

2012 Review of Water Prices

Assessment of Expenditure
Forecasts for Goulburn-Murray
Water

3603/64.003



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Glossary

Term	Definition
ACCC	Australian Competition and Consumer Commission
ALARP	As Low As Reasonable Practical
AMP	Asset Maintenance Program
ANCOLD	Australian National Committee on Large Dams
Capex	Capital Expenditure
CPI	Consumer Price Index
CRC	Current Replacement Cost
DHS	Department of Human Services
EPA	Environmental Protection Authority
EPM	Enterprise Project Management System
ESC	Essential Services Commission
FAR	Fixed Asset Register
FMECA	Failure Modes Effects and criticality Analysis
FTE	Full Time Equivalent
FY	Financial Year
GIS	Geographical Information System
GL/yr	Gigalitres per year
G-MW	Goulburn-Murray Water
GWM	Grampians Wimmera Mallee Water
ISO	International Organisation for Standardisation
IT	Information technology
KPI	Key Performance Indicator
LOS	Level of Service
LMW	Lower Murray Water
MCA	Multi-Criteria Analysis
MDBA	Murray-Darling Basin Authority
NPR	National Performance Report
NPV	Net Present Value
NVIRP	Northern Victoria Irrigation Renewal Project
NWC	National water Commission
NWI	National Water Initiative
O&M	Operations & Maintenance
OM&A	Operation. Maintenance and Administration
Opex	Operating Expenditure
P ₅₀	50th Percentile

Term	Definition
P ₉₀	90th Percentile
RAB	Regulated Asset Base
RCM	Reliability Centred Maintenance
SCADA	System Control and Data Acquisition
SRW	Southern Rural Water
VAGO	Victorian Auditor-General's Office
WDV	Written Down Value
WIRO	Water Industry Regulation Order
WP	Water Plan

Executive Summary

Cardno has been engaged by the Essential Services Commission (ESC) to undertake an independent review of the expenditure forecasts provided by Goulburn-Murray Water (G-MW) as part of its Water Plan submission for the period 2013/14 to 2015/16.

Operating expenditure forecasts – determination of baseline operational expenditure

G-MW has developed its forecast opex by adjusting its 2011/12 actual expenditure to formulate a baseline figure that is representative of business-as-usual. ES Table 1 below reconciles the 2011-12 actual opex to its 2011-12 baseline opex.

ES Table 1 Reconciliation of 2011-12 actual opex to baseline opex (\$M)

Adjustment	Amount
Actual 2011/12 Business as Usual Opex	82.50
One-off flood recovery expenditure	(0.57)
Baseline 2011/12 Business as Usual Opex	81.93

Operation expenditure forecast - escalators

CPI

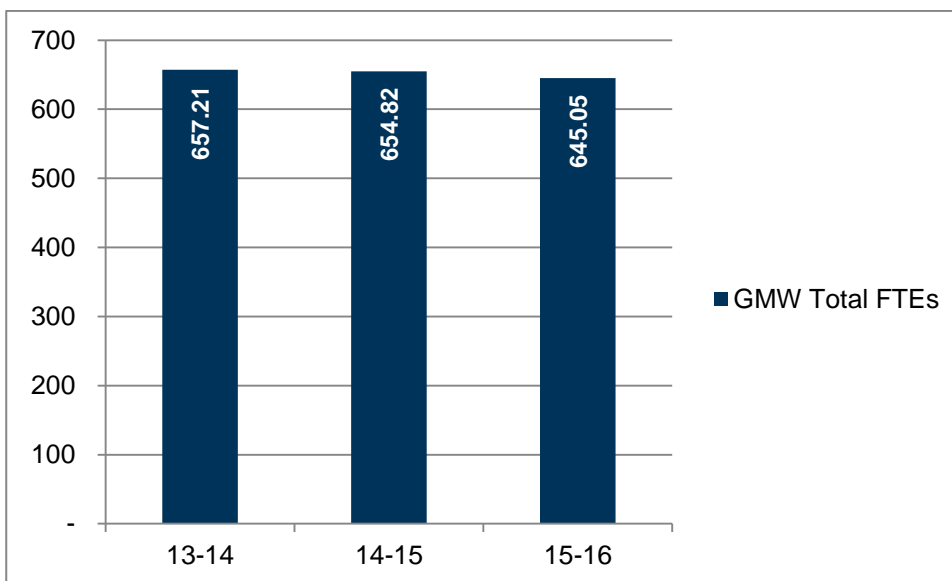
G-MW has assumed the following escalation factors as listed in ES Table 2 and is consistent with the CPI factors provided by the ESC.

ES Table 2 Assumed CPI

	2013/14	2014/15	2015/16
CPI (per annum)	2.75%	2.75%	2.75%

Labour

Labour represents over 60% of G-MW's operating expenditure and its number of FTE's has been forecast to decrease from 657.21 to 645.05 as indicated in ES Figure 1.



ES Figure 1 G-MW's forecast FTEs for WP3

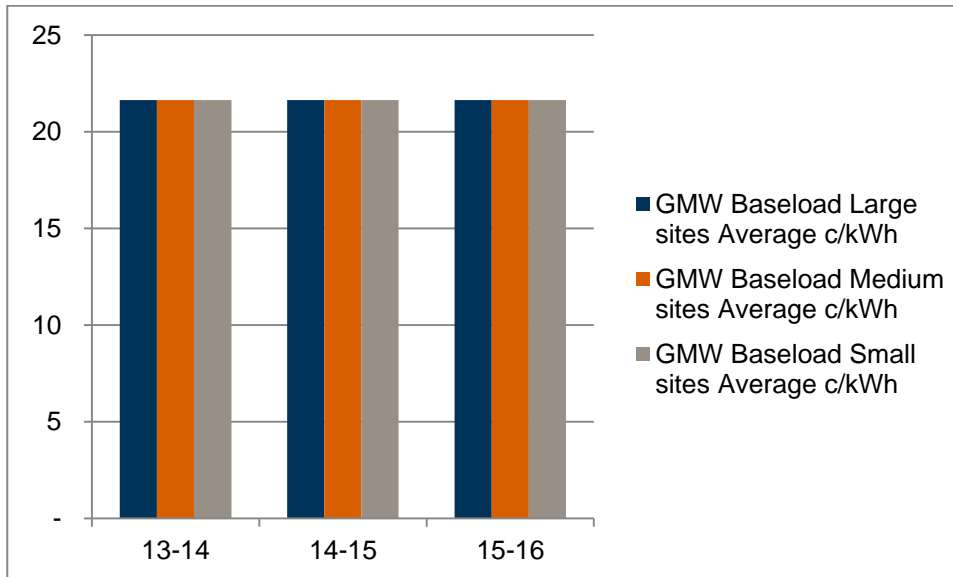
In its WP3 submission, G-MW has assumed a 4% per annum increase as per its Enterprise Bargaining Agreement (1.25% real) for labour until July 2014 which will remain in force until June 2015. However, as indicated in ES Table 3, the application of this increase is not immediately obvious due to the continued restructuring of the business reflecting a 1.50% annual growth in labour cost per FTE in G-MW's total labour costs.

ES Table 3 G-MW labour growth assumptions

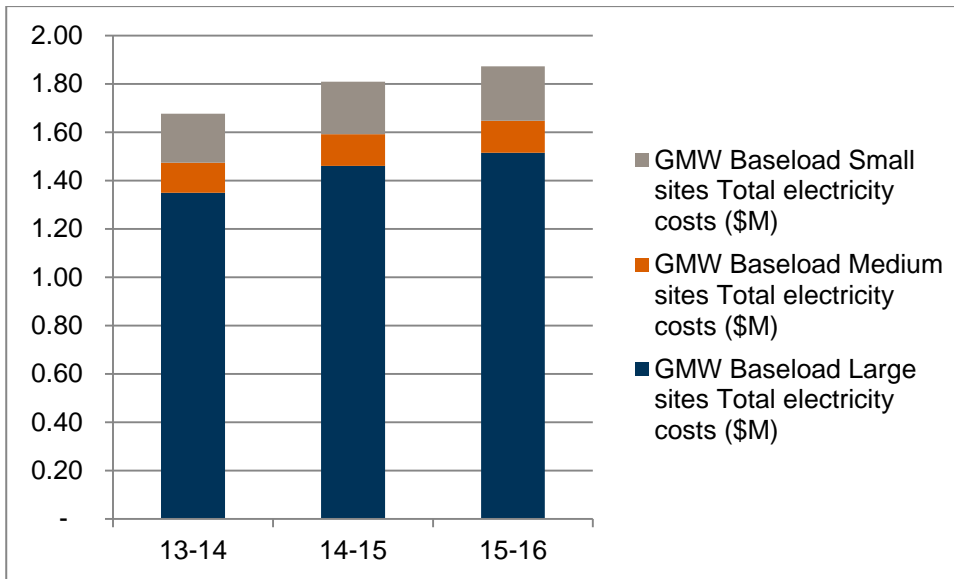
	13/14	14/15	15/16
Forecast labour costs (\$M)	63.76	64.71	65.68
Cost per FTE (\$M)	0.10	0.10	0.10
Annual growth in total labour costs per FTE	1.50%	1.50%	1.50%

Electricity

G-MW has assumed a zero real increase in the cost of electricity in the next price path; however it has also forecast an increased demand for electricity as a result of increased pumping as indicated in ES Figure 2 and ES Figure 3.



ES Figure 2 Forecast average c/kWh



ES Figure 3 Forecast electricity cost by site size

Carbon Price

Following its review of the Draft Report G-MW advised that they had not fully taken into account the impact of the Carbon Price in its operating costs. We have discussed the likely impact of this with the Essential Services Commission and have been advised that no allowance is to be made for the impact of this pricing mechanism over that already allowed for in the assumed rate of inflation of 2.75%.

G-MW responded to this advice by emphasising that it had invested a significant amount of time, money and effort to put forward a rigorous and defensible estimate of the impacts of the Carbon Price on its business. Its forecasting indicates that the Carbon Price will increase operating costs in the vicinity of 1% per annum.

We note G-MW’s concerns but have not amended its operating costs forecasts.

Chemicals

Due to the nature of the G-MW’s business, chemical costs are not significant in determining its future operational expenditure requirements.

Productivity

G-MW is proposing an annual \$1M cumulative productivity gain over the price path. This exceeds the ESC requirement of an annual 1% productivity improvement on its baseline operating expenditure.

ES Table 4 G-MW productivity dividend

	13/14	14/15	15/16
Productivity Dividend (\$M)	(1.00)	(2.00)	(3.00)

Operation expenditure forecast – WP3 submission

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

The final recommendations for G-MW’s operating and capital expenditure for the third regulatory period are outlined in ES Table 5.

ES Table 5 Recommendations for G-MW's operating expenditure forecast (\$M)

	Current Price Path		Future Price Path		
	11/12	12/13	13/14	14/15	15/16
Irrigation	49.57	53.49	53.73	54.86	54.75
Drainage	6.09	6.17	6.38	6.43	6.42
Domestic and stock	0.67	0.72	0.64	0.64	0.64
Surface water diversions	3.72	4.59	5.24	5.26	5.28
Groundwater diversions	3.17	3.32	4.26	4.24	4.24
Bulk water services	19.29	22.13	25.09	28.01	27.73
Productivity Dividend			(1.00)	(2.00)	(3.00)
Total Business as Usual	82.50	90.43	94.35	97.43	96.06
<i>New initiatives and obligations</i>		0.62	1.47	1.66	1.26
External bulk water charges (excl. temporary purchases)	-	-	-	-	-
External temporary water purchases	-	-	-	-	-
Licence fees	0.11	0.09	0.18	0.09	0.18
Environment Contribution	1.55	1.53	1.69	1.69	1.69
Total prescribed opex	84.16	92.66	97.68	100.86	99.18
Fully Government funded programs/projects	4.85	6.02	0.24	0.24	0.24
Fully customer funded programs/projects	-	-	-	-	-
Cardno Recommended			97.68	100.86	99.18
Net Change			0	0	0

Capital expenditure forecasts

The final recommendations for G-MW's capital expenditure forecasts for the third regulatory period are outlined in ES Table 6.

ES Table 6 Recommendations for G-MW's capital expenditure forecast (\$M)

	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16
Irrigation	11.38	13.66	23.56	14.66	16.46	10.72	15.86	16.39
Drainage	1.07	1.26	1.68	0.97	1.42	1.59	2.49	2.68
Domestic and stock	0.06	0.02	0.05	0.04	0.06	0.06	0.04	0.03
Surface water diversions	0.81	0.27	0.26	0.13	0.28	0.86	1.19	1.15
Groundwater diversions	0.53	0.19	0.34	0.14	0.23	0.61	0.84	0.78
Bulk Water	14.05	12.89	9.01	6.06	10.00	8.60	13.87	6.42
Total prescribed BAU capex	27.90	28.30	34.89	22.01	28.45	22.45	34.28	27.44
Government contributions	4.88	3.04	0.68	0.01	0.01			
Customer contributions	5.25	3.15	5.85	2.90	2.04	10.72	15.86	16.39
Cardno Recommended						22.45	34.28	27.44
Net Change						0	0	0

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 G-MW'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
Tullaroop Reservoir	Compliance	\$8M
Mildura/Merbein Salinity Interception Scheme	Compliance	\$4.9M
Access Tracks and Fencing	Improved service	\$13M
Backbone remodelling	Improved service	\$5.4M

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

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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.

As Goulburn-Murray Water (G-MW) draws water from the Murray Darling Basin its pricing is subject to *Pricing principles for price approvals and determinations under the Water Charge (Infrastructure) Rules 2010*, Australian Competition and Consumer Commission (ACCC), July 2011. The ESC is the regulator and accredited state agency but is required to determine prices based on the aforementioned pricing principles. *Section 2.1 Initial approval or determination* of the document, states that the first regulatory period will be for 3 years while subsequent regulatory periods will for four years.

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 three year period commencing 1 July 2013 from Goulburn-Murray Water (G-MW).

The ESC is required to assess the proposals set out in G-MW's Water Plan, 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 G-MW'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 G-MW as part of its Water Plan submission for the three 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 G-MW'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 G-MW'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 G-MW'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.
- > G-MW 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 G-MW'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 G-MW'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 G-MW staff between the 27 and 29 November 2012.
- > Preparation of a Draft Report that identifies our preliminary views on G-MW's proposed expenditure forecasts and the nature of further work and investigation that will be undertaken.
- > Accept comments on the Draft Report.
- > Issue of a Final Report that identifies our final view on G-MW's proposed expenditure.

We found that G-MW staff responded in a professional and cooperative manner to this review.

2 Profile of G-MW

2.1 Overview of G-MW

Goulburn-Murray Water (G-MW) was formed on 1 July, 1995 when the Rural Water Corporation was dissolved.

G-MW manages water-related services in a region of 68,000 square kilometres, bordered by the Great Dividing Range in the south and the River Murray in the north and stretching from Corryong in the east downriver to Nyah. G-MW also operates salinity mitigation works on the Murray downstream of Nyah, manages Mildura Weir, delivers bulk water to supply points outside its region and is the Victorian Constructing Authority for the Murray-Darling Basin Authority.

G-MW is Australia's largest rural water authority and provides a wide range of water services across northern Victoria. G-MW:

- > Manages 16 storages to harvest, store and supply water to irrigators, the environment and urban water corporations.
- > Is the Water Resource Manager for northern Victoria which means that it makes seasonal determinations for all regulated river systems in the region.
- > Manages 6 major gravity irrigation districts, where it delivers water and drainage services to 14,000 customers.
- > Runs 3 pumped irrigation schemes with services delivered by pipeline to 680 properties.
- > Allocates and delivers water to customers on regulated river systems.
- > Manages access to water resources by licensing diverters in unregulated streams and groundwater aquifers to ensure equitable sharing of the resource between these customers and also with the environment.
- > Delivers water to customers in piped and channel-fed stock and domestic schemes.
- > Manages the Loch Garry regulator which provides flood protection services to the adjoining landowners.
- > Provide water registry and water trading service to irrigators.
- > Is the Murray-Darling Basin Authority's appointed construction authority.
- > Provides natural resource management services to the State Government and Catchment Management Authorities.
- > Provides a wide range of services at its dams to support amenity and recreational activities including houseboats, boat ramps, BBQs and toilets.

G-MW has approximately 739 staff that serves a customer base of around 37,000 in northern Victoria. It has revenue of about \$160 million per year and its assets have a current replacement cost of approximately \$5 billion.

2.2 Governance and organisational structure

G-MW is a water corporation owned by the State Government and governed by a Board of Directors, who are appointed by the Minister for Water.

G-MW has functions and powers under the Water Act 1989 to provide, manage and operate an irrigation district (section 221), a water district (section 163) and a waterway management district (section 189).

The organisational structure of G-MW is in the process of being updated. Figure 2-1 provides an overview of the proposed structure.

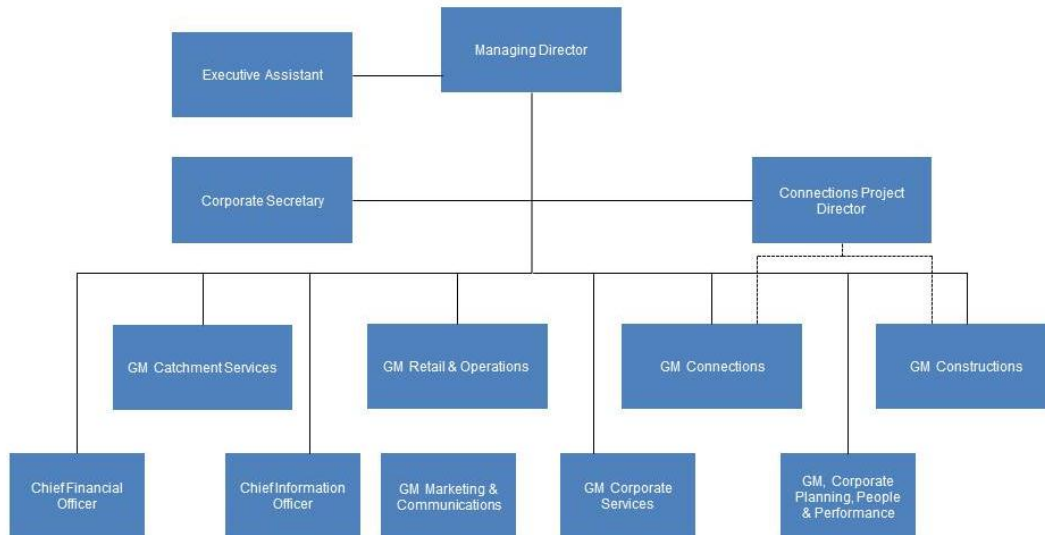


Figure 2-1 Organisational structure – proposed

2.3 Changes in service standards

G-MW's current approved service standards are articulated in Water Plan 2, the ESC's Rural Water Customer Service Code and included in its Customer Charter. The ESC has advised that the service standards in Water Plan 3 should be:

- > Maintained at current levels, without deterioration.
- > Increased only with strong customer support.
- > Linked to increased performance where there are increases in expenditure.
- > Positively impacted by the benefits of the NVIRP investment.
- > Included in a revised Customer Charter.

G-MW's Service Standards for Water Plan 3 are, based on achieving "business as usual" service outcomes with implementation of improvements, where possible, through efficiency and modernisation programs.

The main change between Water Plan 2 and Water Plans 3 and 4 is that customer standards are set at a whole-of-region level rather than at an individual irrigation district level. This change has arisen due to the *Modernisation and Connections Program* which will automate the irrigation system backbone and reduce the length of channel by nearly 50%. G-MW considers that this will establish an enhanced and standardised level of service across the region.

The proposed service standards for Water Plan 3 are summarised in Table 2-1.

Table 2-1 Proposed changes in service standards

Category	Proposed Change
General customer base	<ul style="list-style-type: none"> ▪ No change
<ul style="list-style-type: none"> ▪ Licencing and Administration ▪ Customer Service 	
Bulk Water customers	<ul style="list-style-type: none"> ▪ No change
Gravity Irrigation Districts	Improvements are programmed to occur as system modernisation is complete
<ul style="list-style-type: none"> ▪ Water delivery 	<ul style="list-style-type: none"> ▪ Water delivery efficiency increases from 78% in 2013/14 to 79% in 2015/16 ▪ % of orders delivered on day requested increases from 91% to 93%. This indicator will become superfluous once the system is fully automated ▪ New standards introduced: <ul style="list-style-type: none"> ○ % of orders within +/- 10% of flow rate for 90% of time - 80% ○ % of orders within +/- 40mm of supply level 90% of time – 80%
<ul style="list-style-type: none"> ▪ Maintenance 	<ul style="list-style-type: none"> ▪ No change
<ul style="list-style-type: none"> ▪ Irrigation drainage 	<ul style="list-style-type: none"> ▪ No change
Pumped Irrigation Districts	<ul style="list-style-type: none"> ▪ No change apart from a commitment to reduce pipeline bursts and leaks over time. Standard is 17.5 bursts and leaks per 100km in 2013/14 reducing to 16.5 bursts and leaks per 100km in 2015/16
Water Districts	<ul style="list-style-type: none"> ▪ No change ▪ G-MW has a commitment to review domestic and stock customers who are still serviced off older earthen channels onto new piped schemes as these customers currently receive a poor standard of service
Diverters	<ul style="list-style-type: none"> ▪ No change

2.4 Asset base

G-MW manages 16 bulk water storages, over 6,500km of gravity irrigation channels, over 3,000km of surface water drains, 900km of piped supplies and more than 20,000 structures. The current replacement cost of assets is in the order of \$5 billion with its written down value being in excess of \$4 billion (*Fair Value – VAGO – 2011*). The breakdown of the asset base by value is shown in Figure 2-2.

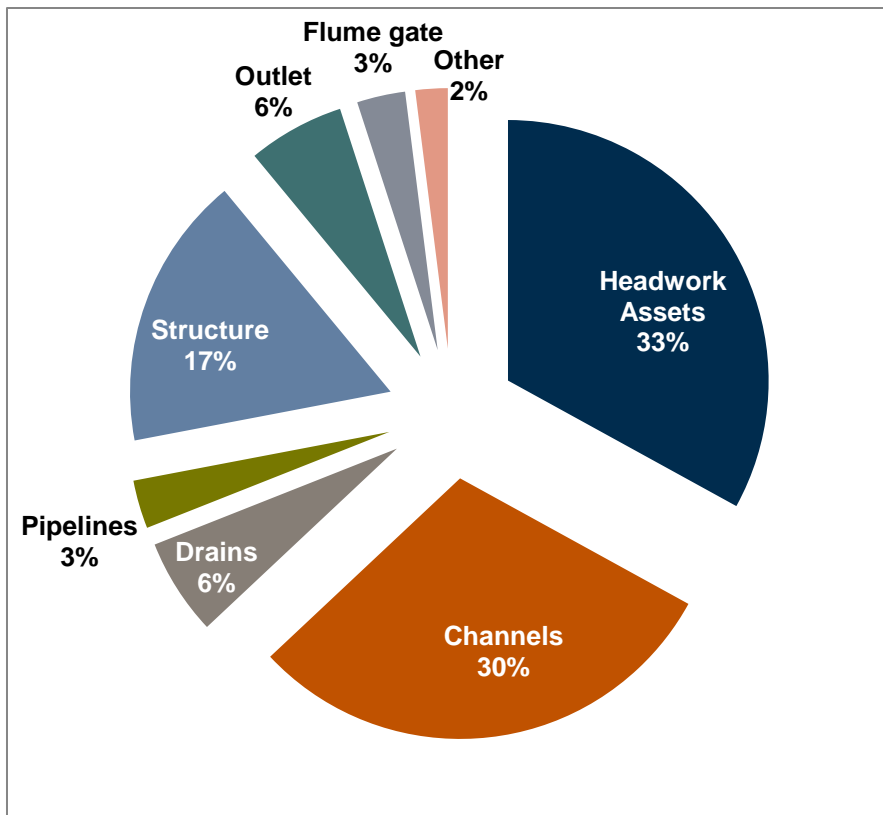


Figure 2-2 Asset value (%) by type of asset

The water distribution system accounts for two thirds of the asset base in value with the remaining third being the value of the bulk water infrastructure being primarily dams. The largest five dams account for 25% of the G-MW’s asset value. The asset base is quite old and long-lived (dams and channels) with the oldest assets being well over 100 years old. Following the *Modernisation and Connections Program* the length of channels will reduce from 6,500km down to around 3,500km and the asset base will include a significant component of relatively short life mechanical and electrical assets.

2.5 Benchmarking

Gravity irrigation operation and maintenance

Table 2-2 summarises the gravity irrigation operation and maintenance data that was reported to the National Water Commission (NWC) for 2009/10 and has been utilised to benchmark G-MW’s performance with other irrigation business in Australia. While this benchmarking is broad-brush it can be useful in identifying trends or matters that require further investigation.

The ranking for each indicator is included in Table 2-3 through to Table 2-9.

G-MW is ranked third or higher in four out of these seven indicators and is midrange in the remaining three indicators suggesting that G-MW’s performance in this area is competitive.

Table 2-2 Benchmarking gravity irrigation operation and maintenance 2009/10

Business	Customers	Intake Volume	Volume Supplied	Assets	Operations	Maint	Admin	OM&A	OM&A per ML	OM&A per Customer	OM&A per km assets	Ops per ML	Maint per Customer	Maint per km of Assets	Network Delivery Efficiency
	(#)	(ML)	(ML)	(km)	(\$M)	(\$M)	(\$M)	(\$M)	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)	(%)
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%
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%
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%
SRW	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%
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%
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%
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%

Table 2-3 Operations, maintenance and administration cost per ML

Business	OM&A per ML	
1 Ord	18,543	G-MW is ranked 2 nd overall in this benchmark and ranks 1 st in utilities with a customer base greater than 3,000. G-MW performs well amongst its peers in this benchmark.
2 G-MW	32,163	
3 SunWater	34,422	
4 Murrumbidgee	37,228	
5 Harvey	38,750	
6 SRW	42,563	
7 Coleambally	46,497	
8 Murray	49,091	
9 Lower Murray	115,800	

Table 2-4 Operations, maintenance and administration charge per customer

Business	OM&A per Customer	
1 Lower Murray	2,665	G-MW is ranked 2 nd overall in this benchmark and ranks 2 nd (behind Lower Murray) in utilities with a customer base greater than 3,000. G-MW performs well amongst its peers in this benchmark.
2 G-MW	3,303	
3 Harvey	5,007	
4 Murrumbidgee	5,589	
5 SRW	6,595	
6 Murray	7,862	
7 SunWater	11,145	
8 Coleambally	14,807	
9 Ord	25,225	

Table 2-5 Operations, maintenance and administration charge per km of assets

Business	OM&A per km assets	
1 Murrumbidgee	3,710	G-MW is ranked 4 th overall in this benchmark. It ranks 2 nd (behind Murrumbidgee) in utilities with a customer base greater than 3,000. G-MW is mid-range in this benchmark.
2 Harvey	4,684	
3 Coleambally	5,949	
4 G-MW	6,350	
5 Murray	6,415	
6 SRW	7,599	
7 Ord	9,556	
8 SunWater	11,107	
9 Lower Murray	17,926	

Table 2-6 Operational costs per ML

Business	Ops per ML	
1 Coleambally	6	G-MW is ranked 3 rd overall in this benchmark and ranks 1 st (marginally ahead of Murrumbidgee) in utilities with a customer base greater than 3,000.
2 Ord	9	
3 G-MW	10	
4 Murrumbidgee	10	
5 Harvey	13	
6 SunWater	16	
7 Murray	22	
8 SRW	26	
9 Lower Murray	34	

Table 2-7 Maintenance Costs per Customer

Business	Maint per Customer	
1 Murray	1,206	G-MW is ranked 3 rd overall in this benchmark and ranks 2 nd (marginally behind Lower Murray) in utilities with a customer base greater than 3,000.
2 Lower Murray	1,277	
3 G-MW	1,324	
4 Harvey	1,395	
5 SRW	1,406	
6 Murrumbidgee	1,784	
7 SunWater	4,533	
8 Coleambally	7,302	
9 Ord	7,387	

Table 2-8 Maintenance cost per km of Assets

Business	Maint per km of Assets	
1 Murray	984	G-MW is ranked 5 th overall in this benchmark. It ranks 2 nd (behind Murrumbidgee) in utilities with a customer base greater than 3,000. G-MW is mid-range in this benchmark.
2 Murrumbidgee	1,184	
3 Harvey	1,305	
4 SRW	1,620	
5 G-MW	2,546	
6 Ord	2,799	
7 Coleambally	2,934	
8 SunWater	4,518	
9 Lower Murray	8,591	

Table 2-9 Network delivery efficiency

Business	Network Delivery Efficiency	
1 Lower Murray	87%	G-MW is ranked 6 th overall in this benchmark. It ranks last (marginally behind Murrumbidgee) in utilities with a customer base greater than 3,000. More recent data (76.5% for 2011/12) indicates that efficiency is improving. This could partially be attributed to lower delivery efficiency during the drought. It is noted that there is a difference in the NWC data (72.3%) and the figure provided in Water Plan 2 (69%).
2 Harvey	76.10%	
3 Ord	75.50%	
4 Coleambally	73.20%	
5 Murrumbidgee	72.90%	
6 G-MW	72.30%	
7 SunWater	70.40%	
8 SRW	63.40%	
9 Murray	41.80%	

Gravity irrigation maintenance and capital

Table 2-10 summarises the gravity irrigation maintenance and capital expenditure data that was reported to the National Water Commission (NWC) for 2009/10 and demonstrates that G-MW's maintenance as a percentage of current replacement cost is relatively low. Capital expenditure as a percentage of current replacement cost is also relatively low. The capital expenditure figures exclude the Northern Victoria Irrigation Renewal Project - *Modernisation and Connections Program*.

Headworks management

Table 2-11 includes comparative information on regulated river supply service and indicates that G-MW's headworks costs are relatively high compared to its peers. This benchmarking is broad-brush and there may be a number of factors that could impact on the indicators provided by each agency. G-MW have responded to this observation by stating that they are currently undertaking a review and restructure process which will result in a reduction in the management costs across G-MW (and will include the Headworks Management Team). G-MW also noted that many of the functions performed by G-MW are not performed by the other organisations.

Other benchmarking

Benchmarking of operational cost components (labour, electricity and IT) are discussed in Section 4.5.

Table 2-10 Benchmarking gravity irrigation maintenance and capital expenditure 2009/10

Business	Current Replacement Cost (CRC)	Written Down Value (WDV)	WDV/CRC	Maint	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%
Southern Rural Water				2.2		3.7	
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 2-11 Benchmarking headworks management 2009/10

	Customer base	Long Term Supply	Volume Supplied in Year	Regulated River	Storage	Weir	Opex	Maint	Admin	OM&A per Storage	OM&A per long term supply expectatio	OM&A per Volume Supplied	Maint per Storage & Weir	CRC	WDV	WDV/CRC	Capex	Capex/CR _C
	(#)	(GL)	GL	(km)	(#)	(#)	(\$M)	(\$M)	(\$M)	(\$M)	\$/ML	\$/ML	(\$k)	(\$M)	(\$M)	(%)	(\$M)	(%)
G-MW	30	273	83	2,470	13	14	26.00	2.75	3.22	2.46	117	385	102	1,405	1,009	72%	10.5	0.75%
State Water	5,719	4,587	1,682	7,920	18	306	17.60	15.60	2.60	1.99	8	21	48	3,458			68.1	1.97%
Sun Water	1,778	1,234	1,108	3,254	17	60	10.12	4.99	3.26	1.08	15	17	65	2,077	1,683	81%	5.1	0.25%
SRW	108	24	93	580	7	8	2.90	1.10	1.00	0.71	208	54	73				2.5	

2.6 Issues and challenges

G-MW's Water Plan 3 has been drafted at a time of unprecedented change for its irrigation customers and its business. G-MW is continuing to modernise its irrigation delivery system through a \$2 billion program with most of this amount invested in new private connections to its newly automated supply backbone. This will transform the irrigation supply system from a manually operated system, much of it 80 years old or more, into an automated state-of-the-art system. This program will rationalise the customer base as well as the channel system which will be reduced by around 50%. This program, previously known as the Northern Victoria Irrigation Renewal Project (NVIRP), was integrated within G-MW from 1 July 2012 and is now termed the *Modernisation and Connections Program*. A major challenge will be to operate hybrid systems that need to be operated in parallel during the transition to fully modernised irrigation systems.

G-MW is transforming its business structures to reflect its new operating environment which will involve a greater focus on customers and cost efficiencies. The nature of the labour force will change with significantly less reliance on traditional labour-intensive irrigation operation but an increased investment required in staff with the skills to manage, operate and maintain a more high technology system.

G-MW is seeking to achieve a cumulative efficiency target of \$6M over the three years of Water Plan 3 which is equivalent to a one per cent annual productivity improvement on its proposed business as usual operating expenditure.

Future access to water will be determined by the Murray-Darling Basin Plan, which will shift the balance between water for irrigation and environmental flows.

2.7 Key outcomes identified in Water Plan 3

G-MW's commitment is to deliver a modernised, fit for purpose irrigation network by 2019. During Water Plan 3 it proposes to:

- > Continue to roll-out its modernisation program across the rest of the business.
- > Maintain, at a minimum, a high level of service with stable costs and charges.
- > Transform the levels of service at the farm gate promoting productivity gains in irrigated farms across the region.
- > Continue to invest on essential system capital renewal beyond the modernisation program to ensure customers can benefit from the modernised system.
- > Upgrade its business processes and systems to match this enhanced level of service.

3 Asset management and project delivery

As part of our review, we took into consideration G-MW’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

G-MW’s asset management information system is made up of a number of interlinked systems as illustrated in Figure 3-1. The key systems are:

- > AMIS which is a computerised maintenance management system (Maximo) which was implemented in 2009 as a result of an IT recommendation.
- > GIS (ESRI ArcGIS) which contains spatial data relating to infrastructure.
- > Finance system (F1).
- > SPM (SCADA system for dam control).
- > IPM (Irrigation Planning Module).
- > SAM (customer billing system).
- > Water Register which contains information on land ownership and water allocation.
- > Electronic document management system (DocsOpen). This also includes the drawings database.

Other related information systems include:

- > Computer Aided Design (CAD) (Autocad).
- > IRIS which is an intranet based reporting tool.

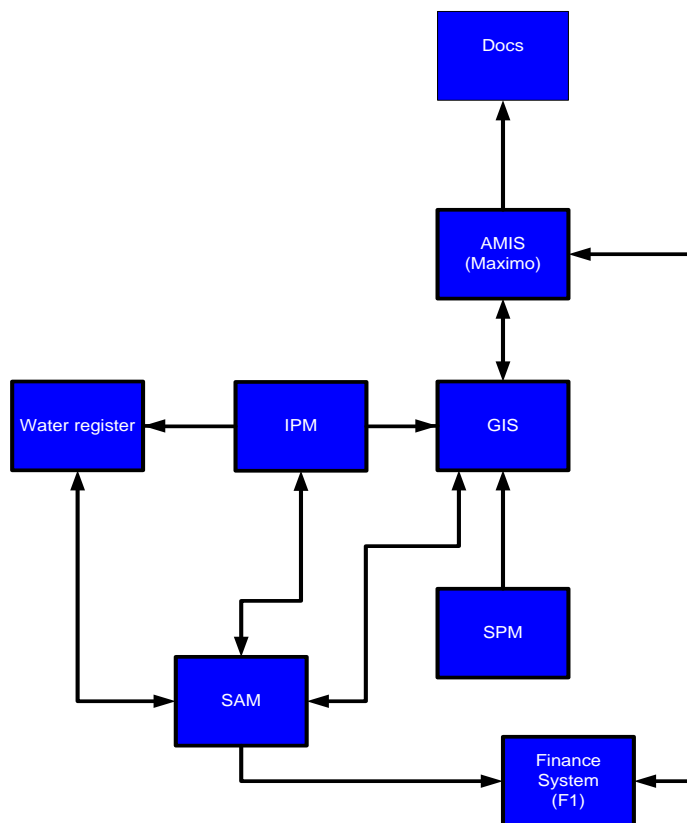


Figure 3-1 Asset Management Information Systems (Source G-MW)

3.2 Progress in addressing recommendations of asset management audit

An asset management regulatory audit was undertaken in late 2011. The audit concluded that overall G-MW has a strong asset management focus and broadly good support systems in place. A number of asset management opportunities were identified and the report commented that whilst G-MW had embraced an asset management improvement journey its efforts needed to be bolstered. The main improvement opportunities included:

- > Better integration and coordination of all aspects of asset management within the Strategic Asset Management Framework.
- > Clarification of asset management accountabilities.
- > Improved Board reporting.
- > Improved Governance Framework for all asset management performance including capital delivery.
- > A stronger risk-based focus for all asset management decisions.
- > Development of a Board approved Asset Management System Improvement Plan.

From our discussions with G-MW staff, review of documents provided, including the updated Corporate Asset Management Manual, Asset management Improvement Plan and the internal audit tracking of the asset management audit recommendations, we were satisfied that G-MW is implementing a number of the recommendations of the report. In particular there is a higher emphasis on risk-based decision making for all asset types.

From the information in the Recommendations Tracker we noted that executive management were satisfied with current reporting arrangements. The draft ISO 5500 Asset Management highlights the importance of leadership in asset management. As part of the G-MW transformation initiative we suggest that management re-evaluates the Board and executive management's involvement in asset management given that the \$2 billion investment from the *Modernisation and Connections Program* will have significant impact on the type, sophistication, management and expenditure on the operation, maintenance and renewal of assets.

G-MW outlined the processes that were being undertaken to gain a full understanding of lifecycle costs associated with the acquisition of the assets from the *Modernisation and Connections Program* and minimising these lifecycle costs. The approach included using techniques such as Reliability-Centred Maintenance (RCM) and FMECA (Failure Modes Effects and Criticality Analysis). G-MW is continuing to review the FMECA results to identify the highest maintenance cost contributors and determine potential maintenance cost reduction options.

We agree with the Audit Report that G-MW has a strong asset management focus and is adapting its asset management strategies in response to the acquisition of a more technically complex portfolio of assets arising from the *Modernisation and Connections Program*. From our high level review of asset management practices we consider that G-MW should develop a 30 year renewals forecast based on a rationalised channel network and *Modernisation and Connections Program* assets, based on the current level of knowledge. Operation and maintenance expenditure profiles are likely to significantly change as channel automation comes on line, as well as the impacts of the organisational transformation initiatives. Renewals forecasts along with updated operations and maintenance projections should be input into G-MW's long-term financial model to assess longer term revenue requirements to sustain the organisation. This is particularly evident given the recent concerns regarding sustainability in the recent Victorian Auditor-General's Report¹

¹ Water Entities: Results of the 2011-12 Audits, Victorian Auditor General, Nov 2012

3.3 Capital delivery processes

G-MW undertakes a continuous budget planning cycle, with plans completed for 10, 5, 3 years and on an annual basis. The process is illustrated in Figure 3-2.

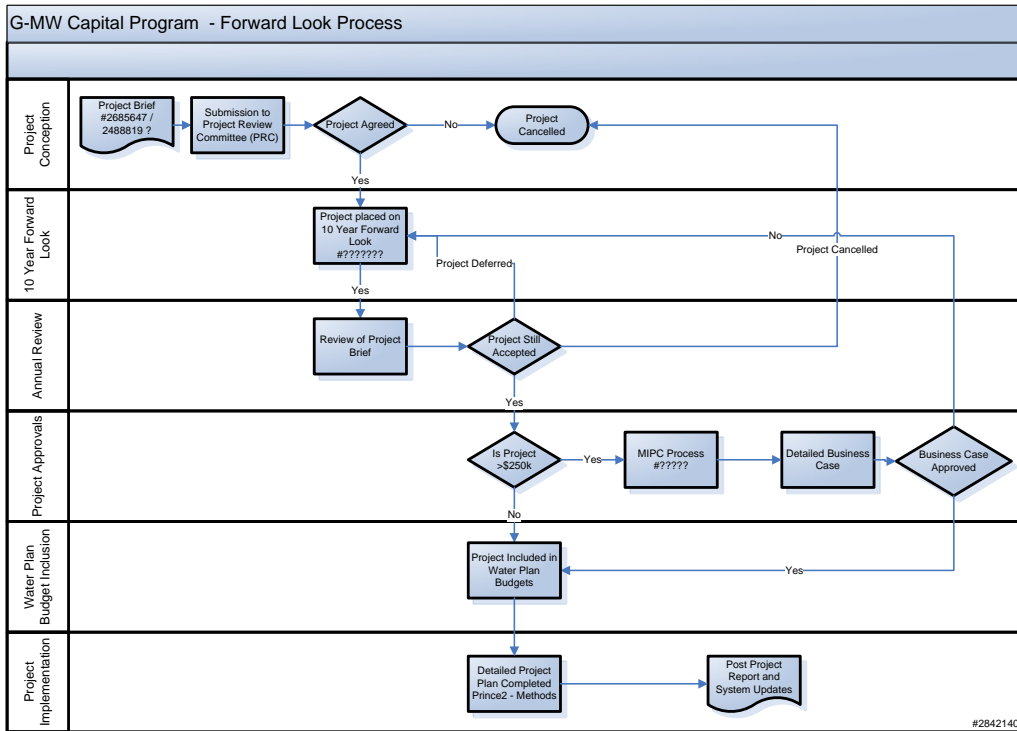


Figure 3-2 Budget Planning Cycle (Source G-MW)

G-MW manages its capital projects using Prince2 processes. Exception reports are generated to manage scope changes. The Asset Management Audit indicated that *G-MW considers and evidence sighted suggests that scope change is reasonably well managed on larger projects but that there is probably less attention on smaller projects, where the risks are considered to be less. Opportunities appear to exist to better manage scope changes overall through the adoption of more rigorous processes for all projects. G-MW has acknowledged this, and recently created and appointed a Project Accountant role, a key part of which will be to manage project over-runs [and under-runs] against budget. The Enterprise Project Management System (EPM) is also being improved to arrange this better and support more incisive reporting.*

G-MW’s project management process is illustrated in Figure 3-3.

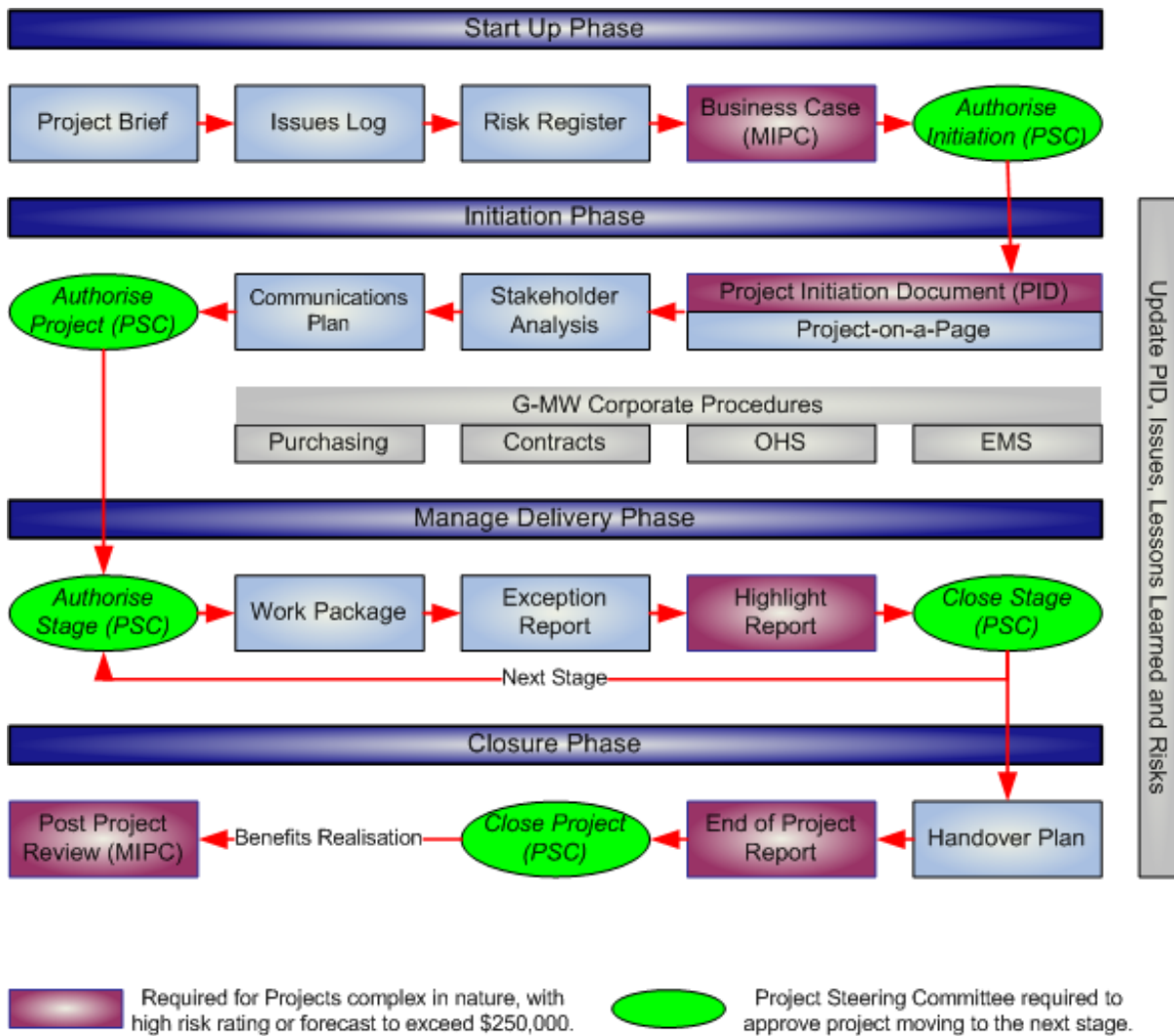


Figure 3-3 G-MW Project Management Process (Source G-MW)

Water Plan 3 consists of a large number of small projects. Many of these projects are repetitive in nature including basic civil and earthworks which G-MW has been undertaking for many years. For these projects G-MW takes a lead role in project and construction management with extensive use of contract plant and labour hire which is sourced through a competitive procurement process. The approach is claimed to allow a significant amount of flexibility on site through experienced works supervisors being able to take decisions on site and ensure harmonious working relationships with landowners. Civil maintenance staff are utilised on construction teams in non-maintenance periods (September to April). G-MW estimates that 60% of its capital expenditure is outsourced.

G-MW benchmarks its costs against local contractors and provided a summary of cost comparisons for the construction of single barrel reinforced concrete pipes (RCP) (1200 and 1350mm diameter) and twin barrel (2100mm diameter RCP). The limited data showed that G-MW was significantly cheaper for the single barrel RCPs but slightly more expensive for the twin barrel RCPs. However more contractor project rates were provided for the twin barrel RCPs which suggest that contractors may already be undertaking these projects. G-MW stated that executive management, as part of the organisational transformation process is keen to further explore further efficiency gains that could be achieved from greater involvement of the private sector.

Where the work is specialist in nature specialist consultants and contractors are utilised (e.g. rock anchoring).

3.4 Cost estimating processes

G-MW's estimating processes are documented in the following documents:

- > *Project Cost Estimating and Sharing.*
- > *Major Investment Projects Committee – Template Descriptors and Guidelines.*

The contingencies applied during the various stages of the project lifecycle appear to be reasonable. Limited contingency is applied for a program of works as average indexed historical rates are utilised, however, a contingency is applied for individual projects. Detailed financial risk estimation (e.g. Monte-Carlo risk cost simulation) may be carried out for major projects and a suitable risk allowance adopted.

Most of the Projects in Water Plan 3 are repetitive in nature and as a result G-MW has a good understanding of the unit rates. The major risk associated with cost estimating was stated to be climatic conditions. It was acknowledged that some of the cost estimates in Water 2 may have been optimistic as they would have assumed the continuation of the drought and not made sufficient allowance for wet weather and waterlogged ground conditions.

4 Operating expenditure

4.1 Methodology

The review of G-MW's historic and forecast operating expenditure (opex) was based on interviews with key G-MW staff, analysis of data provided and consideration of the following documents:

- > Water Plan 3 Submission.
- > Water Plan 3 Financial Template.
- > Information provided by G-MW staff 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. The expenditure shows a significant reduction in expenditure in 2011/12. G-MW provided the following reasons for the reduction of expenditure in 2011/12:

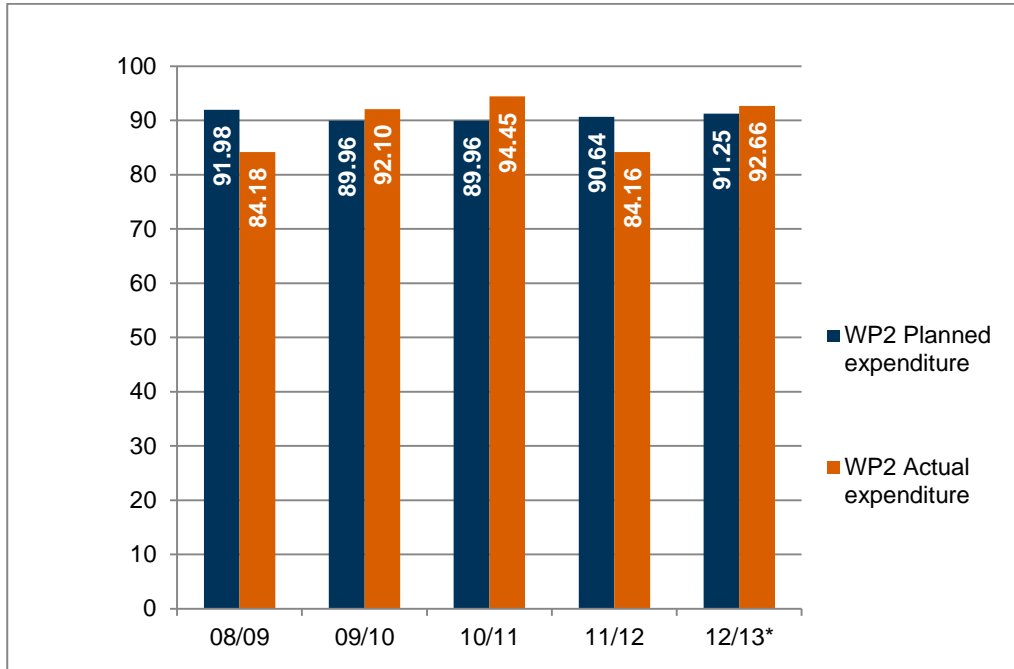
- > The previous year 2010/11, included an \$8.5M Mokoan – Return to Wetlands expenditure, and \$3M flood recovery expenditure
- > A once-off reduction of the MDBA contribution of \$5.5M in 2011/12 plus regular maintenance increased by \$3M which offset the flood recovery expenditure in the previous year

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

	08/09	09/10	10/11	11/12	12/13
Irrigation	46.36	48.79	53.27	49.57	53.49
Drainage	4.58	4.75	6.14	6.09	6.17
Domestic and stock	0.55	0.55	0.78	0.67	0.72
Surface water diversions	3.01	3.30	3.27	3.72	4.59
Groundwater diversions	2.10	3.05	3.00	3.17	3.32
Bulk water services	25.75	29.92	26.28	19.29	22.13
Total Business as Usual	82.35	90.36	92.74	82.51	90.42
<i>New initiatives and obligations</i>					0.62
External bulk water charges (excl. temporary purchases)	-	-	-	-	-
External temporary water purchases	-	-	-	-	-
Licence fees	0.15	0.09	0.10	0.11	0.09
Environment Contribution	1.69	1.65	1.60	1.55	1.53
Total prescribed opex	84.19	92.1	94.44	84.17	92.66
Fully Government funded programs/projects	22.39	37.90	18.12	4.85	6.02
Fully customer funded programs/projects	-	-	-	-	-

4.3 Forecast vs. actual operating expenditure in current price path

Figure 4-1 compares planned and actual operating expenditure in the current price path. The total actual expenditure over the price path is estimated to be \$447.57M compared to a planned expenditure of \$453.78M a variance of minus 1.4%.



* Forecast

Figure 4-1 Operating expenditure in current price path (\$12/13) planned vs. actual (\$M)

The main reductions in operating expenditure were:

- > Reduction of expenditure on the Asset Maintenance Program (AMP). Actual expenditure was \$16.33M compared to projected costs of \$49.24M a reduction of \$32.90M. The program was significantly reduced particularly on the spur channel systems as these will be rationalised under the *Modernisation and Connections Program*.

The increase in operating expenditure was mainly due to the drought and the response to the 2011 flood. Increased costs associated with the drought included:

- > Pumping of dead space in the Waranga basin to access water that could not be accessed by gravity, in order to maintain a limited supply to customers. The additional cost was \$1.66M.
- > Increased administration and management costs to operate the irrigation systems.
- > Increased customer communication/ consultation activities relating to water trading.
- > Expanded compliance regime to provide customers with an assurance that a scarce resource was being allocated fairly and in accordance with licence conditions. This involved the employment of six additional staff and an additional expenditure of \$3.76M.

Increased costs associated with the severe floods in western Victoria in early 2011 amounted to an additional \$5M. This costs included staff overtime and hiring of contractors to manage the short-term response to maintain or restore supply.

G-MW has identified the costs of creating a Water Registry in response to the unbundling of water rights as being much higher than anticipated. The workload was significantly higher than estimated in 2008 as the drought drove increased demand for water trading. Staff numbers in the customer service and billing divisions increased from a total of 24 to a peak of 74 with an equivalent increase in associated overheads for accommodation, IT support and facilities.

G-MW highlighted the following areas where productivity improvements had been achieved during the price path. These included:

- > Coordination of service delivery through having a single, consistent presence at the local level through a one-stop shop for all services.
- > Consolidation of regional teams.
- > Consolidation of the irrigation planning functions.

Modernising of the irrigation scheme has resulted in a reduction of staffing in the irrigation districts from 330 in 2007/08 to 260 in 2012/13.

4.4 Base year operating expenditure

G-MW has developed its forecast opex by adjusting its 2011/12 actual expenditure to formulate a baseline figure that is representative of business-as-usual. Table 4-2 below reconciles the 2011-12 actual opex to its 2011-12 baseline opex.

Table 4-2 Reconciliation of 2011/12 actual opex to baseline opex (\$M)

Adjustment	Amount
Actual 2011/12 Business as Usual Opex	82.5
One-off flood recovery expenditure	(0.57)
Baseline 2011/12 Business as Usual Opex	81.93

4.5 Operating expenditure in the future price path

The operating expenditure in the future price path is summarised in Table 4-3. For the next price path the expenditure is relatively stable and is business as usual for most sectors of G-MW's business apart from the gravity irrigation business. The transition of the gravity irrigation system from a manual to fully automated system will have some cost impacts particularly the operation of a hybrid system.

Table 4-3 Operating expenditure in future price path (\$M)

	Current Price Path		Future Price Path		
	11/12	12/13	13/14	14/15	15/16
Irrigation	49.57	53.49	53.73	54.86	54.75
Drainage	6.09	6.17	6.38	6.43	6.42
Domestic and stock	0.67	0.72	0.64	0.64	0.64
Surface water diversions	3.72	4.59	5.24	5.26	5.28
Groundwater diversions	3.17	3.32	4.26	4.24	4.24
Bulk water services	19.29	22.13	25.09	28.01	27.73
Productivity Dividend			(1.00)	(2.00)	(3.00)
Total Business as Usual	82.50	90.43	94.35	97.43	96.06
<i>New initiatives and obligations</i>		0.62	1.47	1.66	1.26
External bulk water charges (excl. temporary purchases)	-	-	-	-	-
External temporary water purchases	-	-	-	-	-
Licence fees	0.11	0.09	0.18	0.09	0.18
Environment Contribution	1.55	1.53	1.69	1.69	1.69
Total prescribed opex	84.16	92.66	97.68	100.86	99.18
Fully Government funded programs/projects	4.85	6.02	0.24	0.24	0.24
Fully customer funded programs/projects	-	-	-	-	-

Significant increases to the operational expenditure items contained in the annual forecasts compared to the base 2011/12 operating expenditure are listed in Table 4-4.

Table 4-4 Significant increases to operational expenditure items in WP3 (\$M)

	13/14	14/15	15/16
Operations	5.64	6.32	6.65
MDBA Contribution	2.90	5.98	5.98
Maintenance	1.86	2.21	1.60

- > **Operations:** The following are the major changes to business as usual:
 - G-MW has assumed a wage increase of 4% per year until 31 July 2015 (1.25% real). The existing EBA is current until July 2014 and a new agreement will be entered into in August 2015.
 - There will be an increased cost of operating the hybrid gravity irrigation system during the transition from manual to automatic operation. G-MW is required to operate manual and automated systems in parallel during the transition phase. There will also be other additional operating expenditure associated with the *Modernisation and Connections Program*.
- > **MDBA contribution:** This is set by the Ministerial Council and passed on to G-MW by the Victorian Government. It is based on works carried out in the Murray-Darling Basin over prior years. The budget is based on the best estimates available to G-MW at the time of preparation of Water Plan 3.
- > **Maintenance:** The following are major changes to business as usual.
 - Wage increase of 4% per year until 31 July 2015 (1.25% real) (refer to comment for operations).
 - Changes in the maintenance program for a modernised gravity irrigation system. The automated channel control system requires greater attention. In addition the channels are required to be free of any major weed growth which affects the hydraulic performance of the channels and the embedded algorithms.

Benchmarking of operating costs

In Section 2.5 we compared G-MW's operating costs against other rural water providers. This analysis concluded that:

- > OM&A costs for the gravity irrigation system compared quite favourably with similar water providers.

In this section we include a comparison of labour, energy and IT expenditure from 2008/09 and forecast expenditure to 2020 between Grampians Wimmera Mallee (GWM), Lower Murray Water (LMR), Southern Rural Water (SRW) and G-MW based on Water Plan 3 spreadsheet information provided to ESC. To compare the rate of growth we have brought each indicator to a common level (100) in the base year (2005/06, 2008/09 or 2009/10).

Figure 4-2 shows that the relative increase in operating expenditure since 2005/06 has not been significant. Figure 4-3 indicates that G-MW has experienced a relative increase on FTEs whereas Lower Murray Water (LMW) and Grampian Wimmera Mallee (GWM) have had a significant decline. The G-MW FTE increase is due to the operation of a hybrid irrigation control system. The recent announcement of staff reductions (refer to Section 2.6) will reduce the FTEs over Water Plan 3. The increase in cost per FTE as illustrated in Figure 4-4 reflects the changing staff profile with a greater emphasis on technical specialists to manage the automated channel control system in comparison to the traditional manual labour.

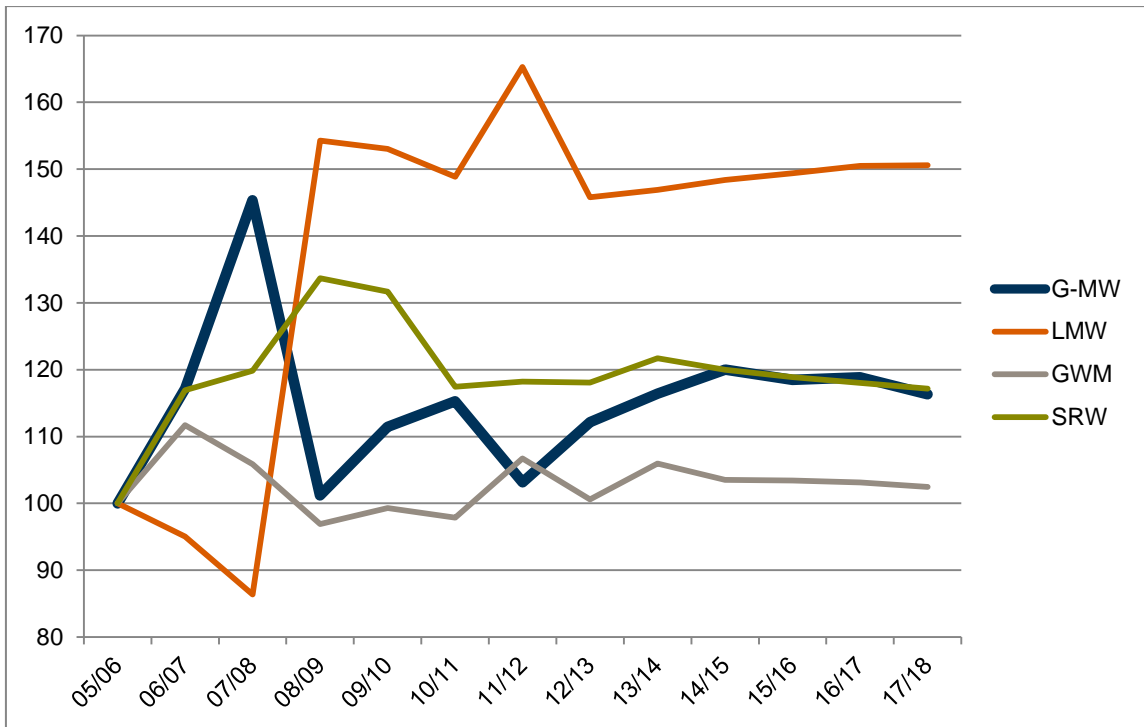


Figure 4-2 Total prescribed opex (from a common base of 100)

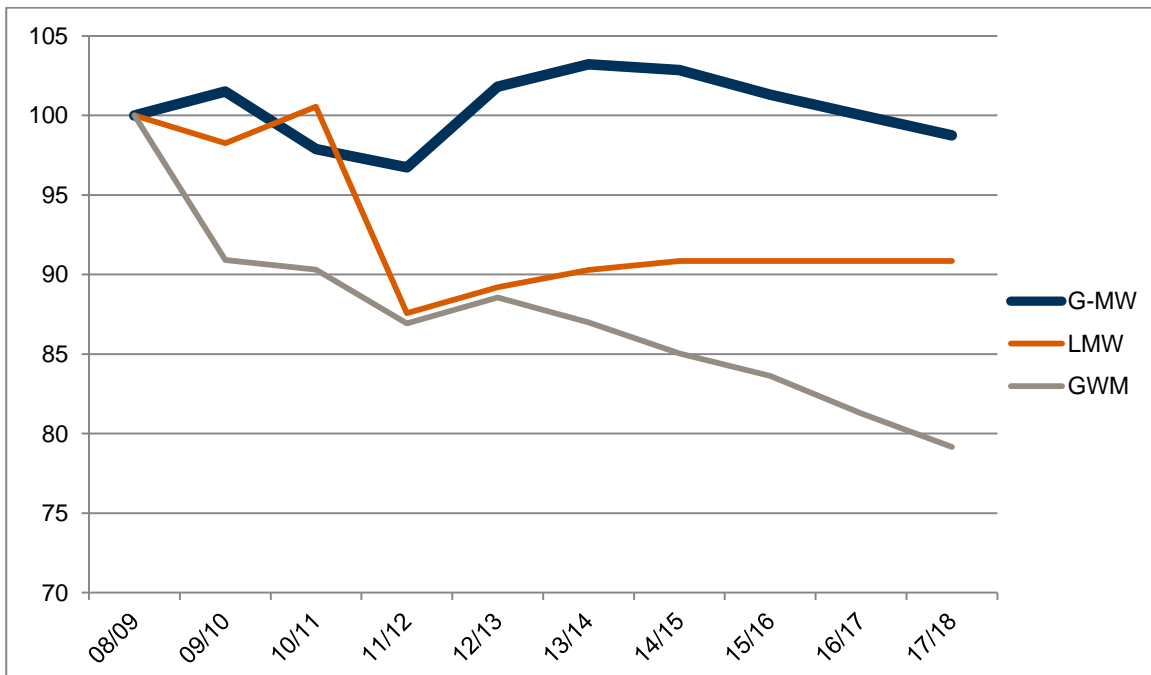


Figure 4-3 Total FTEs (from a common base of 100)

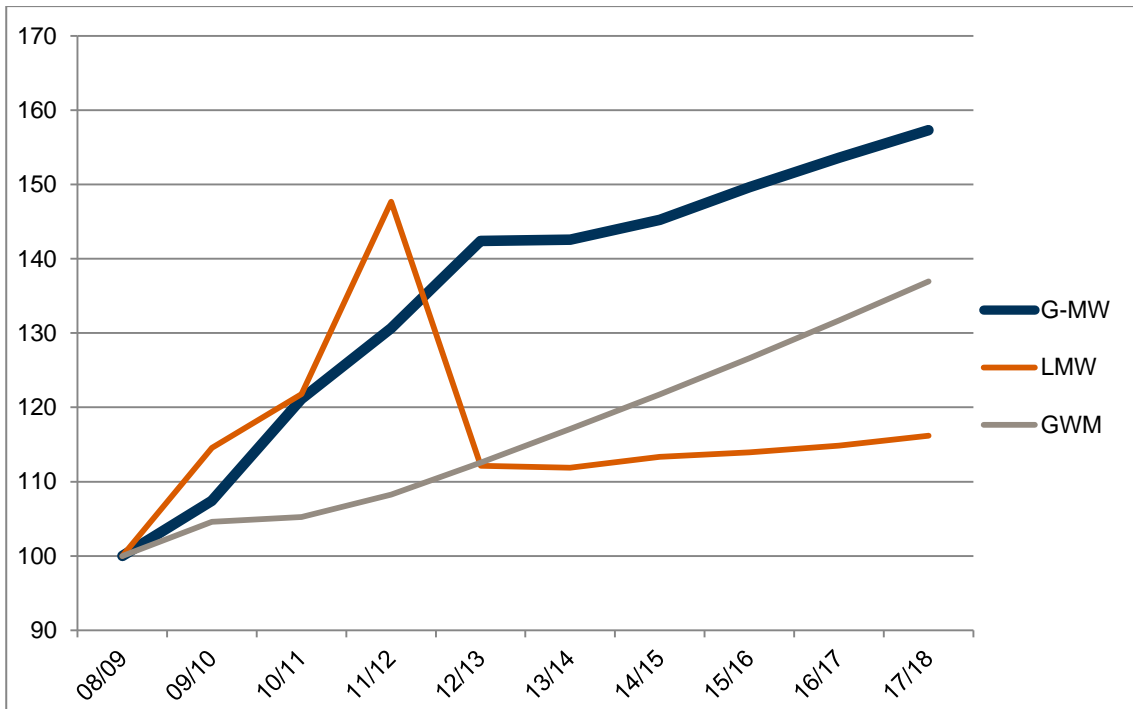


Figure 4-4 Cost per FTE (from a common base of 100)

The average electricity cost increase (refer Figure 4-5) proposed by G-MW appears to be lower than that GWM and proposed in the Deloitte report, *Carbon Price Impact Analysis, Oct 2012*.

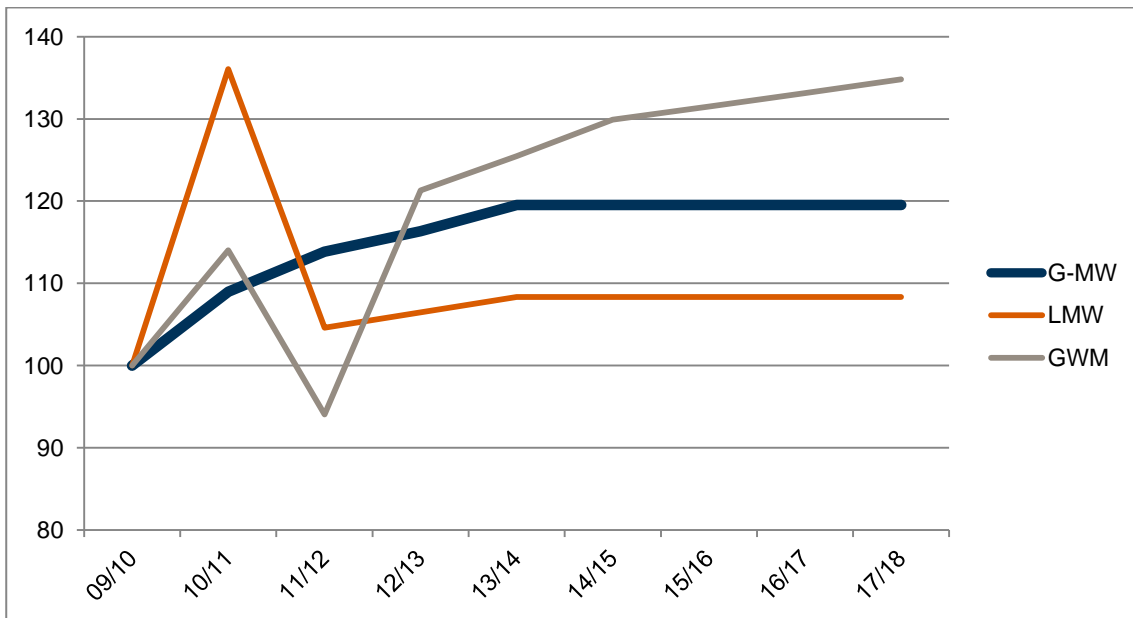


Figure 4-5 Average electricity cost (c/kWh) (from a common base of 100)

IT expenditure as a percentage of operating expenditure and as per FTE is shown in Figure 4-6 and Figure 4-7. The G-MW figures only relate to corporate IT but excludes IT opex (mainly software licences) in other business units. IT expenditure as a percentage of operating expenditure is typically around 3.0% for utilities and 3.2% for state/ local governments. IT expenditure per FTE in utilities, state and local government is in the order of \$7,500 to \$15,000 per FTE. From this broad-brush benchmarking G-MW's expenditure on IT does not appear to be excessive.

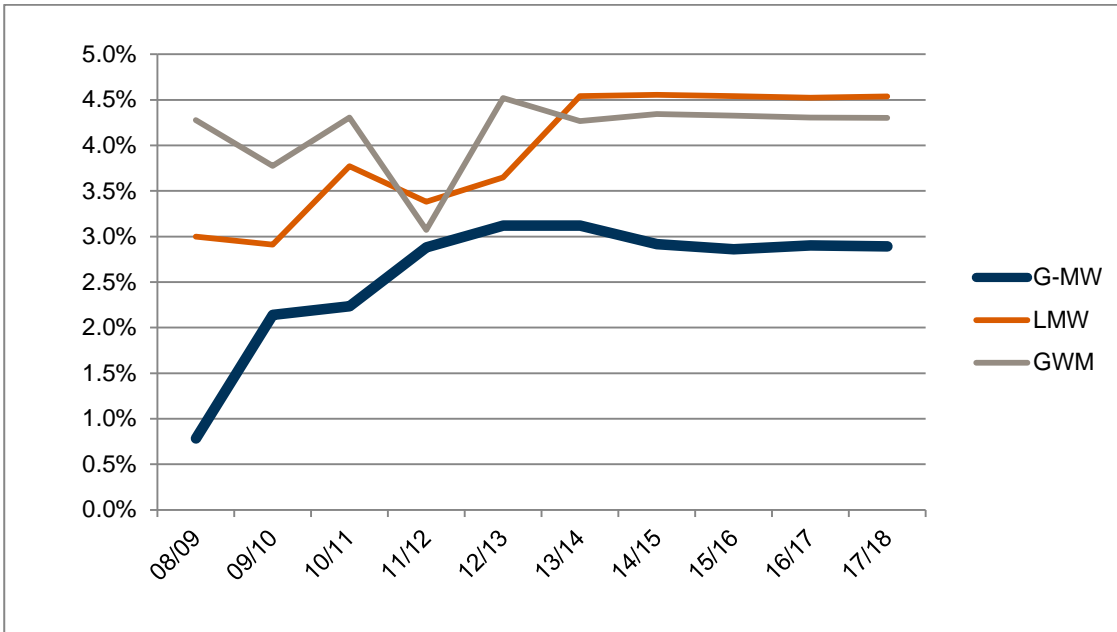


Figure 4-6 IT expenditure as % of operating expenditure

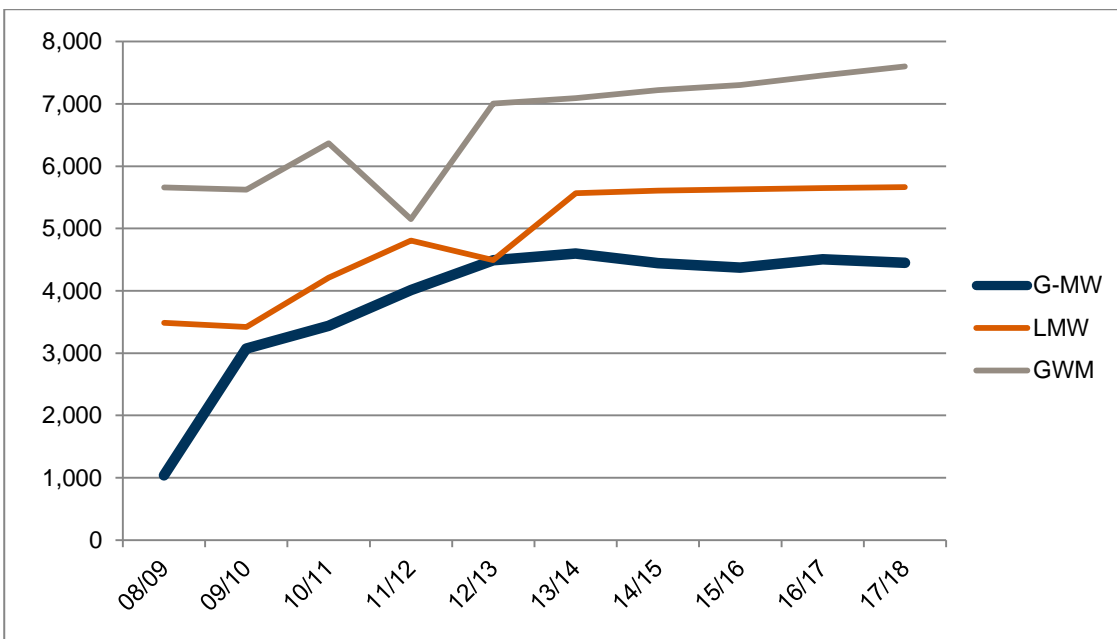


Figure 4-7 IT expenditure per FTE

Independent review of operating expenditure

G-MW engaged Halcrow in 2012 to undertake an independent review of capital and operating expenditure incurred in respect of the Loddon Gravity Irrigation District and Woorinen Pumped Irrigation District over the period 1 July 2008 to 30 June 2016. These reviews formed part of the process for reviewing/setting tariffs for setting tariffs. The reviews concluded that from an overall perspective the actual and forecast expenditure was deemed to be prudent. Actual and forecast expenditure appeared to be generally efficient at an aggregate level. However, further assessment of more detailed supporting information would be required to enable a more robust assessment in some cases.

4.6 Operating expenditure escalators

CPI

G-MW has assumed the following escalation factors as listed in Table 4-5 and is consistent with the CPI factors provided by the ESC.

Table 4-5 Assumed CPI

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

Labour

Labour represents over 60% of G-MW's operating expenditure and its number of FTE's has been forecast to decrease from 657.21 to 645.05 as indicated in Figure 4-8.

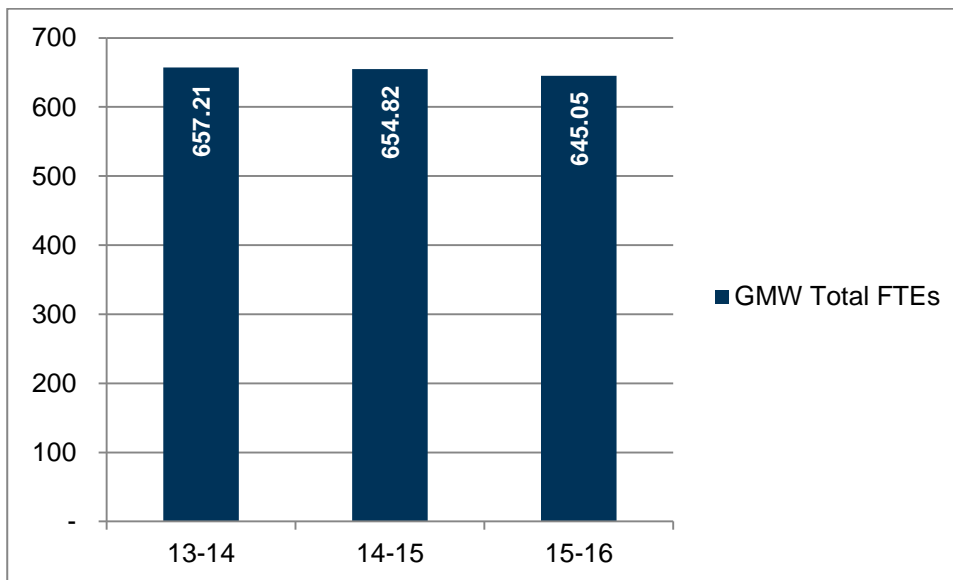


Figure 4-8 G-MW's forecast FTEs for WP3

In its WP3 submission, G-MW has assumed a 4% per annum increase as per its Enterprise Bargaining Agreement (1.25% real) for labour until July 2014 which will remain in force until June 2015. However, as indicated in Table 4-6, the application of this increase is not immediately obvious due to the continued restructuring of the business reflecting a 1.50% annual growth in labour cost per FTE in G-MW's total labour costs.

Table 4-6 G-MW labour growth assumptions

	13/14	14/15	15/16
Forecast labour costs for current FTEs (\$M)	63.76	64.71	65.68
Cost per FTE (\$M)	0.10	0.10	0.10
Annual growth in labour costs for current FTEs	1.50%	1.50%	1.50%

Electricity

G-MW has assumed a zero real increase in the cost of electricity in the next price path; however it has also forecast an increased demand for electricity as a result of the modernisation of its operations as indicated in Figure 4-9 and Figure 4-10.

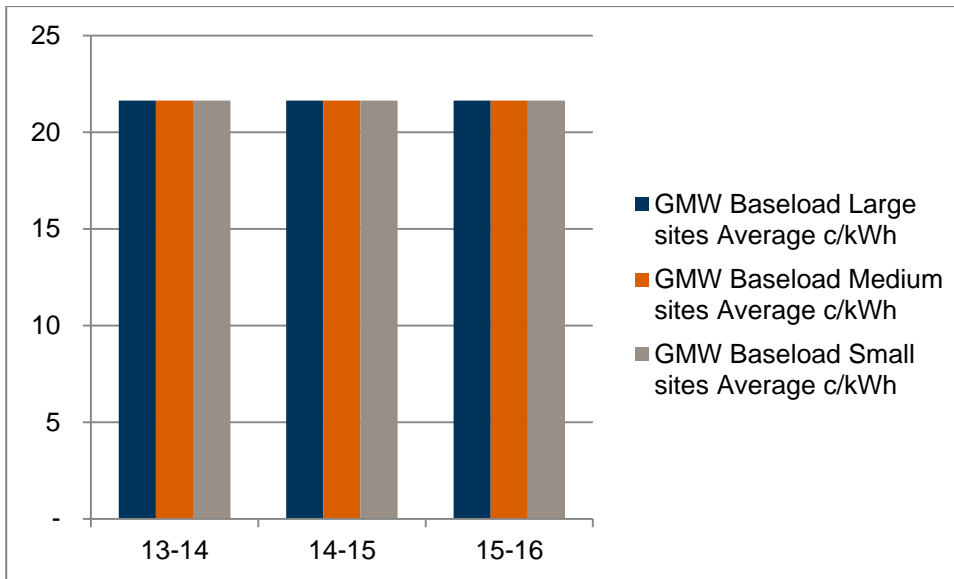


Figure 4-9 Forecast average c/kWh

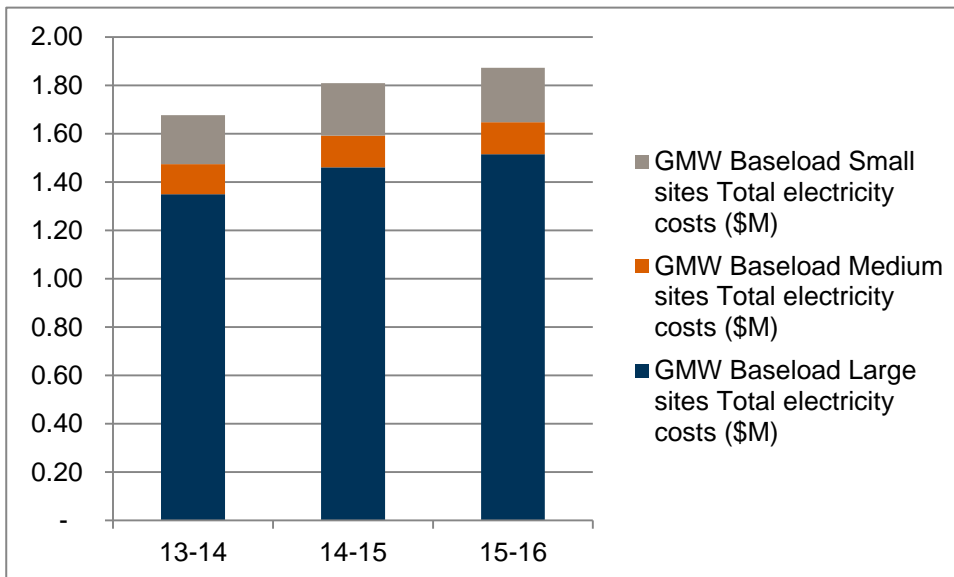


Figure 4-10 Forecast electricity cost by site size

Carbon Price

Following its review of the Draft Report G-MW advised that they had not fully taken into account the impact of the Carbon Price in its operating costs. We have discussed the likely impact of this with the Essential Services Commission and have been advised that no allowance is to be made for the impact of this pricing mechanism over that already allowed for in the assumed rate of inflation of 2.75%.

G-MW responded to this advice by emphasising that it had invested a significant amount of time, money and effort to put forward a rigorous and defensible estimate of the impacts of the Carbon Price on its business. It's forecasting indicates that the Carbon Price will increase operating costs in the vicinity of 1% per annum.

We note G-MW's concerns but have not amended its operating costs forecasts.

Chemicals

Due to the nature of the G-MW's business chemical costs are not significant in determining its future operational expenditure requirements.

Productivity

G-MW is proposing an annual \$1M cumulative productivity gain over the price path. This exceeds the ESC requirement of an annual 1% productivity improvement on its baseline operating expenditure.

Table 4-7 G-MW productivity dividend

	13/14	14/15	15/16
Productivity Dividend (\$M)	(1.00)	(2.00)	(3.00)

G-MW did not specify how this productivity improvement would be achieved in its WP3 submission, but has subsequently advised that it is proposing to implement a new organisational structure to enable efficiencies in its operational expenditures.

The nature of proposed change includes:

- > A review of current business functions with a view to focus on core business activities in the future.
- > Following the review, the development of a revised proposed organisational structure which, among other things, will result in new positions and a number of current positions being declared surplus to requirements.
- > Changes in reporting lines and management structures.

It is proposed that implementation of a new organisational structure will occur in two phases. The proposed first phase, commencing November 2012, will focus on the implementation of the proposed new organisational structure for G-MW's customer operational areas including Retail & Operations, Catchment Services, Construction and Connections.

The proposed second phase of G-WM's business transformation is likely commence in February 2013 and will focus on the business support functions of G-MW, being Finance, Information, Communication & Technology, Corporate Planning, People & Performance, Marketing & Communications, Corporate Services and Corporate Secretary.

Preliminary estimates provided by G-MW to staff indicates that business divisions being addressed in the first phase currently have 629 staff with 140 to 155 positions potentially being surplus and 106 new positions being proposed. This equates to a potential net loss of 34 to 49 staff in Phase 1 reorganisation. Most of the position losses will occur in the Retail and Operations area.

4.7 Conclusions and recommendations

Based on our review we have concluded that the forecast operating expenditure is appropriate, and no change is required in G-MW's forecast operating expenditure.

Our high level benchmarking (refer Section 2.5) suggests that some opportunities may exist for efficiency improvement in Headworks Management, or at least reasons for the high figures should be investigated.

We formed the view that G-MW is committed to delivering productivity improvements as evidenced by the recent initiative to implement a new organisational structure to enable efficiencies in operational expenditure.

5 Capital Expenditure

5.1 Methodology

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

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

5.2 Overview

Figure 5-1 illustrates the actual capital expenditure from Water Plan 1 through to forecast expenditure until 2018. This figure excludes the *Modernisation and Connections Program* which involves an investment of \$730M over the next Price Path (2013/14 to 2015/16). Figure 5-1 shows the following trends:

- > Since 2008 capital expenditure has remained steady at around \$30M per annum. This trend is forecast to continue until 2018. This excludes expenditure on the *Modernisation and Connections Program*.
- > The main expenditure components are irrigation (mainly renewals) and bulk water (mainly related to dam safety).

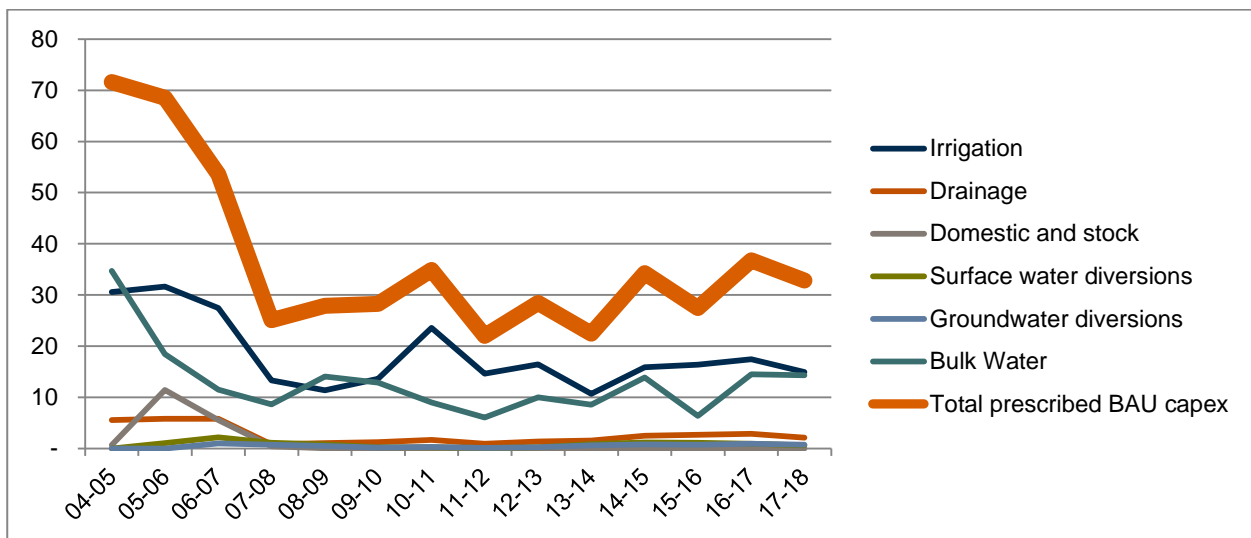


Figure 5-1 Capital expenditure by service

5.3 Capital expenditure in current price path

The capital expenditure in the current price path is summarised in Table 5-1 and Figure 5-2 compares planned and actual expenditure during the price path.

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

	08/09	09/10	10/11	11/12	12/13
Irrigation	11.38	13.66	23.56	14.66	16.46
Drainage	1.07	1.26	1.68	0.97	1.42
Domestic and stock	0.06	0.02	0.05	0.04	0.06
Surface water diversions	0.81	0.27	0.26	0.13	0.28
Groundwater diversions	0.53	0.19	0.34	0.14	0.23
Bulk Water	14.05	12.89	9.01	6.06	10.00
Total prescribed BAU capex	27.90	28.30	34.89	22.01	28.45
Government contributions	4.88	3.04	0.68	0.01	0.01
Customer contributions	5.25	3.15	5.85	2.90	2.04

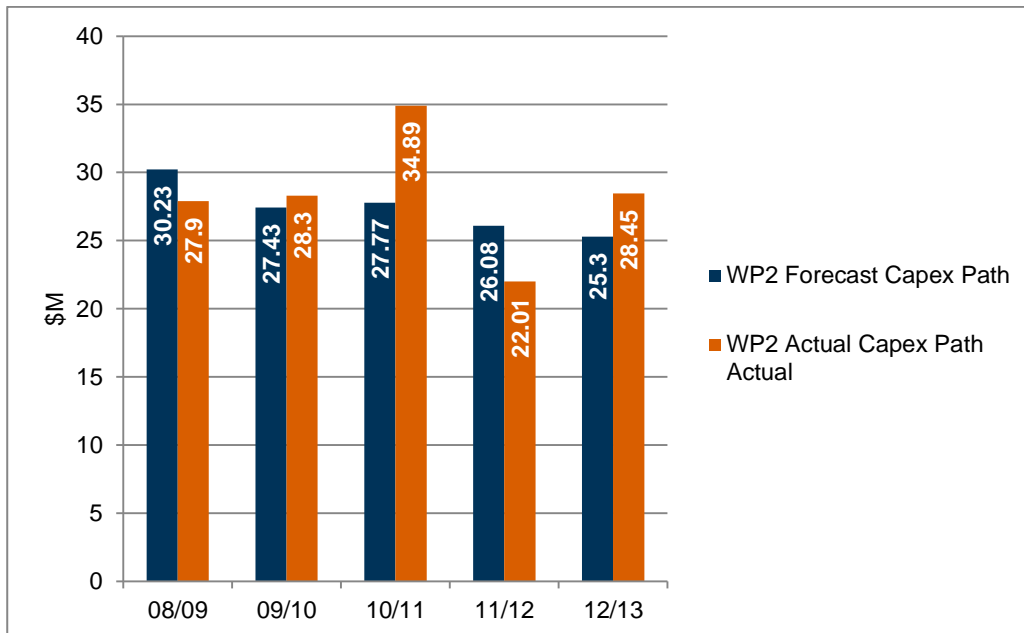


Figure 5-2 Capital expenditure in current price path (\$M)

There was a significant reduction in capital expenditure during the period. Factors that contributed to the majority of this variance between G-MW’s actual capital expenditure and the planned expenditure in Water Plan 2 include:

- > The capex proposals for Water Plan 2 were drafted before the NVIRP modernisation program was fully developed. A significant part of G-MW’s capital works program which had been targeted at system modernisation was transferred to NVIRP as part of the wider modernisation program, which was funded from State and Commonwealth Governments.
- > All renewal work on G-MW’s extensive spur-channel system was curtailed once the extent of the modernisation program became apparent, to ensure that no funds were spent on assets that would later be decommissioned.
- > G-MW implemented a new approach to risk assessment for its headworks business. This showed that the risks at Lake Buffalo and Lake Newlyn were at a level for which action is not required in the short term. This allowed deferral of \$11.2M in capital expenditure to beyond Water Plan 3.
- > G-MW reduced the scale of its metering program for diverters as a result of the Commonwealth Government water purchase and the foreshadowed MDBA plan which is likely to result in a number of private diversion points being decommissioned and not requiring metering.

G-MW provided the following summary of projects delivered during Water Plan 2.

Dam Safety Upgrade Program: Projects completed under this program included William Hovell flood capacity upgrade and Goulburn Weir superstructure strengthening. The upgrade of Laanecoorie was not planned in Water Plan 2 but was initiated in response to deformations from the January 2011 flooding. Other works were deferred reflecting G-MW’s revised risk assessment approach. This program was largely internally funded

Surface Water Management Program: The surface water management program involved the construction of new drainage systems. It was largely funded by external agencies. The level of activity was scaled back due to the drought.

Reconfiguration Program: This program of works was transferred to NVIRP and was externally funded.

Channel Remodelling & culverts - all areas: all works were reduced due to the advent of NVIRP and constrained to the backbone channels. The Board transferred any residual funds to the access tracks and fencing program.

Lake Mokoan return to Wetlands: This project was delivered to DSE requirements and was externally funded.

Metering diverters: The extent of works was reduced to take account of the change in policy in the Northern Region Sustainable Water Strategy and the proposed Murray Darling Basin Plan. This program was part externally funded.

Waranga Western Channel: These works were delivered as required, with a number of subways rehabilitated with lining rather than replacement.

5.4 Capital expenditure in the future price path

The forecast capital expenditure program by service is listed in Table 5-2. Expenditure by driver is illustrated in Figure 5-3.

Table 5-2 Forecast capital expenditure program (\$M 12/13)

	13/14	14/15	15/16
Irrigation	10.72	15.86	16.39
Drainage	1.59	2.49	2.68
Domestic and stock	0.06	0.04	0.03
Surface water diversions	0.86	1.19	1.15
Groundwater diversions	0.61	0.84	0.78
Bulk Water	8.60	13.87	6.42
Total prescribed BAU capex	22.45	34.28	27.44

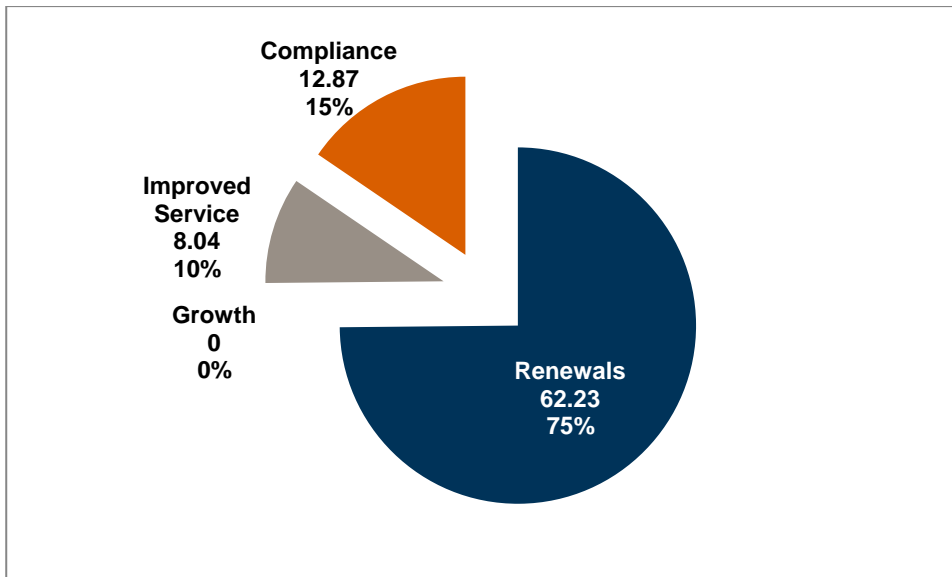


Figure 5-3 Forecast expenditure by driver

The expenditure presented in the Water Plan excludes the *Modernisation and Connections Program* (NVIRP) which is being funded from external sources and is excluded from the RAB. It is estimated that \$730M will be spent on this project during the next 3 year price path.

Most of the projects programmed for Water Plan 3 consist of a large number of small scale projects. Most of the projects presented by G-MW as the top projects are mainly programs of works rather than individual projects. These are listed in Table 5-3.

Table 5-3 Water Plan 3 top capital projects (\$M 12/13)

Project	Total Cost (\$M)	Driver	Scope
Major projects			
Tullaroop Reservoir	8.20	Dam safety	Construction of buttress across embankment and additional instrumentation
Mildura Merbein Salinity Interception Scheme	4.90 (G-MW component)	Renewal and compliance	Renewal of existing groundwater pumps and disposal mains to meet salinity obligations in the River Murray
Aggregate Programs			
Access tracks and fencing	13.00	Optimise service and maintenance	Construct tracks and provide fencing to improve service and reduce costs of maintaining delivery channels
Road culvert and crossing replacement	5.80	Renewal	Renewal and replacement of channel crossings and road culverts on the backbone
Backbone remodelling	5.50	Renewal/ maintain service quality	Bringing backbone channels up to service standard beyond the backbone <i>Modernisation and Connections Program</i>
Storage management program	3.00	Dam safety and service maintenance	13 minor projects at different locations
Rock armouring	2.40	Optimise service	Placing rock armouring on channel banks to improve service delivery and increase asset life

Independent review of capital expenditure

G-MW engaged Halcrow in 2012 to undertake an independent review of capital and operating expenditure incurred in respect of the Loddon Gravity Irrigation District and Woorinen Pumped Irrigation District over the period 1 July 2008 to 30 June 2016. These reviews formed part of the process for reviewing/setting tariffs. The reviews concluded that from an overall perspective the actual and forecast expenditure was deemed to be prudent. Actual and forecast expenditure appeared to be generally efficient at an aggregate level. However, further assessment of more detailed supporting information would be required to enable a more robust assessment in some cases.

5.5 Detailed review of sample capital projects

Water Plan 2 sample projects

Dam Safety Upgrade Program

Key driver: Compliance

A number of dam safety upgrade projects were programmed for implementation in Water Plan 2. These are detailed in Table 5-4.

Table 5-4 Dam Safety Projects in WP2

Dam	Project	Action During Water Plan 3
William Hovell	Increase flood capacity	Complete
Buffalo	Increase flood capacity	Did not proceed following risk review
Nillah Cootie	Dam Safety Upgrade	Did not proceed following risk review
Goulburn Weir	Weir crest anchors	Complete
Eppalock	Secondary embankment filters	Did not proceed following risk review
Tullaroop	Embankment filters	Did not proceed following risk review
Newlyn	Interim strategy	Did not proceed following risk review
Laanecorrie	Training Wall Works	Deferred from 07/08
Laanecorrie	Not planned in WP2 but upgrade works commissioned in response to deformations arising from Jan 2011 flooding	Scheduled for completion in 12/13

Projects completed under this program included William Hovell flood capacity upgrade and Goulburn Weir superstructure strengthening which involved two projects – gate locking and anchor replacement. Other works were deferred reflecting G-MW’s revised risk assessment approach in relation to the calculation of population at risk. Remedial works have had to be undertaken on Laanecorrie Dam following deformations arising following the January 2011 floods. We were provided with a comprehensive Construction History Reports for the upgrades at William Hovell Dam and Goulburn Weir Anchor Replacement projects. .

G-MW has significant experience in dam safety and has well developed processes for planning and implementing dam safety improvement processes. Investigations for dam safety projects were undertaken by G-MW staff supplemented by specialist consultants. Dam safety construction works involving earthworks were project managed by G-MW staff using in-house labour supplemented by external labour and plant hire. Specialist construction work (e.g. rock bolting) was undertaken by specialist contractors.

The William Hovell upgrade was delivered for \$6.02M against an estimate of \$7.7M. G-M explained that project approval was based on securing the spillway structure for its full length. During design G-MW applied dam safety risk assessment principles to demonstrate that anchoring the spillway crest and raising the training walls at the upstream end of the spillway only, achieved the desired risk reduction. The scope of work was subsequently reduced. In addition G-MW received a low tender for the spillway works. The bid was significantly lower than others (which were aligned with G-MW's estimate). The contractor was a reputable firm well known to G-MW and after establishing their understanding of the works was correct the tender was accepted. This resulted in approximately \$1M saving on the estimate

The Goulburn Weir Gate Locking project was delivered for \$2.98M against an estimate of \$3.35M(P_{90}). The Anchor Replacement Project was delivered for \$1.5M against an estimate of \$2.7M (P_{90}). G-MW indicated that at the time of establishing the project budget and obtaining project approval it was anticipated to use a much larger drill rig to drill the required diameter holes to depth through the spillway piers. This would have entailed erecting very substantial scaffolding/access and the utilisation of large cranes for the duration of the project. The project was approved on the basis of this assured methodology. Post-approval, and in conjunction with the anchoring contractor and designer, G-MW developed a methodology allowing for the anchors to be installed in smaller diameter holes enabling a smaller drill rig to be located on the top of the piers with the resulting reduction in access costs. This resulted in the significant saving achieved.

Waranga West Channel – Subway Program

Key driver: Renewal

This program involves the replacement or renewal of reinforced concrete subways that allow overland flow to drain across (underneath) irrigation channels. Many of these drains, of diameters ranging from 450mm to 2000 mm, are over 100 years old and major failure will result in loss of a channel. The need for renewal is identified through condition assessment or the result of identified leakage. The subways to be renewed are programmed for work through a risk based prioritisation program. A design report is prepared which considers a range of alternatives to address the problem including combining and/or abandoning drains and provides cost estimates. The projects are generally delivered through internal management and core staff and external labour and plant hire.

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 G-MW's future expenditure forecasts. Our findings are summarised below.

Tullaroop Reservoir

Key driver: Compliance

Since recent flooding there has been issues associated with movement and subsidence in the dam which were initially identified through routine surveillance and confirmed through further investigation. It is proposed to construct works to mitigate dam safety risks. The works will involve the construction of a filter buttress across the main embankment section and upgrading the existing instrumentation. These works form part of the longer-term Dam Improvement Program. The estimated cost is \$8.0M (\$12/13). We were provided with the investigation report (July 2012) and an estimate for a filter buttress, initially prepared in 2005 and indexed to 2012/13. The estimate included a 40% contingency which is consistent with G-MW's cost estimating guideline and not unreasonable given the current level of knowledge. The cost escalation factor applied appears reasonable. The full range of remedial options is yet to be assessed and a business case will be developed.

Mildura/Merbein Salinity Interception Scheme:

Key driver: Compliance

The scheme intercepts saline groundwater and pumps it to salt disposal basins. The existing scheme is reaching the end of its useful life with bores subject to biofouling. Upgrade of the system is required to ensure compliance with state obligations for salinity targets in the River Murray. The scheme is funded equally by Victoria and the MDBA. G-MW owns and contributes 50% of the capital costs which is added to G-MW's RAB. The total project cost will be \$9.8M of which G-MW contributes \$4.9M (\$12/13). We were provided with a document *Sunraysia Integrated Package of Salinity Management Works and Measures*,

Business Case to the Murray- Darling Basin Authority. The Business Case considered a range of options with a staged approach being the preferred option. The total capital cost of the project is \$16.2M (\$09/10) (Mourquong Basin (NSW) disposal option) or \$21.3M (\$09/10) (Wargan Basin (Victoria) disposal option). Capital costs included a contingency of 40% which is higher than typically applied at a business case stage. Following discussions with G-MW we are satisfied that this level of contingency is appropriate given that the results of the on-going geological investigations and pump tests could have a material bearing on the scope of the works. G-MW indicated that \$2M will be spent in 2012/13 and the extent of work undertaken in the next Price Path will depend on MDBA funding.

Access Tracks and Fencing

Key driver: Improved service

The modernisation program involves the automation of regulators that were previously operated manually. G-MW requires access to sites for weed spraying and to keep the new controls in effective working order to ensure that the enhanced service levels from modernisation are realised. Stock damage is the greatest contributor to deterioration of channels. Fencing to exclude stock will significantly extend the lives of channels. G-MW has estimated that the full cost of providing appropriate access tracks and fencing for the full irrigation networks would be in the order of \$300M (\$12/13). G-MW has developed a prioritised program of sites to be addressed in the next price path at a cost of \$13M (\$12/13).

We were provided with a memo dated 22 October 2010 which indicated a significant underspend on the project during Water Plan 2 with forecast expenditure in Water Plan 2 being around \$24M (\$4.8M per annum nominal). The planned expenditure in Water Plan 3 equates to \$4.3M (\$12/13) which should be achievable.

The project will be delivered using internal resources with external labour and plant hire

Backbone remodelling

Key driver: Improved Service

The externally funded modernisation program will not upgrade all of the backbone irrigation channels. There are stretches of major channels where expenditure is required to ensure a consistent level of service and to ensure that the automated channel control system operates as planned. G-MW has developed a prioritised program using the relevant Asset Condition Rating from the Asset Management Information System, based on location, capacity and condition.

G-MW spent on average \$1.5M pa on remodelling in Water Plan 2. This was less than planned as the channel system is to be rationalised. The expenditure in Water Plan 3 is forecast to average \$1.8M per annum, and appears to be reasonable and achievable.

The project will be delivered using internal resources supplemented with external labour and plant hire.

5.6 Recommendations and conclusions

From discussions with G-MW staff, a review of a sample of historical and forecast capital projects including supporting documentation and a high level review of asset management and capital delivery processes we consider that the capital projects undertaken in WP2 and proposed in WP3 are:

- > Appropriate to key drivers and obligations.
- > Are supported by adequate supporting analysis and systems.
- > Are deliverable over the regulatory period.
- > And, for projects planned for WP3, have reasonable cost estimates.

6 Recommended opex and capex expenditure

Table 6-1 Recommendations for G-MW's operating expenditure forecasts

Forecast operating expenditure (\$M 12/13)			
	13/14	14/15	15/16
Final Water Plan 3	97.68	100.86	99.18
Cardno revised	97.68	100.86	99.18
Net change	0	0	0

Table 6-2 Recommendations for G-MW's capital expenditure forecasts

Forecast capital expenditure (\$M 12/13)			
	13/14	14/15	15/16
Final Water Plan 3	22.45	34.28	27.44
Cardno revised	22.45	34.28	27.44
Net change	0	0	0