2020 Goulburn-Murray Water Price Review: Expenditure

A review of Goulburn-Murray Water's proposed operating and capital expenditure

A Final Report prepared for the Essential Services Commission

Friday 6 March 2020

AITHER

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Executive summary

Aither, and its subcontractor DG Consulting, were engaged by the Essential Services Commission (ESC) to undertake a review of actual and forecast capital and operating expenditure for Goulburn-Murray Water (GMW) in delivering its prescribed services. This report documents the outcomes of the review and will support the ESC in making its determination on the maximum prices that GMW can charge from 1 July 2021.

This report is one of two reports that Aither has been engaged by the ESC to deliver to assist in its 2020 Price Review of GMW. The other report is focused on a review of the tariff reform proposed by GMW. This report should be read in conjunction with the Tariff Review report.

The key objectives for the expenditure review include:

- Assessing GMW's forecast capital and operating expenditure, including whether forecasts for productivity improvements are reasonable, the scope for further improvements beyond those proposed, and the removal of non-recurrent items or expenditure.
- Considering forecast capital expenditure for each year of the next regulatory period, including:
    - assessing cost estimation, timing and other matters associated with a sample of GMW's new capital projects.

Approach to the review

The overall approach to delivering the review involved four phases, as follows:

- **Initiation** – gathering initial documentation, and agreeing project methodology
- **Information discovery** – reviewing available information, developing and submitting further information requests, confirming the evaluation criteria and approach, and undertaking meetings or interviews with GMW staff
- **Analysis and review** – completing analysis in support of the major components of the review, follow up information requests, and consolidation of findings across review elements
- **Reporting** – documenting the results of the analysis and review (this report).

The methodology was designed to assess:

- the reasonableness of operating expenditure forecasts, and
- the reasonableness of actual and forecast capital expenditure.

The review was undertaken from November 2019 to March 2020, with visits to Tatura to meet with GMW staff in December 2019 and January 2020. In addition to GMW's public submission, we sought further information regarding the assumptions that underpinned the forecast expenditure. This included:

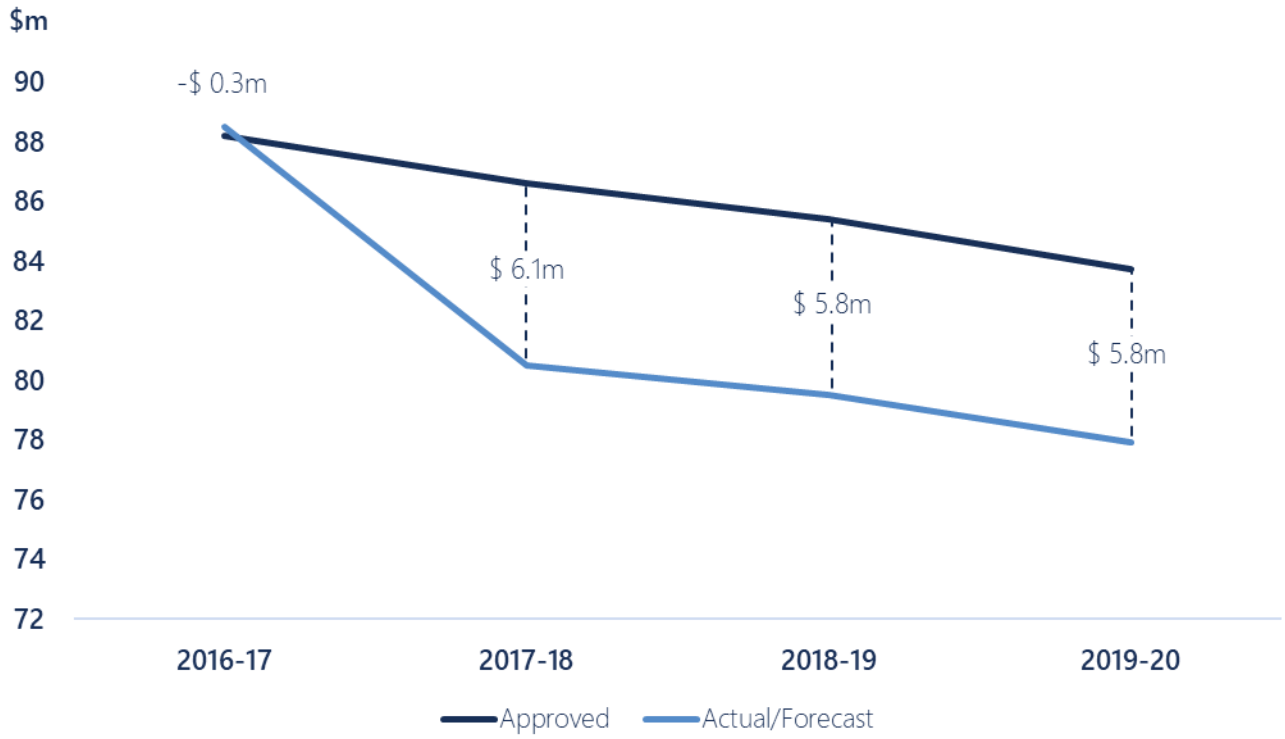
- Additional information identified by GMW in its pricing submission
- On-site interviews with GMW staff
- Three rounds of information requests, and

- Previous ESC Determinations and associated reports.

There was also regular communication with GMW staff throughout the review process to clarify information requests and the responses provided.

Operating expenditure

GMW's operating expenditure for the current pricing period is forecast to be $18.1 million less than the ESC approved total prescribed operating expenditure of $404.6 million for the period. When considering just controllable expenditure, there was an underspend of $17.3 million ($2019-20) compared to an allowance of $343.9 million over the period, representing a 5 per cent underspend. Figure 1 highlights that the actual controllable operating expenditure was approximately equal to the allowed controllable operating expenditure for the first year of the regulatory period (2016-17), with a $6.1 million reduction in 2017-18. This gap between the actual and allowed controllable operating expenditure was maintained throughout the regulatory period.



Source: GMW 2020 Price Review Submission, p.39.

Figure 1 Comparison of actual controllable operating expenditure and approved controllable operating expenditure ($2019-20)

The key driver of the operating expenditure savings within the current regulatory period is a significant reduction in labour costs over the period. These cost savings stemmed from the 2013 Blueprint and the more recent Transformation Project.

For the upcoming regulatory period GMW has proposed material cost savings in its controllable operating expenditure. These forecast savings represent a considerable change to the operating costs required to deliver its services. Some of these savings are driven by significant capital

investments in the network that have resulted in operating efficiencies, while others are driven by internal organisational changes.

GMW is forecasting to generate efficiencies in the last year of the current regulatory period and realise the vast majority of the efficiencies by the end of the first year of the forecast regulatory period. This is appropriate given the current status of the organisational reforms. It is assumed that these efficiencies will be maintained throughout the forecast regulatory period. Given that the majority of the cost savings relate to reductions in labour, this assumption appears reasonable.

Forecast cost savings are generally based on underlying assumptions regarding changes in operations or conditions that result in a reduction in expenditure. Given the current status of the organisational restructure for GMW, these commitments are based on more high-level assumptions rather than detailed assumptions. While we cannot verify all the details of these high-level assumptions underpinning these cost savings, the strong commitments are commendable and highlight the focus of the business going forward.

These significant cost reductions raise queries as to the potential impact on service standards for GMW's customers. Based on our review of the information provided by GMW, we do not consider there to be any material risks of a negative impact on the services provided to customers by GMW.

On balance of the information provided by GMW for the review, we consider that the assumptions underpinning the forecast controllable operating expenditure for the upcoming regulatory period to be reasonable.

Capital expenditure

For the current regulatory period, the ESC set a total capital expenditure allowance for GMW of $145.4 million, which equated to an average of $36.4 million per year. GMW has incurred a total capital expenditure of $106.7 million for the current regulatory period, which is $38.7 million (27 per cent) less than the ESC approved.

GMW has proposed a total capital expenditure over the forecast regulatory period of $96.2 million. This amount equates to an average of $24.1 million per year and is $10.5 million (10 per cent) less than GMW has incurred in the current regulatory period.

Table 1 Capital expenditure allowances and forecasts for GMW ($2019-20, $million)

ESC capital expenditure allowance for current regulatory period	GMW capital expenditure for current regulatory period	GMW capital expenditure forecast for upcoming regulatory period
$145.4	$106.7	$96.2

Figure 2 provides the breakdown of the services that GMW is forecasting its capital expenditure for the upcoming regulatory period.

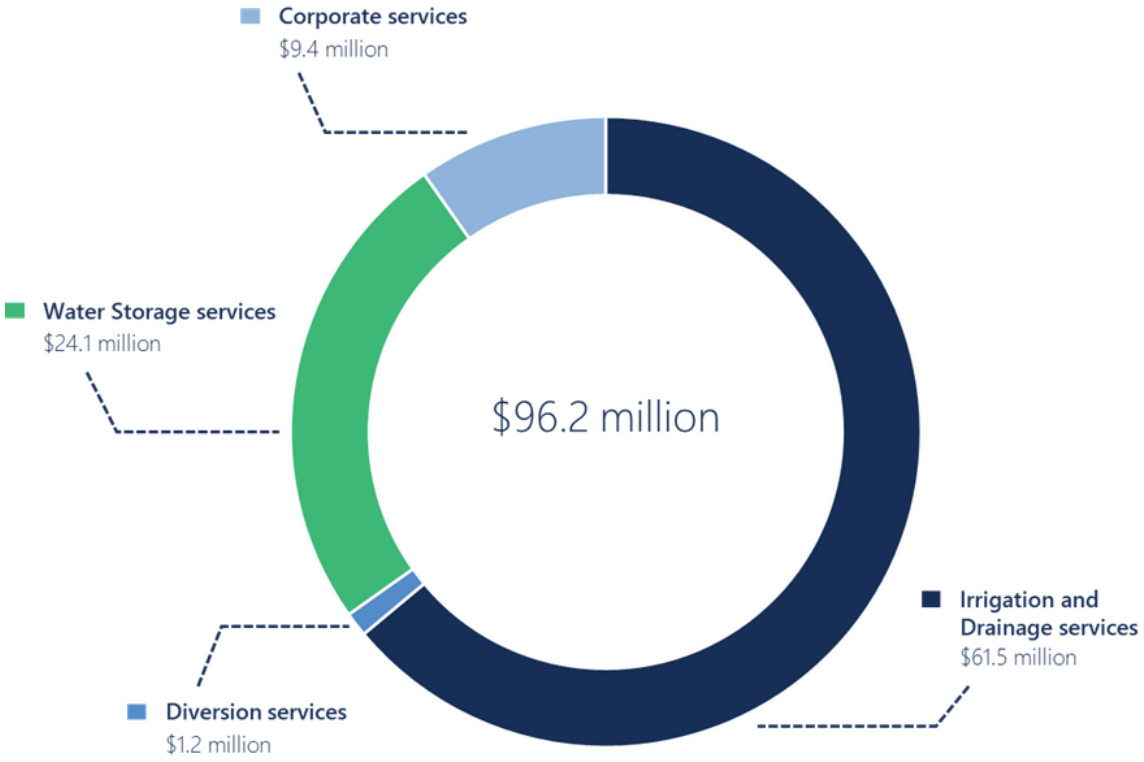


Figure 2 Proposed Capex by service for 2020-24 regulatory period ($2019-20)

Aither's review of GMW's underspend against the ESC approved capital expenditure allowance in the current regulatory period found that it was based on deliberate business decisions and was not due to systematic issues or a lack of capability or capacity.

From interviews with GMW staff and review of supporting documentation, it is considered that GMW's proposed capital expenditure for the upcoming regulatory period is supported by reasoning and evidence and that there are processes in place for its planning and delivery. However, there are inherent cost-risk trade-offs being made.

A high-level review of the forecast capital expenditure program did not identify any projects that were considered uncertain or speculative in nature. It is noted that as part of its capital prioritisation processes, GMW removed a relatively large number of projects it had previously forecast for the upcoming regulatory period but now considers it uncertain whether or not they need to be implemented in the upcoming regulatory period. It is GMW's intention to bear the risk of any of these projects subsequently being required and to fund them from within the ESC approved determination.

GMW's newly adopted channel-by-channel approach to capital planning for its irrigation and drainage assets is based on accepting higher levels of risk around asset failure than in previous regulatory periods. GMW staff advised that these higher risks have been communicated to customers and that the price-risk trade-off proposals are understood and accepted by customers.

Aither supports GMW's channel-by-channel approach and its continuing development. The review of the capital expenditure program did not identify any projects that were considered speculative or uncertain in nature.

Based on our review of the information provided by GMW, we consider that both the actual and forecast capital expenditure are reasonable.

1. Introduction

1.1. Overview

Aither, and its subcontractor DG Consulting, were engaged by the Essential Services Commission (ESC) to undertake a review of actual and forecast capital and operating expenditure for Goulburn-Murray Water (GMW) in delivering its prescribed services. This report documents the outcomes of the review and will support the ESC in making its determination on the maximum prices that GMW can charge from 1 July 2021.

1.1.1. Role of the ESC

Established in 2001, the ESC is an independent regulator of Victoria's energy, water and transport sectors. Under the *Essential Services Commission Act* (2001), the ESC is responsible for delivering price determinations, producing compliance assessments, and applying enforcement actions.

In order to meet its responsibilities, the ESC has various review or assessment processes associated with price determinations. One such process is independent review of expenditure and tariff reform, which helps to determine whether utilities have incurred or are proposing efficient costs and cost structures. Independent reviews are an input to allow the ESC to determine efficient capital and operating expenditure allowances and maximum prices.

The Commonwealth is responsible for the regulation of prices charged by GMW for infrastructure related services under the Murray-Darling Basin Agreement. The ESC holds accreditation from the Australian Competition and Consumer Commission (ACCC), who is responsible for regulation of GMW's infrastructure-related prices under the Water Charge (Infrastructure) Rules (WCIR). This accreditation will be held until 2022.

The ESC is also required under the Water Industry Regulatory Order 2014 (WIRO) to regulate charges for non-infrastructure related services including groundwater, unregulated surface water diversions and some miscellaneous services.

1.1.2. About Goulburn-Murray Water

GMW is a statutory corporation of the Victorian Government and provides water related services to 21,000 customers in northern Victoria. Primary functions of GMW include provision of storage and delivery services to customers and the management of regulated and unregulated river systems. GMW's services, projects and activities cover 68,000 square kilometres, encompassing seven northern Victorian catchment areas from the Upper Murray Basin in the east to the Loddon Basin in the west. Significant service segments include irrigation, domestic and stock, and bulk water to urban and rural water supplies.

GMW also operate salinity mitigation works in the Murray River, manage groundwater use, maintain recreational infrastructure, and are responsible for making the seasonal determination for northern Victorian water systems.

The $2 billion Connections Project, delivered by GMW, is Australia's largest irrigation modernisation project, and is concerned with activities such as the replacement of Dethridge wheels and manual gate channel systems in favour of automatic systems. The project began with the Northern Victoria

Irrigation Renewal Project, which is forecasted to conclude by late 2020. The Project is intended to deliver cost reductions and operational efficiencies for irrigators throughout the Goulburn-Murray Irrigation District (GMID).

GMW has experienced increasing costs of service over the last 20 years. In response to rising operating costs, GMW is currently undergoing significant change in order to identify and create efficiencies across the organisation. These changes include:

- transition to a new organisational structure
- implementation of a transformation action plan
- revision of approaches to business and workforce efficacy programs.

GMW has also used customer input and other stakeholder engagement to revise their service standards and develop the expenditure forecasts discussed in this report.

1.1.3. 2020 price review

The ESC is conducting a review of GMW's proposed expenditure, tariff structure and prices for the regulatory period beginning 1 July 2020. The expenditure component of the review will determine efficient levels of operating and capital expenditure for GMW for the upcoming regulatory period (2020-2024).

1.2. Report objectives and scope

This report is one of two reports that Aither has been engaged by the ESC to deliver to assist in its 2020 Price Review of GMW. The other report is focused on a review of the tariff reform proposed by GMW. This report should be read in conjunction with the Tariff Review report.

The key objectives for the expenditure review include:

- Assessing GMW's forecast capital and operating expenditure, including whether forecasts for productivity improvements are reasonable, the scope for further improvements beyond those proposed, and the removal of non-recurrent items or expenditure.
- Considering forecast capital expenditure for each year of the next regulatory period, including:
  - assessing cost estimation, timing and other matters associated with a sample of GMW's new capital projects.

1.3. Report outline

The report is broadly structured to align with the objectives and scope of work, in addition to further detailed requirements set by the ESC. Specifically:

- This **Section 1** provides background on the ESC and its role, that of GMW, and the objectives and scope of this review.
- **Section 2** outlines the methodology and associated considerations for the review.
- **Section 3** documents the findings from our review of operating expenditure and productivity forecasts

- **Section 4** documents the analysis and findings associated with actual and forecast capital expenditure, including in relation to a sample of capital projects.
- **Appendix A** contains a summary of the Connections Project since its commencement.

2. Review methodology

2.1. Overview

The overall approach to delivering the review involved four phases, as follows:

- **Initiation** – gathering initial documentation, and agreeing project methodology
- **Information discovery** – reviewing available information, developing and submitting further information requests, confirming the evaluation criteria and approach, and undertaking meetings or interviews with GMW staff
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The methodology was designed to assess:

- the reasonableness of operating and productivity forecasts, and
- the reasonableness of actual and forecast capital expenditure.

The review was undertaken from November 2019 to March 2020, with visits to Tatura to meet with GMW staff in December 2019 and January 2020.

2.2. Information sources

In addition to GMW's public submission, we sought further information regarding the assumptions that underpinned the forecast expenditure. This included:

- Additional information identified by GMW in its pricing submission
- On-site interviews with GMW staff
- Three rounds of information requests, and
- Previous ESC Determinations and associated reports.

There was also regular communication with GMW staff throughout the review process to clarify information requests and the responses provided.

2.3. Assessment of operating expenditure and productivity

To provide sufficient depth of analysis in support of any findings in relation to the reasonableness of the proposed operating expenditure, Aither sought to first understand, and then critique, the methodology and underlying assumptions adopted by GMW to establish their forecasts. As a result, Aither focused on:

- understanding the factors driving GMW's future costs, and
- ascertaining the assumptions and methodologies GMW adopted to translate those cost drivers into an operational expenditure forecast.

Having regard to the above, our assessment of the efficiency of GMW's operating expenditure involved the following tasks, amongst other things:

- Reviewing GMW's pricing submission to identify key forecasting issues and assumptions.
- Providing GMW with a detailed questionnaire related to their operating expenditure forecasts. Amongst other things, this initial questionnaire addressed:
    - the methodology GMW used to develop its operational expenditure forecasts – so that Aither could better understand GMW's overarching forecasting methodology
    - cost allocation methodology – so that Aither could better understand how costs are allocated between services
    - escalators and growth drivers – so that Aither could understand how GMW has escalated its forecasts over the period covered by the regulatory submission to account for potential changes in the real cost of labour, materials and electricity costs, as well as changes in the underlying drivers of those costs
    - capitalisation policy – to ensure that GMW has not included in its operational expenditure forecasts, the labour costs that it expects to capitalise over the regulatory period (i.e. to ensure there is no double counting)
    - cost reductions and efficiencies – to better understand how GMW's operating expenditure forecasts include, either directly or indirectly, allowances for on-going productivity improvements.
- Conducting interviews with GMW to discuss their operational expenditure forecasts.

2.4. Assessment of capital expenditure

An assessment was made to determine the reasonableness of GMW's capital expenditure forecasts. The assessment of GMW's capital expenditure was based on understanding, and then critiquing, the methodology, underlying assumptions and models that were used to establish capital expenditure forecasts. This involved the following tasks:

- desktop review of information provided by GMW
- desktop review of information found in the public domain
- meeting with key GMW staff to discuss key issues in relation to a number of individual capital projects selected for detailed review and the broader capital program
- further desktop review of documentation provided by GMW following these interviews.

With respect to the review of past expenditure, the approach was to identify where actual spend differed from allowed or budgeted spend and understand the reasons for these variances. This included understanding the processes adopted by GMW in varying its capital expenditure program within the period. For future expenditure, the approach was similar though it was more focused on individual projects than at a portfolio level.

3. Operating expenditure and productivity

3.1. Overview

This section discusses GMW's past and forecast operating expenditure, and more specifically, our opinion as to whether its forecast operating expenditure is reasonable given GMW's objectives, obligations and operating environment.

3.2. Overview of Goulburn-Murray Water's forecasting approach

GMW undertook a combination of top-down and bottom-up approaches to forecast its operating expenditure forecasts for the upcoming regulatory period. The forecast budgets reflect top-down commitments from GMW management, with these commitments informed by bottom-up information from the business.

While GMW stated that it adopted a base-step-trend approach to developing its forecast controllable operating expenditure, it had developed annual forecasts for the upcoming regulatory period. GMW has then compared these annual forecast budgets against the baseline year (2018-19) to determine the step changes from the baseline to derive a base-step-trend approach to align with the ESC's financial template requirements. Given the significant changes to GMW's forecast compared to actuals, this approach is reasonable.

3.2.1. GMW cost allocation

GMW has a Cost Allocation Manual that is used to provide guidance for internal cost allocation. The manual provides the principles and methodology adopted by GMW for the allocation of first and shared costs between services. To do this, the manual sets out how GMW:

- Distinguishes between direct and indirect costs
- Attributes and allocates costs to regulated services
- Ensures that there is no cross subsidisation between services.

The manual lists a set of cost allocation principles that effectively provide a hierarchy of cost allocation. The following outlines the hierarchy that is set out in the manual:

- Direct charge where possible

  Where possible, costs that are directly attributable to providing a specific service to a specific customer group should be direct charged to the specific service and activity to ensure that costs allocated reflect the costs associated with providing services to customers.

- Shared cost allocations

  Shared costs involve costs relating to shared assets that have specific agreed allocation splits. These splits generally do not change and are often underpinned by legal agreements. These splits are not impacted by day-to-day operations of GMW, however if there are significant changes to the underlying business these allocations will be reviewed to ensure the allocation remains sound.

- Management overheads

  These costs relate to overheads that are directly attributable to specific work groups. These specific work groups charge time directly to specific customer services. Management overhead costs are therefore allocated based on the proportion of time spent on each service by the specific work groups. Such groups include operational managers who are supervising staff providing a wide range of services to customers. Staff direct charge their time where they work, however management time is allocated proportionally as an overhead to this.

- Overheads with causal allocator

  Corporate overheads are examined to determine if there is a potential causal allocator that can be used to accurately allocate overheads. Causal allocators (and examples of when they are used) identified by GMW include:

  - Bulk Entitlement (salinity services)
  - Agreed share (East Goulburn Main and Waranga Western Channel)
  - Average cost per seat/vehicle (accommodation costs for offices and vehicle use)
  - Budgeted labour expense (services where labour is the causal allocator, such as HR, payroll, etc)

- No strong observable causal drivers

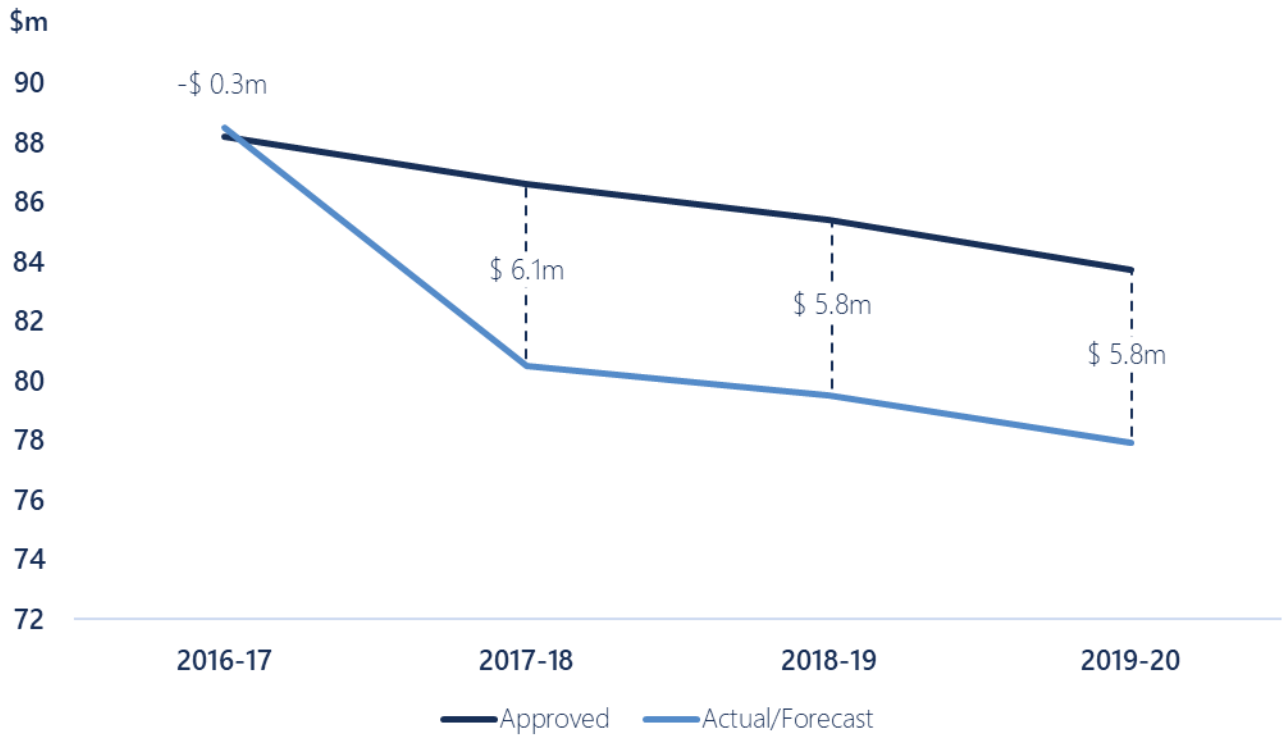
  Many of GMW's corporate overheads have no directly observable cost drivers. In these cases, GMW has adopted expenditure as the most efficient allocation method. Expenditure comprises both operational and capital expenditure, however capital expenditure is capped at $1 million for allocation purposes due to the potential for price shocks from large capital projects. Corporate overheads using this method are classed as operating expenditure and not included in the RAB.

The cost allocation principles adopted by GMW appear reasonable and consistent with other regulated utilities. It should be noted (as highlighted in Section 3 of the Tariff Report) that GMW has adopted a much greater emphasis on directly allocating costs where possible. This is an improvement on past practices where costs were more likely to be centralised and then allocated across the business.

Based on the information provided by GMW for this review, we are confident that the Cost Allocation Manual has been applied appropriately to the forecast expenditure.

3.3. Operating expenditure and productivity during the 2016 pricing period

GMW's operating expenditure for the current pricing period is forecast to be $18.1 million ($2019-20) less than the ESC approved total prescribed operating expenditure of $404.6 million for the period. When considering just controllable expenditure, there was an underspend of $17.3 million ($2019-20) compared to an allowance of $343.9 million over the period, representing a 5 per cent underspend. Figure 3 highlights that the actual controllable operating expenditure was approximately equal to the allowed controllable operating expenditure for the first year of the regulatory period (2016-17), with a $6.1 million reduction in 2017-18. This gap between the actual and allowed controllable operating expenditure was maintained throughout the regulatory period.



Source: GMW 2020 Price Review Submission, p.39.

Figure 3 Comparison of actual controllable operating expenditure and approved controllable operating expenditure ($2019-20)

As can be seen from Table 2 below, the key savings in operating expenditure were from GMW's irrigation services. The irrigation service of the business reflected the majority (approximately 65 per cent) of the total controllable operating expenditure over the current regulatory period.

Table 2 Breakdown of operating expenditure for current regulatory period – by service ($2019-20, $millions)

	2016-17	2017-18	2018-19	2019-20
Irrigation	58.86	53.04	51.94	49.15
Drainage	4.78	3.97	3.37	4.44
Water supply districts	1.55	1.28	0.68	0.79
Surface water diversions	2.94	2.86	2.99	2.66
Groundwater diversions	2.06	1.90	1.92	1.90
Bulk water services	13.49	13.01	14.61	14.96
Customer service and billing	4.81	4.48	4.04	4.03
Total controllable operating expenditure	**88.49**	**80.54**	**79.55**	**77.93**

The key driver of the operating expenditure savings within the current regulatory period is a significant reduction in labour costs over the period. GMW stated in its submission that the original forecast of

full-time equivalents (FTEs) for 2018-19 was 549 FTEs, however the actual FTEs at the end of 2018-19 was 450 FTEs. This is a reduction of 99 FTEs from the budget. The main reductions in FTEs occurred in the Gravity Irrigation and Water Delivery Management teams (60 per cent) and the Corporate and Customer Service and Billing (25 per cent).

The savings in the first three years of the current regulatory period are primarily driven by the 2013 Blueprint which was the initial driver for change within the business. The Blueprint was driven by the removal of 30 per cent of the water held within the GMID. This can create considerable deliverability issues given that the GMID was constructed based on the delivery of significantly more water in the district.

State and Federal Governments invested $2 billion to modernise ageing irrigation infrastructure to improve the level of irrigation service in the district. The combination of this investment and the reduction in irrigation water in the district required GMW to consider the size of its infrastructure through the Connections Project. The commitment within the 2013 Blueprint was to reduce operational expenditure by $20 million over the following five years.

In 2017, the Victorian Government established a Strategic Advisory Panel (SAP) to undertake a detailed review of GMW's governance and structure, asset and project management, customer and stakeholder engagement and financial sustainability. The focus of the review was to assess GMW's ability to continue to deliver efficient, affordable and cost-effective services having regard to the modernised irrigation system, reduced water availability and a changing customer base. Table 3 outlines the recommended cost savings from the review.

Table 3 Strategic Advisory Panel recommended savings (nominal, $million)

	Short-term (2018-2024)	Medium-term (2025 to 2040)	Long-term (2041 to 2067)
Average annual savings	9.7	18.0	7.6
Cumulative savings	9.7	27.7	35.3

Source: Strategic Advisory Panel ,2018, Goulburn-Murray Water Review, p.3.

Note: The SAP Review noted that this information reflects financial year data. The results were based on GMW capital and operating expenditure inputs. The savings identified were in addition to the $474 million (approx.) initiatives and $15.2 million (approx.) efficiencies that GMW had already planned over 25 years. The additional savings avoid growing and unsustainable debt. The report did not specify dollar terms for the savings, so it is assumed that they are nominal amounts.

Following the SAP Review, GMW established its Transformation Project (this project is discussed in more detail in section 3.5.4). From this project, the most significant cost reduction is due to labour efficiencies, while this is offset by a $4 million cost required to implement the Transformation Project (see further below).

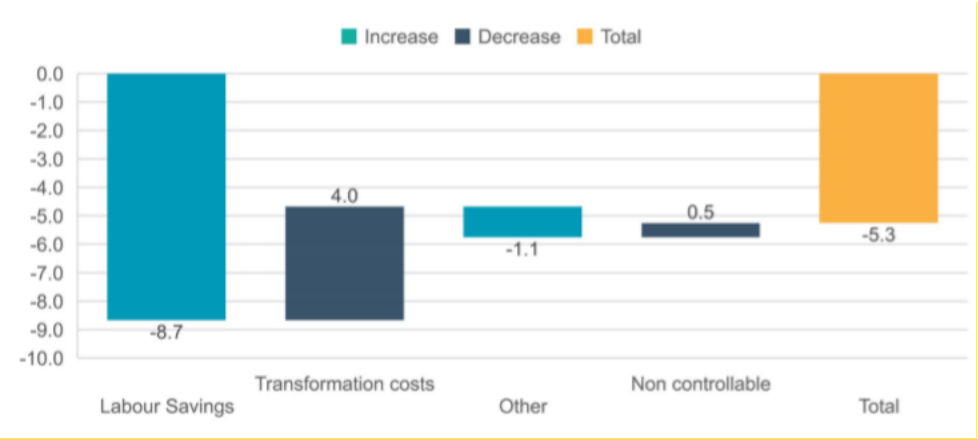


Figure 4 Breakdown of impact from Transformation Project in 2019-20

Source: GMW 2020 Price Review Submission, p.40.

Table 4 demonstrates that the majority of the labour savings identified above are captured within the operations and maintenance staff. These operations and maintenance cost savings represent a reduction of over 15 per cent across the period. The concentration of the savings within the operations and maintenance activities aligns with the discussion above regarding the drivers for labour cost savings.

Table 4 Breakdown of operating expenditure for current regulatory period – by business unit ($2019-20, $million)

	2016-17	2017-18	2018-19	2019-20
Operations and maintenance	60.72	54.18	52.70	51.02
Customer service and billing	4.81	4.48	4.04	4.03
Corporate	22.95	21.88	22.81	22.88
Total controllable operating expenditure	**88.49**	**80.54**	**79.55**	**77.93**

3.3.1. Transformation Project cost for 2019-20

It is noted that GMW will incur costs as part of implementing the Transition Project. These costs are necessary in order to realise the long-term efficiencies from the project. GMW has forecast that these costs would be incurred across both 2019-20 and 2020-21. To estimate the cost associated with implementing the Transformation Project, GMW was required to make a number of assumptions, such as:

- The number (and timing) of staff to participate in the Early Retirement Program
- The number (and timing) of staff to participate in the Regional Mobility Program
- Average salaries of GMW staff eligible to participate
- Average length of service of GMW staff eligible to participate
- Additional costs associated with the program (such as transitional assistance and training)

GMW was then required to make assumptions about when these costs would be incurred (either 2019-20 or 2020-21). This is driven by assumptions about when the organisational restructure will be completed and how many staff will be involved in each of the programs.

Aither has reviewed the assumptions underpinning this cost estimate and consider them to be reasonable.

3.3.2. Non-controllable operating expenditure

GMW's non-controllable operating expenditure increased within the current regulatory period from $8.64 million in 2016-17 to $16.17 million in 2019-20. This increase was primarily driven by increases in the required Murray-Darling Basin contribution.

Table 5 Breakdown of non-controllable operating expenditure for current regulatory period ($2019-20, $million)

	2016-17	2017-18	2018-19	2019-20
Licence fees	0.13	0.05	0.08	0.08
Environment contribution	1.78	1.74	2.74	2.69
Murray-Darling Basin contribution	6.73	15.99	14.59	13.40
Total non-controllable operating expenditure	**8.64**	**17.78**	**17.41**	**16.17**

3.4. 2018-19 baseline year

Consistent with regulatory practice, GMW has used the last year of actual information (2018-19) as the baseline year for determining the forecasts of future years.

When using a base-step-trend approach to forecasting, it is important to ensure that the baseline year reflects a 'typical' year and does not incorporate costs that would not normally be incurred. This requires an assessment of the baseline year cost information to determine what adjustments, if necessary, are required.

3.4.1. Adjustments to controllable operating expenditure baseline

To determine the necessary adjustments to the baseline, GMW assessed previous expenditure to determine cost trends that required further investigation. This analysis highlighted surplus disposal costs that were incurred in the base year that were non-recurring. The analysis considered whether changes were required for accounts such as Materials to account for prevailing conditions in the base year. It was viewed that these accounts were low in the base year based on weather conditions and did not warrant a change in the forecast period.

Internal knowledge of the 2018-19 budget also resulted in adjustments for non-recurring items in accounts such as Consultants, Labour Hire and Termination packages. The adjustments to these accounts were based on the two previous financial year costs.

Table 6 outlines GMW's proposed adjustments to the baseline operating expenditure.

Table 6 Adjusted controllable operating expenditure baseline ($2019-20, $million)

Cost item	2018-19
Baseline operating expenditure	**97.0**
Less non-controllable expenditure	
Environmental contribution	2.7
MDB contribution	14.6
ESC licence fee	0.1
Baseline controllable operating expenditure	**79.6**
Less non-recurring items	
Termination packages	0.3
Consultants	0.4
Labour hire	0.2
Surplus plant disposal	0.3
Adjusted baseline controllable operating expenditure	**78.3**

There are a high number of variables that can impact on operating conditions for GMW, therefore it is difficult to determine what a 'typical' year is from an operations perspective. Given this, we consider that GMW's approach of not adjusting the base year based on forecast weather conditions to be appropriate.

Aither has assessed the information underpinning GMW's adjustments and considers that the adjustments made to the 2018 baseline year are reasonable. Aither notes that the adjusted baseline controllable operating expenditure is lower than the previously approved controllable operating expenditure for 2018-19.

3.5. Assessment of forecast operating expenditure and productivity

GMW has forecast further cost savings in the upcoming regulatory period. As shown in Figure 5, there has been a steady decline in controllable operating costs since 2016-17, with costs forecasts to remain constant from 2021-22 to 2023-24.

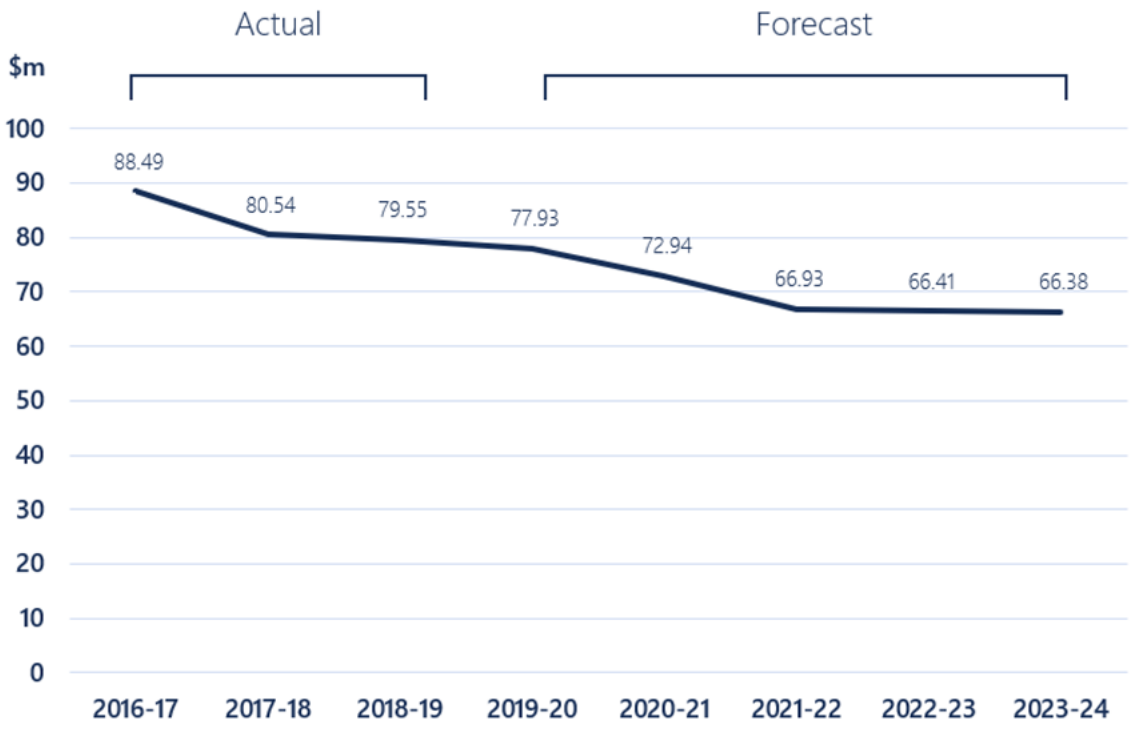


Figure 5 GMW controllable operating expenditure ($2019-20, $million)

The forecast controllable operating expenditure in 2023-24 represents a reduction of approximately 9 per cent over the regulatory period from 2020-21. It also represents a reduction of 16 per cent from the total controllable operating expenditure in 2019-20 ($79.55 million). It can be seen from Table 7 that these cost reductions are driven by modernisation and the Transformation Project (these two impacts are discussed in detail in section 3.5.4).

Table 7 Forecast controllable operating expenditure ($2019-20, $million)

Cost savings	2020-21	2021-22	2022-23	2023-24
Adjusted baseline controllable operating expenditure	**78.3**	**78.3**	**78.3**	**78.3**
Additional costs				
Water storage projects	2.7	0.8	0.9	0.9
Transformation costs	4.0			
Cost savings				
Modernisation impact	-5.4	-5.4	-5.4	-5.4
Transformation labour savings	-6.0	-6.3	-6.8	-6.8
Transformation services, materials and equipment savings	-0.6	-0.4	-0.6	-0.7
Total forecast variations	*-5.3*	*-11.3*	*-11.9*	*-11.9*
Total controllable operating expenditure	**72.9**	**66.9**	**66.4**	**66.4**

The forecast cost savings in the upcoming regulatory period are primarily in GMW's irrigation and bulk water services with a 6 per cent reduction in irrigation services costs and an 18 per cent reduction in bulk water services costs over the period. Table 8 provides a breakdown of the forecast operating expenditure across each of the services.

Table 8 Breakdown of operating expenditure for forecast regulatory period – by service ($2019-20, $million)

	2020-21	2021-22	2022-23	2023-24
Irrigation	43.49	41.02	40.98	40.95
Drainage	3.61	3.37	3.37	3.37
Water supply districts	0.71	0.69	0.68	0.68
Surface water diversions	2.62	2.50	2.43	2.43
Groundwater diversions	1.95	1.80	1.77	1.77
Bulk water services	17.24	14.37	14.07	14.06
Customer service and billing	3.32	3.17	3.12	3.13
Total controllable operating expenditure	**72.94**	**66.93**	**66.41**	**66.38**

The cost savings in the current regulatory period were more heavily focused on operations and maintenance costs. This is consistent with the timing of the expected efficiencies from the modernisation investment. This is in contrast with the forecast regulatory period whereby more costs in the corporate sector will be expected to be saved as a result of the Transformation Program. It can be seen from Table 9 that corporate costs for GMW are assumed to decrease by 20 per cent over the forecast regulatory period.

Table 9 Breakdown of operating expenditure for forecast regulatory period – by business unit ($2019-20, $million)

	2020-21	2021-22	2022-23	2023-24
Operations and maintenance	48.50	46.60	46.50	46.35
Customer service and billing	3.32	3.17	3.12	3.13
Corporate	21.13	17.16	16.80	16.90
Total controllable operating expenditure	**72.94**	**66.93**	**66.41**	**66.38**

The majority of the reductions in these costs are forecast to come from labour costs where this expenditure has reduced from $59.5 million in 2016-17 to a forecast $43.6 million in 2023-24 (see Figure 6). This represents a reduction of over 25 per cent of GMW's labour costs since the start of the current regulatory period.

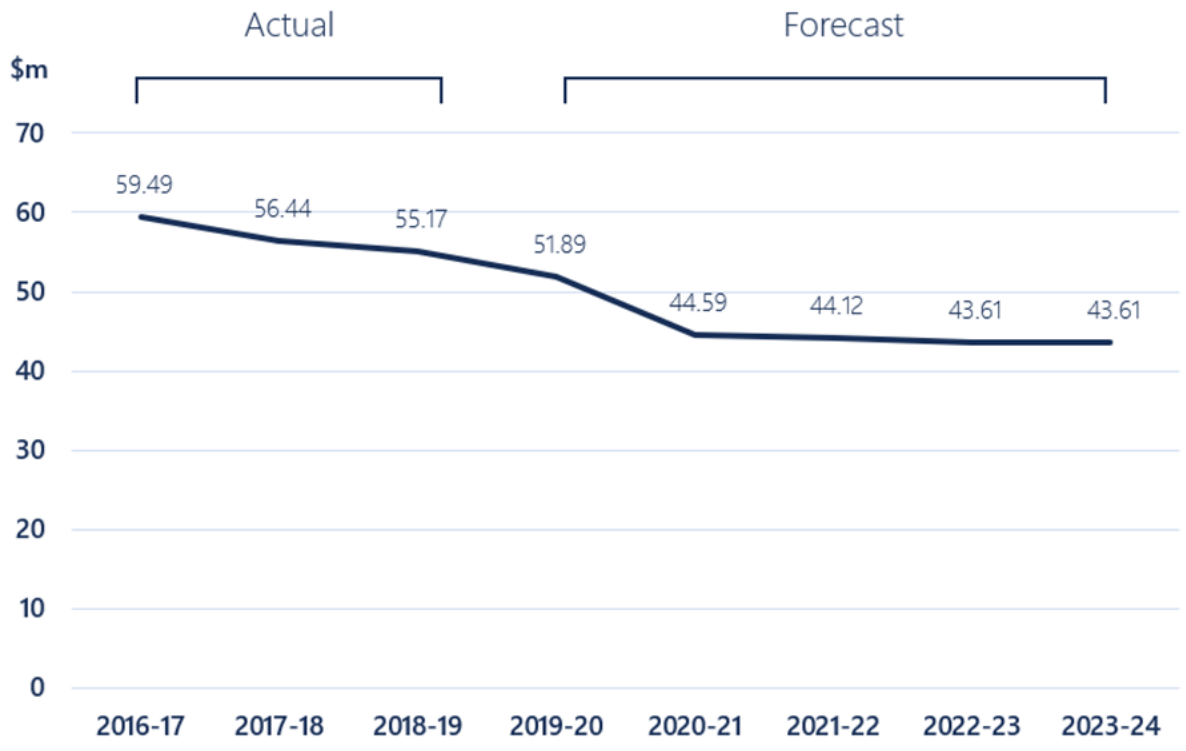


Figure 6 GMW actual and forecast labour operating expenditure ($2019-20, $million)

3.5.1. Output growth

GMW is not proposing any increased expenditure based on growth in outputs. This was driven by the assumptions that delivery shares will remain constant and water deliveries will reduce over the regulatory period.

Based on our review of GMW's information, these assumptions appear reasonable.

3.5.2. Real price growth

GMW is not proposing any expenditure increases over inflation based on price. GMW has assumed that all input prices will increase consistent with inflation and that it would absorb any increases above inflation.

Aither notes that there are likely to be variations in price increases across inputs, both above and below CPI. Given this, the assumption of no real price increases is reasonable.

3.5.3. Proposed new expenditure

As part of the ESC requirements for forecasting operating expenditure, GMW was required to indicate any proposed new operating expenditure in addition to the 2018-19 base level operating expenditure. GMW has proposed two new types of controllable operating expenditure for the upcoming regulatory period

- Transformation costs
- Water storage operating projects

Table 10 provides a breakdown of the proposed new operating expenditure for each of these items.

Table 10 Operating expenditure in addition to the controllable baseline year ($2019-20, $million)

New operating expenditure	2020-21	2021-22	2022-23	2023-24
Water storage projects	2.7	0.8	0.9	0.9
Transformation costs	4.0			
TOTAL	**6.7**	**0.8**	**0.9**	**0.9**

The following provides our assessment of these two costs.

Transformation costs

In order to deliver the cost savings associated with the Transformation Program, GMW forecast that it will incur additional costs. As outlined above in section 3.3.1, GMW has forecasted the expected costs associated with the Transition Program for both 2019-20 and 2020-21.

The forecast 2020-21 Transformation costs were based on the same spreadsheet as the expected 2019-20 costs. Consistent with our assessment of the 2019-20 costs, we consider that the assumptions used by GMW to forecast this cost to be reasonable and therefore the $4 million in additional operating expenditure is considered appropriate.

These costs are not forecast to continue beyond 2020-21.

Water storage operating projects

In its 2020 Price Submission, GMW has proposed operating expenditure for water storage projects of $5.3 million. This $5.3 million is ‘new’ operating expenditure and additional to the baseline operating expenditure. Table 11 provides a breakdown of these water storage projects.

Table 11 Breakdown of water storage operating projects ($2019-20, $million)

Proposed additional operating projects	Forecast operating expenditure
Various maintenance tasks across dams	$1.0
Inspection, Operation and Maintenance (IOM) schedule tasks	$0.5
Ground anchor testing	$0.5
Valve refurbishments	$0.7
Eppalock rock wall stability project	$1.1
Investigation works identified in 2019 Portfolio Risk Assessment	$0.4
Dam safety design reviews	$1.1
TOTAL	**$5.3**

The following provides an overview of these projects:

Various maintenance tasks across dams

Aither understands that this is re-classifying standard maintenance activities as operating expenditure rather than capital expenditure.

Inspection, Operation & Maintenance (IOM) schedule tasks

Each storage has an IOM schedule that sets out the tasks to be undertaken to manage and maintain the storage. The majority of IOM tasks are completed within the routine budget, however there are larger cyclic tasks that require additional budget. GMW has identified the following additional IOM projects for the WP5 period; Nillahcootie ($50K) Goulburn Weir ($50K), Tullaroop ($50K) Cattanach Canal ($250K), Stuart Murray Canal ($50K), and Waranga Major Outlet ($50K).

Ground anchor testing

GMW has advised that ground anchor testing is undertaken on a 10 year cycle and testing of the anchors at the following storages is planned for the WP5 period; Cairn Curran ($125K), Buffalo ($75K), Laanecoorie ($50K) and Goulburn Weir ($250K).

Valve refurbishments

GMW has advised that Dam Safety Inspections have identified the need for major valve refurbishments in the WP5 period at Eildon ($400K), Nillahcootie ($200K) and William Hovell ($100K).

Eppalock rock wall stability project

We understand that this is a necessary project and this increase is due to the reallocation to operating expenditure.

Investigation works identified in 2019 Portfolio Risk Assessment

The 2019 Dams Portfolio Risk Assessment (PRA) recommended investigation works to further inform the ALARP and business risks. The investigations proposed by GMW for the WP5 period include

Buffalo ($150K), Nillahcootie ($50K), Eildon ($150K), Tullaroop ($50K) and Newlyn ($15K) and these align with the PRA recommendations.

Dam safety design reviews

GMW has advised that dam safety design reviews are conducted on a 20 year cycle in accordance with ANCOLD guidelines and reviews at the following storages are planned for the WP5 period; Buffalo ($100K), Eppalock ($300K), Goulburn Weir ($150K), Cairn Curran ($100K) and Waranga Basin ($350K).

During the current regulatory period GMW identified that some projects had been incorrectly budgeted as capital expenditure but have since been reclassified as operating expenditure in accordance with Australian Accounting Standards. These projects were therefore re-classified from capital to operating expenditure and have been confirmed as being additional operating expenditure and not within the baseline operating expenditure in 2018-19. Based on our review of the additional projects, we did not identify any projects that were inconsistent with the PRA, Dam Safety Reviews and the Dams Strategy.

Given the information provided by GMW, our review has found that this additional expenditure is reasonable.

3.5.4. Proposed efficiencies

Similar to the forecast new operating expenditure, GMW is required to outline the cost savings for the forecast regulatory period in reference to the adjusted baseline year of controllable operating expenditure (see section 3.4). GMW is proposing three different cost savings:

- Modernisation impact (from the Connections Project)
- Transformation savings – labour
- Transformation savings – services, materials and equipment.

It should be noted that there is an inherent inter-relationship between the Transformation Project and the Connections Project – i.e. some of the cost savings in the Transformation Project are only achievable as a result of the Connections Project and vice versa. For simplicity, GMW has categorised the modernisation efficiencies from the Connections Project as those efficiencies related to the Gravity Irrigation services of the business.

Table 12 provides a breakdown of the proposed cost savings from each of these items.

Table 12 Cost savings from the controllable baseline year ($2019-20, $million)

Cost savings	2020-21	2021-22	2022-23	2023-24
Modernisation impact	-5.4	-5.4	-5.4	-5.4
Transformation labour savings	-6.0	-6.3	-6.8	-6.8
Transformation services, materials and equipment savings	-0.6	-0.4	-0.6	-0.7
TOTAL	**-12.0**	**-12.1**	**-12.8**	**-12.7**

The following provides our assessment of these cost savings.

Modernisation

The modernisation efficiencies are the savings expected in the gravity irrigation business as a result of the Connections Project. The Connections Project focused on the modernisation of its irrigation supply system and resulted in a reduction in the length of the system, automating regulators and outlets, and therefore enabled GMW to run a more efficient and cost-effective network.

The modernisation of the network has allowed GMW to reduce the number of staff necessary to manage the network, while the Transformation Program has also allowed for cost reductions in the Gravity Irrigation business (these reductions have been captured in these estimates rather than the Transformation Program). Based on information provided by GMW, the key drivers of the changes include:

- Direct labour cost savings are driven by an estimated reduction of 40 FTEs (25 from operations and 15 from maintenance). This is an estimate and will be determined by the final approved organisational structure.
- Reduction in equipment is based on a reduced fleet forecast through better management practices.
- Reduction in management and administration is primarily driven by labour savings from the Transformation program.
- An increase in costs from the automation of the network.

Table 13 provides the breakdown of the total Modernisation efficiency impact when compared to the baseline year (2018-19).

Table 13 Breakdown of modernisation efficiency compared to baseline year ($2019-20, $million)

	2020-21	2021-22	2022-23	2023-24
Direct labour	(4.6)	(4.6)	(4.6)	(4.6)
Materials	0.1	0.1	0.1	0.1
Equipment and services	(0.4)	(0.4)	(0.4)	(0.4)
Electricity	(0.02)	(0.02)	(0.02)	(0.02)
Other (Management and administration)	(0.8)	(0.8)	(0.8)	(0.8)
Other	0.3	0.3	0.3	0.3
Other efficiency savings	(0.01)	(0.01)	(0.01)	(0.01)
Total efficiency	**(5.4)**	**(5.4)**	**(5.4)**	**(5.4)**

Further discussion on the impact of the Connections Project is provided in Appendix A.

Based on our review of the information provided by GMW, we consider that the assumed modernisation cost savings to be reasonable.

Transformation

The second key driver for cost savings in the upcoming regulatory period is the Transformation Program. This program of work stems from the SAP Review of GMW undertaken in 2018. Through this review, it was identified that GMW faces a range of challenges going forward, including:[1]

- Adapting to external factors and uncertainties (such as climate change)
- Changing characteristics of the GMID footprint
- Improving business practices and efficiency needs to support financial objectives (e.g. improved asset management, capital delivery performance, smarter technology, etc.)
- Addressing governance and internal process issues
- Improving leadership and management capability
- Improving regional confidence in GMW, and
- Operating on a more commercial basis.

It was noted that the proposed changes require GMW to go beyond 'business as usual' efforts for efficiencies and necessitated a 'step change' in its approach to providing services. Given this, GMW established a transformation action plan (the Transformation Program) to act on the recommendations from the review and deliver a more financially sustainable business going forward.

The following outlines the key drivers for the cost efficiencies from the Transformation Program:

- A new organisational structure is forecast to reduce the number and cost of direct FTEs across the business. While the final number of FTEs will be determined through the approved organisational structure, it is estimated that over 75 per cent of the savings will come from corporate services.
- GMW has made a commitment to reduce contracted services across the business. Approximately 60 per cent of these savings are in corporate services.
- The cost savings in IT are primarily driven by reductions in labour costs. It is expected that there will be some increases in IT costs through contracts and services through cloud solutions, however these will be more than offset by the labour cost reductions.
- Other costs relate to commitments to reduce costs in areas such as consultancy and labour hire over the period.
- The re-allocation of efficiencies is to account for the fact that some of these efficiencies need to be attributed to non-prescribed services.

The efficiencies from the Transformation Program are assumed to commence in the final year of the current regulatory period (2019-20) with the majority of the efficiencies realised by the end of the first year of the forecast regulatory period (2020-21).

The forecast efficiencies are driven by commitments from business segments based on underlying assumptions about changes in staffing requirements and other resourcing going forward. These commitments are generally ambitious in their nature and reflect a change in approach for GMW.

[1] Strategic Advisory Panel, 2018, Goulburn-Murray Water Review, p.8.

GMW undertook a risk assessment of various assumptions regarding the cost savings across business units and functions. This assessment was designed to test the assumptions to ensure the delivery risks underpinning the assumptions was appropriate.

Table 14 provides a breakdown of the forecast efficiencies against the baseline year of 2018-19.

Table 14 Breakdown of transformation efficiency compared to baseline year ($2019-20, $million)

	2020-21	2021-22	2022-23	2023-24
Direct labour	(5.0)	(5.2)	(5.7)	(5.7)
Contracted services	(1.7)	(1.4)	(1.4)	(1.6)
Information Technology	(1.0)	(1.0)	(1.1)	(1.1)
Materials	0.3	0.2	0.2	0.2
Other	(0.8)	(0.8)	(0.9)	(0.9)
Re-allocation of non-prescribed efficiencies	1.6	1.5	1.5	1.6
Total efficiency	**(6.6)**	**(6.7)**	**(7.4)**	**(7.4)**

We note that the forecast efficiencies are primarily driven by commitments from management regarding a lower cost to serve for the network. Some of the detail around how these commitments will be delivered is not yet clear as GMW is still in the process of implementing organisational reform and therefore does not have firm FTE forecasts for each business unit.

Based on our review of the information provided by GMW, we consider that the assumed savings from the Transformation Program to be reasonable. The fact that the detail on how some of these efficiencies will be delivered is not yet determined reflects where the business is currently at in terms of its reform.

3.6. Review findings

GMW has proposed material cost savings in its controllable operating expenditure for the forecast regulatory period. These forecast savings represent a considerable change to the operating costs required to deliver its services. Some of these savings are driven by significant capital investments in the network that have reduced operating costs, while others are driven by internal organisational changes.

GMW is forecasting to generate efficiencies in the last year of the current regulatory period and realise the vast majority of the efficiencies by the end of the first year of the forecast regulatory period. This is appropriate given the current status of the organisational reforms. It is assumed that these efficiencies will be maintained throughout the forecast regulatory period. Given that the majority of the cost savings relate to reductions in labour, this assumption appears reasonable.

Forecast cost savings are generally based on underlying assumptions regarding changes in operations or conditions that result in a reduction in expenditure. Given the current status of the organisational restructure for GMW, these commitments are based on more high-level assumptions rather than detailed assumptions. While we cannot verify all of the details of these high-level

assumptions underpinning these cost savings, the strong commitments are commendable and highlight the focus of the business going forward.

These significant cost reductions raise queries as to the potential impact on service standards for GMW's customers. Based on our review of the information provided by GMW, we do not consider there to be any material risks of a negative impact on the services provided to customers by GMW.

On balance of the information provided by GMW for the review, we consider that the assumptions underpinning the forecast controllable operating expenditure for the upcoming regulatory period to be reasonable.

4. Capital expenditure

4.1. Overview

This section discusses GMW's past and forecast capital expenditure, and more specifically, our opinion as to whether its forecast capital expenditure is reasonable given GMW's objectives, obligations and operating environment.

4.2. Summary of past and proposed capital expenditure

For the current price determination, the ESC set a total capital expenditure allowance for GMW of $145.4 million, which equated to an average of $36.4 million per year. GMW has incurred a total capital expenditure of $106.7 million for the current regulatory period, which is $38.7 million (27 per cent) less than the ESC approved.

GMW has proposed a total capital expenditure over the forecast regulatory period of $96.2 million. This amount equates to an average of $24.1 million per year and is $10.5 million (10 per cent) less than GMW has incurred in the current regulatory period.

Table 15 Capital expenditure allowances and forecasts for GMW ($2019-20, $million)

ESC capital expenditure allowance for current regulatory period	GMW capital expenditure for current regulatory period	GMW capital expenditure forecast for upcoming regulatory period
$145.4	$106.7	$96.2

GMW proposes to undertake the largest proportion of its forecast capital expenditure for the upcoming regulatory period on its irrigation & drainage and water storage assets.

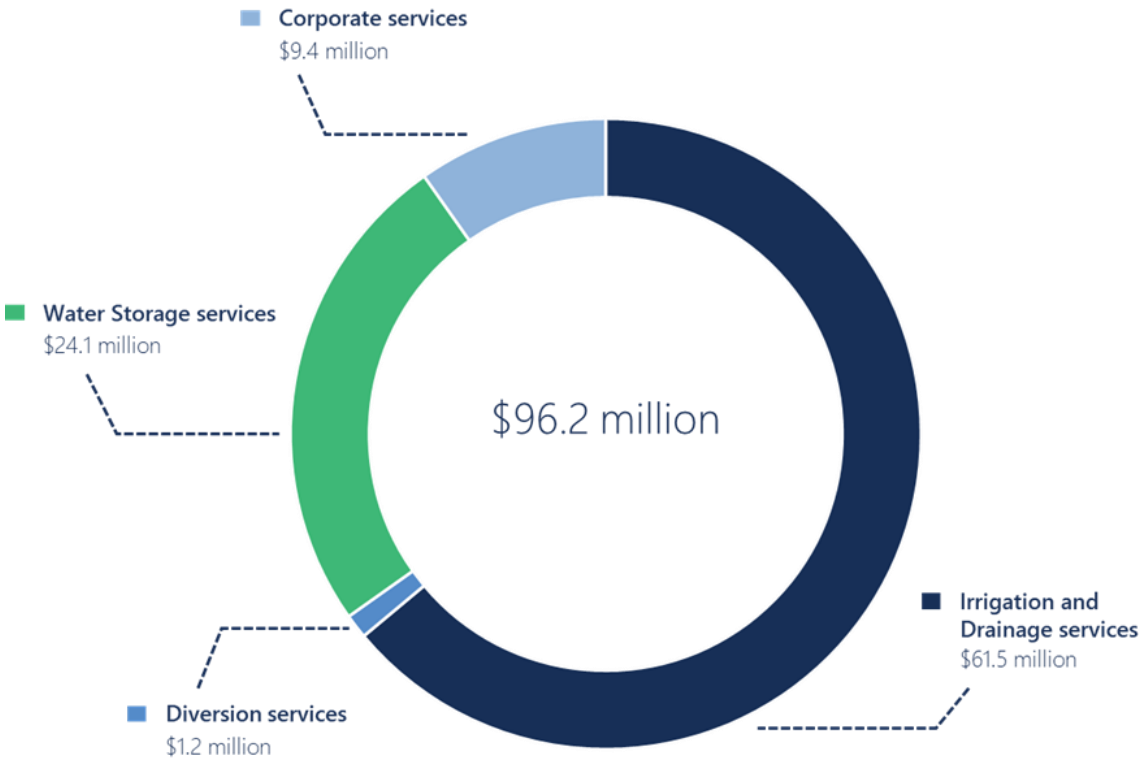


Figure 7 Proposed Capex by service for 2020-24 regulatory period ($2019-20)

There is a significant step change in the level of capital expenditure from one regulatory period to the next. It is evident from the actual capital expenditure figures for the current regulatory period that a change in GMW's capital investment approach occurred in 2018-19 following the 2018 SAP Review and commencement of GMW's Transformation Project.

4.2.1. Review findings

Aither's review has found that GMW's underspend against the ESC approved capital expenditure allowance in the current regulatory period was based on deliberate business decisions and was not due to systematic issues or a lack of capability or capacity. From interviews with GMW staff and review of supporting documentation, it is considered that GMW's proposed capital expenditure for the upcoming regulatory period is supported by reasoning and evidence and that there are processes in place for its planning and delivery. However, there are inherent cost-risk trade-offs being made.

GMW's newly adopted channel-by-channel approach to capital planning for its irrigation and drainage assets is based on accepting higher levels of risk around asset failure than in previous regulatory periods. GMW staff advised that these higher risks have been communicated to customers and that the price-risk trade-off proposals are understood and accepted by customers.

Aither supports GMW's channel-by-channel approach and its continuing development. The review of the capital expenditure program did not identify any projects that were considered speculative or uncertain in nature.

Based on our review of the information provided by GMW, we consider that both the actual and forecast capital expenditure are reasonable.

4.3. GMW's approach to project identification

In its Pricing Submission, GMW has broadly applied three different approaches to capital project identification and prioritisation across its business:

- Portfolio Risk Assessment (PRA) and Dams Strategy for the Bulk Water storage assets
- Channel-by-channel framework for GMID Irrigation and Drainage assets
- Business prioritisation for Diversion, Pumped Irrigation, Water District, Facilities, ICT and Corporate assets.

4.3.1. Portfolio Risk Assessment

The safe management of dam assets is an inherent obligation that dam owners must comply with, taking into account the associated risks. GMW has used its recently updated PRA across its dams and its newly developed Dams Strategy to inform its proposed dam program capital requirements.

The 2019 PRA was carried out for each of the twelve dams consistent with the requirements of the Australian National Committee on Large Dams (ANCOLD) and the Department of Environment, Land, Water and Planning (DELWP) guidelines. The findings from the PRA provided a prioritised sequence of dam safety works to achieve a risk management outcome acceptable to GMW. The first stage compliance projects are intended to reduce the societal risk of dams to a level below the Limit of Tolerability. The next stage of projects is intended to reduce dam safety risks to the "As Low As Reasonably Practical" (ALARP) level.

To satisfy GMW's responsibility under its Statement of Obligations, its plan for the upcoming regulatory period is to invest in dams that do not meet the Limit of Tolerability and to continue to show progress of its dam safety investment program towards the ALARP level.

GMW is currently developing an overarching dam investment framework that integrates the outcomes of the PRA and the Dams Strategy in preparation for the development of its 2024-28 capital expenditure forecasts. This will particularly focus on the investment approach for the smaller river basins.

4.3.2. Channel-by-channel Framework

The new 'channel-by-channel' framework is different to the way GMW has thought about its assets in the past. It is a move away from the focus on the maintenance and replacement of individual assets to a more strategic and interdisciplinary approach to asset management where decision-making is aligned with broader business objectives and customer preferences.

Due to the recent development of the channel-by-channel approach, there is minimal empirical evidence of the benefits of its implementation or the level of confidence associated with the quantum and timing forecast. GMW staff provided a high-level overview of the bottom-up channel-by-channel planning process. A worked example of a channel-by-channel assessment was also made available for review. Although the documentation provided by GMW on the channel-by-channel framework was limited, it was able to illustrate the processes behind the approach.

While it is too early to make a definitive judgement, the channel-by-channel approach would seem a useful strategic tool that can inform decision-making around irrigation assets. The approach seems logical and is consistent with contemporary asset management thinking.

Channel-by-channel assessments have identified where GMW is prepared to accept a higher risk of asset failure for parts of the system. This has enabled the deferment of capital replacement works to a time outside of the upcoming regulatory period. As part of a longer-term strategy to reduce the asset base of the GMID over time (thereby reducing the number of assets that GMW needs to maintain and replace in the future), the identified assets are essentially being put into a holding pattern until future needs are more certain. As a result, some assets will develop higher maintenance needs or move into a higher failure zone over time.

New techniques to extend the service lives of ageing assets are being developed to reduce the risks posed. Wherever it is both possible and practical, assets are decommissioned to achieve a reduction in GMW's infrastructure footprint. However, it is evident from interviews with GMW staff that the application of the channel-by-channel approach in making key decisions is still evolving.

The approach encourages taking a less conservative approach and having higher risk exposure to potential service disruptions and asset failures. Portraying what this increased asset risk profile may look like over time is not a straightforward matter and GMW is working on how best to express this. Fully understanding the risks and implications and how it aligns with the corporate risk framework is still a work in progress and no definitive comment can be made.

Over the upcoming regulatory period, GMW will need to verify the appropriateness of the channel-by-channel approach for its intended purpose. Asset data and intervention measures need to be quantified with increased confidence in preparation for future capital expenditure forecasts, as well as the post-Connections Project costs to rationalise, reconfigure and decommission assets.

Reducing capital expenditure by deferring asset replacements can necessitate increased levels of future maintenance expenditure. As the service lives of assets are extended, maintenance needs can increase and GMW staff interviewed acknowledged that this linkage between capital and maintenance had not been explicitly recognised. In the context of the upcoming regulatory period, this is not envisaged to be a material concern, but as the development of GMW's channel-by-channel approach matures the linkages between capital and operating expenditure will need to be incorporated. We would expect that as the understanding of the channel-by-channel framework increases and there is greater evidence of its usage, GMW will have more detailed information to demonstrate how the framework impacts on those linkages and the overall benefits from the framework. This would provide a more robust forecast of expenditure requirements for the next pricing submission.

4.3.3. Business Prioritisation

Prospective projects were identified through multiple avenues, then prioritised using risk-based criticality tools, local input, site inspections and investment appraisals.

4.3.4. Review findings

With the exception of the channel-by-channel framework, which is still in development, it is considered that GMW's approaches to asset management and project identification are mature, well established and systemised. From the Pricing Submission, discussions with GMW staff and review of supporting documents, it is considered that the asset management and project identification approaches used by GMW for its 2020-24 capital expenditure forecasts are sound.

Some of the supporting documents reviewed do not align with the thinking expressed in the Pricing Submission. It is observed that some of the documents that make up GMW's asset management framework need updating to reflect the recent changes to asset planning and management. We would expect that this would be rectified in time for the next pricing submission.

Aither recognises that GMW is in the process of adapting its asset management approaches to changing business needs and maintaining the currency of the suite of supporting asset management documents is an ongoing task.

4.4. Past capital expenditure

In the current regulatory period, GMW is forecast to significantly underspend compared to the ESC's approved capex provision. The forecast capital expenditure for the current regulatory period (2016-20) is $38.7 million (27 per cent) less than the ESC approved determination.

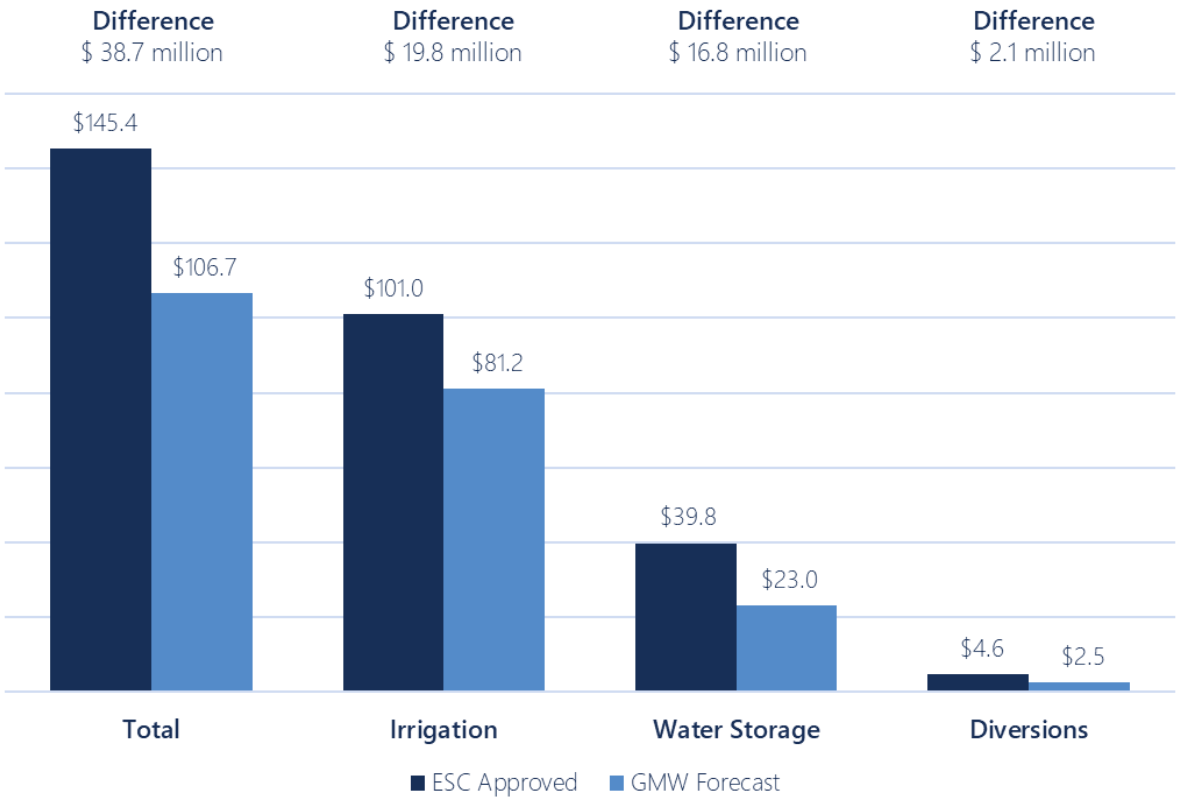


Figure 8 Current period performance against determination ($2019-20)

4.4.1. Irrigation and Drainage

GMW has forecast an overall underspend of $19.8 million (20 per cent) across the current regulatory period. Following the SAP Review, the adoption of the Transformation Project and the introduction of the channel-by-channel asset management framework, GMW made the considered decision to reduce its capital expenditure. Aither considers the action to reduce the forecast expenditure based on these factors to be appropriate.

4.4.2. Diversions

GMW has forecast an overall underspend of $2.1 million (46 per cent) across the current regulatory period. The current capital expenditure determination was based on a proactive program of upgrading non-compliant water use meters for diversion customers to national metering standards. The cost

impact of proactively upgrading meters was questioned through the Victorian metering policy and the metering action plan development. GMW made the business decision to address non-compliant meters as they fail, thereby significantly reducing required expenditure across the period.

4.4.3. Water Storage (State Dams)

GMW has forecast an overall underspend of $16.8 million (42 per cent) across the current regulatory period. This was a result of bringing forward works at Buffalo and Tullaroop to the 2012-16 regulatory period to take advantage of the opportunity presented by low storage levels, which resulted in an adjustment in the timing of works at Laanecoorie and Newlyn, pushing them out into the upcoming regulatory period. From the information provided by GMW, these program changes are considered to be appropriate.

4.4.4. Information and Communication Technology

GMW has forecast an overall underspend of $6.3 million (40 per cent) across the current regulatory period. This was a result of cost savings made, adjustments to the scope of some projects and GMW's ICT strategy being re-defined as part of the organisation-wide Transformation Project.

It should be noted that in GMW's Price Submission, the ICT capital spend has been rolled up into corporate allocation and is included in the total figures shown for the primary services.

Table 16 ICT Capex in the current regulatory period ($2019-20, $million)

ESC Approved ($m)	GMW Forecast ($m)	Difference ($m)
$15.8	$9.5	$6.3

4.4.5. Review findings

Aither considers GMW's underspend against the ESC approved capital expenditure allowance in the current period to be appropriate and based on deliberate business decisions and not due to a lack of capability, capacity or systemic issues.

4.5. Forecast capital expenditure

During the forecast regulatory period, GMW has proposed a total capital expenditure of $96.2 million, or an average of $24.1 million per year. This is marginally lower than what GMW had forecast to spend during the current period. GMW is forecasting a total capital expenditure of $106.7 million in the current period. This amount equals an average of $26.7 million per year.

Table 17 Forecast capital expenditure ($2019-20, $million)

	Proposed 2020-24	ESC Approved 2016-20	GMW Forecast 2016-20
Irrigation and Drainage	$61.5	$101.0	$81.2
Diversion Services	$1.2	$4.6	$2.5
Water Storage	$24.1	$39.8	$23.0
Corporate	$9.4		
Total	**$96.2**	**$145.4**	**$106.7**

In GMW's Pricing Submission, the corporate capital expenditure over the current period has been rolled up into overhead allocation and included in the figures for the primary services.

The predominant driver of the capital program for the upcoming regulatory period is renewals (the end of life replacement of existing assets). The largest proportion of the proposed capital expenditure is on the irrigation and drainage program which involves numerous discrete packages of work across its irrigation districts, with a primary focus on the GMID.

GMW is currently updating its capital investment decision making framework and while this is still evolving, the new framework was used in the development of the proposed capital expenditure program for the upcoming regulatory period.

GMW utilised a top-down and bottom-up capital project prioritisation process. Corporate ranking criteria were applied in the top-down approach and operational staff input was used in the bottom-up approach. The decision-making framework and the software tools used had logic and rigour. The high-level documentation provided does not have detail on how the top-down and bottom-up project assessment processes were integrated together. It is understood that the different programs of work were ultimately aligned with the budgets from the Transformation Project financial modelling. GMW acknowledges that there may be some asset failures that have not been included in the capital expenditure forecast given the expenditure caps applied.

GMW's 2016-2020 forward forecast of capital expenditure over the 2020-24 period has been reduced by $57.8 million. The reduction has been achieved by excluding projects that GMW has deemed as 'uncertain' at this point. It is GMW's intention to bear the risk of any of these projects subsequently being required and to fund them from within the ESC approved determination.

4.5.1. Major Projects

GMW's forecast capital expenditure for the upcoming regulatory period includes three major projects during the regulatory period that will be customer funded.

Table 18 Major projects ($2019-20, $million)

Project Description	Total Estimated Cost	Customer Contribution	Construction Scheduled
Cohuna weir fishway	$2.8	$2.8	2021
Mitiamo & District reticulated water supply	$29.0	$4.3	2020/21
Tatura campus solar panel installation	$1.0	$1.0	2022
Total	**$32.8**	**$8.1**	

Further details of these projections are proved in sections 4.6, 4.7 and 4.8.

4.5.2. Dam Safety Projects

GMW's capital expenditure forecasts include only the State-owned water storages and do not include the Murray system storages that are managed by the Murray Darling Basin Authority (MDBA).

The proposed 2020-24 Water Storage capital expenditure of $24.1 million is made up of multiple projects across the storages. An important sub-set of the Water Storage expenditure is the dam safety program. The proposed dam safety expenditure of $3.6 million for 2020-24 is less than the approved dam safety expenditure for 2016-20 and less than the 2016-20 forecast of dam safety expenditure for the 2020-24 period.

The 2016-20 dam safety expenditure forecasts were based on the 2006 PRA and the forward forecast for the 2020-24 proposed dam safety works on Eildon, Waranga, William Hovel and Eppalock storages. The 2020-24 dam safety capital expenditure forecasts are based on the recently completed 2019 PRA which identified three projects to be undertaken in the 2020-24 period:

- Newlyn $1.2 million
- Tullaroop $0.45 million
- Nillahcootie $1.95 million

The mandates for each of these projects have been reviewed and the justification for inclusion in the 2020-24 period is considered to be sound.

Previously identified projects on Eildon ($19 million), Waranga ($9 million), Willian Hovel ($6 million) and Eppalock ($4 million) were excluded from 2020-24 based on the 2019 PRA, which called for further investigation of these projects to better understand the existing risks or to evaluate the level of risk reduction achievable by non-structural risk reduction actions.

GMW's proposed 2020-24 dam safety capital expenditure forecasts are mostly consistent with the 2019 PRA recommendations. The PRA classified works on Nillahcootie in the third ranked risk category, with an indicative timing for completion within 15-25 years. GMW stated that including

Nillahcootie in 2020-24 was in order to reduce the safety risks and achieve ALARP status for the storage. This explanation is considered reasonable. The Nillahcootie work proceeding is still subject to a final gateway when the detailed design work is completed.

Table 19 Dam safety capital expenditure ($2019-20)

Storage	Dam Safety Works	Total proposed expenditure	Forecast capital expenditure	PRA Risk Category	PRA Proposed Timing
Newlyn	Installation of embankment and interface filters	$2.7 million (30% contingency)	$1.2 million (Stage 1 Complete)	First risk target – Life safety risks below limit of tolerability	Start within 2-5 years
Tullaroop	Upgrade of filters in minor embankments	$5.4 million (40% contingency)	$0.45 million (Detailed design)	Second risk target – business risk priority rating of 3 or better	Start within 5-20 years
Nillahcootie	Stabilise spillway walls and construct filters	$3.95 million (40% contingency)	$1.95 million (Detailed design; Construction commenced)	Third risk target – business risk priority rating of 4 or better	Complete within 15-25 years

4.5.3. Diversions

GMW has made the business decision to not replace water use meters for diversion customers that do not comply with national metering standards if they are still operational. GMW staff advised that a risk-based metering approach has been adopted that includes replacing meters as they fail but not proactively replacing operating non-compliant meters.

GMW advises that it will still meet its obligations under the 2018 Murray Darling Basin Compliance Compact which Victoria has signed onto. We note that the State Government's metering action plan is currently being developed.

4.5.4. Development of cost estimates

The capital expenditure forecasts for the Linear and Structures programs are based on derived quantities and unit costs. The unit cost rates have been derived by GMW from the actual costs over the previous 2 years (2017-18 and 2018-19) and include 15 per cent contingencies. These programs involve over 300 diverse packages of work across the upcoming regulatory period and the general costing approach applied by GMW is considered to be sound.

Information provided by GMW on the estimated and actual expenditure of recent Linear and Structures programs shows a degree of variability to warrant the addition of the 15 per cent contingences allowance to account for the level of costing uncertainty.

Capital expenditure forecasts for larger discrete projects have been based on either a P50 probabilistic estimate or include an individually assessed risk-based contingency allowance. This is considered a good middle estimate approach for pricing purposes. For major projects (>$2M) GMW uses a P90 estimate for project approval and a P50 estimate for pricing submission purposes.

From the high-level review undertaken it is considered that GMW has exercised sound judgement in its assessment of costs for the various programs that make up the forecast capital expenditure.

4.5.5. Investment appraisal

It is standard GMW practice that all capital projects need to be justified and approved. The level of appraisal and rigour of the business case depends on the project cost. Most projects go through a number of approval gateways, including the assessment of criticality, options and risks.

4.5.6. Ability to deliver proposed capital program

GMW uses a standard project management methodology (PRINCE2). This provides a consistent, scalable approach for projects to follow. Irrigation works are largely undertaken during the winter period and drainage works during the summer period. Most works on water storages are dependent on the water level at the particular site.

GMW is undertaking a significant business transformation process and the staff reductions proposed will impact on how the business is operated in future.

GMW has in place a well-established and flexible program delivery model that utilises a mix of internal resources, a technical consultancy panel and an external contractor base that is experienced with GMW works.

From discussions with GMW staff responsible for delivery of the capital program, they are confident that the risks of non-delivery in the upcoming regulatory period are low.

Having regard to GMW's current capability and capacity to deliver a capital program, its delivery performance across the current regulatory period and the forecast capital projects and timeframes, it is considered that GMW should be able to resource and deliver the proposed capital works program within the upcoming regulatory period.

4.5.7. Review findings

It is considered that the approaches used by GMW to inform the capital expenditure forecast were of adequate rigour, fit-for-purpose and make business sense.

A high-level review of the forecast capital expenditure program did not identify any projects that were considered uncertain or speculative in nature. It is noted that as part of its capital prioritisation processes, GMW removed a relatively large number of projects it had previously forecast for the upcoming regulatory period but now considers it uncertain whether or not they need to be implemented in the upcoming regulatory period. It is GMW's intention to bear the risk of any of these projects subsequently being required and to fund them from within the ESC approved determination.

GMW's capability and capacity to deliver the capital program is considered high, even with the planned reduction of internal resources.

4.6. Major project: Cohuna Weir Fishway

4.6.1. Background

This project involves the construction of a fishway at the Cohuna Weir on the Gunbower Creek which forms part of the Torrumbarry irrigation supply system. No fishway was constructed at the time the Cohuna Weir was replaced in 2005 and as a result, it not currently possible for fish to pass upstream through the weir structure.

At the time of the weir replacement it was agreed with the North Central Catchment Management Authority (North Central CMA) and relevant government departments that the statutory provision of the fish passage could be deferred until a later date. This was in part due to the legislation changing at the time of completing the weir design and in part due to the lack of fish studies to inform the design of a fishway. These studies have now been completed and there is a requirement from the North Central CMA and an expectation from the local community to construct a fishway.

Gunbower Creek forms the southern border of the Gunbower forest and is a waterway of significant value. The movement of fish species within the Gunbower Creek system is important for the breeding and survival of many species. Further to this, the provision of the fish passage along the entire length of Gunbower Creek is considered a high ecological priority as part of the Living Murray Program.

The construction of a fishway at Cohuna Weir will open up a further 87 km of the Gunbower Creek system between Thompson Weir and Koondrook Weir. Fishways are already in place at Gunbower Weir and Thomson's Weir and the construction of a government funded fishway at Koondrook Weir is planned to coincide with the Cohuna Weir fishway.

4.6.2. Justification for the project

It is a legislative and environmental requirement for structures constructed across natural waterways to have provisions to allow fish movement along the waterway; therefore, GMW has an obligation to provide a fish passage structure across the Cohuna Weir.

Construction of the Cohuna Weir fishway will facilitate fish movement on the Gunbower Creek. In particular, this will allow passage upstream during their migration and spawning season. Construction of the fishway will allow GMW to meet its legislative requirements and meet the 2005 commitments made to referral authorities and public reference groups.

4.6.3. Project cost estimation

The proposal is to construct 85 metres of reinforced concrete vertical slot fishway. This style of fishway was selected as the most appropriate because vertical slot fishways are already present along the Gunbower Creek and have proved successful. The detailed design has been completed and planning approval processes have commenced.

The total cost of the project is estimated at $2.8 million. A detailed estimate was prepared in 2017 and this has been updated for the upcoming regulatory period using inflation increases and adjusted to a risk-based P50 estimate. The most significant identified project risk is around the timelines for obtaining the necessary planning and cultural approvals.

4.6.4. Project timing and delivery

It is proposed the works will be carried out over the 2020-21 and 2021-22 financial years with key construction stages requiring dewatering to be completed as part of the 2021 winter works program.

Cohuna weir fishway works will be completed in the same winter as the Government-funded Koondrook weir fishway to minimise disruption to aquatic life and irrigators and maximise the benefit of removing all barriers to fish passage along Gunbower Creek from the Murray to the National Offtake.

The proposed project delivery method is to undertake construction of the fishway using primarily GMW internal resources. Substantial waterway excavation is involved to construct the concrete civil works and GMW is experienced in works of this nature adjacent to an operational weir.

4.6.5. Review findings

Based on the information provided by GMW, our review did not identify any issues with the project. Confidence in the need for the project is considered high and the project risks are considered moderate.

4.7. Major project: Mitiamo Pipeline

4.7.1. Background

The project involves the replacement of an existing open channel domestic and stock 'dam fill' schemes with a pressurised pipeline system supplying on-farm enclosed tanks over a 75,000ha area in the Mitiamo region of north central Victoria.

The proposed service area is located north of Bendigo and south west of Echuca near the Mitiamo, Tennyson and Dingee townships. It includes more than 180 property owners and 90 occupied houses.

Water is currently delivered to some properties in this region for domestic and stock purposes through a network of open channels and earthen farm dams. The current system is characterised by poor service capability and large losses of water through seepage and evaporation.

It is estimated that over 80 per cent of water supplied to the channels is lost before use. Two-thirds of the project area is currently serviced. There are 10 separate dam filling schemes operating at present.

The new reticulated pipeline system will include 375 km of pipeline and a pump station on the Waranga Western Channel, and a main carrier in the Goulburn System. The scheme will be operated and managed by GMW with ongoing costs funded by the serviced customers.

4.7.2. Justification for the project

The project is driven by the expected water savings of 1GL per annum through the reduced losses in the current delivery network. It will also provide a more secure water supply for expansion and diversification of agricultural production in the region and improve community resilience and liveability.

4.7.3. Project cost estimation

The total capital cost of the pipeline scheme is estimated at $29.0 million (P90 confidence). Based on current arrangements, customers will contribute $4.3 million and the Victorian and Commonwealth government will contribute $24.7 million.

It is a straight-forward pipeline project at a green-field site. In recent years, GMW has constructed similar domestic and stock pipeline schemes at Normanville, East Loddon, Tungamah and Cosgrove therefore the level of accuracy of the cost estimate is considered reasonable.

4.7.4. Project timing and delivery

It is noted that government funding has been secured and planning approval processes are underway. The project will take approximately 18-24 months to complete with construction scheduled to commence in 2020-21.

The proposed delivery model for the construction of the pipeline is through a competitive tendering of design and construction.

4.7.5. Review findings

Based on our review of the information provided by GMW, no issues were identified with the project. Confidence in the need for the project is considered high and the project risks are considered low.

4.8. Major Project: Tatura Campus Solar Panel Installation

4.8.1. Background

This project involves the installation of solar panels with frames, inverters and associated cabling onto the roofs of GMW's Casey St (258kW) and Cussen St (59kW) buildings in Tatura. The objective is to provide power to the sites to assist in meeting the Government target of net zero emissions by 2050, greenhouse gas emission reduction and reducing long-term energy costs.

The electricity consumption across both sites is significant and cannot be totally offset with solar. The proposed size of arrays provides the best return on investment (ROI).

4.8.2. Justification for the project

The project is expected to deliver an estimated 46 per cent reduction in GMW's electricity bills across both sites. The project will also deliver a reduction in the GMW's greenhouse gas emissions which are increasing with the additional pump stations installed as part of the Connections Project. The project seeks to deliver a 487 tonne CO_2-e per year reduction which represents nearly 5 per cent of GMW's total emissions.

GMW's modelling estimates a return of investment in the order of 14 years for both sites combined. Market-leading panel manufacturers warranted output for 25 years which provides an adequate buffer for the installation costs to be recouped.

4.8.3. Project cost estimation

GMW has estimated the total capital cost at $1.0 million (including 25 per cent contingencies). The estimate is based on an expression of interest (EOI) undertaken to test who in the market would be interested in undertaking these works and what their estimates for the work would be.

4.8.4. Project timing and delivery

The works are forecast to be carried out over the 2021-22 and 2022-23 financial years with the main switchboard upgrades performed during the 2022 irrigation off-season.

The proposed delivery model is a competitive tendering of design and construction.

4.8.5. Review findings

Based on our review of the information provided by GMW, we consider the project to be reasonable. Confidence in the need for the project is considered high and the project risks are considered low.

Appendix A: Connections Project

Context

The Connections Project resulted in extensively automating, modernising and rationalising the GMID.

While the Shepparton Irrigation Area channel system has been fully automated, the five other Irrigation Areas continue to operate hybrid systems where the backbone channels have been automated and non-backbone channels that have been retained are still being manually operated.

The Connections Project has involved the automation of regulators and outlets and the reduction in the footprint of the supply system. While the Connections Project has delivered new assets requiring less maintenance in the initial years, there are still extensive numbers of GMID supply assets that have been untouched.

For some time now there has not been a stable GMID operating environment and this has made the tracking of changes to annual operating expenditure somewhat difficult. Since 2012, GMW has undertaken a number of productivity, efficiency and cost reduction exercises that include the GMID Connections Project, 2013 Blueprint cost saving, 2015/16 organisation re-structure and workforce review, the Transformation Program following the 2018 SAP Review and the new 2019-20 business structure.

Aither has undertaken a high-level review of the impact on GMID expenditure resulting from the Connections Project since 2012 and the forecasts for the upcoming regulatory period. The review was based on the supporting documentation provided and interviews with GMW staff. The source figures and underlying assumptions and calculations have not been verified.

GMID expenditure reductions

The Connections Project has allowed GMW to reduce the GMID operational expenditure since 2012 by $2.3 million (7 per cent) by 2019 and GMW is forecasting this to increase to $3.7 million (11 per cent) by the end of the current regulatory period in 2020.

GMW is proposing further aggressive reductions in the GMID forecast operating expenditure for the upcoming regulatory period. Table 20 provides a breakdown of actual and forecast operating expenditure figures as a result of the Connections Project provided by GMW.

Table 20 Breakdown of operational expenditure changes resulting from the Connections Project ($2019-20, $millions)

GMID	2012 – Base Year	2019 – Actual	2020 – Forecast	2024 - Forecast
Operations	$15.2	$12.2	$11.5	$8.7
Maintenance	$18.9	$15.7	$15.0	$13.5
Support/Licence charges	$0.4	$4.3	$4.3	$4.7
Total	**$34.5**	**$32.2**	**$30.8**	**$26.9**

Over the seven-year period from 2012 to 2019 the total operating expenditure reduction achieved by GMW has been 7 per cent. In the four-year period from 2020-2024 GMW is forecasting a further reduction in operating expenditure of 13 per cent.

The Connections Project has enabled efficiencies and savings in the irrigation business by reducing the workforce required for manual operations and maintenance and replacing it with a smaller, higher skilled workforce responsible for the operations and maintenance of the automated aspects of the network. Table 21 provides a breakdown of the impact that the Connections Project has had on labour costs for GMW.

Table 21 Impact on labour expenditure from Connections Project ($2019-20, $million)

GMID	2012 – Base Year	2019 – Actual	2020 – Forecast	2024 - Forecast
Direct labour – Operations	$10.0	$8.3	$7.3	$5.3
Direct labour - Maintenance	$8.0	$7.5	$7.2	$5.9
Total	**$18.0**	**$15.8**	**$14.5**	**$11.2**

Over the seven-year period from 2012 to 2019 expenditure on direct labour has reduced by 12 per cent. In the forecast four-year period from 2020-2024, GMW is forecasting a further reduction in direct labour expenditure of 23 per cent.

The GMID expenditure reduction forecast in upcoming regulatory period is nearly double what has been achieved under the Connections Project in the previous two regulatory periods.

While the GMID expenditure reductions are referred to as productivity improvements, in reality the reductions are a mix of productivity, efficiency and cost avoidance and cost deferral.[2]

It is considered that the forecast expenditure reductions for the GMID will be “pushing the envelope” as GMW’s current levels of channel maintenance are at the lower end of the range of industry benchmarks.

Some of the future uncertainties around upward pressures on GMID costs include the defects liability period for many of the modernised assets will be ending shortly and require maintenance expenditure going forward. For example, the mid-life refurbishments of the flume gates that were installed early in the program are coming up and will start to impact the maintenance expenditure.

The modernised electro-mechanical gates and outlets have increased technical maintenance requirements and there is only a relatively short cost history to this point. Deferring the replacement of assets under the channel-by-channel approach may lead to increased maintenance needs over time.

[2] Cost avoidance results in no future cost stream. For example, the decommissioning of a channel which eliminates the future operation, maintenance and replacement costs for that channel. The Connections program has reduced the length of GMID channels by 1,513 km and as a result GMW has avoided the future operation, maintenance and replacement costs for that length of channel removed (page 67 of GMW’s price submission sets out the avoided capital costs over 50 years as a result of the Connections Project).

Cost deferral is where the timing of the future cost stream is changed. For example, the modernisation of channel regulating structures and irrigation outlets (new for old) changes the timing of future costs but does not avoid them.

We note that considerable organisational effort is expected to be required to achieve the expenditure reductions and not have unintended service or asset impacts.

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