintain releases from dams to meet demand, meeting resource operation plan compliance, delivering water to irrigation customers, and ensuring water related data is recorded and stored.

Recreational water treatment plant operation: With respect to irrigation services specifically, this activity is limited to managing the recreation water treatment plants which services visitors to the recreation sites located at the dams or water storages within the Warrill Valley Water Supply Scheme.

Group support and catchment services: The team ensures that asset management plans, processes, systems and practices are implemented in accordance with relevant regulatory requirements including environmental protection laws and land ownership laws. This team also contributes to the effective development, implementation and management of the management and reporting systems within Seqwater's Water Delivery Group, as well as the management of third party access and event approval at Seqwater sites and locations.

Water quality monitoring: The central role of the Water Quality team is to manage Seqwater's risk in relation to water quality. The core functions and activities of the Water Quality Team are catchment and water treatment plant monitoring, laboratory and data management services and drinking water quality management.

6.14.3. Provided documentation

The documents used for this review are:

- *Information Request Response, RFI023,Materials and Other Warrill Valley WSS, Seqwater, 14/08/2012*
- *Operational Cost Report for 2012-13, Seqwater*
- *Opex – Irrigation Updated YTD.xls, Seqwater*
- *RFI023 Attachment Warrill Valley Schedule of Info*
- *RFI023 Attachment Warrill Valley Fleet*
- *Opex – Irrigation Queries*
- *Opex summary (461146_1).xlsx, Seqwater, 04/09/2012*

Initial information provided by Seqwater outlined costs associated with materials and other, and the method for budget calculation. Discussions with Seqwater staff during project interviews provided further information, and resulted in identification of a number of additional information sources that were subsequently requested.

Additional information requested from Seqwater for this review included:

- Breakdown of water quality monitoring costs, including a breakdown of contractor sampling charges and monitoring program
- DERM water quality sampling and reporting guidelines
- Business Case for returning water quality sampling in-house
- HACCP Plan for a recreational water treatment plant
- Method for calculating the fleet allocation budget

All requested information was provided by Seqwater and utilised in this review

6.14.4. Prudency

Operating the water supply scheme or tariff group, and achieving compliance in practice with legislation and the Resource Operating Plan for the water supply scheme, requires Seqwater to consume materials and supplies.

The materials and supplies required to operate the Warrill Valley Water Supply Scheme or tariff group predominantly relate to the operation of assets such as Moogerah Dam (including the catchment and the recreation areas associated with the dam) and the Moogerah Dam (Recreation) WTP.

Seqwater is subject to numerous regulatory obligations, including those arising from relevant legislation and the relevant Resource Operating Plan. For example, Moogerah Dam is a referable dam under the *Water Supply (Safety and Reliability) Act 2008*. The precise regulatory obligations providing a requirement for labour resources vary according to the operational team in question.

Compliance requirements driving expenditure on materials and other for the Warrill Valley Water Supply Scheme include:

- Dam Operations: Market Rules requirements, water ownership and water use legislation, water information reporting requirements, dam safety and reliability legislation
- Catchment Services: environmental protection legislation, recreation responsibilities, catchment management responsibilities, land ownership legislation
- Water Treatment Operations: Market Rules requirements, recreation responsibilities. Materials and Consumables are required to operate Moogerah Dam in the Warrill Valley Water Supply Scheme
- Water Quality – WQ Monitoring Expenses: There is no requirement under the Water Act for Seqwater to provide water of a certain quality to irrigators or monitor the quality of irrigation water. However under the resource operating plans and licences subordinate to the Water Act, Seqwater is required to monitor water quality in storages, releases and recreational areas. At recreation sites Seqwater incurs expenses for fulfilling water quality monitoring requirements. At the Moogerah recreational water treatment plant water quality monitoring requirements are defined in the HACCP Plan for the plant. The HACCP plan is subordinate to the DWQMP which is a requirement under the Water Supply (Safety and Reliability) Act.

SKM understands that Seqwater is not required, under legislation or under the Resource Operating Plan to provide potable water at the recreation facilities, including to camp sites. However SKM understands that following a risk assessment, Seqwater has determined that all water that it provides for human consumption should be to potable water standards. SKM considers that Seqwater's policy in this area is reasonable taking into account the impact on reputation arising from not adopting this policy.

Consequently the operating expenditure item has been assessed as prudent.

6.14.5. Efficiency

For expenditure to be efficient it must represent the least-cost means of providing the requisite level of service within the relevant regulatory framework.

Evaluation of costs

A breakdown in costs was provided in response to SKM's request for further information (RFI023) and is displayed in **Table 187**.

- **Table 187 Materials and other costs breakdown**

Expense	Breakdown	2012-13 budget costs	2013-14 forecast costs
Dam Operations – Materials & Consumables – Moogerah Dam	Nil	$25,000	$26,000
Dam Operations – Plant & Fleet Hire Internal – Moogerah Dam	See Table 188	$83,114	$86,439
Group Support – Plant & Fleet Hire Internal – Moogerah Dam	See Table 189	$84,688	$88,076
Water Quality – WQ Monitoring Expenses	Water samples	$11,120	$11,565
	Routine Testing	$20,800	$21,632

Expense	Breakdown	2012-13 budget costs	2013-14 forecast costs
	Unscheduled Testing	$1,664	$1,731
	Event testing	$4,000	$4,160
Water Quality – WQ Monitoring Expenses – Moogerah Rec WTP	Nil	$41,500	$43,160

The 2013-14 forecast costs have been determined by escalating 2012-13 actual costs by a factor of 4%. The application of a 4% escalation factor to previous budgets is considered appropriate, albeit potentially on the high side, considering the Reserve Bank of Australia's inflation target of 2-3%.

The breakdown of costs provided in response to SKM's request for further information (RFI023) total to $282,761 for 2013-14, which is lower than the $314,000 listed in the Terms of Reference. However, the difference between the two is acknowledged in response to SKM's request for information (RFI023) in which Seqwater states *'In the attached Schedules of Information, note that all cost types have been explained, except where a type of cost (by natural account description) did not exceed $10,000 at any asset location in the relevant WSS'* and further that *'This threshold was applied for the purposes of fast-tracking this RFI response and also for the purposes of materiality, given that these costs are yet to be apportioned between irrigation services and urban water supply purposes'*. This suggests that some minor costs included within the proposed budget for the Warrill Valley Water Supply Scheme may be associated with urban water supply; however SKM has insufficient information to determine the apportionment of that cost. Given that costs in excess of $10,000 and in some cases below $10,000 have been explained, and that the costs detailed account for 90% of the budget for materials and other for Warrill Valley Water Supply Scheme, SKM considers that the costs included in the Terms of Reference are appropriate. A more detailed review of the broken down costs is provided in the sections below.

There is a minor difference between both Dam Operations and Group Support plant and fleet hire costs listed in Seqwater's response to SKM's request for further information (RFI023) and associated attachments. However this difference is in the hundreds of dollars for each and is approximately 0.27% of the fleet cost for both Dam Operations and Group Support plant and fleet hire, and SKM considers that the difference is not significant.

Dam Operations: The breakdown of costs provided by Seqwater identifies costs for Dam Operations including materials and consumables in addition to plant and fleet hire. During interviews Seqwater personnel identified expenses associated with equipment and consumables as including oils, fuels, equipment and cleaning products, which are purchased on an as needed basis. No further breakdown of expenditure on equipment and consumables was provided, however budgets were calculated based on previous expenditure from 2010-11.

Plant and fleet hire internal costs were further broken down as included in **Table 188**. The fleet allocation budget is determined by calculating a representative annual "lease" charge, which is calculated on whole of life costs excluding fuel, oil and tyres, assuming an average vehicle life of 120,000km or five years. The budge for fuel is calculated based on historical expenditure.

- **Table 188 Dam Operations 2012-13 plant and fleet costs**

Fleet / Plant Type	Description	Fleet Allocation Budget	Fuel Allocation Budget
Vehicle	Ford Falcon RTV 4x2 Utility	$7,440	$4,861
Vehicle	Ford Ranger XL 4x4 Utility	$8,400	$3,819
Light mobile plant	Yamaha TW200 trail bike	$2,400	$400
Truck > 4.5t	Izuzu PV2 1400	$13,200	$6,884
Watercraft	4.9m Sea Jay aluminium boat	$4,920	$80
Watercraft	Quintrex Explorer	$2,400	$80
Vehicle	Ford Ranger XL 4x4 Dual Cab	$9,720	$4,843
Vehicle	Ford Ranger Space 4x4	$9,300	$4,338

No information regarding the number of Seqwater personnel employed in the Warrill Valley Water Supply Scheme has been provided; therefore SKM is unable to assess the number of vehicles assigned to Dam Operations. With regards to fuel allocation, utilising a fuel efficiency of 10km/L for all vehicles and fuel cost of 159.996 cents per litre (cpl), the fuel allocation budget provides for between 23,869 km and 30,382 km per annum. During site visits, Seqwater operational personnel confirmed that they drove approximately 30,000 km per year. Considering the large distance between sites in the Warrill Valley Water Supply Scheme and it's remoteness for major regional centres SKM considers the fuel allocation budget for vehicles to be reasonable, particularly if, as may be expected, operators use these vehicles to travel from home to site.

With regards to fleet and plant types and numbers, SKM has insufficient information to enable a complete assessment of the number of vehicles assigned to Dam Operations. However, as discussed above the fuel budget, which is based on historical consumption suggests a high level of utilisation for vehicles in addition to the truck and motorbike. For the watercraft, considering the low fuel budget for each watercraft SKM considers that one boat would be sufficient to conduct operations. SKM has insufficient information to fully assess the fleet allocation budget. Such information required would include number of dam operators to which vehicles are allocated, distances between home and sites and between sites and number of visits per annum (or estimates of vehicle distances travelled in the dam operators carrying out their duties).

Group Support: Costs for Group Support identified in the breakdown of costs are for plant and fleet hire internal as shown in **Table 189**, however the methodology for calculating these costs is not clear in supporting documentation. No further materials and other costs were identified for group support.

- **Table 189 Group Support 2012-13 plant and fleet costs**

Fleet / Plant Type	Description	Fleet Allocation Budget	Fuel Allocation Budget
Vehicle	Nissan Navara St-X 4x4	$9,720	$8,971
Tractor / Mower	Kubota F3680	$7,400	$880
Tractor / Mower	John Deere BL20	$10,200	$2,400
Tractor / Mower	John Deere K Series	$2,400	$800
Tractor / Mower	Kubota 4x4	$2,400	$1,280
Vehicle	Ford Ranger Space Cab 4x4	$9,500	$7,035
Watercraft	Polycraft Ranger Vessel	$1,680	$1,600
Vehicle	Ford Ranger Space Cab 4x4	$9,500	$8,016

As detailed above, insufficient information has been provided to assess the number of vehicles assigned to group support. However, the fuel allocation for vehicles is reasonable and provides for between approximately 44,000 km and 56,000 km per annum for each vehicle. SKM considers vehicle usage to be reasonable, albeit higher than for dam operations personnel. The fuel allocation for the watercraft is considered by SKM to be reasonable.

With regards to fleet and plant types and numbers, SKM assesses the watercraft to be reasonable, particularly considering the utilisation inferred from the fuel allocations. SKM questions the requirement for four tractor / mowers considering that mowing is undertaken by contractors. SKM has insufficient information to enable a complete assessment of the number of vehicles assigned to Group Support. However, the fuel budget which is based on historical expenditure suggests a high utilisation of all vehicles.

As such SKM has insufficient information to fully assess the fleet allocation budget.

Water Quality Monitoring: A breakdown of the water quality monitoring costs for Moogerah Dam is provided in **Table 190**. No breakdown of costs is provided for costs of water quality monitoring for the Moogerah recreational water treatment plant, however supporting documentation demonstrating the base costs and requirements for sampling have been provided. These documents included rates for contractor water sampling and analysis and an example HACCP Plan.

- **Table 190 Moogerah Dam water quality monitoring costs**

Item	2012-13 data	2013-14 (2012-13 escalated)
Water sampling	$11,120	$11,565
Routine testing	$20,800	$21,632
Unscheduled testing	$1,664	$1,731
Event testing	$4,000	$4,160

Delivery of service

Dam Operations: The expenditure for dam operations consists of equipment and consumables utilised in emergency dam safety works and operational repairs, in addition to fleet costs associated with dam operations. During interviews Seqwater personnel identified expenses associated with equipment and consumables as including oils, fuels, equipment and cleaning products, which are purchased on an as needed basis by Seqwater staff with a budget of $26,000 for 2013-14.

Fleet costs are the costs associated with internal hire of eight plant and fleet items from the Seqwater fleet in addition to fuel allocation as listed in **Table 188**. The budget for fleet and fuel allocation is determined by Seqwater's Fleet Manager.

Equipment and consumables are purchased on an as needed basis for operational repairs and emergency works. The budget for equipment and consumables has been calculated by escalating historical expenditure at 4%.

Catchment Services: No costs for catchment services have been listed in the breakdown of costs.

Water Treatment Operations: No costs for water treatment operations have been listed in the breakdown of costs.

Water Quality Monitoring: Water quality monitoring costs for the Warrill Valley Water Supply Scheme are associated with water quality monitoring of Moogerah Dam and catchment in addition to the Moogerah Dam recreational water treatment plant.

While under the Water Act there is no requirement for Seqwater to provide water of a certain quality to irrigation users, under the resource operating plans and licenses subordinate to the Act Seqwater is required to monitor water quality in storages, releases and recreational areas according to the state government procedures.

Monitoring costs associated with Water Treatment Operations are incurred from compliance with the routine verification and monitoring plan. Attachments to Seqwater's response to SKM's request for further information (RFI023) identifies that the verification and monitoring plan outlines the '*monitoring requirements defined in the HACCP Plan for the Moogerah recreational water treatment plant*', which is '*subordinate to the Drinking Water Quality Management Plan required under the Water Supply (Safety and Security) Act*'. Further, with regards for that the budget for monitoring of water at the Moogerah recreational water treatment plant, the RFI attachment states '*the cost is directly derived from the routine verification monitoring plan*'. The RFI attachment identifies that the water quality monitoring budget is derived by a bottom up calculation method, utilising the water quality monitoring requirements defined under the HACCP and set contract prices.

Water quality sampling comprises collection and analysis of water samples. Currently routine sampling and analysis for both the Moogerah Dam and Moogerah recreational water treatment plant is undertaken by an external contractor selected by public tender. The contract is for a five year term beginning in 2011. Seqwater has informed SKM that it is investigating ways of making this service more cost-effective.

SKM assesses the budget for costs associated with materials and other for Warrill Valley Water Supply Scheme to be efficient, with the exception of plant and fleet costs, for which there is insufficient information to enable a complete review.

SKM notes that the results of the business case to return dam and catchment water quality sampling submission may be of interest in future reviews.

Market conditions

The contract for completing water quality sampling and analysis was awarded following a public tender process that was conducted in accordance with the State Procurement Policy. SKM concludes that the rates for water quality sampling and analysis for Warrill Valley Water Supply Scheme is therefore efficient as they represent market rates.

No information has been provided to allow assessment of the equipment and consumables. However, future costs have been calculated by escalating past expenditure. SKM therefore considers them to be efficient.

Efficiencies and economies of scale

No economies of scale have been identified for fleet and plant in addition to materials and consumables. During interviews with Seqwater personnel, it was identified that outsourcing of the water quality sampling was undertaken to gain efficiency. This however has not fully been realised due to the abovementioned performance issues of the contractor. The current investigations into

returning the dam and catchment water quality monitoring aspects of the contract are expected provide cost benefits to Seqwater.

It must be noted however that Seqwater has significantly reduced the budget for non-routine sampling and analysis after identifying that the budget for non-routine sampling and analysis was in excess of actual expenditure.

Benchmarking

Costs for the fleet and plant aspects of materials and other for the Warrill Valley Water Supply Scheme have been calculated by the Seqwater Fleet Manager. In calculating the costs associated with the operation of plant and fleet, Seqwater has applied a cost of 159.996 cpl for fuel. In comparison, the RACQ lists the retail Brisbane unleaded fuel price for April 2012 as 148.8cpl for unleaded and 153.8 cpl for diesel. While the Seqwater unit fuel cost is higher than retail costs for both unleaded and diesel, this is not unreasonable and may potentially be a result of an applied safety factor or inefficiencies of supply of the small volume of fuel required by Seqwater. Insufficient information has been provided to assess the reasonableness of the allocation of plant and fleet to the Warrill Valley Water Supply Scheme.

The contract for water quality sampling was awarded in accordance with the State Procurement Policy by an open tender process. Further, the water sampling program has been developed in accordance with resource operating plans, licenses and for the recreational water treatment plant, in accordance with the plant's HACCP Plan. The costs associated with the water sampling program are therefore considered reasonable.

There is insufficient information supplied to analyse the 2013-14 $26,000 budget for materials and consumables detailed in **Table 187**. However, this budget was calculated by escalating historical expenditure and is therefore considered reasonable.

6.14.6. Policies and procedures

The contractor for water quality sampling and analysis was selected through a public tender process, which was conducted in accordance with the State Procurement Policy. As such SKM considers the procedures applied for water quality sampling to be appropriate.

Plant and fleet is provided internally through Seqwater's Fleet Manager with the budget being based on estimated vehicle costs and fuel requirements. No further documentation has been provided in this area and SKM does not have sufficient information to assess the policies and procedures for budget calculation.

6.14.7. Summary

The operating expenditure item is assessed as prudent as the need for the expenditure has been demonstrated.

The operating expenditure is assessed efficient with the exception of the fleet allocation budget as the scope is appropriate, the operating expenditure in support of regulated service delivery is consistent with industry practice and the costs are consistent with prevailing market conditions.

It is recommended that sufficient additional information is provided by Seqwater to enable a complete assessment. This information should include:

- Number of dam operators to which vehicles are allocated
- Distances travelled by dam operators between home and sites and between sites and number of visits per annum (or estimates of vehicle distances travelled in the dam operators carrying out their duties)

The quality of the information provided on this project is outlined below in **Table 191**.

Table 191 Quality of information provided

Section of OPEX review	Materials and Other, Warrill Valley WSS		
Operating item description			
Provided documentation			
Prudency			
Efficiency			
Evaluation of costs			
Delivery of service			
Market conditions			
Efficiencies and economies of scale			
Benchmarking			
Policy and procedures			
Legend	Sufficient documentation	Minor issues / conflicting documentation	No documentation / major issues with documentation

The value of any expenditure considered to be prudent or efficient is outlined below in **Table 192**. In calculating the proposed budget, SKM has removed the fleet allocation and fuel budgets for the tractors / mowers and one watercraft from Seqwater's revised budget. This is because they are considered unnecessary as mowing is undertaken by contractors and the site has two watercraft, both with low utilisation (as inferred by the low fuel allocations).

Table 192 Materials and Other, Warrill Valley – operating expenditure profile

Project	Costs ($'000) 2012-13	Costs ($'000) 2013-14
Terms of reference	317	314
Final NSP^	264.4	271
SKM's proposed budget 'other'	234.2	239.6
SKM's proposed budget materials and other	271.7	282.6

^ *The NSP value does not include costs of materials, only 'other' whereas the QCA Terms of Reference value includes expenditure on materials as well as 'other'.*

6.14.8. Application to other projects

SKM has been asked to determine whether the results of the materials and other costs reviewed in detail can be applied to costs for other water supply schemes. The major finding from this review has been that there is an over allocation of tractor / mowers in the Warrill Valley Water Supply Scheme considering that mowing is undertaken by contractors. Further, SKM considers that one too many

boats are allocated to the Warrill Valley Water Supply Scheme. SKM does not consider it likely that these findings will be applicable to other water supply schemes.

6.15. Historical projects - Recreation Maintenance, Mary Valley Water Supply Scheme

The Mary Valley Water Supply Scheme services mainly irrigators, the Gympie Regional Council, some industrial customers and the SEQ Water Grid manager. These customers are supplied from a number of assets within this scheme including Borumba Dam (including the catchment and the recreational areas associated with the dam), the Imbil Weir and the Borumba (Recreation) water treatment plant. This review item seeks to assess the prudency and efficiency of the historical expenditure spent at the Borumba Dam Recreation area between 2008-09 and 2010-11.

6.15.1. Proposed operating expenditure

Table 193 shows the cost of the operating expenditure recreation maintenance, Mary Valley from 2008-09 to 2010-11.

- **Table 193 Recreation Maintenance, Mary Valley – Historic operating expenditure profile**

Source	Actual Costs ($) 2008-09	Actual Costs ($) 2010-11	Proposed Costs ($)
Terms of reference as derived from Seqwater's original NSP			230,186
Mary Valley WSS & Cedar Pocket Dam WSS - Murray Dunstan Reply 20120404 amended.xlsx	110,601	123,293	233,894

Seqwater had submitted to the Authority that between 2008-09 and 2010-11, some $230,186 was spent in Mary Valley on recreation maintenance. The cost breakdown provided by Seqwater in response to SKM's request for information (RFI031) totals to $233,894 for the years 2008-09 and 2010-11 which is higher than the costs identified in the terms of reference. According to Seqwater, no costs were incurred in 2009-10.

SKM notes that, whilst this cost item has been classed as renewals expenditure by Seqwater for cost recovery purposes, Seqwater has advised that it is operating expenditure in nature. SKM also notes that Seqwater has, subsequent to SKM's initial review, withdrawn the 2008-09 expenditure from the renewals balance based on the Authority's advice that the costs will be disallowed due to inadequate substantiation. However, the 2010-11 expenditure is to be recovered from the renewals annuity.

6.15.2. Operating item description

The costs incurred for recreation maintenance, Mary Valley relate to the resurfacing and maintenance of the recreation area surrounding Borumba Dam in particular the resurfacing of the car park, boat ramp repair and re-arrangement of the traffic flow in the vicinity of the boat ramp. It also includes some landscape work resulting from the re-arrangement of the traffic flow.

6.15.3. Provided documentation

The following documents were provided by Seqwater and used for this review:

- *Information Request Response, RFI031 & RFI032, Additional Projects, 14/08/2012*

- *Water Supply Infrastructure, Maintenance Services Standing Offer Pane, User Manual, Northern District*

Discussions were also held with Seqwater staff during project interviews and a site visit provided further information.

6.15.4. Prudency

The recreation area located at Borumba Dam was serviced by an access road leading to a car park. At a corner of the car park, at the end of the access road, a boat ramp provided boat access to the water. Prior to the resurfacing work and traffic flow re-design, the road surface was worn and access to both the car park and boat ramp was via a narrow approach. This often created difficulties in accessing the car park when a boat was being launched or recovered. It also constituted a public safety concern to both car and pedestrian traffic in the vicinity of the boat ramp due to the age and condition of the assets.

The resurfacing, enlarging and re-design of the traffic flow rectified the situation and enabled the approach to the car park to avoid the immediate area where boat are launched or recovered.

Seqwater is required to maintain the recreation facilities at its dams. These dams are part of South East Queensland's water supply system and Borumba Dam is a referable dam under the Water Supply (Safety and Reliability) Act 2008.

Consequently the operating expenditure item has been assessed as prudent.

6.15.5. Efficiency

For expenditure to be efficient it must represent the least-cost means of providing the requisite level of service within the relevant regulatory framework. Seqwater provided SKM details of the proposed recreation maintenance cost at Borumba Dam shown in **Table 194**.

- **Table 194 Detailed operating expenditure – Recreation Maintenance, Mary Valley**

Work order	Description	2008-09 ($)	2010-11 ($)
A0007367 - DBR: RM Rec Maint - Borumba Rec Fac Main	Contractor - Civil Maintenance	1,892	2,109
	Contractor - Construction	81,517	90,872
	Contractor - General Mtce	1,530	1,706
	Contractor – Plumbing & Drain	1,309	1,459
	Contractor - Waste Management	1,754	1,955
	Equipment Hire - External	399	444
	PA-Survey Equipment	2,453	2,735
	PA-Other Workshop Equipment	89	99
	Minor Material & Consumables	988	1,101
A0009067 - DBO: (ms) Invest toilet flush system	Contractor – Plumbing & Drain	521	580
A0009584 - DBR: (ms)	Minor Material & Consumables	317	353

Work order	Description	2008-09 ($)	2010-11 ($)
Damage to bins & toilet block			
A0010103 - DBO: (MS) Cistern in gents toilet leak	Contractor – Plumbing & Drain	188	210
A0011505 - DBO: (MS) Survey setout works	Contractor - Civil Maintenance	3,097	3,453
A0011506 - DBO: (MS) REC Reseal road surface	Contractor - Civil Maintenance	4,306	4,800
A0016752 - DBR: (MS) Rectification Works Month WO	Minor Material & Consumables	295	329
A0022032 - DBR: (Ops) ELE Invest power for BBQ's	Minor Material & Consumables	109	121
A0023191 - DBR: (MS) Supply & lay turf	Contractor - General Mtce	1,525	1,700
A0023339 - DBR: (MS) Double gas BBQ	Contractor - General Mtce	2,413	2,690
	Contractor - General Construction	4,854	5,411
A0025789 - DBR: (Ops) ELE Invest news board	MP-Instrument Mtce Svces	722	805
A0026294 - DBO (Ops) ELE Old Toilet Block Decom	MP-Electrical Mtce Svces	324	361
Total cost		**110,602**	**123,293**

Evaluation of costs

Data provided by Seqwater showed that most of the costs incurred in 2010-11 were due to the re-surfacing of the road, car park and repair the boat ramp. This work was carried out by Gympie Council.

Gympie Council was not on Seqwater's panel of contractors. However, Gympie Council was appointed to undertake the car park res-resurfacing work and boat ramp repair after a tender process resulted in prices that were above Seqwater's expectations. Gympie Council was already in the process of re-surfacing the access road[13] to the car park and were then approached by Seqwater to provide a quote to undertake the car park re-surfacing work and repair the boat ramp in addition. Given that Gympie Council was already deployed in the area and has labour and assets in place, they were able to provide a quote that was significantly below that quoted by the other parties. SKM have been granted access to the quotes provided by the all parties and confirm that Gympie Council's quotes amounted to less than 60% of the next lowest value quote due to the fact that much of their fixed and overhead costs had already been accounted for by the initial work to re-surface the access road.

Other works related to the recreation area was performed by panel contractors under the terms of their contracts.

No costs have been identified by Seqwater in 2009-10. Costs for 2008-09 were recorded in Seqwater's previous financial system in one single order. The costs submitted by Seqwater for

[13] The access road is owned by, and the responsibility of, Gympie Council.

recreation maintenance, Mary Valley Water Supply Scheme were based on the assumption that, for the purposes of establishing renewals expenditure, the expenditure might be allocated to work orders based on work carried out in later years (2010-11). The actual breakdown of 2008-09 costs is not available for evaluation and an assessment of efficiency by SKM. This was highlighted in an allocation of over $80,000 for construction work in 2008-09 due to the car park re-surfacing work and boat ramp repair undertaken in 2010-11.

On the basis of insufficient information to evaluate the costs incurred as compared to the scope of work, SKM has determined that this expenditure is not efficient.

Delivery of service

The maintenance is delivered through a panel of providers. Each of Seqwater's operational regions has a panel of four contractors, who have been selected through an expression of interest process for each work classification including electrical, mechanical, instrumentation, control system pipeline and civil. During interviews Seqwater personnel stated that contractors were appointed in accordance with the State Procurement Policy. The works under review was conducted under the panel agreement that ran from 2009 until 2012,

Panel contractors are audited to determine work performance. The audit, performed by Seqwater, details performance in terms of work order completion and supply of documentation, contractor timesheet entry and other categories as appropriate for the job. During interviews Seqwater personnel stated that audits of panel members were completed monthly.

Gympie Council was engaged to undertake the car park res-resurfacing work and boat ramp repair after a tender process resulted in prices that were above Seqwater's expectations. As Gympie Council was already in the process of re-surfacing the access road to the car park and were thus already deployed in the area and had labour and assets in place, they were able to provide deliver the works at a cost that was significantly below that quoted by the other parties.

Market conditions

The number of contractor responses, in addition to the procurement method consistent with the State Procurement Policy has ensured that current market conditions are accurately reflected in contractor rates.

Gympie Council was invited to provide a quote for the car park resurfacing work and boat ramp repair when the initial tender response resulted in an unsatisfactory outcome. Gympie Council was able to leverage off their presence in the area as they were already in the process of re-surfacing the access road and thus were able to provide a quote that was significantly lower than the other quotes from panel contractors.

Efficiencies and economies of scale

The work undertaken by Gympie Council represents a significant efficiency and scale economy. Gympie Council was able to undertaken the work at a significant discount to other contractors due to their existing presence in the area.

Benchmarking

The selection of panel contractors for the 2009 to 2012 period was market tested and the performance of contractors was constantly audited.

The selection of Gympie Council to perform the road, car park resurfacing work and boat ramp repair was done after a public tender process that resulted in costs above that expected by Seqwater. Quotes provided to SKM indicated that normal market rates as submitted by panel contractors would result in higher cost.

6.15.6. Policies and procedures

Panel contractors are engaged via a panel of providers. For individual projects, the engagement of panel members is guided by the Panel User Manual. The Panel User Manuel provides guidelines to Seqwater staff in the engagement and management of maintenance and specialist services provided by the panel.

Gympie Council was engaged after a tender process resulted in costs that were unacceptable. Seqwater's processes allowed Seqwater to go outside its stated panel contractors to engage a service provider that was able to supply the required service at a lower cost.

6.15.7. Summary

The operating expenditure item is assessed as prudent as the need for the expenditure has been demonstrated.

The operating expenditure is assessed not efficient as the details and documents in support of the service delivery are not available for 2008-09.

It is recommended that sufficient additional information be provided by Seqwater to enable a complete assessment. This information should include detailed information identifying the actual expenditure for 2008-09. In the absence of this information, SKM is unable to assess the accuracy and efficiency of the expenditure.

The quality of the information provided on this project is outlined below in **Table 195**.

Table 195 Quality of information provided

Section of OPEX review	Recreation Maintenance, Mary Valley WSS
Operating item description	
Provided documentation	
Prudency	
Efficiency	
Evaluation of costs	
Delivery of service	
Market conditions	
Efficiencies and economies of scale	
Benchmarking	
Policy and procedures	

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

Based on the information provided by Seqwater, SKM is only able to consider the expenditure incurred by 2010-11 as efficient. Information does not exist for SKM to offer a view regarding costs

proposed for 2008-09. SKM's recommended costs for recreation maintenance, Mary Valley is shown in **Table 196**.

- **Table 196 Recreation Maintenance, Mary Valley – Revised operating expenditure (2008-09 to 2010-11)**

Project	Seqwater Proposed Cost ($)	SKM Recommended Costs ($)
Recreation Maintenance, Mary Valley	230,186	123,293

Subsequent to SKM's initial review, Seqwater has acknowledged the detailed information regarding costs incurred in 2008-09 is not available from the legacy accounting system and has now withdrawn the 2008-09 expenditure from consideration.

6.15.8. Application to other projects

Given the unrepresentative nature of the recreation maintenance incurred at Borumba Dam, SKM does not recommend applying the findings of this review to other expenditure items.

6.16. Historical projects - Repairs and Maintenance – Unplanned, Pie Creek

The Pie Creek Distribution System is a tariff group of the Mary Valley Water Supply Scheme. Pie Creek Distribution System constitutes a series of channels and pipes distributing water pumped from the Mary River. Customers are supplied by a number of assets including:

- Calico Creek Channel
- Calico Creek Pipeline
- McIntosh Channel
- McIntosh Creek Pipeline
- Pie Creek Main Channel
- Pie Creek Pipeline
- Pie Creek Pump Station
- Rising main
- Flow meters

6.16.1. Proposed operating expenditure

Table 197 shows the proposed cost of the operating expenditure item repairs and maintenance – unplanned Pie Creek within the 2013-14 budget. Also shown are the actual/estimated operating costs for 2008-09 and 2010-11.

- **Table 197 Repairs and maintenance – Unplanned, Pie Creek – Historic operating expenditure profile**

Source	Actual Costs ($'000) 2008-09	Actual Costs ($'000) 2010-11	Forecast Costs ($'000) 2013-14
Terms of reference as derived from Seqwater's original NSP	-	-	19.9
Response to request for information RFI031	31.0	36.1	-

6.16.2. Operating item description

The costs incurred for unplanned maintenance, Pie Creek relate to breakdowns at the pump station at the Mary River.

6.16.3. Provided documentation

The documents used for this review are:

- *Information Request Response, RFI031 & RFI032,Additional Projects, 14/08/2012*
- *Water Supply Infrastructure, maintenance Services Standing Offer Pane, User Manual, Northern District*

Discussions were also held with Seqwater staff during project interviews and a site visit provided further information.

6.16.4. Prudency

Operating the Pie Creek Distribution System requires Seqwater to properly repair and maintain the assets that it owns and operates and which are used to service irrigation customers. The reactive maintenance costs incurred relate to the Pie Creek Pump Station and associated telemetry. As the pump station is needed to operate the Pie Creek Distribution System, the operating expenditure item has been assessed as prudent.

6.16.5. Efficiency

For expenditure to be efficient it must represent the least-cost means of providing the requisite level of service within the relevant regulatory framework.

Evaluation of costs

Data provided by Seqwater showed that the costs incurred in 2010-11 were incurred in maintaining the Pie Creek Pump Station and associated telemetry. The work was conducted by contractors under the terms of their contracts. A breakdown of costs for 2010-11 was provided in Seqwater's response to SKM's request for information (RFI031) and included:

ME Pie Creek Reactive Maintenance - electrical maintenance services	$4,785
ME Pie Creek Reactive Maintenance - P5455	$1,109
ELE auto dialler fault – contractor electrical maintenance	$553
ELE estop enclosures – contractor electrical maintenance	$2,173
MEC SS skirt fitted to pump – P5457	$92
ELE pump will not start – MP control system maintenance services	$385
MEC Flygt submersible pump – MP mechanical maintenance services	$934
MEC Flygt submersible pump – MP specialist maintenance services:	$15,555
MEC Flygt submersible pump – Equipment hire – external	$2,037
ELE fault pump control – MP – Instrument maintenance service	$8,549

No costs have been identified by Seqwater for 2009-10. All 2008-09 costs were recorded in Seqwater's previous financial system under one single work order number. The 2008-09 allocation of costs submitted by Seqwater for unplanned maintenance, Pie Creek were based on the assumption that, for the purposes of establishing renewals expenditure, the expenditure might be allocated to work orders based on work carried out in later years (2010-11). The actual breakdown of the 2008-09 costs is not available for evaluation and efficiency assessment by SKM. There is an allocation of over $31,015 for 2008-09.

Insufficient information has been provided to assess the efficiency of expenditure of $31,015 in 2008-09 for unscheduled maintenance, as such this expenditure is, by default, considered by SKM to be inefficient. A detailed breakdown of costs has been provided for 2010-11 and on assessment the costs are considered by SKM to be reasonable for the reactive maintenance of the Pie Creek Pump Station. As such, the expenditure of $36,172 is 2010-11 is considered by SKM to be efficient. .

Delivery of service

Unplanned maintenance is delivered through a panel of providers. Each of Seqwater's operational regions has a panel of four contractors, that have been selected through an expression of interest process for each work classification including electrical, mechanical, instrumentation, control system pipeline and civil. During interviews, Seqwater personnel stated that contractors were appointed in accordance with the State Procurement Policy. The works under review were conducted under the panel agreement that ran from 2009 until 2012. The panel member rates for the 2009-12 period are included in **Table 198**; note that contractor names have been removed.

- **Table 198 N2 panel contractor rates 2009-12**

Electrical	Mechanical	Instrumentation	Control Systems	Pipeline	Building and Civil
$70	$65	$85	$120	$75	$55
$65	$73.65	$90	$130		$96.18
$75	$110	$80	$130		$115
$75	$76	$99.90	$130		$120
	$118				

Panel contractors are audited to determine work performance. The audit, performed by Seqwater, details performance in terms of work order completion and supply of documentation, contractor timesheet entry and other categories as appropriate for the job. During interviews Seqwater personnel stated that audits of panel members were completed monthly.

SKM considers that the use of panel contractors to complete maintenance is efficient.

Market conditions

The expression of interest process used by Seqwater in engaging contractors to the panel in addition to the procurement method consistent with the State Procurement Policy has ensured that market conditions were accurately reflected in contractor rates.

Efficiencies and economies of scale

No efficiencies or economies of scale have been identified.

Benchmarking

The selection of panel contractors for the 2009-12 period was market tested and the performance of contactors was constantly audited.

Rawlinsons Australian Construction Handbook 2011 identifies contractor charge out rates for Brisbane including:

- Electrician: $83 - $88
- Mechanical services: $75 - $88
- Instrumentation: $83 - $88
- Plumber: $77 - $82

While the contractor charge out rates identified in Rawlinsons are not available for all Seqwater categories of contractor included in **Table 198**, enough information is available to provide a comparison. Seqwater panel contractor rates are generally within the rates listed in Rawlinsons, although some panel rates are higher which is not unreasonable given that Rawlinsons' rates are based on a 38 hour working week, and assumes the rate '*assumes a negotiated rate*' which '*should not be confused with the usually much higher rate charged for non-contract works*'. SKM therefore considers Seqwater's maintenance panel contractor rates efficient.

SKM has not been provided with information on the times taken by contractors for individual activities or projects, and therefore is not able to comment on a sample basis of the appropriateness of time taken to complete work. However, SKM has reviewed the processes undertake by Seqwater in engaging and reviewing the activities of contractors.

SKM's estimators consider the panel rates appropriate when contrasted to SKM's database for such costs to be reasonable. In their assessment, SKM's estimators considered the geographical location of the assets being maintained, the method of procurement, and terms and conditions of the rates, including removal of allowance for contractors to charge travel time. SKM's estimators additionally considered the utilisation of Brisbane contractor rates as a benchmark for rates of contractors in Pie Creek. It was found that although a minor premium may be expected due to the distance from Brisbane, Pie Creek rates should be comparable to Brisbane's due to the proximity of the major regional centre of Gympie.

The unit rates applied to contractors who perform unplanned maintenance are considered to be efficient, as contractors have been selected through a competitive tender process.

6.16.6. Policies and procedures

Panel contractors are engaged via a panel of providers. For individual projects, the engagement of panel members is guided by the Panel User Manual. The Panel User Manuel provides guidelines to Seqwater staff in the engagement and management of maintenance and specialist services provided by the Panel.

In the previous contractor panel, projects under $50,000 required one written quote from a Panel member, projects from $50,000 to $250,000 required a minimum of three Panel member quotes and projects $250,000 required an invitation to tender process to be completed. In Pie Creek no reactive maintenance project exceeded $50,000.

6.16.7. Summary

The operating expenditure item is assessed as prudent as the need for the expenditure has been demonstrated.

The operating expenditure has been assessed as being efficient for 2010-11. No documentation supporting the 2008-09 expenditure is available for review; therefore SKM has insufficient information to assess its efficiency and hence, by default, has determined it to be inefficient.

The quality of the information provided on this project is outlined below in **Table 199**.

- **Table 199 Quality of information provided**

Section of OPEX review	Pie Creek WSS Unplanned Maintenance
Operating item description	
Provided documentation	
Prudency	
Efficiency	
Evaluation of costs	
Delivery of service	
Market conditions	
Efficiencies and economies of scale	
Benchmarking	
Policy and procedures	

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

The value of any expenditure considered to be prudent or efficient is outlined below in **Table 200**. Subsequent to SKM's initial review, Seqwater has acknowledged the detailed information regarding costs incurred in 2008-09 is not available from the legacy accounting system and has now withdrawn the 2008-09 expenditure from consideration.

- **Table 200 Repairs and Maintenance – Unplanned, Pie Creek – Revised operating expenditure profile**

Project	Seqwater Proposed Cost ($)	SKM Recommended Costs ($)
Unplanned Maintenance, Pie Creek	67,187	36,172

6.16.8. Application to other projects

SKM has been asked to determine whether the results of the repairs and maintenance – unplanned reviewed in detail can be applied to repairs and maintenance – unplanned costs for other water supply schemes. Given the unique nature of this review of historical costs rather than forecast costs SKM does not recommend applying the findings of this review to any other expenditure item.

6.17. Overall Summary

A sample of 12 projects were identified and assessed as a representative sample of the operating expenditure program for 2013-14 for Seqwater. These projects were assessed for prudency and efficiency and the operational expenditure of all 12 operational expenditure projects were assessed as prudent. However, no items have been assessed as efficient against Seqwater's proposed costs as presented in its original submission to the Authority[14].

Table 201 presents a summary of the assessment of prudency and efficiency for the sample of operating costs.

- **Table 201 Summary of prudency and efficiency of operating costs ($'000)**

	Operating Expenditure item	Terms of Reference Value $'000 (2013-14)	NSP Value $'000 (2013-14)	Prudent	Efficient	SKM Recommended Value $'000 (2013-14)
1	Cedar Pocket Dam WSS Operations - Direct Labour and Contractors	49.0	51.4	Prudent	Not efficient	39.2
2	Central Brisbane River WSS Operations - Materials and Other	1,528.7	1,132.4^	Prudent	Efficient	1,528.7
3	Central Brisbane River WSS Operations - Direct Labour and Contractors	3,143.1	3,212.7	Prudent	Not efficient	3,085.7
4	Central Lockyer Valley WSS Repairs and Maintenance - Planned	320.9	313.5	Prudent	Efficient*	125.0
5	Central Lockyer Valley WSS Repairs and Maintenance - Unplanned	131.1	128.1	Prudent	Efficient*	51.0
6	Logan River WSS Operations - Direct Labour	408.8	418.4	Prudent	Not efficient	253.4
7	Lower Lockyer Valley WSS Operations - Direct Labour	225.5	265.8	Prudent	Not efficient	168.8
8	Lower Lockyer Valley WSS Operations - Materials and Other	236.4	199.5^	Prudent	Efficient	236.4
9	Mary Valley WSS Operations - Direct Labour	420.6	429.1	Prudent	Not efficient	350.4
10	Morton Vale Pipeline Operations - Direct Labour	25.0	25.0	Prudent	Not efficient	7.0
11	Pie Creek Repairs and Maintenance - Planned	48.8	52.5	Prudent	Not efficient	36.2
12	Warrill Valley WSS Operations - Materials and Other	314.0	271.0^	Prudent	Not efficient	282.6

[14] Seqwater identified error in the original submission in which costs associated with Mount Crosby were included in the Central Lockyer budget. Following the removal of the Mount Crosby costs, the operational expenditure for both planned and unplanned repairs and maintenance for Central Lockyer was found to be efficient.

* Seqwater identified an error in its original submission in which costs associated with Mount Crosby were included in the Central Lockyer budget. Following the removal of the Mount Crosby costs, the operational expenditure for both planned and unplanned repairs and maintenance for Central Lockyer was found to be efficient.

^ *The NSP value does not include costs of materials, only 'other' whereas the QCA Terms of Reference value includes expenditure on materials as well as 'other'.*

In addition to the forecast operating costs, SKM was also requested to review historical costs for:

- Recreation Maintenance – $230,186 in the Mary Valley in 2008-09 and 2010-11
- Repair & Maintenance – Unplanned of $67,187 in Pie Creek in 2008-09 and 2010-11

SKM found that recreation maintenance in the Mary Valley was prudent but the efficiency of costs incurred in 2008-09 could not be assessed as no detailed cost breakdown was available. SKM found that the cost incurred in 2010-11 ($123,293) was efficient. Similarly, the expenditure at Pie Creek was also found to be inefficient due to a lack of information regarding costs incurred in 2008-09. Only costs incurred in 2010-11 ($36,172) is seen as efficient.

For a number of operating expenditure items, SKM has recommended the Authority adopts a revised forecast operating expenditure for 2012-13 significantly below that budgeted by Seqwater. The reasons for SKM's recommendation are largely founded on the historic expenditure data provided by Seqwater to SKM which show an expenditure level significantly below that forecast for future years by Seqwater. During the time of development of this report, Seqwater has not provided to SKM sufficient information to justify the projected step change in expenditure, nor has Seqwater provided sufficient information to underpin the number of full time equivalents and other budget costs making up the forecast expenditure. However SKM wishes to advise that, just prior to delivery of this final report, Seqwater provided further information that it considers underpins its budget forecasts. Unfortunately, this information was not provided in sufficient time for SKM to review in order to incorporate this additional information into its findings. As such, SKM recommends that the Authority gives consideration to this additional information from Seqwater during the consultation phase between its draft and final reports.

6.18. Application to other projects

In addition to the expenditure items selected for detailed analysis, SKM was asked to consider the application of findings of the operational expenditure review to other operational expenditure items.

The following table identifies where SKM believes the findings of prudency and efficiency can be generalised across a particular asset class to determine the likely prudency and efficiency of total expenditure in that class.

Table 202 Summary of possible application of findings

Project	Application possible?	Prudent	Efficient	Cost ($'000)
Direct Labour and Contractors				
Cedar Pocket Dam WSS	Yes	Yes	No	39.2
Central Brisbane River WSS	No	Yes	No	3,085.7
Direct Labour				
Logan River WSS	Yes	Yes	No	253.4
Lower Lockyer Valley WSS	Yes	Yes	No	168.8

Project	Application possible?	Prudent	Efficient	Cost ($'000)
Mary Valley WSS	Yes	Yes	No	337.2
Morton Vale Distribution System	No	Yes	No	7
Materials and Other				
Central Brisbane River WSS	Yes	Yes	No	657.8
Lower Lockyer Valley WSS	Yes	Yes	No	144.9
Warrill Valley WSS	Yes	Yes	No	156
Repairs and Maintenance				
Central Lockyer Valley WSS – Planned	Yes	Yes	Yes	125
Central Lockyer Valley WSS – Unplanned	Yes	Yes	Yes	51
Pie Creek Distribution System – Planned	Yes	Yes	No	21.5

Further analysis

As a result of the further information identified by Seqwater after SKM had completed the assessment of the efficiency of the operating expenditure, the Authority commissioned SKM to undertake further analysis of six operating expenditure items to include the information that Seqwater was able to supply. These items include:

- Cedar Pocket Labour
- Logan Labour
- Lower Lockyer Labour
- Mary Valley Labour
- Morton Vale Labour
- Pie Creek Maintenance

Further discussions were held with Seqwater to review this additional information. SKM found that had the information been made available earlier, the recommendations would have been different. SKM notes that the additional information provided by Seqwater has also indicated that the initial proposal for the Mary Valley WSS labour costs was over estimated. In this further review, SKM found that the reduced value for the Mary Valley WSS is efficient and recommends it acceptance. SKM also found that the new information for plan maintenance at Pie Creek provided sufficient justification for the proposed expenditure and thus we find that the proposed costs of planned maintenance at Pie Creek efficient. SKM's view of the efficiency of the six proposed costs items are shown in **Table 203**.

- **Table 203 Revised efficiency recommendations**

Project	Proposed Costs ($000) 2013-14	Efficient
Cedar Pocket Dam Water Supply Scheme Labour cost	51.4	No
Logan River Water Supply Scheme Labour cost	321.5	No
Lower Lockyer Valley Water Supply Scheme Labour cost	265.8	No
Mary River Water Supply Scheme Labour cost	233.5	Yes
Morton Vale Distribution System Labour cost	43.3	No
Repairs and maintenance – Planned, Pie Creek	52.5	Yes

Further Seqwater has also reduced the proposed labour cost for the Logan River WSS. On the other hand, a higher labour cost proposal was provided for the Morton Vale Distribution System. While SKM found that the proposed direct labour costs for the Morton Vale Distribution System, Cedar Pocket, Logan and Lower Lockyer WSS not efficient, the difference between the Seqwater forecast and SKM's recommendation has narrowed significantly.

The revised recommendations for these six operating expenditure items are shown in **Table 204**.

Table 204 Revised operating expenditure recommendations

Project	Costs ($) 2012-13	Costs ($) 2013-14
Cedar Pocket Dam Water Supply Scheme Labour cost	44,178	45,945
Logan River Water Supply Scheme Labour cost	306,130	318,375
Lower Lockyer Valley Water Supply Scheme Labour cost	248,097	258,021
Mary River Water Supply Scheme Labour cost	224,495	233,475
Morton Vale Distribution System Labour cost	36,019	37,460
Repairs and maintenance – Planned, Pie Creek	50,500	52,500

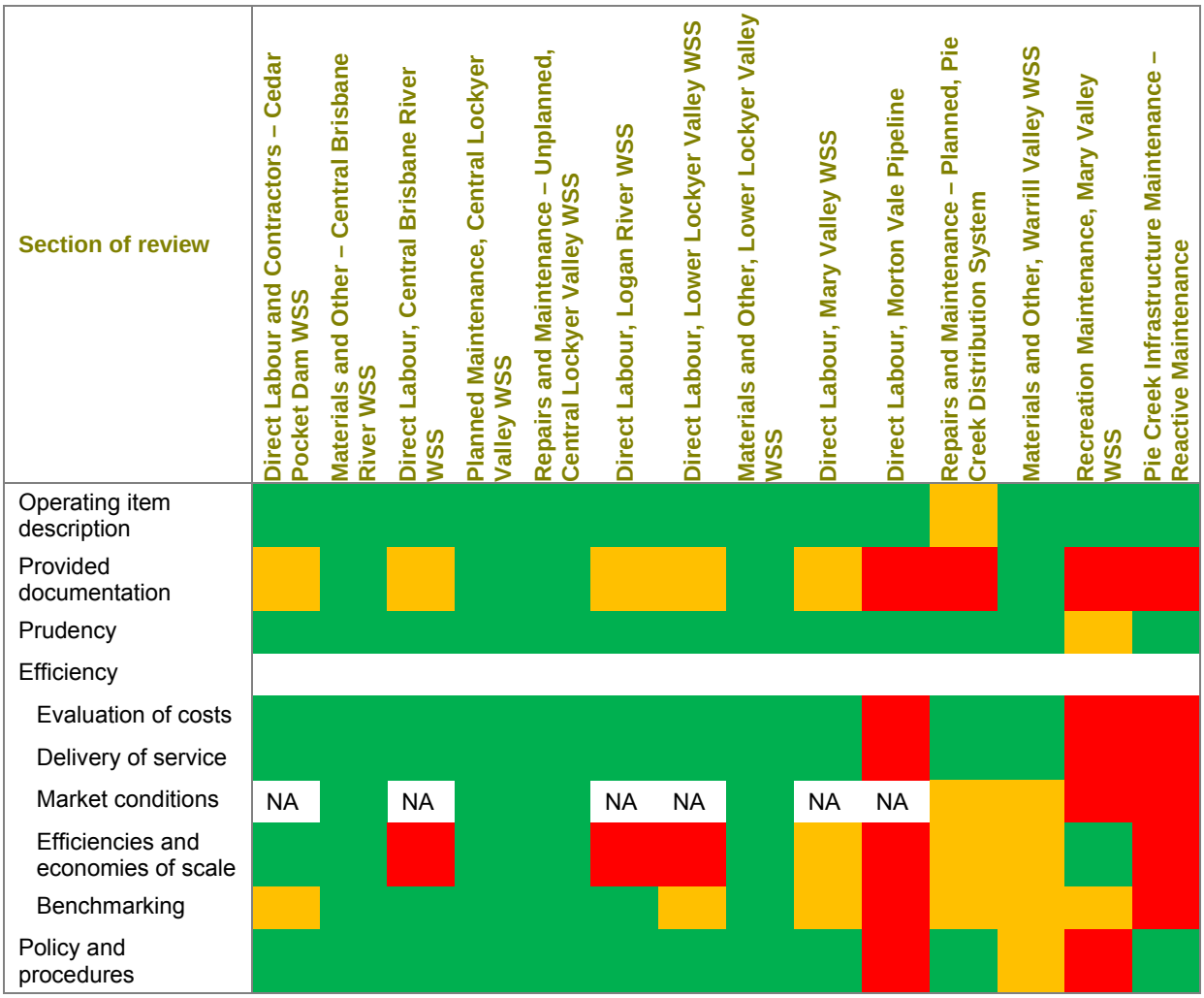
6.19. Summary of information provision

With the exception of one scheme (the Morton Vale Pipeline System), Seqwater had generally provided sufficient information to make an assessment of prudency and efficiency. For material and other costs all water supply scheme reviewed had costs that were found to be partially inefficient because of a lack of information to review the plant and fleet costs. The major outstand items of information required are:

- Reasons for the high rate of overtime in a number of schemes
- Information regarding any efficiency targets set for productivity improvements
- Methodology of assigning plant and fleet costs to individual Water Supply Schemes

The adequacy of the information provided is illustrated in **Table 205**.

- **Table 205 Seqwater operational expenditure information adequacy**



While the documentation provided for the Morton Vale system was inadequate this was due to issues with record keeping and cost allocation in the past. Seqwater has informed SKM that a new series of work orders has been or is in the process of being set up that will separately identify work conduction in relation to the Morton Vale Distribution system. Our assessment of the Morton Vale, direct Labour Costs was made on the basis of discussions with Seqwater staff rather than on documented costs.

7. Conclusions and overall recommendations

7.1. Conclusion

SKM has reviewed the prudency and efficiency of a sample of Seqwater'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 Seqwater. In addition SKM has reviewed the policies and procedures adopted by Seqwater for operating and capital expenditure budget planning.

7.2. Overall recommendations – policies and procedures

A summary of SKM's findings from its review of Seqwater's policies and procedures is presented below:

Budgetary process

The intent of Seqwater's budgetary process is to be in line with good industry practice, which SKM considers that Seqwater largely achieves. However, there are opportunities for improvement. These include the development of a robust integrated asset management approach, which incorporates risk and condition assessment on an on-going basis, not just when planning and prioritising asset renewals projects.

Risk and asset management planning

Seqwater has made progress in developing robust asset management processes and procedures for comprehensive asset information. While Seqwater may not currently have good asset condition information due to its recent formation and the lack of condition information transferred from previous owners/operators, we consider that the plans and processes it has adopted to assess the condition of its assets will rectify this situation if carried through.

Installed capital asset cost escalation rate determination

SKM considers that the composite indexation series developed by Cardno not to be appropriate for rebasing the replacement value of the assets making up the renewal/refurbishment annuity value submitted to the Authority. This is partly because of the restrictions of the brief requiring the development of one indexation series only and partly because of the approach adopted by Cardno in developing a composite index based on dams and weirs based on applying a higher weighting on composite indices such as CPI, building price index, rather than on the indices of the primary constituent components.

SKM also considers that, if renewal values are to be developed by escalation of installed costs on a like for like replacement basis, it would be more appropriate for a number of escalation indices to be developed for related groups of asset classes rather than a single composite index to cover all asset types. Further these indices should be derived predominantly from movement in prices of constituent components rather than from composite indices such as CPI. However, to take account of changes in technology, SKM considers that there would be merit in Seqwater considering revaluing the assets on a modern equivalent replacement asset basis, using asset class modern equivalent building blocks rather than assuming like for like replacements.

Corporate directives

SKM is satisfied that the service standards applied by Seqwater in providing irrigation services is in line with and meets its obligations under and standards established by the *Water Act 2000.*

Procurement

While Seqwater's procurement policies and procedures do not provide for sustainable purchasing per se, its requirement to adhere to State Procurement Policy does require it to integrate sustainability into the procurement of goods, services and construction.

A further concern that we have is the arrangement for sole sourcing from tender panels. The relatively high limit of up to $100,000 of such single source purchases with limited required review from supervisory managers could allow misuse. It may be prudent for further limits to be placed on such an arrangement.

7.3. Adequacy of information

Given that the majority of the capital projects are at feasibility or early planning stages, the level of supporting documentation was minimal, but in keeping with the status of the projects. However, for future regulatory reviews, SKM recommends that Seqwater develops a standard project description template that describes, as a minimum:

- The need for the capital expenditure and the regulatory driver(s) supported by the expenditure
- Detailed options study, including analysis of the 'do nothing' option
- Technical description of the preferred option with sufficient detail to enable a regulator's consultant to develop benchmark costs
- A breakdown of the costs of the project together with a description of the basis of the costs together with supporting supplier quotations where available
- The timing for the project and justification of that timing, including supporting documentation on condition and consequence of risk of failure for that asset

For many of the capital projects reviewed, Seqwater indicated that prior to implementation a condition assessment and options analysis would be undertaken. SKM recommends that this approach is followed and suitably documented prior to the implementation of the project as proposed.

SKM understands that Seqwater is aiming to achieve a more proactive approach to maintenance in future. This will require Seqwater to gather detailed information on condition and failure data on similar assets. SKM recommends that Seqwater continues to develop its asset management systems, incorporating considerations of asset condition and both health and safety and business risks.

For operating expenditure items, with the exception of one scheme (the Morton Vale Pipeline System), Seqwater had generally provided sufficient information to make an assessment of prudency and efficiency. For material and other costs all water supply scheme reviewed had costs that were found to be partially inefficient because of a lack of information to review the plant and fleet costs. The major outstand items of information required are:

- Reasons for the high rate of overtime in a number of schemes[15]
- Information regarding any efficiency targets set for productivity improvements
- Methodology of assigning plant and fleet costs to individual Water Supply Schemes

7.4. Capital expenditure

A sample of 12 capital expenditure items planned to be undertaken during the 20 year capital asset renewal annuity period were selected by the Authority as a representative sample of the capital expenditure program for Seqwater. SKM has assessed these projects against the Authority's definitions of prudency, in particular the relevant driver and the decision making process, and efficiency, including the identified need for the project, proposed timing of implementation, scope of work, standards of service and the project costs.

Table 206 provides an overview of the final assessment made for each project of the project sample chosen for assessment of prudency and efficiency.

- **Table 206 2012-13 sample project summary - revised capital expenditure profile ($'000)**

	Expenditure Item	Item Cost ($'000)	Prudent	Efficient	Revised Cost ($'000)
1	Cedar Pocket Dam - Telemetry	68	Prudent	Efficient	68
2	Bromelton Weir - Telemetry	105	Prudent	Revised cost efficient	70
3	Clarendon Dam - Embankment (Main Dam)	312	Prudent	Efficient	312
4	L1 Distribution - Observation Bores	344	Not prudent	Efficient	0
5	Clarendon Diversion - Control Equipment	174			
6	Central Lockyer - Gauging Stations	120	Prudent	Revised cost efficient	143.4
7	Clarendon Diversion - Access Road	122	Prudent	Efficient	122
8	Warrill Creek Diversion Weir - Access Road & Hard Standing	194	Prudent	Revised cost efficient	69.3
9	Calico Creek Channel/Pie Ck Main Channel – Various Air Valves	269	Prudent	Efficient	269
10	Somerset Dam - Inlet Screens & Trash Racks - Structural Walls, Columns & Beams	3,251	Prudent	Efficient	3,251
11	Clarendon Diversion - Trash Screens	50	Prudent	Efficient	50
12	Central Lockyer and Mary Valley Metering	1,670	Prudent	Revised cost efficient	2,484

Application to other projects

In addition to the expenditure items selected for detailed analysis, a number of other expenditure items were identified from the ten asset classes.

The following table identifies where SKM believes the findings of prudency and efficiency can be generalised across a particular asset class to determine the likely prudency and efficiency of total expenditure in that class.

[15] This requirement has been subsequently satisfied with further information submitted by Seqwater and the discussions subsequently held between Seqwater and SKM.

Table 207 Summary of possible application of findings

Project	Application possible?	Prudent	Efficient	Cost ($'000)
Telemetry				
Wivenhoe Dam - Telemetry	No	N/A	N/A	N/A
Maroon Dam – Telemetry	No	N/A	N/A	N/A
Clarendon Dam – Telemetry	Yes	Yes	Yes	70
Atkinson Dam - Telemetry	Yes	Yes	Yes	70
Embankment				
Clarendon Dam - Earthworks/Formation	No	N/A	N/A	N/A
Cedar Pocket Dam – Embankment	No	N/A	N/A	N/A
Borumba Dam - Embankment	No	N/A	N/A	N/A
Observation Bores				
Central Lockyer – Observation Boreholes	Yes	Yes	Yes	200
Atkinson Dam – Observation Bores (15)	Yes	Yes	Yes	75
Control Equipment				
Clarendon Diversion - Control Equipment	Yes	Yes	Yes	137
Pie Creek Pump Station - Control Equipment	Yes	Yes	Yes	123
Clarendon Diversion - Control Equipment	Yes	Yes	Yes	26
Atkinson Dam - Spillway Control Structure	Yes	Yes	Yes	20
Atkinson Dam - Spillway Control Structure	Yes	Yes	Yes	15
Atkinson Dam - Spillway Control Structure	Yes	Yes	Yes	15
Warrill Creek Diversion Weir - Control Equipment	Yes	Yes	Yes	98
L1 Distribution - Buaraba Ck Diversion Channel Gate Control Equipment	Yes	Yes	Yes	12
Borumba Dam - Control Equipment	Yes	Yes	Yes	14
Moogerah Dam - Control Equipment	Yes	Yes	Yes	21
Gauging Stations				
L1 Distribution - Gauging Stations - Lower Lockyer	Yes	Yes	N/A	N/A
Mary River - Gauging Stations	Yes	Yes	N/A	N/A
Warrill Ck - Gauging Station	Yes	Yes	N/A	N/A
Logan River - Gauging Stations	Yes	Yes	N/A	N/A
Roads				
Clarendon Diversion - Access Road	Yes	Yes	Yes	50
Clarendon Diversion - Access Road to Weir R/Bk	Yes	Yes	Yes	24
Atkinson Dam - Main Wall Embankment	Yes	Yes	Yes	42
Clarendon Dam - Access Roads	Yes	Yes	Yes	20
Clarendon Diversion - Turn Outs	Yes	Yes	Yes	15
Clarendon Diversion - Access Road to Weir R/Bk	Yes	Yes	Yes	10
Atkinson Dam - Access Road & Car park	Yes	Yes	Yes	10
Bromelton Weir – Road Amtd 113.2km	Yes	Yes	Yes	60
Pie Creek Pump Station - Access Road	Yes	Yes	Yes	81
L1 Distribution - O'Reilly Weir R/Bank Access Road	Yes	Yes	Yes	30
Air Valves				
Lake Dyer Diversion - Air Valve	No	N/A	N/A	N/A
L1 Distribution - Buaraba Creek Supply Pipeline Air Valve 1 at 24.40m	Yes	Yes	Yes	6

Project	Application possible?	Prudent	Efficient	Cost ($'000)
L1 Distribution - Buaraba Creek Supply Pipeline Air Valve 2 at 1770.30m	Yes	Yes	Yes	6
Upper Warrill Diversion - Double Air Valves-2829m, 3342m	Yes	Yes	Yes	21
Upper Warrill Diversion - Double Air Valves at 10911.60m	Yes	Yes	Yes	11
Upper Warrill Diversion - Double Air Valves at 273m	Yes	Yes	Yes	11
L1 Distribution - Buaraba Creek Supply Pipeline Double Air Valve 1 at 1551.40m	Yes	Yes	Yes	1
Trash Screens				
Atkinson Dam - Inlet Screens & Trash Racks - Trash Screens	No	N/A	N/A	N/A
Somerset Dam - Trashracks	No	N/A	N/A	N/A
Borumba Dam - Trash Screens	No	N/A	N/A	N/A
Morton Vale Reticulation - Trash Screen	Yes	Yes	Yes	18
Maroon Dam - Intake Trash Screens	Yes	Yes	Yes	36
Somerset Dam - Inlet Screens & Trash Racks - Spares in Sand Blasting Shed for Refurbishment	No	N/A	N/A	N/A
Wivenhoe Dam - Inlet Screens & Trash Rack - Trash Rack	Yes	Yes	Yes	80
Kent's Lagoon Diversion Weir - Trash Screen	No	N/A	N/A	N/A
Upper Warrill Diversion - Trash Screen at inlet	No	N/A	N/A	N/A

Table 207 indicates that for the majority of the project the findings from the detailed investigation can be applied to projects within the same assets class.

The general reasons for not being able to apply the findings from the detailed project reviews are as follows:

- The scope of works was significantly different to the project reviewed
- The scope of works was undefined and the cost profile indicated that the works were significantly different to the project reviewed (eg large one off project compared to a minor reoccurring spend)

7.5. Operational Expenditure

From the review undertaken by SKM, 12 operating expenditure projects reviewed were determined to be prudent. All proposed costs have been assessed as not efficient, except for four operating expenditure items. **Table 208** below presents SKM's recommended 2013-14 operating expenditure.

- **Table 208 Summary of revised operating costs ($'000)**

	Operating Expenditure item	Terms of Reference Value $'000 (2013-14)	NSP Value $'000 (2013-14)	Prudent	Efficient	SKM Recommended Value $'000 (2013-14)
1	Cedar Pocket Dam WSS Operations - Direct Labour and Contractors	49.0	51.4	Prudent	Not efficient	39.2
2	Central Brisbane River WSS Operations - Materials and Other	1,528.7	1,132.4^	Prudent	Efficient	1,528.7
3	Central Brisbane River WSS Operations - Direct Labour and Contractors	3,143.1	3,212.7	Prudent	Not efficient	3,085.7
4	Central Lockyer Valley WSS Repairs and Maintenance - Planned	320.9	313.5	Prudent	Efficient*	125.0
5	Central Lockyer Valley WSS Repairs and Maintenance - Unplanned	131.1	128.1	Prudent	Efficient*	51.0
6	Logan River WSS Operations - Direct Labour	408.8	418.4	Prudent	Not efficient	253.4
7	Lower Lockyer Valley WSS Operations - Direct Labour	225.5	265.8	Prudent	Not efficient	168.8
8	Lower Lockyer Valley WSS Operations - Materials and Other	236.4	199.5^	Prudent	Efficient	236.4
9	Mary Valley WSS Operations - Direct Labour	420.6	429.1	Prudent	Not efficient	350.4
10	Morton Vale Pipeline Operations - Direct Labour	25.0	25.0	Prudent	Not efficient	7.0
11	Pie Creek Repairs and Maintenance - Planned	48.8	52.5	Prudent	Not efficient	36.2
12	Warrill Valley WSS Operations - Materials and Other	314.0	271.0^	Prudent	Not efficient	282.6

*Seqwater identified an error in its original submission in which costs associated with Mount Crosby were included in the Central Lockyer budget. Following the removal of the Mount Crosby costs, the operational expenditure for both planned and unplanned repairs and maintenance for Central Lockyer was found to be efficient.

^ *The NSP value does not include costs of materials, only 'other' whereas the QCA Terms of Reference value includes expenditure on materials as well as 'other'.*

In addition to the forecast operating costs, SKM found that recreation maintenance in the Mary Valley was prudent but the efficiency of costs incurred in 2008-09 could not be assessed as no detailed cost breakdown was available. SKM found that the cost incurred in 2010-11 ($123,293) was efficient. Similarly, the expenditure at Pie Creek was also found to be inefficient due to a lack of information regarding costs incurred in 2008-09. Only costs incurred in 2010-11 ($36,172) is seen as efficient.

In its draft report, SKM recommended that the Authority adopts a revised forecast operating expenditure for 2012-13 significantly below that budgeted by Seqwater for a number of operating expenditure items. The reasons for SKM's recommendations at the time of the draft report were

founded on the historic expenditure data provided by Seqwater to SKM which showed an expenditure level significantly below that forecast for future years by Seqwater. In addition, during the development of the draft report and up until just prior to issuing a final report Seqwater had not provided SKM with sufficient information to justify the projected step change in expenditure, nor had Seqwater provided sufficient information to underpin the number of full time equivalents and other budget costs making up the forecast expenditure. However, just prior to SKM's issue of a final report, Seqwater advised that it was able to provide further information that it considered underpinned its budget forecast. Seqwater also advised that the reasons this information wasn't initially provided were primarily that a number of cost items had been incorrectly allocated in its accounting systems and, in terms of full time equivalent requirements, Seqwater had not previously advised of changes in duties for dam operators relating to increased time involved with data entry and training programmes. Following receipt of this additional information, the Authority commissioned SKM to undertake additional analysis for a number of operating expenditure items. The results of this additional analysis have been presented in this final report under sections entitled "Further Analysis" for each of the operating expenditure items affected.

Application to other projects

In addition to the expenditure items selected for detailed analysis, SKM was asked to consider the application of findings of the operational expenditure review to other operational expenditure items.

The following table identifies where SKM believes the findings of prudency and efficiency can be generalised across a particular asset class to determine the likely prudency and efficiency of total expenditure in that class.

- **Table 209 Summary of possible application of findings**

Project	Application possible?	Prudent	Efficient	SKM Recommended Values $'000 (2013-14)
Direct Labour and Contractors				
Cedar Pocket Dam WSS	Yes	Yes	No	39.2
Central Brisbane River WSS	No	Yes	No	3,085.7
Direct Labour				
Logan River WSS	Yes	Yes	No	253.4
Lower Lockyer Valley WSS	Yes	Yes	No	168.8
Mary Valley WSS	Yes	Yes	No	350.4
Morton Vale Distribution System	No	Yes	No	7
Materials and Other				
Central Brisbane River WSS	Yes	Yes	No	1,132.4
Lower Lockyer Valley WSS	Yes	Yes	Yes	199.5
Warrill Valley WSS	Yes	Yes	No	239.6
Repairs and Maintenance				
Central Lockyer Valley WSS – Planned	Yes	Yes	Yes	125
Central Lockyer Valley WSS – Unplanned	Yes	Yes	Yes	51
Pie Creek Distribution System – Planned	Yes	Yes	No	36.2

Further analysis

As a result of the further information identified by Seqwater after SKM had completed the assessment of the efficiency of the operating expenditure, the Authority commissioned SKM to undertake further analysis of six operating expenditure items to include the information that Seqwater was able to supply. These items include:

- Cedar Pocket Labour
- Logan Labour
- Lower Lockyer Labour
- Mary Valley Labour
- Morton Vale Labour
- Pie Creek Maintenance

Further discussions were held with Seqwater to review this additional information. SKM found that had the information been made available earlier, the recommendations would have been different. SKM notes that the additional information provided by Seqwater has also indicated that the initial proposal for the Mary Valley WSS labour costs was over estimated. In this further review, SKM found that the reduced value for the Mary Valley WSS is efficient and recommends it acceptance. SKM also found that the new information for planned maintenance at Pie Creek provided sufficient justification for the proposed expenditure and thus we find that the proposed costs of planned maintenance at Pie Creek efficient. SKM's view of the efficiency of the six proposed costs items are shown in **Table 210**.

- **Table 210 Revised efficiency recommendations**

Project	Proposed Costs ($000) 2013-14	Efficient
Cedar Pocket Dam Water Supply Scheme Labour cost	51.4	No
Logan River Water Supply Scheme Labour cost	321.5	No
Lower Lockyer Valley Water Supply Scheme Labour cost	265.8	No
Mary River Water Supply Scheme Labour cost	233.5	Yes
Morton Vale Distribution System Labour cost	43.3	No
Repairs and maintenance – Planned, Pie Creek	52.5	Yes

Further Seqwater has also reduced the proposed labour cost for the Logan River WSS. On the other hand, a higher labour cost proposal was provided for the Morton Vale Distribution System. While SKM found that the proposed direct labour costs for the Morton Vale Distribution System, Cedar Pocket, Logan and Lower Lockyer WSS not efficient, the difference between the Seqwater forecast and SKM's recommendation has narrowed significantly. The revised recommendations for these six operating expenditure items are shown in **Table 211**.

- **Table 211 Revised operating expenditure recommendations**

Project	Costs ($) 2012-13	Costs ($) 2013-14
Cedar Pocket Dam Water Supply Scheme Labour cost	44,178	45,945
Logan River Water Supply Scheme Labour cost	306,130	318,375
Lower Lockyer Valley Water Supply Scheme Labour cost	248,097	258,021
Mary River Water Supply Scheme Labour cost	224,495	233,475
Morton Vale Distribution System Labour cost	36,019	37,460
Repairs and maintenance – Planned, Pie Creek	50,500	52,500

Appendix A Terms of Reference

Terms of Reference

Seqwater Irrigation Price Review 2013-17

Assessment of Capital and Operating Expenditure

18 July 2012

1. Project Background

Queensland Competition Authority

The Queensland Competition Authority (the Authority) is an independent statutory body responsible for assisting with the implementation of competition policy for government owned business entities in Queensland.

Seqwater

As a Queensland Government Statutory Authority, Seqwater stores and treats water from dams, weirs, bores and other water storages, and also supplies desalinated water from the Gold Coast Desalination Plant and purified water from the Western Corridor Recycled Water Scheme. Seqwater supplies raw water to some 1,455 irrigation customers, as well as industrial users and local governments.

Seqwater's irrigation customers hold water access entitlements (WAE) in seven water supply schemes (WSS):

a) Cedar Pocket WSS;
b) Central Brisbane River WSS;
c) Central Lockyer (including Morton Vale Pipeline) WSS;
d) Logan River WSS;
e) Lower Lockyer WSS;
f) Mary Valley (including Pie Creek) WSS; and
g) Warrill Valley WSS.

Of the seven WSSs subject to this review Central Lockyer, Lower Lockyer and Cedar Pocket WSS only supply water to irrigators. The other four WSS also provide water for urban, industrial and irrigation use.

Additionally, Seqwater operates the Pie Creek Distribution System and the Morton Vale Pipeline Distribution System.

Ministerial Direction

The Authority has been directed to develop irrigation prices to apply to seven Seqwater WSSs from 1 July 2013 to 30 June 2017 (four years). A copy of the Minsters' Direction Notice (the Notice) is available at http://www.qca.org.au/files/W-SeqWaterIrr-QLDTreas-WaterGazette-0112.pdf

The Ministers' Notice requires, among other things, that bulk water supply and channel prices and tariff structures are set so as to provide a revenue stream that allows Seqwater to recover the efficient costs associated with:

a) operational, maintenance and administrative activities (including recreation and compliance costs); and
b) renewing and rehabilitating existing assets using a renewals annuity methodology.

2. Purpose of Consultancy

As part of the price review process, Seqwater has submitted its Network Service Plans (NSPs) to the Authority, and associated documents, for each of the seven WSSs covered by the Ministerial Direction. Consultant submissions should be based on the information in these NSPs, noting that the successful consultant will have access to updated NSPs from 24 July 2012. Seqwater will work with the consultant to enable the commencement of the review, and will make the necessary data available.

Accordingly, the purpose of the consultancy is to provide the Authority with independent, expert advice regarding the prudency and efficiency of Seqwater's capital (renewal) and operating costs to form the basis of costs eligible for recovery through cost-reflective irrigation prices during 2013-17 regulatory period.

It is anticipated the consultant will work in conjunction with appropriate Seqwater and Authority staff. The Authority will monitor progress to ensure that the review is providing meaningful results and may cease the consultancy if satisfactory results are not being achieved.

The consultant is to advise the Authority at the beginning of the review if Seqwater has provided insufficient data or documentation to progress. The consultant is required to advise the Authority on the data required to complete the review, including where a more detailed breakdown of expenditure is needed. In doing so, the consultant is to identify the required documents that it expects would typically contain this data, such as business cases, bills of materials, options analyses, tenders, asset condition assessments and invoices.

In this consultancy it is intended that the consultant undertake site visits and therefore site assessments of assets nominated for review by the Authority.

The items to be reviewed are included in Attachments 1 (Renewal/capital expenditure) and Attachment 2 (Operating expenditure).

Definition of Prudency

For expenditure to be prudent, there must be an identified need. Expenditure is prudent if the item for review:

a) is necessary to operate to WSS or tariff group;
b) results from a legal or compliance obligation; or
c) is required to fulfil regulatory obligation such as those specified in a Resource Operation Plan or Interim Resource Operations Licence.

Further, the consultant is to consider whether the proposed timing of the expenditure is appropriate (i.e. based on lowest whole-of-life costs) or whether the expenditure could be delayed, or needs to be drought forward. Consultants are to explicitly consider whether any recommended changes to timing reflect this least cost (whole-of-life) approach.

Definition of Efficiency

For expenditure to be efficient it must represent the least-cost means of providing the requisite level of service within the relevant regulatory framework.

Expenditure is efficient if:

a) the scope of the works (which reflects the general characteristics of the expenditure) is the best means of achieving the desired outcomes after having regard to the options available, including substitution possibilities between capital and operating expenditure;
b) the standard of 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 its views with reference to relevant interstate or international benchmarks and information sources. For example, the source of comparable unit costs and indexes must be given and the efficiency of costs justified. The consultant should identify the reasons for any costs higher than normal efficient commercial levels.

Capital/Renewals Costs

In accordance with the Ministerial Direction, the Authority is to recommend prices that allow recovery of renewing and rehabilitating existing assets costs through a renewals annuity methodology.

Seqwater's NSPs and associated submissions outline the proposed renewal/capital expenditure. The consultant is to review a sample of this expenditure (as per Attachment 1) and conclude for each item whether this expenditure is prudent and efficient. In addition, consideration is to be given to whether the findings can be generalised across a particular asset class (that is, of similar renewal items) to determine the likely prudency and efficiency of total expenditure (or forecast expenditure) by Seqwater in that class.

Moreover, the consultant is to recommend whether the sample findings and assets class findings (referred to above, if any) can be generalised to other asset classes to determine the general prudency and efficiency of total (including unsampled) renewals expenditure.

Process

The consultant is to review Seqwater's policies and procedures relevant to irrigation renewals expenditure, and comment particularly on whether they represent good industry practice, integrate risk and asset management planning, corporate directives, appropriate drivers and robust procurement practices likely to deliver least cost delivery.

The consultant is then to review in detail the specific assets (as per Attachment 1). For each of the identified asset types, a large item/s is identified the must be reviewed in detail. For each of these detailed reviews the consultant is required to:

a) provide a brief description of the nature, location and function of the proposed renewal expenditure;
b) outline information the Seqwater have made available to establish prudency and efficiency. Any information that was not available, and the efforts made to obtain it, should be noted;
c) conclude whether the proposed expenditure is prudent, according to the above definition. Additionally, the consultant should:
    i. review whether the proposed renewals/capital expenditure is consistent with Seqwater's policies and procedures relating to renewals/capital expenditure;
    ii. assess the timing of asset replacement or refurbishment. For each asset, the consultant is required to comment on the standard run-to-failure asset life, and risk adjusted asset life determined or proposed by Seqwater. Any material variations in expected asset lives should be explained where possible;
    iii. conduct a condition assessment – including frequency of assessment and results of most recent assessments. Where possible, the consultant should comment on any reasons for revised condition assessments. Reference can be made to photographic evidence where available; and
    iv. determine if the scope of works represents the best means of achieving the desired outcomes;
d) assess the efficiency of Seqwater's proposed capital expenditure. The consultant should use a first principles approach to establish an estimate of efficient costs. This analysis should include a review of:
    i. Seqwater's Bill of Materials (BOM), and specifically details of item specifications (scope and scale), volumes/quantities of key inputs (material etc), unit rates for inputs, and identify the level of indirect cost allowances. This should take into account technological change and process redundancy as well as costs associated with improving general business performance;
    ii. cost escalation methods and factors used by Seqwater to project capital expenditure into the future are appropriate and consistent with market benchmarks; and
    e) options analysis (where undertaken). The consultant should review the options proposed and procedures used be Seqwater for determining the least cost or

preferred options. The consultant is required to advise whether Seqwater's approach is appropriate and delivers efficient and least cost outcomes.

All of the consultant's findings, reasoning, justification and conclusions are to be provided in written form.

The consultant must clearly identify the nature and value of any proposed expenditure considered not prudent or efficient. Where the consultant considers that the projected timing and/or cost of a review item is not efficient, the consultant is required to recommend an alternative timing and/or an alternative prudent and efficient cost estimate.

Attachment 1 specifies the 12 items that require a 'detailed review' according to the above process. Other similar items are also identified in Attachment 1 and the consultant is to then consider whether the findings for the reviewed item/s, could reasonably be applied to the other similar renewal items identified by the Authority.

For each item the consultant should determine (write) whether the cost (or portions of the cost) of the relevant item or class of items arose from flood damage incurred during the 2010 and 2011 floods.

Operating Costs

In accordance with the Ministerial Direction, the Authority is to recommend prices that allow recovery of Seqwater's prudent and efficient operating costs of relevance to irrigation.

Seqwater's projected costs for operational, repairs and maintenance, and administration activities (so-called operating costs) for the five-year period commencing 1 July 2013 and the basis for their projections have been provided as part of Seqwater's submission to the Authority.

The consultant is to review a sample of this expenditure (specified in Attachment 2) and conclude whether this expenditure is prudent and efficient. In addition, consideration is to be given to whether the findings can be generalised across a particular spending category (that is, the same category in other WSSs) to determine the likely prudency and efficiency of total expenditure (or forecast expenditure) by Seqwater in the reviewed categories.

Process

The consultant is to review Seqwater's policies and procedures for operating expenditure, particularly whether they represent good industry practice, integrate risk and asset management planning, corporate directive, appropriate cost drivers and robust procurement practices.

Seqwater's direct operating cost data has been provided in three categories: direct operations, repairs and maintenance, and non-direct costs. Non-direct costs) excluding insurance) have been considered elsewhere, and their evaluation is not part of this consultancy.

Direct operations costs consist of labour, contractors and materials, and other costs. Other direct costs include rates and dam safety.

Repairs and maintenance costs include planned and unplanned maintenance.

The consultant is to review Seqwater's applied methodology for forecasting 2012-13 operating costs and consider whether this method is likely to produce a prudent and efficient result. Where the applied methodology differs to Seqwater's documented processes, the consultant will consider and comment upon both, including the variations.

The consultant is to review in detail specific cost types and/or their interactions. The consultant must review in detail the operational activities in Attachment 2. For each WSS, the cost category is identified that must be reviewed in detail. The consultant must clearly identify the nature and value of any proposed operating expenditure considered not prudent or efficient.

For each of these detailed reviews the consultant is required to:

a) assess whether Seqwater's operating expenditure is prudent and efficient, according to the definitions above;
b) provide a brief description of the nature, location and function of the proposed operating expenditure;
c) outline information that Seqwater have made available to establish prudency and efficiency. Any information that was not available, and the efforts made to obtain it, should be noted;
d) assess the extent to which Seqwater's operating cost projections used to calculate Seqwater's 'base' year (2012-13) are based on appropriate forecasting methodology;
e) assess the extent to which Seqwater's operating cost projections are based on appropriate cost drivers, including water use;
f) assess the standards of service adopted by Seqwater and whether these standards have been approved or are required by external (government) agencies; and
g) determine whether management procedures incorporate appropriate approval processes and allow for sufficient monitoring and reporting against budget/implementation plans.

As for renewals, all of the consultant's findings, reasoning, justification and conclusions are to be provided in written form.

Attachment 2 specifies the costs that require a 'detailed review'. Consideration should be given by the consultant to the ability to draw prudency and efficiency conclusions to non-sampled items and, in doing, the consultant should document their view on the overall prudency and efficiency of Seqwater's irrigation related operating costs of relevance to the 2013-17.

The consultant is not required to consider cost escalation rates; rather focus is to be on the prudency and efficiency of the proposed operating costs for 2012-13 (base year).

3. Resources/Data Provided

The consultant will be required to source information form Seqwater and other stakeholders as appropriate.

Additional information relevant to this consultancy may be found in the Authority's publications, available from the Authority or for downloading from its website at www.qca.org.au:

(a) Seqwater's submission to the Authority and attachments (including NSPs for the seven WSSs listed above) http://www.qca.org.au/water/SEQIrrigPrices/;

(b) Seqwater's cost spreadsheet;

(c) SunWater, 2006, Irrigation Price Paths 2006/07-2010/11 Final Report http://www.sunwater.com.au/irrigationpricing/SunWater_Irrigation_Price_Paths_Final_Report.pdf

(d) Queensland Competition Authority (QCA), 2000, Statement of Regulatory Pricing Principles for the Water Sector, December 2000. http://www.qca.org.au/files/PricingPrinciples.pdf

(e) QCA, July 2010, Final Report – SEQ Interim Price Monitoring Information Requirements for 2010/11. http://www.qca.org.au/files/W-2010SEQretail-price-SEQIntReq-0710.pdf;

(f) QCA, April 2010, Final Report – SEQ Interim Price Monitoring Framework http://www.qca.org.au/files/W-SEQinterim-price-QCA-FinalReport-PriceFramWork-0410.pdf

Additional information relevant to this consultancy may also be found in the Authority's publications, available from the Authority or for downloading from its website at www.qca.org.au

4. Project Time Frame

The consultancy will commence on 6 August, with a completion date of 21 September. A draft report will be required on 7 September. The draft report should be submitted in progress report-style sections (prior to 7 September), as each is completed.

5. Specifications and Fees

The proposal should:

- include the name, address and legal status of the tenderer;
- provide the proposed methods and approach to be applied;
- provide a fixed price quote for the provision of the services herein; and
- nominate the key personnel who will be engaged on the assignment together with the following information:
  - name;
  - professional qualification;
  - general experience and experience which is directly relevant to this assignment;
  - expected time each consultant will work on the project; and
  - standard fee rates for any contract variations.

The fee quoted is to be inclusive of all expenses and disbursements. A full breakdown of consultancy costs is required with staff costs reconciled to the consultancy work plan.

Total payment will be made within 28 days of receiving an invoice at the conclusion of the consultancy.

6. Contractual Arrangements

This consultancy will **only** be offered in accordance with the Authority's standard contractual agreement.

This agreement can be viewed at http://www.qca.org.au/about/consultancyagreement.php

7. Reporting

The consultant will be required to provide the Authority reports on each item or activity as they are completed. If necessary, the consultant should advise at earliest opportunity any critical issues that may impede progress of the consultancy.

The consultancy will also provide detailed data for each project, including subcategories under the headings of direct and indirect/overhead costs. An excel spreadsheet is required, documenting the costs of each item. All entries must be referenced to the primary source material.

An electronic version of the final report is also required, saved in Microsoft© Word with any numeric data in Microsoft© Excel.

At the conclusion of the consultancy, the consultant will be required to provide the Authority with a personal presentation on the findings of the analysis in addition to presenting three (3) copies of a written report.

8. Confidentiality

Under no circumstance is the selected consultant to divulge any information obtained from Seqwater or the Authority for the purposes of this consultancy to any party other than with the express permission of Seqwater and the Authority.

9. Conflicts of Interest

For the purpose of this consultancy, the consultant is required to affirm that there is no, and will not be any, conflict of interest as a result of this consultancy.

10. Authority Assessment of Proposal

The proposal will be assessed against the following criteria:

a) understanding of the project;
b) skills and experience of the firm and team;
c) the proposed methods and approach;
d) capacity to fulfil the project's timing requirements; and
e) value for money.

In making its assessment against criteria, the Authority will place most weight on relevant experience of the team members involved and the proposed method for the completion of task.

11. Insurance

The consultant must hold all necessary work cover and professional indemnity insurance.

12. Quality Assurance

The consultant is required to include details of quality assurance procedures to be applied to all information and outputs provided to the Authority.

13. Grievances

If during the course of your engagement you wish to raise any grievances or make a complaint, please contact Mrs Robyn Farley-Sutton, Director Corporate Services, on (07) 3222 0505 or robyn.farley-sutton@qca.org.au

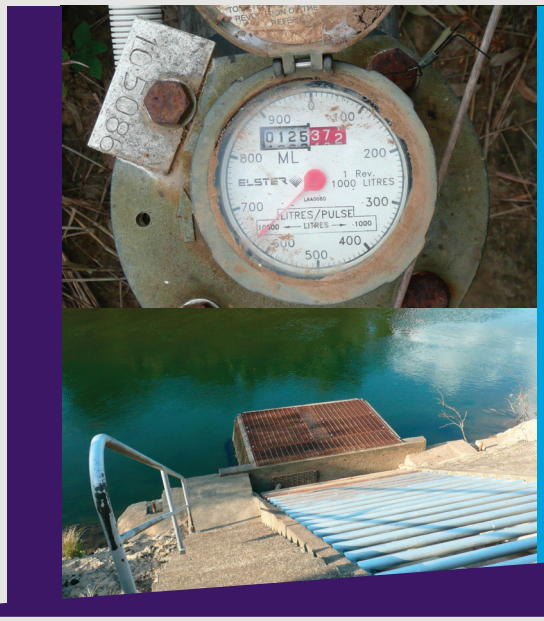
Appendix B Central Lockyer and Mary Valley Metering Full Cost Breakdown

		Costs per year ($'000)																						
Source	WSS	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	2034-35	2035-36	Total
Seqwater original costs	Central Lockyer	132	132	168	168	168	168	168	168	168	35	35	35	35	35	35	35	35	35	35	35	35	35	35	1,930
	Mary Valley	99	99	56	56	56	56	56	56	56	18	18	18	18	18	18	18	18	18	18	18	18	18	18	842
	Pie Creek	20	20	11	11	11	11	11	11	11	3	3	3	3	3	3	3	3	3	3	3	3	3	3	159
	Logan	66	66	34	34	34	34	34	34	34	11	11	11	11	11	11	11	11	11	11	11	11	11	11	524
	Lower Lockyer	158	158	22	22	22	22	22	22	22	16	16	16	16	16	16	16	16	16	16	16	16	16	16	694
	Morton Vale	0	0	17	17	17	17	17	17	17	3	3	3	3	3	3	3	3	3	3	3	3	3	3	161
	Cedar Pocket	7	7	6	6	6	6	6	6	6	2	2	2	2	2	2	2	2	2	2	2	2	2	2	84
	Warrill Valley	145	145	78	78	78	78	78	78	78	24	24	24	24	24	24	24	24	24	24	24	24	24	24	1,172
	Total																								**5,566**

		Costs per year ($'000)																						
Source	WSS	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	2034-35	2035-36	Total
SKM revised costs	Central Lockyer	132	132	168	168	168	168	168	157	0	0	0	0	0	0	35	35	35	35	35	35	35	35	35	1,578
	Mary Valley	99	99	56	56	56	56	56	50	0	0	0	0	0	0	18	18	18	18	18	18	18	18	18	687
	Pie Creek	20	20	11	11	11	11	11	11	0	0	0	0	0	0	3	3	3	3	3	3	3	3	3	136
	Logan	66	66	34	34	34	34	34	28	0	0	0	0	0	0	11	11	11	11	11	11	11	11	11	429
	Lower Lockyer	158	158	22	22	22	22	22	22	0	0	0	0	0	0	16	16	16	16	16	16	16	16	16	595
	Morton Vale	0	0	17	17	17	17	17	17	0	0	0	0	0	0	3	3	3	3	3	3	3	3	3	130
	Cedar Pocket	7	7	6	6	6	6	6	6	0	0	0	0	0	0	2	2	2	2	2	2	2	2	2	61
	Warrill Valley	145	145	78	78	78	78	78	73	0	0	0	0	0	0	24	24	24	24	24	24	24	24	24	971
	Total																								**4,586**

SINCLAIR KNIGHT MERZ

SKM



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