

2012 Review of Water Prices

Assessment of expenditure forecasts
for Lower Murray Water

3603-64.005

Prepared for
Essential Services Commission

February 2013



Document Information

Prepared for	Essential Services Commission
Project Name	Assessment of expenditure forecasts for Lower Murray Water
File Reference	ESC - Assessment of expenditure forecasts for LMW v3.docx
Job Reference	3603-64.005
Date	February 2013

Contact Information

Cardno (QLD) Pty Ltd
ABN 57 051 074 992

Level 11, North Tower Green Square
515 St Paul's Terrace
Locked Bag 4006
Fortitude Valley Qld 4006
Level 11, North Tower Green Square
515 St Paul's Terrace
Locked Bag 4006
Fortitude Valley Qld 4006

Telephone: 07 3369 9822
Facsimile: 07 3369 9722
International: +61 7 3369 9822

www.cardno.com.au

Document Control

Version	Date	Author	Author Initials	Reviewer	Reviewer Initials
Preliminary draft	13 December 2012	Geoff Hales	GH	Aneurin Hughes	AH
Draft	20 December 2012	Geoff Hales	GH	Aneurin Hughes	AH
Final	25 February 2013	Geoff Hales	GH	Stephen Walker	SW

© Cardno 2013. Copyright in the whole and every part of this document belongs to Cardno and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or in or on any media to any person other than by agreement with Cardno.

This document is produced by Cardno solely for the benefit and use by the client in accordance with the terms of the engagement. Cardno does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.

Glossary

Term	Definition
Capex	Capital Expenditure
CCTV	Closed Circuit Television
CPI	Consumer Price Index
CRC	Current Replacement Cost
DHS	Department of Human Services
EP	Equivalent Person
EPA	Environmental Protection Authority
ESC	Essential Services Commission
FTE	Full Time Employee
FY	Financial Year
GIS	Geographical Information System
GL/yr	Gigalitres per year
G-MW	Goulburn-Murray Water
IT	Information Technology
KPI	Key Performance Indicator
LOS	Level of Service
LMW	Lower Murray Water
MCA	Multi-Criteria Analysis
MDBA	Murray-Darling Basin Authority
ML/d	Megalitres per Day
NPR	National Performance Report
NPV	Net Present Value
O&M	Operations & Maintenance
OM&A	Operation, Maintenance and Administration
Opex	Operating Expenditure
RCProfile	Replacement Cost Profile
SCADA	System Control and Data Acquisition
SCI	Statement of Corporate Intent
TBL	Triple bottom line reporting (social, economic, environmental)
WDV	Written Down Value
WIRO	Water Industry Regulatory Order, 2003
WP	Water Plan
WSAA	Water Services Association of Australia
WWTP	Wastewater Treatment Plant
WTP	Water Treatment Plant

Executive Summary

Cardno has been engaged by the Essential Services Commission (ESC) to undertake an independent review of the expenditure forecasts provided by Lower Murray Water (LMW) as part of its Water Plan submission for the period 2013/14 to 2017/18.

Sunraysia Modernisation Project

In late November 2012, the Commonwealth Government announced that it would provide \$103M in funding to support modernisation of irrigation infrastructure owned by LMW. LMW expects that this investment and the works that it will fund will substantially alter its operating environment. However, LMW notes that the funding is contingent on approval of a final business case which will take around a year to occur. In preparing its Water Plan submission, LMW has sought to delay projects that may be impacted by the modernisation project. It has also undertaken risk assessment so that only the highest priority renewals projects are completed in WP3. We believe that LMW's WP3 submission represents a considered approach to asset renewal and maintenance in light of the likely approval of the Sunraysia Modernisation Project. However, we recommend that the ESC review the impact of the project on LMW's business as a whole if and when the project is fully approved.

Operating expenditure forecast - escalators

CPI

LMW has assumed the factors as listed in ES Table 1 for general inflation. These assumptions are consistent with the CPI factors recommended by the ESC.

ES Table 1 Assumed CPI

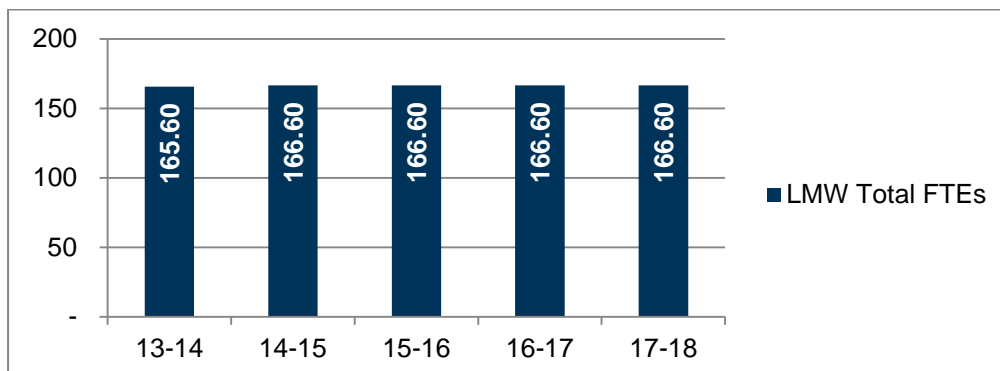
	13/14	14/15	15/16	16/17	17/18
CPI (per annum)	2.75%	2.75%	2.75%	2.75%	2.75%

Labour

Between 2011 and 2012, LMW's staff numbers were reduced significantly. This reduction in staff resulted in a transitory increase in labour costs measured per FTE of approximately 21.3% due to the impact of the employment termination payments that had to be made. Labour costs per FTE have reduced by approximately 23.8% for 2012/13, returning costs per FTE to a similar level as to that before the reductions made to staff numbers.

Some efficiency improvements have been able to partly mitigate the impact of such a reduction. However, there has been some reduction in services, increased workload pressure on some staff, and the need to increase the use of external services.

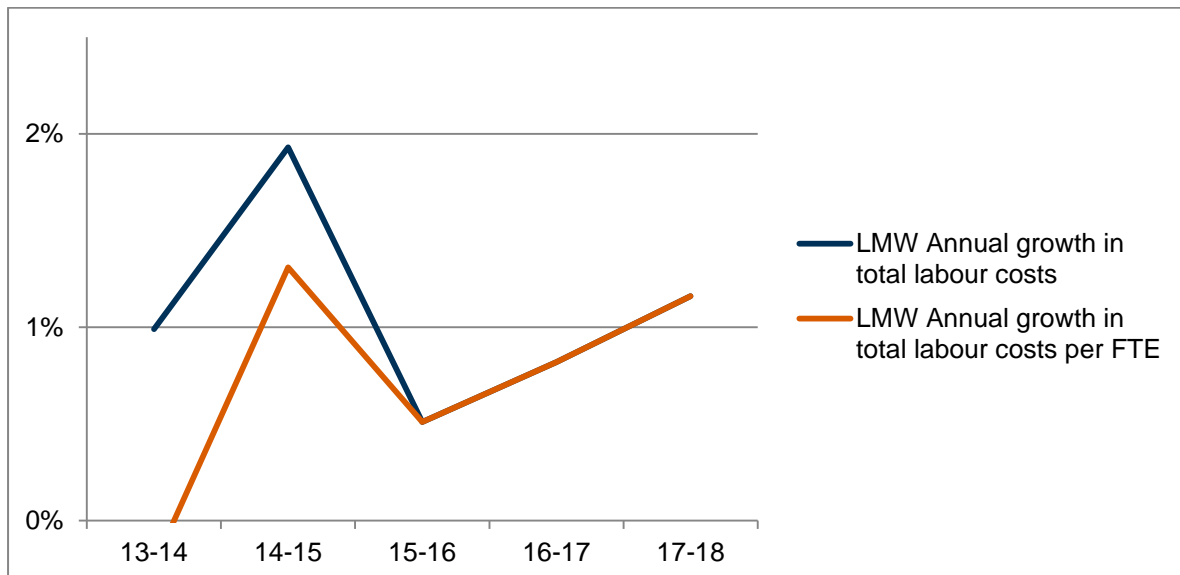
LMW currently has 160.8 FTE staff, and plans to create and fill three new positions within the next six months and a further three new positions in the first two years as indicated in ES Figure 1.



ES Figure 1 LMW's forecast FTE's fro WP3

Three of the six new positions are planned to be in the area of engineering and information technology, for which LMW largely utilises external services. It is expected that having such additional in-house resources will result in a comparable reduction in the use of external resources. Therefore, the savings from these positions would likely cover the costs of these additional staff. The other three new positions are in the area of finance, revenue and risk management. LMW has identified that it currently has inadequate in-house capacity in these areas and that these functions cannot be suitably resourced externally.

LMW is currently establishing a new three year Enterprise Bargaining Agreement (EBA) for its non-contract staff. This Agreement will comprise of a base wage increase of 2.5% pa, plus an additional 1.5% pa wage increase tied to efficiency gains. This is consistent with the State Government’s recent policy on wage increases in State Government agencies. Although the EBA is close to being signed and executed, the operating expenditure estimates (as indicated in ES Figure 2 and ES Table 2) only incorporate the wage increases for the corporate staff. We considered adjusting the opex estimates to take into account wage increase for the other staff. On discussion with LMW, it seemed reasonable to assume that additional potential productivity improvements not already taken into account would cover such wage increase. As a result of these discussions we have not proposed to make an adjustment.



ES Figure 2 Percentage annual growth in total labour costs and labour cost per FTE

ES Table 2 LMW’s labour growth assumptions

	13/14	14/15	15/16	16/17	17/18
Actual and forecast labour costs for FTEs (\$M)	14.9	15.3	15.4	15.6	15.7
Cost per FTE (\$000)	92.8	95.2	96.1	96.9	98.0
Annual growth in labour costs for FTEs	1.43%	2.59%	0.94%	0.82%	1.16%

Electricity

LMW purchases, via Purchasing Australia, its electricity from AGL Energy. By utilising the large purchasing power of Purchasing Australia, it obtains competitive prices. The current supply agreement concludes on 30 June 2013. Tenders for a new supply agreement are currently being sought. Powercor is the electricity distributor that services LMW.

LMW has noted significant increases in its electricity charges in the current price period, being up to 16% annual changes at some sites in 2012/13. The reasons provided for suppliers included passed on costs for carbon pricing and renewals schemes. For the upcoming regulatory period, LMW has proposed any increase in its total electricity costs as detailed in ES Table 3. This is consistent with the advice provided to us by the Essential Services Commission based on information from Purchasing Australia regarding the terms of electricity supply contracts currently being agreed.

ES Table 3 LMW's applied electricity increases

	13/14	14/15	15/16	16/17	17/18
Total LMW-Urban energy costs (\$M)	1.78	1.78	1.78	1.78	1.78
% Increase per annum	4.16%	0.00%	0.00%	0.00%	0.00%
Total LMW-Rural energy costs (\$M)	2.81	2.81	2.81	2.81	2.81
% Increase per annum	1.75%	0.00%	0.00%	0.00%	0.00%
LMW total energy costs (\$M)	4.60	4.60	4.60	4.60	4.60
% Increase per annum	2.58%	0.00%	0.00%	0.00%	0.00%

Chemicals

Due to the nature of LMW's business, chemical costs are not significant in determining its future operating expenditure requirements.

Operation expenditure forecast – WP3 submission

Our findings indicate that the changes in operating expenditure forecast by LMW for WP3 are consistent with the timing of major capital projects and for fulfilling its obligations and customer service expectations as cost efficiently as possible. Any divergences from historical trends in operating expenditure have been explained by management and are detailed in Section 4 of this report.

Our recommendations for LMW's operating expenditure for the third regulatory period are outlined in ES Table 4.

ES Table 4 Recommendations for LMW's operating expenditure forecast (\$M)

	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18
Urban water	9.62	9.68	10.97	11.53	10.74	9.82	10.04	10.61	10.18	10.1
Urban sewerage	5.73	6.05	6.76	6.88	6.9	7.06	6.96	6.82	6.85	7.07
Total business as usual - urban	15.34	15.73	17.73	18.41	17.63	16.88	17.00	17.43	17.03	17.18
Irrigation	12.62	12.76	11.25	10.95	9.18	9.59	9.75	9.81	9.98	10.05
Drainage	3.06	2.81	3.03	2.84	2.19	1.94	1.99	2.08	2.04	2.02
Domestic and stock	0.47	0.42	0.45	0.46	0.39	0.44	0.44	0.45	0.45	0.44
Surface water diversions	1.23	1.14	1.09	1.18	0.87	0.87	0.88	0.88	0.91	0.9
Total business as usual - rural	17.39	17.13	15.82	15.43	12.63	12.83	13.06	13.21	13.37	13.4
Total business as usual - LMW	32.73	32.86	33.55	33.84	30.27	29.72	30.06	30.65	30.41	30.58
External bulk water charges (excl. temporary purchases)	0.66	0.57	0.58	0.67	0.69	0.67	0.67	0.67	0.67	0.67
External temporary water purchases	0.03	0.24	2.89	-	-	-	-	-	-	-
Licence fees	0.16	0.16	0.16	0.09	0.05	0.10	0.10	0.10	0.10	0.10
Environment contribution	0.95	0.95	0.95	0.99	1.27	1.24	1.2	1.17	1.14	1.11
New initiatives and obligations - urban	1.79	1.91	4.57	1.76	2.01	2.00	1.97	1.94	1.91	1.88
External bulk water charges (excl. temporary purchases)	3.46	3.57	4.33	6.98	7.09	7.08	7.08	7.07	7.07	7.06
Licence fees	0.04	0.03	0.02	0.03	0.03	0.02	0.02	0.02	0.02	0.02
Environment contribution	0.43	0.42	0.41	0.4	0.4	0.36	0.35	0.34	0.33	0.32
New initiatives and obligations - rural	3.93	4.02	4.75	7.41	7.52	7.46	7.45	7.43	7.42	7.41
Total prescribed opex - urban	17.14	17.65	22.30	20.17	19.64	18.88	18.98	19.37	18.94	19.06
Total prescribed opex - rural	21.32	21.15	20.58	22.84	20.15	20.3	20.51	20.65	20.79	20.81
Total prescribed opex - LMW	38.45	38.79	42.88	43.01	39.8	39.2	39.48	40.03	39.74	39.87
Fully Government funded programs/projects	-	-	-	-	-	-	-	-	-	-
Fully customer funded programs/projects	0.01	-	-	-	-	-	-	-	-	-
Net prescribed opex - LMW	38.44	38.79	42.88	43.01	39.8	39.2	39.48	40.03	39.74	39.87
Cardno recommended – urban						18.8	18.98	19.37	18.94	19.06
Cardno recommended - rural						20.3	20.51	20.65	20.79	20.81
Net change						-	-	-	-	-

Productivity assessment

The ESC requires all businesses to achieve a minimum of 1% per year productivity improvement on its baseline operating expenditure adjusted for growth. The ESC has determined a 'target' business as usual operating expenditure profile based on the 2011/12 baseline figure adjusted for customer growth and the productivity dividend target. Customer growth has been forecast using the adjusted average growth figures as determined through the review of future demand undertaken by ESC.

In its submission, LMW proposed a 1% annual productivity dividend on its unadjusted BAU totals. LMW has identified the following areas where productivity gains are anticipated:

- > PLC and SCADA upgrades, that have been completed or will be completed in the next period at treatment plants, will result in automated data collection, collation and reporting that will reduce labour inputs and improve operational control of treatment plants
- > The installation of smart-meters has and will continue to reduce meter reading costs
- > In some areas irrigation pumping has been restricted to off-peak and greater pumping efficiency has been achieved after pump and motor overhauls.

As demonstrated in ES Table 5, the productivity hurdle set by the ESC has been surpassed comfortably in each year of the price path.

ES Table 5 Productivity hurdle assessment (\$M)

Operating expenditure item	Actual 11/12	13/14	14/15	15/16	16/17	17/18	Total
Recommended operating expenditure		16.88	17.00	17.43	17.03	17.18	85.52
Less prudent and efficient new initiatives expenditure		0	0	0	0	0	0
Recommended BAU expenditure		16.88	17.00	17.43	17.03	17.18	85.52
Adjusted BAU target	18.41	18.42	18.43	18.43	18.44	18.44	92.16
Amount above BAU target		-1.54	-1.43	-1	-1.41	-1.26	-6.64
% above BAU target		-8.36%	-7.76%	-5.43%	-7.65%	-6.83%	-7.20%

Capital Expenditure Forecasts

Our final recommendations for LMW's capital expenditure forecasts for the third regulatory period are outlined in ES Table 6.

. As noted previously, we believe that LMW's capital expenditure forecasts for WP3 satisfactorily account for the likely impact of the Sunraysia modernisation project.

For LMW's forecasts for Urban Water, we have made the following revisions:

- > Expenditure for sewer renewals has been increased from \$0.9M to \$1.0M per annum to incorporate costs for sewer manholes
- > Expenditure for the Mildura Water Supply Strategy has been reduced by \$0.9M. This adjustment has two components. Firstly, we recommend that three projects totalling \$3.0M be deferred until WP4 as we believe that they will not be required until that time. Secondly, we have adjusted some of the costs for pipelines to be built under this strategy upwards as we believe that the unit rates allowed were inadequate.

We have not recommended any changes to LMW's forecasts for Rural Water.

ES Table 6 Recommendations for LMW's capital expenditure forecast (\$M)

	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18
Urban - Water	3.23	7.28	4.44	5.47	7.69	5.20	11.53	6.70	3.90	5.24
Urban - Sewerage	6.27	30.21	8.47	6.91	3.19	9.08	2.88	3.39	2.49	4.93
Urban - Recycled Water	1.73	11.83	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Urban - Bulk Water	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00
Total prescribed bau capex - Urban	11.24	49.33	14.10	12.38	10.91	14.28	14.41	10.09	6.39	10.17
Rural - Irrigation	25.20	19.71	5.41	5.23	6.68	14.53	8.75	2.00	2.01	2.03
Rural - Drainage	0.06	0.15	0.17	0.21	0.15	0.33	0.21	0.19	0.19	0.19
Rural - Domestic and stock	0.13	0.13	0.06	1.63	0.03	2.02	0.09	0.25	0.05	0.05
Rural - Surface water diversions	0.95	0.53	0.25	0.50	0.12	0.89	0.08	0.08	0.08	0.08
Total prescribed bau capex – Rural	26.35	20.52	5.89	7.57	6.97	17.77	9.13	2.53	2.34	2.35
Total prescribed bau capex – LMW	37.59	69.85	19.99	19.95	17.88	32.05	23.54	12.62	8.73	12.52
Cardno recommended – Urban						15.87	12.51	10.19	6.49	8.88
Cardno recommended - Rural						17.77	9.13	2.53	2.34	2.35
Net Change						1.59	(1.90)	0.10	0.10	(1.29)

Major projects comprising a significant proportion of the total capital expenditure forecast have been assessed as part of this review and have been deemed appropriate in relation to LMW's key drivers and obligations. Robust justifications and reasonable cost estimates of works required have been provided by management for all projects reviewed as detailed in ES Table 7.

ES Table 7 Capital projects reviewed

	Driver	Estimated Cost
Mildura Water Supply Strategy Projects	Growth	\$10.79M
Mildura Irrigation System Essential Replacements and Overhauls – Central Pump Station Modernisation	Growth	\$6.79M
WTP Water Quality Improvements	Improved service	\$6.6M
Sewer Renewals	Renewals	\$1.0M

Divergences from proposed capital expenditure for Water Plan 3 to LMW's historical capital expenditure trends have been investigated and are fully explained in Section 5 of this report.

Table of Contents

Glossary ii

Executive Summary iii

1	Introduction	5
1.1	Background	5
1.2	Scope	6
1.3	Review methodology	8
2	Overview of Lower Murray Water	9
2.1	Governance and organisational structure	10
2.2	Changes in service standards	11
2.3	Asset base	11
2.4	Benchmarking	12
2.5	Issues and challenges	14
2.6	Key outcomes identified in Water Plan 3	14
3	Asset management and project delivery	15
3.1	Asset management information systems	15
3.2	Progress in addressing recommendations of asset management audit	15
3.3	Capital delivery process	15
3.4	Cost estimating processes	16
4	Operating expenditure	17
4.1	Methodology	17
4.2	Operating expenditure in current price path	17
4.3	Operating expenditure in the future price path	18
4.4	Operating expenditure escalators	20
4.5	Conclusions and recommendations	22
5	Capital Expenditure	23
5.1	Methodology	23
5.2	Overview	23
5.3	Capital expenditure in current price path	24
5.4	Capital expenditure in the future price path	25
5.5	Detailed review of sample capital projects	26
5.6	Conclusions and recommendations	32
6	Recommended opex and capex forecasts	33
6.1	Opex forecasts	33
6.2	Capex forecasts	33

Tables

Table 2-1	Benchmarking of similar water businesses – maintenance and capital expenditure.....	12
Table 2-2	Benchmarking of similar water businesses – operating expenditure.....	13
Table 3-1	2011 Asset Management Audit Recommendations and Status of Implementation.....	15
Table 4-1	Operating expenditure in current price path (\$M 12/13)	17
Table 4-2	Operating expenditure in future price path (\$M)	19
Table 4-3	Assumed CPI	20
Table 4-4	LMW’s labour growth assumptions	21
Table 4-5	LMW’s applied electricity increases	22
Table 4-6	Productivity hurdle assessment (\$M)	22
Table 5-1	Actual capital expenditure in Water Plan 2 (\$M 12/13) – Urban.....	24
Table 5-2	Actual capital expenditure in Water Plan 2 (\$M 12/13) - Rural.....	24
Table 5-3	Capital expenditure associated with outcomes (\$M nominal).....	24
Table 5-4	Urban forecast capital expenditure by service (\$M 12/13)	25
Table 5-5	Rural forecast capital expenditure by service (\$M 12/13).....	25
Table 5-6	Mildura water supply strategy projects included in WP3	28
Table 5-7	Comparison of pipeline unit rates.....	29
Table 6-1	Recommendations for LMW’s operating expenditure forecasts – Urban Water (\$M)	33
Table 6-2	Recommendations for LMW’s operating expenditure forecasts – Rural Water (\$M)	33
Table 6-3	Recommendations for LMW’s Capital Expenditure Forecasts – Urban Water.....	33
Table 6-4	Recommendations for LMW’s capital expenditure forecasts – Rural Water	33

Figures

Figure 2-1	LMW’s Organisation Structure	10
Figure 2-2	Asset value (%) by type of asset.....	11
Figure 4-1	LMW’s forecast FTE’s fro WP3.....	20
Figure 4-2	Percentage annual growth in total labour costs and labour cost per FTE	21
Figure 5-1	Urban capital expenditure by service (\$M)	23
Figure 5-2	Rural capital expenditure by service (\$M).....	23
Figure 5-3	Total forecast WP3 capital expenditure by driver (\$M 12/13)	25

1 Introduction

1.1 Background

On 1 January 2004 the Essential Services Commission (ESC) became the economic regulator for the Victorian water sector. The Commission's role involves regulating the prices and service standards of 20 regulated water businesses supplying water, sewerage and related services to residential, industrial and commercial, and irrigation customers throughout the State.

Each of the regulated water businesses is required to develop and submit a Water Plan to the Commission for its approval. The Plans are required to set out:

- > What the water business proposes to achieve over the regulatory period in meeting demands for rural and where relevant urban water and sewerage services, and complying with its obligations
- > How the water business proposes to achieve those outcomes
- > The water business's revenue requirement to deliver those outcomes
- > The proposed prices, or the manner in which prices will be calculated or otherwise determined, for each of the prescribed services.

The businesses are required to consult with other relevant regulators (including the ESC, the Environmental Protection Authority (EPA) and the Department of Human Services (DHS)) and the Minister with respect to those other parties' requirements and expectations prior to submitting their Water Plans to the Commission for the formal assessment against the principles set out in the Water Industry Regulatory Order 2003 (WIRO).

In late September 2012, the ESC received Water Plan 3 setting out, among other things, the proposed expenditure forecasts and prices for the five year period commencing 1 July 2013 from Lower Murray Water (LMW).

The ESC is required to assess the proposals set out in LMW's Water Plan 3, consistent with the requirements of the legislative framework. With respect to the businesses' expenditure forecasts, it must be satisfied that, among other things, the forecasts:

- > Reflect efficient expenditure
- > Are consistent with delivering the required service levels, outputs and obligations over the regulatory period
- > Take into account a planning horizon that extends beyond the regulatory period.

In assessing LMW's proposed Water Plan, the Commission is required to have regard to its objectives under the *Essential Services Commission Act 2001* including the primary objective to "promote the long term interests of Victorian consumers" [section 8(1)]. Section 4C of the *Water Industry Act 1994* also sets out a number of specific objectives that the Commission must have regard to in regulating the water sector namely:

- > Wherever possible, to ensure the costs of regulation do not exceed the benefits
- > To ensure regulatory decision making and regulatory processes have regard to any differences in the operating environments of regulated entities
- > To ensure regulatory decision making has regard to the health, safety, environmental sustainability (including water conservation) and social obligations of regulated entities.

Further more detailed requirements that the Commission needs to have regard to are set out in the WIRO, made under section 4D of the Water Industry Act. In particular, the Commission must be satisfied that the prices proposed by a water business comply with the regulatory principles outlined in the WIRO. Specifically, the WIRO requires prices to be set so as to, among other things:

- > Provide for a sustainable revenue stream to the regulated entity that nonetheless does not reflect monopoly rents or inefficient expenditure by the regulated entity
- > Allow the regulated entity to recover operational, maintenance and administrative costs
- > Allow the regulated entity to recover expenditure on renewing and rehabilitating existing assets
- > Allow the regulated entity to recover a rate of return on investments made after 1 July 2004 to augment existing assets or construct new assets
- > Take into account the interests of customers of the regulated entity, including low income and vulnerable customers, in receiving reliable services at affordable prices
- > Provide the regulated entity with incentives to pursue efficiency improvements and to promote the sustainable use of Victoria's water resources and enable customers or potential customers of the regulated entity to readily understand the prices charged by the regulated entity for prescribed services, or the manner in which such prices are to be calculated or otherwise determined.

The regulatory principles also require the expenditure forecasts in the Water Plan to reflect the efficient delivery of the proposed outcomes contained in the Water Plan and take into account a planning horizon that extends beyond the regulatory period.

1.2 Scope

Cardno has been engaged by the ESC to undertake an independent review of the expenditure forecasts provided by LMW as part of its Water Plan submission for the five year period commencing 1 July 2013 and provide advice on whether the proposed expenditure forecasts are consistent with the requirements of the legislative framework.

The main objective of the review is to determine whether the operating expenditure (opex) and capital expenditure (capex) forecasts included in LMW's Water Plan:

- > Reflect efficient expenditure
- > Are consistent with delivering the required service levels, outputs and obligations over the regulatory period
- > Take into account a planning horizon that extends beyond the regulatory period.

In undertaking the review, Cardno is required to consider:

- > Any guidance issued by the ESC with respect to how it will assess the businesses' proposed expenditure forecasts including the 2013 Water Price Review – Guidance on Water Plans (2011)
- > The information set out in LMW's Water Plans (and accompanying information templates) and any explanations that the businesses provide with respect to the basis used to derive the forecasts including any assumptions used
- > Any readily available data and information that Cardno has access to, to assess expenditure forecasts
- > The experience of the Cardno's project team in preparing and assessing the veracity of forecasts as well as costing projects in the water sector.

Review of operating expenditure

The ESC requires advice on LMW's operating expenditure, specifically on whether:

- > Changes in operating costs are consistent with the timing of major capital projects
- > The Commission expects that energy costs, labour costs, IT costs and chemical costs will be a significant focus of the operating expenditure review
- > LMW is fulfilling its obligations and meeting customer service expectations as cost efficiently as possible, including through the setting of an appropriate target for cost efficiency gains
- > Any forecast divergence from historical trends in operating expenditure can be readily explained, for example, by changes in obligations imposed by Government, including technical regulatory and customer service expectations
- > One-off costs associated with the drought (for example costs relating to advertising, education and appliance changeover) have been removed.

Review of capital expenditure

The ESC requires advice on LMW's capital expenditure, specifically whether the projects reviewed meet the following criteria:

- > Appropriate in relation to key drivers and obligations – proposed capital expenditure reflects obligations imposed by Government (including technical regulators) or customers' service expectations
- > Robust (with adequate supporting analysis and systems) – as demonstrated by reports which clearly enunciate the service outcomes proposed by the water business, and sets out the analysis undertaken of the options to deliver these outcomes and identifies the preferred approach. Evidence may also be sought to demonstrate that proposed capital expenditure is consistent with efficient long-term expenditure on infrastructure services (based on a best practice asset management framework which considers risk and system-wide needs)
- > Deliverable over the regulatory period – demonstrated that the key activities comprising the delivery of the project from planning to construction have been identified and thought through and that the projects can be practically delivered within the proposed timeframe, given the business's delivery of major projects in the past
- > Reasonable cost estimate – the cost estimate is well supported either by a schedule of quantities using typical rates currently being experienced in the industry, or compare favourably with other similar projects or preferably both of the above
- > Proposed trends in capital expenditure are compared with historical trends in expenditure; to identify the reasons for divergences from historical trends can be identified, together with any other relevant factors
- > The business's risk sharing and incentive and penalty payment arrangements with its contractors are based on a symmetrical sharing of risk for delivery or non-delivery of projects.

1.3 Review methodology

Our approach to this review was based around structured interviews with key agency staff. Our review had the following stages:

- > Review of information, particularly LMW's Water Plan 3 for the period 2013 to 2018 and the expenditure information templates provided to us by the ESC
- > Development and issue of a Review Plan, which sets out the program, interview themes and information requests
- > Detailed interviews with LMW between 20 and 22 November 2012
- > Preparation of a Draft Report that identifies our preliminary views on LMW's proposed expenditure forecasts and the nature of further work and investigation that will be undertaken
- > Issue of a Final Report that identifies our final view on LMW's proposed expenditure forecasts

We found that LMW's staff responded in a professional and cooperative manner to this review.

2 Overview of Lower Murray Water

The Lower Murray Urban and Rural Water Authority was created under the provisions of the Water Act 1989 via an Order in Council effective 1 July 2004. The new Authority assumed the whole of the property, rights, liabilities, obligations, powers and functions under the Water Act 1989 of the Lower Murray Region Water Authority and Sunraysia Rural Water Authority.

The Water (Governance Act) 2006 varied the form and title of Lower Murray Water and established new governance arrangements effective from 1 July 2007. The Lower Murray Urban and Rural Water Authority is now the Lower Murray Urban and Rural Water Corporation.

On 19 August 2008 a Ministerial Determination under Section 87 of the Water Act 1989, appointed Lower Murray Urban and Rural Water Corporation to take over the whole of the functions, powers and duties of First Mildura Irrigation Trust, including its functions in respect of all of its districts under the Act.

Lower Murray Urban and Rural Water Corporation, referred to as 'Lower Murray Water' (LMW) is a State-owned Government Business Enterprise that operates across the municipalities of Mildura, Swan Hill and Gannawarra in North-Western Victoria. It provides the region with urban water and wastewater services, treatment and effluent disposal services, river quality water to stock and irrigation customers, along with the collection and disposal of subsurface irrigation drainage water.

LMW provides:

- > Urban water services to 14 townships via nine treatment plants. Approximately 70,000 customers are provided with urban water services along the Murray River in Victoria from Kerang to Mildura
- > Wastewater collection, treatment and effluent re-use and disposal services to eleven towns via ten treatment plants
- > River quality water services to over 4,700 customers in the four pumped irrigation districts of Merbein, Red Cliffs, Mildura and Robinvale, the Millewa rural district and some areas of the waterworks districts of Carwarp and Yelta
- > Management of the region's rural water entitlements
- > The collection and disposal of subsurface drainage water from the four pumped irrigation districts, Nangiloc, Robinvale and Boundary Bend diverters
- > Assurance that irrigation and drainage designs in new agricultural developments conform to salinity management plan development guidelines
- > Management of the private diversion licenses of approximately 1,100 water users along the Murray River in Victoria between Nyah West and the South Australian border
- > The assessment and approval of permanent and temporary water trade applications
- > Reclaimed water for third party use.

LMW has approximately 165. It has revenue of about \$57 million per year and its assets have a current replacement cost of approximately \$1.3 billion.

2.1 Governance and organisational structure

The State Government appoints a Board of directors to oversee the direction of LMW. The operation of the business is the responsibility of the Managing Director, supported by four Executive Managers. The areas of responsibility of the Executive Managers are:

- > Technical Service
- > Business Services
- > Customer Services
- > Southern Region.

The structure, and associated functions of the sections of the organisation, is outlined in Figure 2-1.

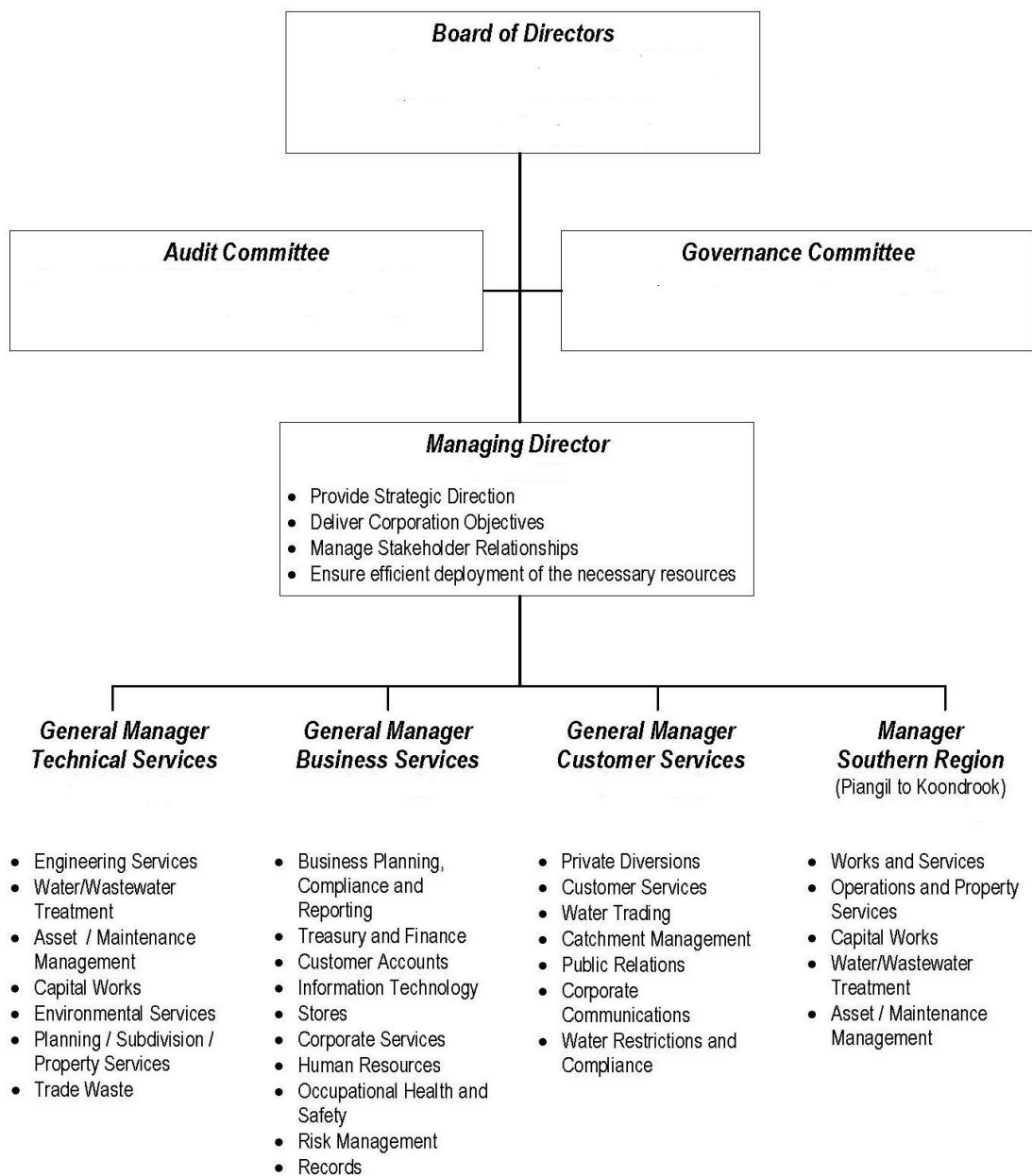


Figure 2-1 LMW's Organisation Structure

2.2 Changes in service standards

LMW has generally met outcomes or made progress in line with expectations in the Statement of Obligations, Customer Charter, service standards, environmental and water quality obligations, and other obligations and initiatives outlined in WP2 for the second regulatory period 2008/09 to 2012/13.

The LMW Board has approved a range of service performance standards and targets, which it intends to meet in the WP3 period relating to:

- > Water services – unplanned interruptions, time to attend bursts and leaks and restore services, frequency and duration of water supply interruptions, customers experiencing multiple interruptions, and unaccounted for water
- > Sewerage services – sewer blockages, time to attend sewer spills and blockages and restore services, containment of sewer spills, and customers experiencing multiple blockages
- > Irrigation services standards - water orders delivered on time; channel bursts and leaks; and unaccounted for water
- > Licensing and administration standards - determining applications for surface diversion, groundwater or supply by agreement; processing transfer of water use licences or water shares; and metered percentages of use limit volumes
- > Customer services – complaints to the Energy and Water Ombudsman of Victoria, and response to telephone calls
- > Greenhouse gas emissions.

In general, the new service standard targets are based on the average performance outcomes delivered over the past 5 years. In the case of planned water supply interruptions, their frequency and duration will increase for one year, due to the reinstatement of LMW’s water main air scouring program designed to maintain drinking water quality to customers.

For WP3, LMW also proposes a set of Guaranteed Service Levels for urban water and sewerage services.

2.3 Asset base

LMW own assets with a total current replacement cost of \$1,327M as at 30 June 2011. Figure 2-2 summarises LMW’s asset base.

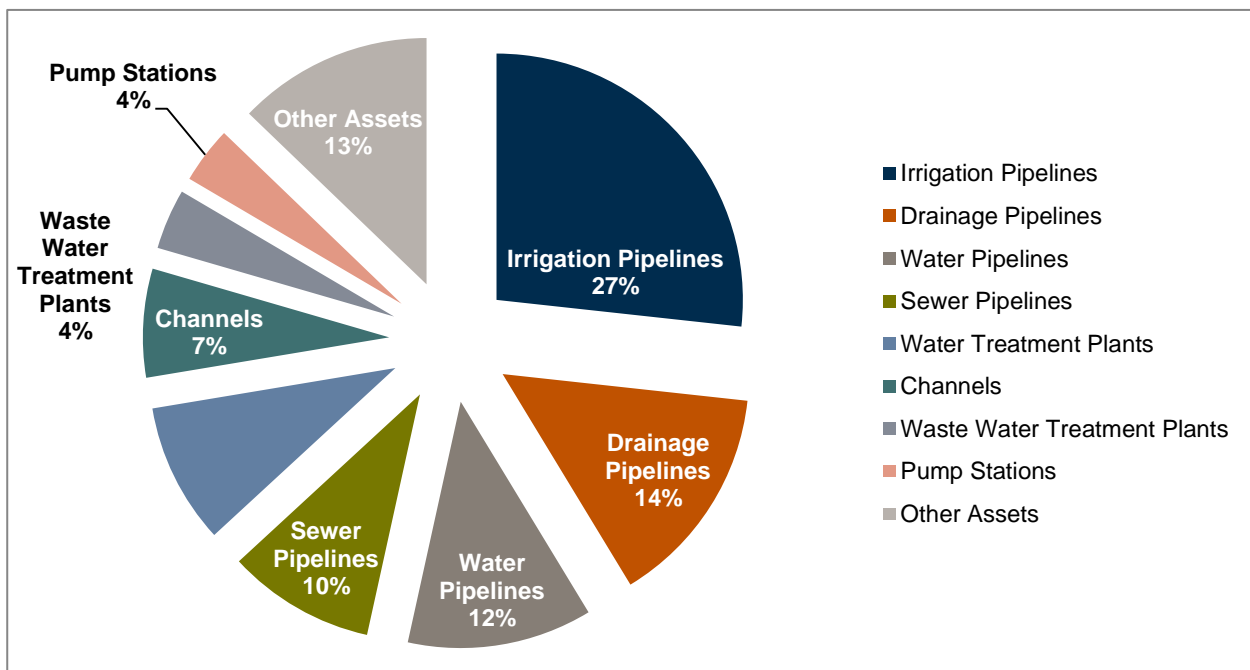


Figure 2-2 Asset value (%) by type of asset

This analysis shows the diversity of the assets under LMW's control which span the complete urban water cycle in addition to the rural water distribution assets.

2.4 Benchmarking

As part of our review, we have undertaken benchmarking of LMW's rural water services against similar water businesses. The data was sourced from the National Water Commission's *National Performance Report 2009-10 for Rural Water Service Providers*. The findings from the benchmarking are detailed in Table 2-1 and Table 2-2.

Table 2-1 Benchmarking of similar water businesses – maintenance and capital expenditure

Business	Current Replacement Cost of assets (CRC)	Written Down Value (WDV)	WDV/CRC	Maintenance	Maint. as % Current Replacement cost	Capital Expenditure	Capital Expenditure /CRC
	(\$M)	(\$M)	(%)	(\$M)	%	(\$M)	(%)
G-MW	2,747.4	1435	52%	18.0	0.66%	7.3	0.27%
Lower Murray	102.9	47.5	46%	5.6	5.39%	3.6	3.50%
Coleambally	98.6	33.2	34%	3.6	3.65%		
Murray	356.5			2.9	0.81%	5.7	1.60%
Murrumbidgee	481.0	411	85%	6.0	1.25%	13.2	2.74%
SunWater	1,873.0	1146	61%	12.0	0.64%	6.9	0.37%
Ord	87.7	18	21%	0.8	0.94%	-	0.00%
Harvey	121.8	110.7	91%	1.0	0.78%	5.6	4.60%

Table 2-2 Benchmarking of similar water businesses – operating expenditure

Business	Customers	Intake Volume	Volume Supplied	Assets	Operat'ns	Maint	Admin	OM&A	OM&A / ML	OM&A/ Customer	OM&A / km assets	Ops per ML	Maint / Customer	Maint/ km of Assets	Delivery Efficiency
G-MW	13,592	1,396	1,010	7,071	13.9	18	13	44.9	32,163	3,303	6,350	10	1,324	2,546	72.30%
Lower Murray	4,346	100	87	646	3.4	5.55	2.63	11.58	115,800	2,665	17,926	34	1,277	8,591	87.00%
Southern Rural Water	1,536	238	151	1,333	6.1	2.16	1.87	10.13	42,563	6,595	7,599	26	1,406	1,620	63.40%
Coleambally	493	157	115	1,227	0.9	3.6	2.8	7.3	46,497	14,807	5,949	6	7,302	2,934	73.20%
Murray	2,404	385	161	2,946	8.4	2.9	7.6	18.9	49,091	7,862	6,415	22	1,206	984	41.80%
Murrumbidgee	3,364	505	368	5,068	5	6	7.8	18.8	37,228	5,589	3,710	10	1,784	1,184	72.90%
SunWater	2,647	857	603	2,656	13.5	12	4	29.5	34,422	11,145	11,107	16	4,533	4,518	70.40%
Ord	111	151	114	293	1.3	0.82	0.68	2.8	18,543	25,225	9,556	9	7,387	2,799	75.50%
Harvey	681	88	67	728	1.1	0.95	1.36	3.41	38,750	5,007	4,684	13	1,395	1,305	76.10%

Relevant observations from the benchmarking are discussed in the later sections on Operating and Capital expenditure (Sections 4 and 5).

2.5 Issues and challenges

LMW indicated the main issues and challenges it faces for WP3 are:

- > Maintaining level of service to urban customers
- > Ensuring maximum outcomes from capex on urban infrastructure to ensure water treatment capabilities can handle a broader range of raw water quality while also providing adequate infrastructure for growth
- > Minimising infrastructure failure risk whilst maintaining level of service and minimising tariff increases for rural customers
- > Maintaining and, if possible, increasing the use of rural services in the four irrigation districts
- > Delivering of opex and capex within projected budgets
- > Ensuring LMW maintains its staff skill levels to effectively deliver its core services.

Sunraysia Modernisation Project

In late November 2012, the Commonwealth Government announced that it would provide \$103M in funding to support modernisation of irrigation infrastructure owned by LMW. LMW expects that this investment and the works that it will fund will substantially alter its operating environment. However, LMW notes that the funding is contingent on approval of a final business case which will take around a year to occur. We have had discussions with LMW regarding the impact of the project on its business and understand that it involves major capital works in the Merbein, Mildura and Red Cliffs irrigation districts. LMW advised they have discussed this project with the ESC and agreed to discuss the consequences when the project details are confirmed.

2.6 Key outcomes identified in Water Plan 3

LMW's key desired outcomes for WP3 include:

- > Maintaining its current level of service and level of customer satisfaction
- > Minimising risk of failure of assets and the risk from dirty water events in the Murray River
- > Providing for future growth in urban water supply demand
- > Maintaining and, if possible increasing, the use of rural services in our four irrigation districts whilst minimising tariff increases
- > Ensuring the Corporation has adequately addressed all of its key risk areas
- > Maintaining the urban water tariff structure to protect vulnerable customers but be reflective to high end users.

3 Asset management and project delivery

As part of our review, we took into consideration LMW’s asset management practices in relation to their potential impact on their opex and capex projections. Key relevant information and observations are noted in the following sub-sections.

3.1 Asset management information systems

To support the management of assets, LMW utilises the following systems:

- > Geographical Information System - this is used as the asset register
- > Asset Management System – Hansen 7. LMW is upgrading Hansen to Version 8 in 2013
- > Project Management – Technology One Projects Module.

LMW is utilising SCADA to assist with the control and monitoring of treatment plants and pump stations. This is helping achieve increased operational efficiency. Hansen is being used to schedule and record maintenance activities, and record asset performance issues such as failures.

3.2 Progress in addressing recommendations of asset management audit

An asset management regulatory audit of LMW was undertaken in late 2011 to assess whether there is a significant level of risk that LMW’s asset management processes and practices could lead to a decline in the quality, reliability and safety of the services provided. The audit concluded that there was not a significant risk, but made a series of recommendations. These recommendations, and LMW’s advice on the status of implementing these, are outlined in Table 3-1.

Table 3-1 2011 Asset Management Audit Recommendations and Status of Implementation

Recommendation	Current Status of Implementation
Management should ensure the development and completion of a comprehensive asset management strategy supported by relevant asset management plans. This should align to the Corporate Plan.	GHD has been engaged to develop strategy
Management should consider undertaking the Operation Review Report update in conjunction with the review of asset management processes for the Hansen 8 upgrade.	Waiting on upgrade to Hansen 8
LMW should continue with the update of the financial model to enable ten year forecasting instead of the current five years.	Implemented. LMW already does 20 year forecasting
A comprehensive asset maintenance strategy should be developed and linked into the asset management strategy. This should be developed in conjunction with the review of processes for the Hansen update.	Yet to commence, but intend to do so
Any risk assessments that form the basis of a maintenance program should be documented.	Yet to commence, but intend to do so
LMW should ensure that there is a documented process in place for decommissioning of assets as part of a capital project. This should include procedures for ensuring the finance system accurately reflects the decommissioning.	Yet to commence. Not considered a priority
LMW should continue with the implementation of Hanson 8 and utilise the process to streamline information as per LMW’s needs.	Yet to commence, but intend to do so

3.3 Capital delivery process

As stated in its WP3 submission, LMW’s capital expenditure planning is based on a combination of ongoing processes and specific investigations, including:

- > Master plans developed for each major urban area to plan for growth and improved service levels
- > Compliance and Service Level Reviews of water and wastewater treatment plant to identify service improvements, augmentation requirements, and major refurbishments

- > Site Management Plans for each urban 'site-based' or facility asset, including treatment plants, pump stations, storages etc. The plans, also titled by LMW as 'Site Works and Spending Plans', identified specific required works and associated budget cost estimates
- > Renewal Forecasts for network assets (i.e. water mains, sewers and manholes); comprising initially of a forecasted renewal expenditure based on age, modified to suit LMW's knowledge of the asset condition, performance and failure history
- > Business Cases for major programs and projects incorporating options, lifecycle cost, and triple bottom line analysis.

LMW has a risk assessment framework which it utilise to assess the risks associated with its infrastructure assets, and identify new projects to address the risk.

LMW does not have a standard documented process for approval of capital works, from the identification of a need for a project to the approval to proceed with implementation of and capital expenditure for the project. A standard process enhances the consistency in reviewing and processing projects. LMW also does not have standard requirements/templates for key documents, such as business cases. Such standards help ensure all key aspects of projects are addressed and reviewed, and enhance the efficiency in doing so, as the document authors, as well as the decision makers, become more familiar with what to prepare and review. We believe that LMW will be able to realise some efficiencies by improving its processes in these areas. However, we also note that LMW's capital expenditure program is not large and it is typically much closer to its customers than other larger water authorities so we have not proposed specific efficiency gains in this area.

For growth related projects, LMW uses modelling to determine future demands and need for capacity upgrades. As actual growth and demand can vary from its projections, LMW does an update on the actual demand the year prior to an upgrade to verify the timing of the upgrade. If the demand is found to be less than projected, LMW assesses whether the related upgrade project can be deferred.

LMW makes considerable use of consultants to assist with capital works planning. These consultants provide supplementary resources, expertise and systems (e.g. hydraulic models) that LMW may not necessarily have in-house. LMW is currently using:

- > GHD for urban water and sewerage network projects and rural water pipelines, and to help prepare the overall capex program for WP3
- > SKM for its rural water network
- > Hunter Water Australia (HWA) for water and wastewater treatment plants.

LMW has limited in-house capacity to cater for large peaks in capital expenditure and so uses consultants to assist with project delivery if faced with such a peak. For each proposed project, LMW assesses and implements the model of delivery it believes will provide the best outcomes, in terms of value, timing and risk.

3.4 Cost estimating processes

Much of LMW's cost estimation for larger projects is undertaken by its consultants. LMW does not have a guideline to provide a consistent framework for cost estimation by internal staff and external consultants. We recommend that LMW develop an appropriate cost estimation guideline. Our review of capital projects (refer to Section 5) found that the basis for the cost estimates was not always well documented in planning studies which can sometimes lead to misinterpretation of the estimate figures provided.

We also noted that there were significant cost over-runs in WP2 on a few large projects notably Koorlong WWTP Augmentation and Recycled Water Project (97%) and to a lesser extent the Robinvale High Pressure System (8%). While there were a number of reasons associated with these cost over-runs we are of the view that better attention to project scoping and cost estimation in the planning stage would have resulted in a more robust planning cost estimate and reduced the level of cost over-run. For high cost /high risk projects the involvement of an independent cost estimator could be beneficial.

4 Operating expenditure

4.1 Methodology

Our review of LMW's forecasted operating expenditure (opex) was based on interviews with key LMW staff and consideration of information provided in the following LMW documents:

- > Water Plan submission
- > AE WP Regulatory Periods Comparison spreadsheets
- > Allocation of Corporate Costs Discussion Paper
- > Organisational Structure
- > Annual Report 2011/12
- > Corporate Plan 2012/13
- > Other information provided by LMW in response to interview questions and requests for clarification or supporting material.

4.2 Operating expenditure in current price path

Operating expenditure in the current price path is summarised in Table 4-1.

Table 4-1 Operating expenditure in current price path (\$M 12/13)

	08/09	09/10	10/11	11/12	12/13
Urban Water	9.62	9.68	10.97	11.53	10.74
Urban Sewerage	5.73	6.05	6.76	6.88	6.90
Irrigation	12.62	12.76	11.25	10.95	9.18
Drainage	3.06	2.81	3.03	2.84	2.19
Domestic and stock	0.47	0.42	0.45	0.46	0.39
Surface water diversions	1.23	1.14	1.09	1.18	0.87
Total Business as Usual	32.73	32.86	33.55	33.84	30.27
<i>New initiatives and obligations</i>	-	-	-	-	-
External bulk water charges (excl. temporary purchases)	4.12	4.14	4.90	7.65	7.78
External temporary water purchases	0.03	0.24	2.89	-	-
Licence fees	0.20	0.20	0.18	0.12	0.08
Environment Contribution	1.38	1.37	1.35	1.40	1.67
Total prescribed opex	38.45	38.79	42.88	43.01	39.79

General

A common factor that has influenced the past expenditure in all of LMW's three business areas has been climate events. Most significant was the drought that commenced in the early 2000's, ending with increased rainfall in 2010/11, which culminated in a significant flood event in the region in February 2011. Increased costs were generally incurred for emergency response and service restoration during the flood, with some infrastructure damaged. Much of the emergency response was reimbursed from government.

Following the flood, the water quality in the Murray River decreased significantly for a relatively short period of time. This has been referred to as the 'blackwater' event. Water quality also decreased for a period of time in the 2012/13. Another common factor that has influenced the past expenditure in all three business areas has been efficiencies gained through staff redundancies in the 2011/12, and a significant reduction of all non-critical expenditure through the latter part of the drought years.

Urban water

During the drought period, opex for urban water declined due to reduced water usage resulting in less electricity usage for pumping and less chemical usage for water treatment. As the drought broke, the water usage increased, and along with this, opex. Treatment costs also temporarily increased further during the 'blackwater' event that followed the 2011 flood. The implementation of water fluoridation over the past years has also contributed to an ongoing increase in water treatment costs.

The large jump in expenditure for 2010/11 shown in Table 4-1 was due to temporary water purchases utilised that year due to the drought.

Urban sewerage

As with urban water, but to a lesser extent, opex for urban sewerage declined during the drought period. This was also due to less pumping and treatment costs. However, maintenance costs somewhat increased due to increased pipeline failures caused by tree-roots. During the floods, there was increased wastewater pumping and treatment, and some facilities were damaged.

Rural water

Irrigation and drainage operations and maintenance opex has been declining over the past years despite the additional cost to respond to the flood event. This is mainly due to less demand due to the higher rainfall, and the efficiencies gained as referred to above.

This expenditure reduction was offset by increased external bulk water charges in 2011/12 from Goulburn Murray Water, as it sought to recover lost revenue from previous years. Therefore the total prescribed opex increased in 2011/12 as seen in Table 4-1.

The benchmarking information provided in Section 2.4 indicated the following for LMW's rural water business in regards to the level of operational expenditure in 2009/10:

- > Maintenance as a ratio of current replacement cost was 5.4%, which was the highest amongst the other water businesses. We note that being the highest amongst the sample group does not automatically infer that this ratio was too high. However, we consider that reasons for the high figure should be identified along with possible efficiency improvements opportunities. We discuss this further in the following Sections with reference to operating expenditure in the future price path
- > Operations, maintenance and administration as a ratio of intake volume \$116/ML, which was significantly higher than the other water businesses. This is not a comparable indicator as unlike the other water businesses, LMW has to pump all of its water and is the only one that has an extensive pipeline system.

4.3 Operating expenditure in the future price path

The operating expenditure in the future price path is summarised in Table 4-2 LMW has endeavoured to limit its forecasted opex in WP3. LMW has made its forecast based on the following:

- > Past expenditure, with estimates adjusted to:
 - Remove the impacts of previous flood and drought events
 - Allow for cyclic activities (e.g. air scouring)
 - Reflect changes to its asset base (e.g. upgraded treatment plants)
- > Assumed growth of 1% p.a. for the number of urban customers, and nil for the number of rural customers
- > Anticipated productivity savings as discussed in Section 4.4
- > Not adjusting forecasts to accommodate potential future new or changed regulatory obligations (such as new Health Regulations for Water Quality)
- > Including payments towards the funding of its Superannuation Fund's deficit
- > Not recovering the short-fall in revenue from current period
- > Expenditure escalation factors as discussed in Section 4.4.

The main risks with this approach are:

- > It contributes towards lower pricing and if greater expenditure is required, another potential operating loss, which LMW has experienced over the past two financial years
- > It results in limiting maintenance to a level that affects the condition and performance of the infrastructure.

In regards to the latter, there was no indication provided that the current levels of maintenance were negatively impacting asset condition and performance, or that current level of maintenance are too high. It is however recommended that LMW implement a process to monitor such and ensure maintenance is optimised. One indicator is comparing the level of corrective versus proactive maintenance, and ideally against an indicator such as asset condition/age. LMW propose to undertake this analysis after it upgrades to Hansen 8.

Forecasted corporate costs have slightly increased due to the need to employ two new corporate staff (refer below Section 4.4), and including a budget (of \$110k p.a.) for the promotion of permanent water saving rules, a budget for which hadn't been previously provided for.

Table 4-2 Operating expenditure in future price path (\$M)

	Current Price Path			Future Price Path			
	11/12	12/13	13/14	14/15	15/16	16/17	17/18
Urban Water	11.53	10.74	9.82	10.04	10.61	10.18	10.10
Urban Sewerage	6.88	6.90	7.06	6.96	6.82	6.85	7.07
Irrigation	10.95	9.18	9.59	9.75	9.81	9.98	10.05
Drainage	2.84	2.19	1.94	1.99	2.08	2.04	2.02
Domestic and stock	0.46	0.39	0.44	0.44	0.45	0.45	0.44
Surface water diversions	1.18	0.87	0.87	0.88	0.88	0.91	0.90
Total Business as Usual	33.84	30.27	29.72	30.06	30.65	30.41	30.58
<i>New initiatives and obligations</i>	-	-	-	-	-	-	-
External bulk water charges (excl. temporary purchases)	7.65	7.78	7.76	7.75	7.75	7.74	7.74
Licence fees	0.12	0.08	0.12	0.12	0.12	0.12	0.12
Environment Contribution	1.40	1.67	1.60	1.55	1.51	1.47	1.43
Total prescribed opex	43.01	39.80	39.20	39.48	40.03	39.74	39.87

Urban water

The urban water forecasted opex for WP3 has been kept less than the level for 2012/13. This is mainly because costs are forecast to return to long-term average costs which exclude the dirty water events experienced in 2011/12 and 2012/13. It is noted that these forecast reductions are despite forecast price escalations discussed in Section 4.4. There are fluctuations within the yearly forecasted maintenance, mainly due to cyclic maintenance activities. For instance, air-scouring of water mains costing approximately \$0.8M occurs every 4 years.

Urban sewerage

The urban sewerage forecasted opex expenditure for WP3 has been kept less than the level for 2012/13. This is mainly because costs are forecast to return to long-term average costs which exclude drought and wet periods. It is noted that these forecast reductions are despite forecast price escalations discussed in Section 4.4. There are fluctuations within the yearly forecast for maintenance costs, mainly due to cyclic maintenance activities. For instance, level control and well washer replacement occur at pump stations in WP3.

Rural water

Rural water forecasted opex for WP3 has slightly increased over the level for 2012/13. The main reasons for this are:

- > Increased maintenance needs have been identified
- > Some increase in demand (based on consumption per customer) back to previous levels has been allowed for
- > Prices are forecasted to escalate as discussed in Section 4.4.

4.4 Operating expenditure escalators

CPI

LMW has assumed future inflation will be 2.75% p.a. as indicated in Table 4-3. This is in line with guidance provided by the ESC.

Table 4-3 Assumed CPI

	11/12	12/13	13/14	14/15	15/16	16/17
CPI (per annum)	3.33%	1.58%	2.75%	2.75%	2.75%	2.75%

Labour

Between 2011 and 2012, LMW's staff numbers were reduced significantly. This reduction in staff resulted in a transitory increase in labour costs measured per FTE of approximately 21.3% due to the impact of the employment termination payments that had to be made. Labour costs per FTE have reduced by approximately 23.8% for 2012/13, returning costs per FTE to a similar level as to that before the reductions made to staff numbers.

Some efficiency improvements have been able to partly mitigate the impact of such a reduction. However, there has been some reduction in services, increased workload pressure on some staff, and the need to increase the use of external services.

LMW currently has 160.8 FTE staff, and plans to create and fill three new positions within the next six months and a further three new positions in the first two years as indicated in Figure 4-1.

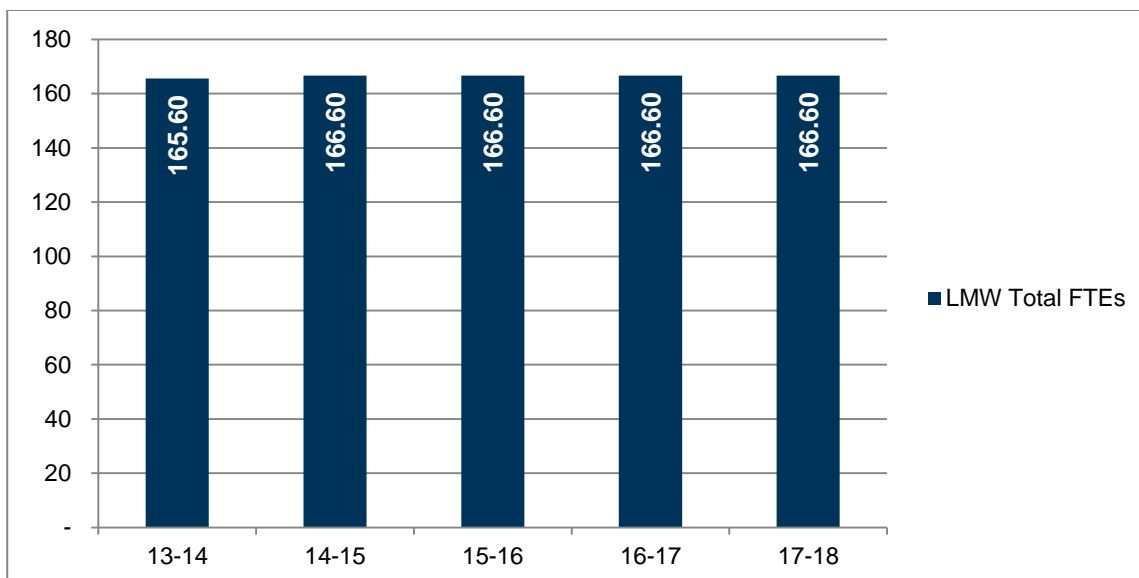


Figure 4-1 LMW's forecast FTE's fro WP3

Three of the six new positions are planned to be in the area of engineering and information technology, for which LMW largely utilises external services. It is expected that having such additional in-house resources will result in a comparable reduction in the use of external resources. Therefore, the savings from these positions would likely cover the costs of these additional staff. The other three new positions are in the area

of finance, revenue and risk management. LMW has identified that it currently has inadequate in-house capacity in these areas and that these functions cannot be suitably resourced externally.

LMW is currently establishing a new three year Enterprise Bargaining Agreement (EBA) for its non-contract staff. This Agreement will comprise of a base wage increase of 2.5% pa, plus an additional 1.5% pa wage increase tied to efficiency gains. This is consistent with the State Government's recent policy on wage increases in State Government agencies. Although the EBA is close to being signed and executed, the operating expenditure estimates (as indicated in ES Figure 2 and ES Table 2) only incorporate the wage increases for the corporate staff. We considered adjusting the opex estimates to take into account wage increase for the other staff. On discussion with LMW, it seemed reasonable to assume that additional potential productivity improvements not already taken into account would cover such wage increase. As a result of these discussions we have not proposed to make an adjustment.

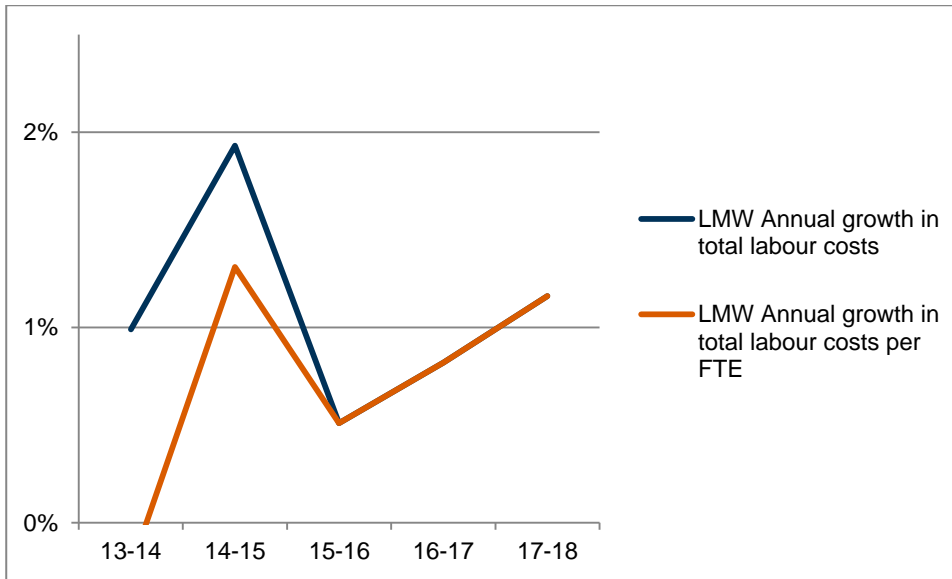


Figure 4-2 Percentage annual growth in total labour costs and labour cost per FTE

Table 4-4 LMW's labour growth assumptions

	13/14	14/15	15/16	16/17	17/18
Actual and forecast labour costs for FTEs (\$M)	14.9	15.3	15.4	15.6	15.7
Cost per FTE (\$000)	92.8	95.2	96.1	96.9	98.0
Annual growth in labour costs for FTEs	1.43%	2.59%	0.94%	0.82%	1.16%

Electricity

LMW purchases, via Purchasing Australia, its electricity from AGL Energy. By utilising the large purchasing power of Purchasing Australia, it obtains competitive prices. The current supply agreement concludes on 30 June 2013. Tenders for a new supply agreement are currently being sought. Powercor is the electricity distributor that services LMW.

LMW has noted significant increases in its electricity charges in the current price period, being up to 16% annual changes at some sites in 2012/13. The reasons provided for suppliers included passed on costs for carbon pricing and renewals schemes. For the upcoming regulatory period, LMW has not proposed any increase in its total electricity costs as detailed in Table 4-5. This is consistent with the advice provided to us by the Essential Services Commission based on information from Purchasing Australia regarding the terms of electricity supply contracts currently being agreed.

Table 4-5 LMW's applied electricity increases

	13/14	14/15	15/16	16/17	17/18
Total LMW-Urban energy costs (\$M)	1.78	1.78	1.78	1.78	1.78
% Increase per annum	4.16%	0.00%	0.00%	0.00%	0.00%
Total LMW-Rural energy costs (\$M)	2.81	2.81	2.81	2.81	2.81
% Increase per annum	1.75%	0.00%	0.00%	0.00%	0.00%
LMW total energy costs (\$M)	4.60	4.60	4.60	4.60	4.60
% Increase per annum	2.58%	0.00%	0.00%	0.00%	0.00%

Chemicals

Due to the nature of LMW's business chemical costs are not significant in determining its future operating expenditure requirements.

4.5 Conclusions and recommendations

Based on the above observations, and the lack of findings indicating otherwise, we have come to the conclusion that the proposed level of operating expenditure is appropriate, and a change to LMW's forecasted opex is not justified.

To advance its maintenance planning, we recommend that LMW implement a process to monitor this activity so that areas for improvement, including optimisation, can be identified. One indicator is comparing the level of corrective versus proactive maintenance, and ideally comparing it against an indicator such as asset condition/age and/or service levels (refer Section 4.3).

Productivity assessment

The ESC requires all businesses to achieve a minimum of 1% per year productivity improvement on its baseline operating expenditure adjusted for growth. The ESC has increased the 2011/12 baseline figure each year to allow for customer growth using the adjusted average growth figures as determined through its demand review process. Furthermore, the adjusted BAU totals in Table 4-6 include an annual 1% productivity dividend.

In its submission, LMW proposed a 1% annual productivity dividend on its unadjusted BAU totals.

LMW has identified the following areas where productivity gains are anticipated:

- > PLC and SCADA upgrades, that have been completed or will be completed in the next period at treatment plants, will result in automated data collection, collation and reporting that will reduce labour inputs and improve operational control of treatment plants
- > The installation of smart-meters has and will continue to reduce meter reading costs
- > In some areas irrigation pumping has been restricted to off-peak and greater pumping efficiency has been achieved after pump and motor overhauls.

As demonstrated in Table 4-6, the productivity hurdle set by the ESC has been surpassed comfortably in each year of the price path.

Table 4-6 Productivity hurdle assessment (\$M)

Operating expenditure item	Actual 11/12	13/14	14/15	15/16	16/17	17/18	Total
Recommended operating expenditure		16.88	17.00	17.43	17.03	17.18	85.52
Less prudent and efficient new initiatives expenditure		0	0	0	0	0	0
Recommended BAU expenditure		16.88	17.00	17.43	17.03	17.18	85.52
Adjusted BAU target	18.41	18.42	18.43	18.43	18.44	18.44	92.16
Amount above BAU target		-1.54	-1.43	-1	-1.41	-1.26	-6.64
% above BAU target		-8.36%	-7.76%	-5.43%	-7.65%	-6.83%	-7.20%

5 Capital Expenditure

5.1 Methodology

The review of LMW's historic and forecast capital expenditure (capex) was based on interviews with key LMW staff, analysis of data provided and consideration of the following documents:

- > Water Plan 3 Submission
- > Water Plan 3 Financial Template
- > Information provided by LMW staff in response to interview questions and requests for clarification or supporting material.

5.2 Overview

Figure 5-1 and Figure 5-2 illustrates the actual and forecast capital expenditure from Water Plan 1 through to 2018 for the urban and rural businesses respectively.

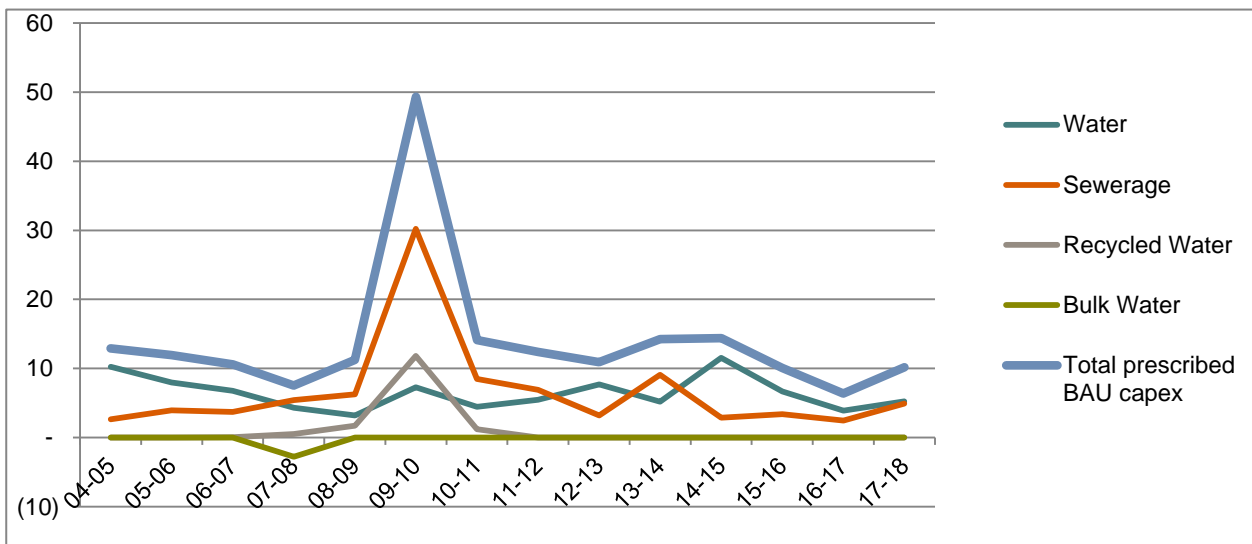


Figure 5-1 Urban capital expenditure by service (\$M)

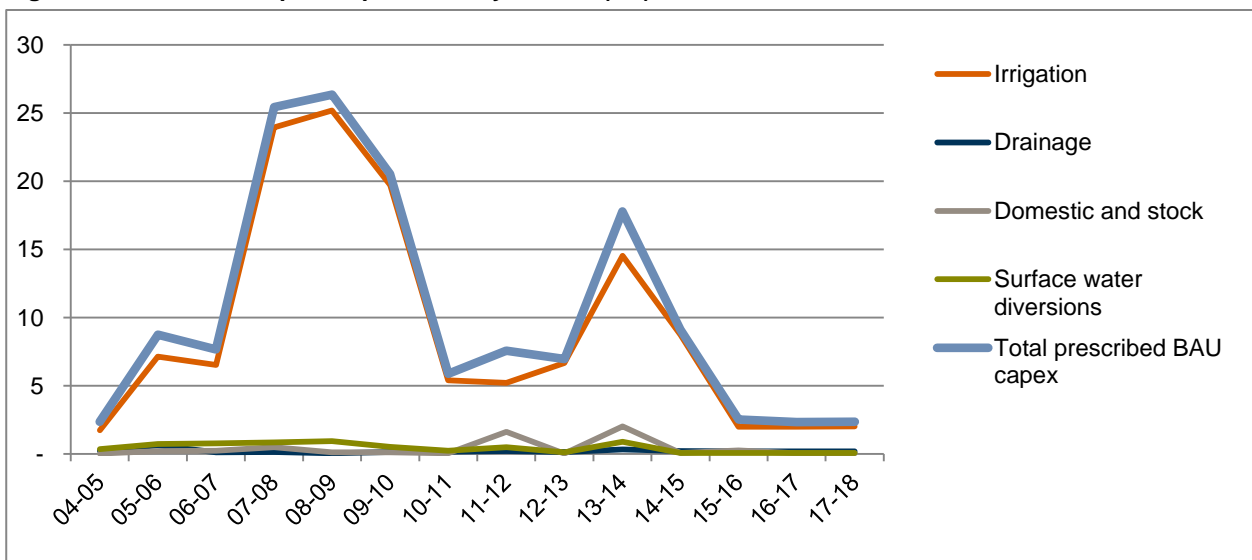


Figure 5-2 Rural capital expenditure by service (\$M)

5.3 Capital expenditure in current price path

The capital expenditure in the current price path for the urban business is summarised in Table 5-1 and Table 5-2 for the rural business.

Table 5-1 Actual capital expenditure in Water Plan 2 (\$M 12/13) – Urban

	08/09	09/10	10/11	11/12	12/13
Water	3.23	7.28	4.44	5.47	7.69
Sewerage	6.27	30.21	8.47	6.91	3.19
Recycled Water	1.73	11.83	1.20	-	-
Bulk Water	-	-	-	-	0.03
Total prescribed BAU capex	11.24	49.33	14.10	12.38	10.91

Table 5-2 Actual capital expenditure in Water Plan 2 (\$M 12/13) - Rural

	08/09	09/10	10/11	11/12	12/13
Irrigation	25.20	19.71	5.41	5.23	6.68
Drainage	0.06	0.15	0.17	0.21	0.15
Domestic and stock	0.13	0.13	0.06	1.63	0.03
Surface water diversions	0.95	0.53	0.25	0.50	0.12
Total prescribed BAU capex	26.35	20.52	5.89	7.57	6.97

LMW's performance in regards to actual versus budget expenditure in WP2 is shown in Table 5-3.

Table 5-3 Capital expenditure associated with outcomes (\$M nominal)

Service	Approved WP2	08/09 to 10/11 Actual	11/12 Actual	12/13 Forecast	Expected Total WP2	
Urban – Water & Sewerage	70.76	70.83	70.83	12.19	10.88	93.90
Rural – Water	57.19	48.43	48.43	7.45	6.98	62.86
Total	127.95	119.26	119.26	19.64	17.86	156.76

It was noted that an assessment of risks was a key aspect in LMW's selection of capex projects for WP3. LMW had undertaken a comprehensive assessment of risks across its facilities. Some of the risk assessments were sighted at our review, along with the recommended works to address the risks identified. A suggestion we discussed with LMW was that where a project was being proposed to address an assessed risk, then the expected residual risk should be noted. If it cannot be demonstrated that a project will adequately reduce the risk, then other options may need to be considered.

A review of an agency's performance delivering past capital expenditure can indicate whether there might be issues with an organisation's capacity to effectively deliver future capital programs. It can be seen from Figure 5-1 and Figure 5-2, that the highest level of capital expenditure in WP2 was for over \$70M in 2009/10. The highest level of capital expenditure in WP3 is \$30M in 2013/14. This figure is less than half the peak delivered in WP2. Also, the total capital expenditure proposed for WP3 totals around \$90M, much less than the \$128M originally proposed for WP2 and the \$157M actually delivered. These comparisons show that the WP3 capital program is substantially reduced from that in WP2 and could therefore be considered less of a challenge for LMW to deliver. However, these figures, and Table 5-3, also call into question the accuracy of the LMW's cost estimates and the ability for LMW to deliver projects on budget. Two projects that were completed over budget have been reviewed to verify if there may be such an issue (refer Section 5.5). While we believe that LMW needs to improve its cost estimating processes, we believe that on balance, it has the capacity to deliver the capital program planned for WP3.

5.4 Capital expenditure in the future price path

The forecast capital expenditure program by service is listed in Table 5-4 for the urban business and Table 5-5 for the rural business. Total expenditure across the regulatory period by service is illustrated in Figure 5-3.

Table 5-4 Urban forecast capital expenditure by service (\$M 12/13)

	13/14	14/15	15/16	16/17	17/18
Water	5.20	11.53	6.70	3.90	5.24
Sewerage	9.08	2.88	3.39	2.49	4.93
Total urban prescribed BAU capex	14.28	14.41	10.09	6.39	10.17

Table 5-5 Rural forecast capital expenditure by service (\$M 12/13)

	13/14	14/15	15/16	16/17	17/18
Irrigation	14.53	8.75	2.00	2.01	2.03
Drainage	0.33	0.21	0.19	0.19	0.19
Domestic and stock	2.02	0.09	0.25	0.05	0.05
Surface water diversions	0.89	0.08	0.08	0.08	0.08
Total rural prescribed BAU capex	17.77	9.13	2.53	2.34	2.35

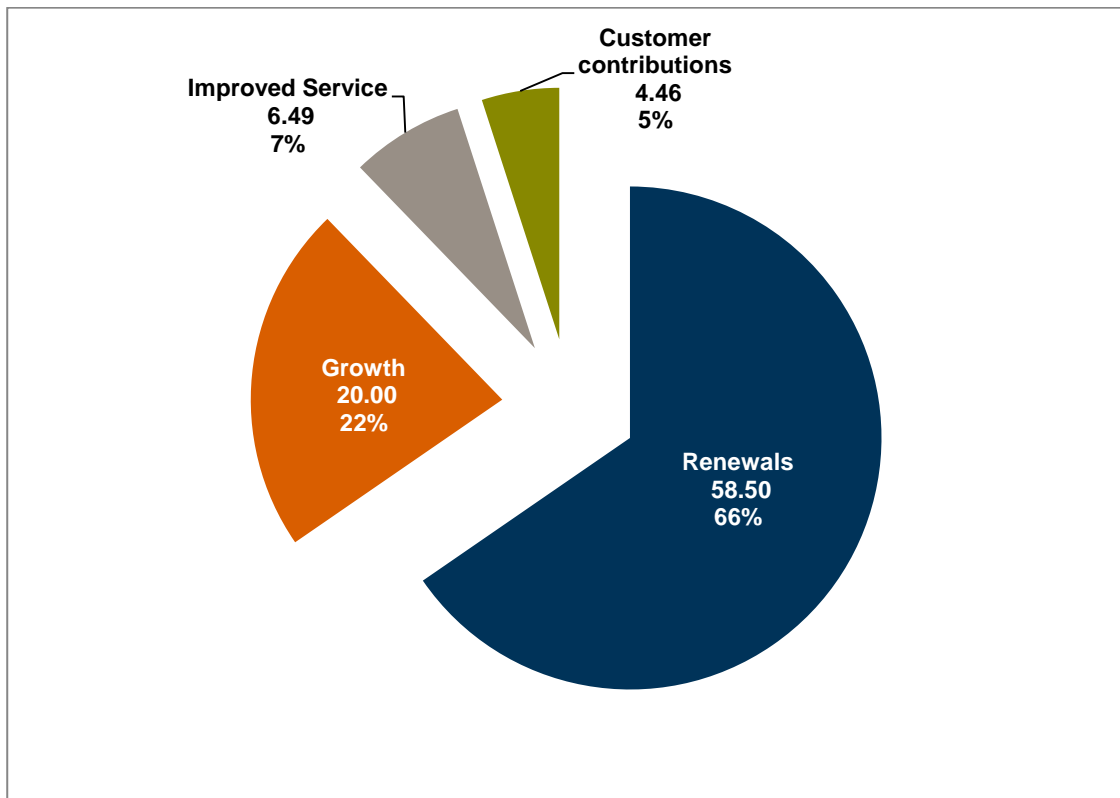


Figure 5-3 Total forecast WP3 capital expenditure by driver (\$M 12/13)

LMW has endeavoured to limit its capital expenditure in WP3 by:

- > Generally limiting renewal projects to those projects considered as a high priority in relation to risk
- > Delaying projects that are dependent on government funding (e.g. Sunraysia Modernisation Project).

The main risk with this approach is that if there is an inadequate level of asset renewal in the short term, the overall condition and performance of assets may decrease, increasing lifecycle costs and the risk of asset failure in the medium and long terms. However, there was no indication provided that the current levels of renewal were negatively impacting asset condition and performance. It is however recommended that LMW implement a process to monitor asset condition and performance and confirm that renewal expenditure is

adequate to minimise lifecycle costs and limit the risks of asset failure to an acceptable level. One indicator that is instructive is to compare the level of renewal expenditure to corrective maintenance, asset condition/age and service levels. LMW propose to undertake this analysis following the upgrade to Hansen 8.

The benchmarking information provided in Section 2.4 indicated that for rural water, the level of capital expenditure in 2009/10 as a ratio of current replacement cost of 3.5% was one of the highest amongst the other water businesses. That does not necessarily mean it was too high as the figures were for one year only. Nonetheless, the level has been greatly reduced for WP3.

Urban water and sewerage

Capital expenditure for urban water and sewerage forecast for WP3 is approximately 40% less than that for WP2. The reduction is mainly in the area of renewals. As discussed above, there is a risk associated with inadequate renewal expenditure, but there was no indication from the information we reviewed that the proposed renewal expenditure for WP3 is inadequate.

Rural water

Rural water forecasted capex for WP3 is approximately 46% less than for WP2. The reduction is mainly in the area of growth and improved service. LMW also took into consideration the potential for the Sunraysia Modernisation Project to receive government funding. A risk-based assessment was undertaken to consider affected assets proposed for renewal in WP3. This assessment resulted in some renewals being deferred.

5.5 Detailed review of sample capital projects

Water Plan 2 sample projects

Koorlong WWTP Augmentation and Recycled Water Project – WP2

The Koorlong WWTP Augmentation and Recycled Water Project was completed by 2010 and enabled the plant to service the Red Cliffs area, treat excess wastewater from Mildura WWTP, cater for future growth, and provide for the increased reuse of treated effluent. Total expenditure was \$41.1M, compared with the original budget of \$20.9M¹ in WP2. The main reasons for the total expenditure being 97% over the original budget are outlined as follows:

- > The original budget was based on a business case developed in 2006, which considered 3 options to meet the project objectives. Since then, major scope and design changes, which significantly increased the capital cost, were implemented to address the following needs:
 - To limit risks associated with managing the trade waste stream and to ensure quality to the 3rd party re-users
 - To 'future proof' the plant to allow for easy upgrade to produce Class A effluent.
 - To minimise lifecycle costs (which commonly required higher capital expenditure)
- > A significant increase in the cost of materials occurred at the early stages of the project. For example, the price of steel increased by 34% between March and May 2008. Such increases resulted in uncertainty and an upward trend in the pricing of infrastructure projects
- > The time leading up to tendering was a period in which the construction industry was experiencing a high activity level, resulting in an unanticipated escalation of construction costs.

LMW regularly updated the capital cost estimates for the project as the project developed. In September 2010 it developed a Business Case Addendum to address changes, including the price changes since the original Business Case was developed. The addendum noted that the final cost was significantly less than other projects known that were being undertaken to deliver similar plants.

Based on our review of this project we concluded that LMW needs to develop a more rigorous project delivery framework with greater attention to project scoping, cost estimation and greater scrutiny at various stages of the project cycle (including consideration of staging, re-scoping or deferring the project).

¹ Values quoted are in nominal dollars. The original budget was \$19.4M in July 2007 dollars

From its experience with this project LMW has also recognised the need to:

- > Allow for price escalation from the date of an estimate and the expected date of commencement and completion of the project works
- > Ensure budget estimates based on concept/preliminary designs have adequate contingency to manage risk and minimise lifecycle costs
- > Ensure, with future similar large and complex projects, that the head contractor adequately manages the subcontractor interfaces to ensure there aren't any major delays.

Robinvale High Pressure System – WP2

The Robinvale High Pressure System was a project that was completed by 2010 which provided high-pressure irrigation water to customers in the Robinvale area. The total expenditure was \$51.3M, compared with the original budget of \$47.5M². The main reasons for the total expenditure being 8% over the original budget are outlined as follows:

- > During the construction phase, the pipeline contractor went into liquidation. LMW was required to address issues with the standard of pipeline construction, which required approximately \$0.7M additional expenditure
- > The majority of the project completion and associated expenditure occurred over 4 years. There was no adjustment for price escalation of approximately 11% that occurred over that period
- > The original estimate and budget did not include the connection of domestic and stock customers. Such connections, requiring additional expenditure of approximately \$1.7M, were added to the project.

LMW also acknowledged the project was initially under-resourced, and the pipeline contractor needed greater management by LMW than expected.

The key related lessons from this project were:

- > Allow for price escalation from the date of an estimate and the expected date of commencement and completion of the project works
- > Ensure budget estimates include the full scope of works
- > Ensure the project delivery team has adequate capacity, including experience, and provide adequate supervision of construction works so issues with quality can be detected and addressed at an early stage.

Water Plan 3 Sample Projects

As required under the scope set by the ESC, we have reviewed a sample of capital projects to inform our opinion of LMW's future expenditure forecasts. Our findings are summarised below.

Mildura Water Supply Strategy Projects

Key driver: Growth

The Mildura Water Supply Strategy generally comprises the augmentation of the water supply system in Mildura to accommodate demands and supply standards to 2046. The strategy was developed by consultants GHD, and was based on estimates of future demand together with hydraulic modelling of the water supply system's capacity to meet such demands.

The works proposed were planned for delivery over WP2 onwards. Those works planned for delivery under WP2 have not been proceeded with due to lower than expected demands and changes in the strategy. The project works planned for WP 3 are listed in Table 5-6 below. They are currently in the planning stage. The timing of each project will be verified by demand growth assessed on a year-by-year basis to ensure the investment is neither too early nor too late.

² Values quoted are in nominal dollars. The original budget was \$45.5M in July 2007 dollars

Table 5-6 Mildura water supply strategy projects included in WP3

Project	Value (\$k)	Year scheduled
1930m of 450DN Watermain along Fourteenth St between Sundilong Ave & Koorlong Ave	1,675	2013/14
650m of 450DN Watermain along Fourteenth St between Koorlong Ave & Irymple Ave	564	2014/15
1270m of 600DN Watermain along Fourteenth St between San Mateo Ave & Benetook Ave	2,576	2014/15
1280m of 600DN Watermain along Fourteenth St between Benetook Ave & Sandilong Ave	2,600	2014/15
1370m of 300DN Watermain along Riverside Ave between Sixteenth St & Seventh St	825	2015/16
905m of 300DN Watermain along Riverside Ave between Benetook Ave & Seventh St	550	2015/16
1365m of 150DN Watermain along Ginquam Ave between Fourteenth St & Fifteenth St	600	2015/16
New 4 th duty pump and bypass at Mildura West WTP	400	2017/18
Increase capacity of Mildura West WTP by 20ML/d	1,000	2017/18

The Business Case for the above projects addressed technical asset-based options to meet the forecasted growth and demands. However, it did not address options such as 'do nothing' and/or defer the projects through demand management. In the National Performance Report for 2010/11, water usage by LMW customers was shown as 313kL/property, which was the highest usage amongst other similar water businesses. LMW advised that it is implementing demand management measures (such as Water Savings Rules, sprinkler and shower head exchange program), and had found further water leakage reduction not feasible. With a significant degree of uncertainty in regards to future post drought/flood water usage levels, we have not proposed adjustments to capex forecasts to suit demand management options. But such options should be considered further by LMW, noting they may impact later projects after measures have time to be implemented and realise benefits.

The timing of the projects generally correspond with the required timing identified in the strategy document. The only exceptions are discussed as follows:

- > The 1280m of 600DN watermain along Fourteenth St between Benetook Ave & Sandilong Ave, scheduled for 2014/15 FY. The strategy document indicates this project is not required until the year 2021. LMW advised that it has been moved forward to 2014/15 so it can be undertaken in conjunction with the adjacent 600DN watermain along Fourteenth Ave, providing potential cost savings due to 'economies of scale'. However, the potential savings do not appear to be reflected in the cost estimates, and there was no analysis providing support for moving the project forward. We therefore propose that this project and expenditure be moved back to WP4
- > New duty pump and bypass at Mildura West WTP, scheduled for 2017/18 FY. The strategy document indicates this project is not required until the year 2021. Though the strategy document indicates the project should proceed in WP3, there appears to be no reason it should not be deferred to 2020 (as part of WP4). We therefore propose that this project and expenditure be moved back to WP4
- > Increase capacity of Mildura West WTP by 20ML/d, scheduled for 2017/18 FY. The strategy document indicates this project is not required until the year 2021. Though the strategy document indicates the project should proceed in WP3, there appears to be no reason the construction works, and therefore the majority of the expenditure, should not be deferred to take place in 2020 (as part of WP4). We therefore propose that this project and expenditure be moved back to WP4.

The cost estimates for each project are documented in the strategy documents. The estimates include an allowance of 25% and 15% for contingencies and project delivery. This is considered reasonable for budget purposes. The costs are based on 2011 rates and cost data.

A review of the unit rates used for some of the pipeline projects was undertaken, with a comparison of Cardno rates provided in Table 5-7 below.

Table 5-7 Comparison of pipeline unit rates

Type of pipe	Unit Rate used in WP3	Cardno Unit Rate	Comments
300DN uPVC	\$516/m	\$370 - 490/m	Unit rate for WP3 is slightly higher than Cardno rate range. As the design consultants are more familiar with the site, it is not proposed to adjust the rate.
450DN MSCL	\$744/m (for uPVC)	\$1,200 - 1590/m	Unit rate for WP3 based on UPVC pipe. It is not common practice to use uPVC pipes for large diameter pipelines such as 450DN. LMW confirmed also that this was not their practice, which is to use metallic pipes for large diameter pipelines. We propose to adjust the capital cost to suit the Cardno unit rate range for MSCL pipes
600DN MSCL	\$1,740/m	\$1,470 - 1,950/m	.

Note: The above rates include an allowance for fittings, valves and hydrants, but not for contingencies

The projects are of relatively low value. They primarily consist of new pipelines within road reserves, making them relatively simple and unlikely to have delays. Therefore it is considered there is a low risk that the projects will not be delivered as scheduled. The main exception would be if the actual future demand varies significantly from the predicted demand, requiring the timing of the works to change.

Mildura Irrigation System Essential Replacements and Overhauls – Central Pump Station Modernisation

Key driver: Renewals

Mildura Irrigation System Essential Replacements and Overhauls is a program of projects deemed required to address high risks to service delivery. LMW utilised the services of engineering consultants SKM to assess the risks, identify the required projects, and prioritise the projects based on the risk. The estimated total cost of the projects included in WP3 is \$6.79M.

The highest value project, with an estimated cost of \$3.53M, is the Central Pump Station Modernisation.

In the time available for the review, LMW was not able to provide a concise breakdown of the scope and cost, nor reconcile the final scope and cost estimates with SKM's concept design report which showed the total value of the project being \$5.9M. LMW provided capital works spreadsheets which were structured differently to the WP3 input, along with the following clarification:

- > In regards to the SKM concept design report, the recommended works were not fully accepted and thus the total of \$5.9M no longer reflected the scope of works proposed. The SKM estimates were for the concept phase only. The detailed design phase has commenced, providing more accurate estimates with lower contingencies
- > The scope of works now comprises:
 - \$108k for completion in 2013 of electrical upgrade which commenced in 2010
 - Replacement of motors and switchboards
 - Pump Station automation
 - \$65k for completion of cathodic protection in 2013
 - Design, project management and construction supervision
- > Separate project briefs were not developed, and instead the original SKM/LMW risk assessments were checked to confirm the scope.

The basis of the final cost estimates was not provided. SKM's concept design report does not discuss the basis of its cost estimates, but in the appendices there are copies of quotations provided by different service providers, indicating that quotations form the basis of some of the estimates. If this is the case, the estimates can be assumed to be relatively accurate.

SKM's report 'Sunraysia Modernisation Project - Scoping & Prioritisation Workshop Report' was presented to the Board. No business case was developed as the SKM report was seen as adequate justification for the works. However, the SKM report did not address aspects that are commonly covered in Business Cases, a key one being the consideration of options.

The works at Central Pump Station started this year with installation of valves, removal of redundant pump sets and civil modifications. Works will continue for this year and into 2013/14. As the work has already commenced, and the total value of the remaining work is relatively low, it is considered there is a low risk that the project will not be completed as scheduled.

WTP Water Quality Improvements

Key driver: Improved service

The WTP Water Quality Improvements project is a program of works at LMW's water treatment plants to improve the ability of the plants to cater for dirty water events in the Murray River. LMW utilised the services of Hunter Water Australia (HWA) to review each WTP and identify the necessary augmentations. Their report (Lower Murray Water WTP Optimisation Report - June 2011) provided their findings and recommended augmentations, which were valued at \$5.2M.

The findings from the reports were inputted into LMW's Site Works and Spending (SWS) Plans. HWA were then engaged to review the SWS Plans for finalisation for use in the WP3 capital expenditure forecasts. This included a 'sanity check' of the cost estimates. Two further workshops were held between LMW and HWA to verify inclusions in WP3, including cost estimates and timing. The scope of the project was varied slightly, and the estimated cost increased to \$5.7M. LMW provided a spreadsheet that reconciled the difference. It was noted that Table 24 of LMW's Urban Water Plan indicated the estimated cost of the project as \$6.6M. LMW advised that Table 24 is just a summary of key projects and accounted for less than 80% of the forecasted capex and does not represent a summary of the forecasted capex. We accept this explanation and did not investigate this discrepancy further.

Options were considered as part of the above workshops.

The basis and details of the final cost estimates were not provided. HWA's report does not discuss the basis of their cost estimates, except to state they were preliminary and intended to assist LMW in scheduling and budgeting. LMW advised separately that HWA had used a 40% mark-up to cover contingencies and project/contract management.

LMW presented the proposed works to the Board for its approval. No business case was developed as the HWA report was seen as adequate justification for the works. However, the report did not address aspects that are commonly covered in Business Cases, a key one being the consideration of options.

The proposed works will be completed over the full period of WP3, with the annual expenditure peaking at \$6.3M in 2015. There should be sufficient time to ensure preparatory work, such as designs and tenders, can be completed in advance to enable the work in that year to be completed on schedule. In 2013/14, the expenditure is valued at \$2.7M. Some of the design for WP3 work is already underway (e.g. for automation at Mildura and Piangil WTPs), with some designs completed (e.g. for the typical temporary dosing arrangements) and some quotations for works already received (e.g. for the polymer upgrade at Mildura WTP). Therefore it is considered the 2013/14 works should be able to be completed on schedule. Overall, there was no indication provided of a significant risk of the total project works not being completed on schedule.

While we believe that LMW can improve its options analysis, we are comfortable that a need exists for these works. While LMW has engaged external consultants to provide expert advice on the most appropriate works to address the risks identified, options analysis should always be performed for significant items of expenditure to support the option selected.

Sewer Renewals

Key driver: Renewals

Sewer renewals comprise the renewal of sewerage pipelines and manholes. The scope of works for each year is developed based on an assessment of the risk of failure of the assets and minimising life-cycle costs.

LMW has a formal process for the selection of sewer pipelines for renewal. It takes into account the criticality of the pipelines, results from any inspections (such as CCTV), and history of failures. Sewerage pipeline renewals primarily comprise of relining of gravity sewers.

For sewer manholes, renewal needs are determined based on visual inspections.

GHD has undertaken a review of the future renewal expenditure required for LMW's urban water pipelines, urban sewerage pipelines and manholes, and rural drainage pipelines. As part of this review, GHD considered the performance history and replacement cost profiles (RCProfile) for the assets. Relevant findings and recommendations are as follows:

For sewerage pipelines

- > The 20 year average annual asset replacement cost was around \$0.7M, with the required annual expenditure exceeding this between 2011 and 2020, and between 2035 and 2080
- > Taking into account replacement backlog, and the RCProfile for WP3, the adjusted RCProfile for WP3 equates to an average of \$2.0M per annum
- > Over the past 5 years, LMW average annual expenditure on renewals has been \$0.87M
- > Network performance has indicated that the recent levels of expenditure have maintained the performance of the sewerage network
- > Based on the above, it was recommended that the annual renewal expenditure be increased to \$0.9M for WP3 and to \$1.2 M for WP4.

For sewerage manholes

- > The 20 year average annual asset replacement cost was around \$0.16M, with the required annual expenditure exceeding this between 2020 and 2030, and between 2040 and 2097
- > Taking into account replacement backlog, and the RCProfile for WP3, the adjusted RCProfile for WP3 equates to an average of \$0.09M per annum
- > Over the past 5 years, LMW expenditure on renewals has been relatively minor
- > Based on the above, it was recommended that the annual renewal expenditure be increased to \$0.1M for WP3 and to \$0.2 M for WP4.

LMW presented the proposed sewer renewals expenditure levels to the Board for its approval as part of an overall presentation of WP3 capital expenditure. No business case was developed as the GHD report was seen as adequate justification for the works. However, the report did not address aspects that are commonly covered in Business Cases, a key one being the consideration of options.

The forecasted expenditure in WP3 for sewerage pipeline and manhole renewals is generally in accordance with GHD recommendations. However, LMW has not separately forecast expenditure for renewal of manholes, advising that it would be covered under the \$0.9M annual allowance for sewer pipelines. Therefore the expenditure in WP3 is \$0.1M less than recommended by GHD.

This forecasted expenditure is also less than that indicated from the RCProfile as being required. But this currently does not appear to be an issue for the following reasons:

- > The RCProfile does not necessarily reflect the actual condition of the assets
- > Information available to LMW, such as performance history and asset inspection findings, indicates the actual condition of the assets is better than indicated by the RCProfile
- > LMW has a robust process to identify and replace assets that are in actual need for renewal
- > The RCProfile is based on assets being replaced rather rehabilitated, the latter which is a more common practice and has a lesser capital and lifecycle cost.

We recommend that the forecasted expenditure for renewal of sewerage pipelines be increased from \$0.9M to \$1.0M pa to account for the allowance of \$0.1M pa for sewerage manholes as recommended by GHD.

5.6 Conclusions and recommendations

Based on the above findings, the assumption that sample projects assessed are representative of the other project expenditure proposed, and the lack of findings indicating otherwise, we have come to the following conclusions:

- > The proposed capital expenditure is appropriate in regards to key drivers and obligations
- > LMW's processes for developing capital expenditure forecasts are reasonably robust, with adequate documentation supporting the need for the projects. However opportunities exist for improving the process of selecting the best option
- > That LMW, supported by external resources, have the capacity to deliver the projects.

The supporting documentation provided for the majority of cost estimates for the sample projects was limited, and therefore difficult to come to a conclusion on the suitability of the estimates. LMW advised that it has utilised professional engineering consultants to develop such estimates, and independently check those for larger sub-project items. It is therefore confident that the estimates are suitable for budgetary purposes.

We have considered the impact of the inadequate solution development for some projects and believe that no adjustments to LMW's capital expenditure should be made other than the deferrals to the elements of the Mildura Water Supply strategy, an increase in unit rates for some mains and a small increase in sewer renewals expenditure, as noted.

We do not propose any adjustments to capital expenditure where we noted that the supporting information could be improved. This is because we were satisfied for all projects reviewed that there was a clear need for the expenditure. That is, that it was prudent. While we believe that better options analysis should have been undertaken by LMW, we note that the works proposed are generally not complex and that the proposed solutions were likely to be appropriate. While we believe that LMW should provide more background to its cost estimates, we did not note any bias to overstate costs.

To improve the robustness of LMW's capital works planning and implementation process, we recommend the following be implemented:

- > A more formalised capital delivery process should be established. LMW should develop and document a standard process for the capital works approval process, from the identification of a need for a project to the approval to proceed with implementation of capital expenditure for the project, and a formalised project prioritisation process to develop the capital program
- > Develop and utilise standard requirements/templates for key documents, such as business cases
- > Implement a process to ensure the level of renewal expenditure is adequate to minimise lifecycle costs and limit level of risks of asset failure. One indicator is comparing the level of renewal expenditure to corrective maintenance, asset condition/age and service levels
- > Where projects have been developed to address a significant risk, the supporting documentation should detail the current risk and the expected residual risk
- > Stipulate a requirement, on staff and consultants, that reports containing cost estimates should advise: the basis (inclusions and exclusions) and accuracy of the estimates; of allowances for contingencies and project/contract management; and a cost breakdown where relevant. For high risk/ high cost projects the services of an independent cost estimator should be sought. The development of an appropriate cost estimation guideline is recommended
- > Stipulate a requirement, on staff and consultants, that all planning studies should consider options including non-capital solutions such as demand management.

Our recommended changes to LMW's forward capex are provided in Table 6-3 and Table 6-4.

6 Recommended opex and capex forecasts

6.1 Opex forecasts

Our recommended levels of opex for LMW in WP3 are shown in Table 6-1 and Table 6-2. We have not recommended any changes to LMW's forecasts for opex.

Table 6-1 Recommendations for LMW's operating expenditure forecasts – Urban Water (\$M)

	13/14	14/15	15/16	16/17	17/18
Final Water Plan 3	18.89	18.97	19.37	18.94	19.05
Cardno recommended	18.89	18.97	19.37	18.94	19.05
Net change	0	0	0	0	0

Table 6-2 Recommendations for LMW's operating expenditure forecasts – Rural Water (\$M)

	13/14	14/15	15/16	16/17	17/18
Final Water Plan 3	20.30	20.51	20.65	20.79	20.81
Cardno recommended	20.30	20.51	20.65	20.79	20.81
Net change	0	0	0	0	0

6.2 Capex forecasts

Our recommended levels of capex for LMW in WP3 are shown in Table 6-3 and Table 6-4.

For LMW's forecasts for Urban Water, we have made the following revisions:

- > The expenditure for sewer renewals has been increased from \$0.9M to \$1.0M pa to incorporate sewer manholes and the recommended expenditure adjustment for this is \$0.1M pa.
- > The expenditure for the Mildura Water Supply Strategy has been reduced by \$0.9M with three projects being deferred until WP4 as the strategy had indicated they were not required until then, and the cost estimate of two pipeline projects were increased as the cost estimate rates used were considered to be inadequate.

We have not recommended any changes to LMW's forecasts for Rural Water.

Table 6-3 Recommendations for LMW's Capital Expenditure Forecasts – Urban Water

	13/14	14/15	15/16	16/17	17/18
Final Water Plan 3	14.28	14.41	10.09	6.39	10.18
Cardno recommended	15.87	12.51	10.19	6.49	8.88
Net Change*	1.59	(1.90)	0.10	0.10	(1.30)

Table 6-4 Recommendations for LMW's capital expenditure forecasts – Rural Water

	13/14	14/15	15/16	16/17	17/18
Final Water Plan 3	17.77	9.13	2.53	2.34	2.35
Cardno recommended	17.77	9.13	2.53	2.34	2.35
Net Change	0	0	0	0	0