Water price review 2023

Submission received through Engage Victoria

Date submitted: 1 December 2022

Water business: GWM Water

Submission written by: David Bath

Postcode: 2601

From 3 October 2022, we began accepting submissions on our 2023 water price review via Engage Victoria (www.engage.vic.gov.au). On this website, people were given the option to send us general feedback or respond to questions we provided.

1. What do you think of the prices proposed by your water business?

Please refer to our submission to ESC from Dr Simon Banks, Commonwealth Environmental Water Holder, Department of Climate Change, Energy, the Environment and Water for GWMWater water price review 2023.

2. What do you think of the proposed outcomes?

The Marsden Jacobs Associates report carried out as part of GWMWater bulk water pricing review has provided increased transparency on GWMWater's current bulk water pricing strategy.

Australian Government
Commonwealth Environmental Water Office

Our Reference: 002038209

Attn: Water Price Review 2023
Essential Services Commission
Level 37, 2 Lonsdale Street
Melbourne VIC 3000

e-mail: water@esc.vic.gov.au

Dear Sir / Madam

CEWH submission for the GWMWater 2023-2028 water pricing review

Thank you for the opportunity to provide a submission on the water pricing review for Grampians Wimmera Mallee Water (GWMWater) for the 2023-2028 period. As the Commonwealth Environmental Water Holder, I am responsible to manage the Commonwealth environmental water holdings to protect and restore environmental assets in the Murray-Darling Basin. Supported by my office, I am also responsible for managing the associated funding which includes paying statutory fees and delivery charges associated with these holdings. The Commonwealth environmental water holdings include a 28,000 megalitre bulk water entitlement in the Wimmera system that has yielded very little water as it is the lowest security entitlement in the system. In most years since the Commonwealth acquired this bulk entitlement in 2013 it has yielded no water. Before 2022/23, the cost per service received from GWMWater, that is the cost per megalitre of water delivered is considered high at $57.50/ML.

Prior to the GWMWater submission and given that we have been unable to ascertain whether the basis of pricing paid by the Commonwealth is transparent and reasonable, my office commissioned an independent review of pricing by Frontier Economics. This report, and an associated earlier transmittal letter, are provided at Attachment A. This independent review helped my office to become more informed, but it did not answer if the basis of pricing of the services of GWMWater was transparent, and therefore we could not determine if the pricing was reasonable for the Commonwealth environmental water holdings.

GWMWater's 2023 submission to your price review includes a significant amount of information, which is helpful for us. We note the analysis of the Marsden Jacob Associates bulk water pricing review final report (Appendix 3) and the consultation with the regional community (Appendix 1). We note with gratitude that GWMWater are proposing to reduce the cost to all entitlement holders by achieving system efficiencies.

As a result of the information in the GWMWater submission, we have a greater understanding of the complexity of the GWMWater business and system, and its important role, including in delivering drinking water to many western Victorian communities. However, we note the "disproportionate impact of climate performance in Western Victoria on the regulated water systems" (p.73). We would welcome the opportunity to engage in the Western Sustainable Water Strategy when it commences as it is important to ensure that the community and water entitlement holders have a common understanding of what to expect in the future in western systems. As the Commonwealth receives water last under the low security bulk entitlement, we have borne the greatest volumetric impact and a significant reduction to service than what would have been expected under past climate conditions.

There remain some issues that are not transparent to us. In the interests of transparency, we seek responses to the following questions that relate to section 18.2 of the GWMWater submission:

- Is the basis of pricing for the Commonwealth the 129 year (1891-2020) wetter scenario or the post 1997 drier scenario that takes account of the "climate performance"? We believe the latter is a better reflection of the system hydrology and therefore the service that we receive.

- Does the Essential Services Commission consider that the pricing charged for the Commonwealth holdings in the Grampians Wimmera Mallee scheme to be transparent and reasonable, and compliant with the National Water Initiative? There is little reference to the National Water Initiative in the GWMWater submission.

I would be grateful for a response to the above questions. I appreciate the opportunity to provide a submission for consideration. If clarification or further information is needed with respect to this submission, please contact Dr Lindsay White, Director, Portfolio Management, at my office.

Yours sincerely,

[redacted]

Dr Simon Banks
Commonwealth Environmental Water Holder
December 2022

cc: Mark Williams, Managing Director, GWMWater

27 June 2022

Mr Michael Wrathall
Assistant Secretary, Policy, Wetlands and Northern Water Use
Commonwealth Environmental Water Office
GPO Box 858
Canberra City ACT 2601

Dear Michael,

Re: Review of pricing arrangements for the Commonwealth's bulk water entitlement in the Grampians Wimmera Mallee system

Frontier Economics is pleased to provide advice to the Commonwealth Environmental Water Office (CEWO) on the reasonableness and transparency of Grampians Wimmera Mallee Water's (GWMWater's) prices to the Commonwealth Environmental Water Holder (the Commonwealth) in the Grampians Wimmera Mallee system.

In providing this advice, we have drawn on our extensive experience in water pricing and best practice pricing principles, including those of the National Water Initiative (NWI) and the Victorian Essential Services Commission (ESC).

The Commonwealth's water entitlement and the prices it pays to GWMWater

GWMWater reported that in 2013 the Commonwealth secured the collective water holding of the Wimmera Irrigation System under the Commonwealth Irrigator Led Group Proposal Program. It also noted that:

> "The investment by the Commonwealth secured the water at source and agreement was reached in relation to the funding for the removal of the delivery infrastructure. By virtue of this the only obligation attributable to the Commonwealth is the relative share of headworks cost."[1]

The Commonwealth has 28,000 ML of water entitlement in the Wimmera-Glenelg system. Consistent with the ESC's 2018 price determination, it currently pays GWMWater $8.33 per ML of its entitlement and $16.76 per ML of water released.

In its 2018 pricing decision, the ESC approved real annual increases of about 3.1% per annum to GWMWater's prices to the Commonwealth over 2018-19 to 2022-23, while many other water customers experienced no real increase in prices over this period. These annual real price increases of 3.1% per annum were proposed by GWMWater in its response to the ESC's draft decision.

[1] GWMWater, Response to Essential Services Commission 2018 draft decision, March 2018, p 12.

The Commonwealth pays prices to GWMWater for the provision of bulk water storage and release services. There are other water entitlement holders that draw on GWMWater's Wimmera-Glenelg headworks system, and hence which also receive similar water storage services from the same assets. These other ('Direct from Headworks') entitlement holders currently pay GWMWater $132.40 per ML of entitlement and $132.40 per ML of water delivered (or released).

However, the Commonwealth has the lowest level of reliability amongst entitlement holders, which means that it receives water against its entitlement in relatively few years and only after other entitlement holders (see Attachment 1). For example, the Commonwealth has received an average of 5% of its entitlement over the last 10 years.

According to GWMWater, another difference is that it is required to apply more effort/management in releasing environmental water, which includes an operator attending the reservoir to adjust the outlet valve to achieve the requested delivery flow rate; whereas releasing water to other entitlement holders does not require intervention or involvement by GWMWater as the other entitlement holders have their own infrastructure to take water (e.g. they turn on their own pump, with a direct connection to the reservoir).[2]

We note, however, that any such increase in effort required to release water to the Commonwealth should be considered in the context of the low level of reliability of the Commonwealth's entitlement — which can significantly impact on the frequency of when costs are incurred in releasing water to the Commonwealth.

Best practice pricing principles

Best practice pricing principles, including those of the NWI and the ESC, require that prices are cost-reflective and transparent. This means that prices should reflect the efficient costs of providing services to customers, and that customers should have a clear understanding of the prices they face and how they relate to the costs of supplying the services they receive. Cost-reflective prices are important for reasons of:

- Economic efficiency – to promote efficient consumption and investment decisions, so that:
    - customers face the true cost of supplying them, so they only consume where benefits outweigh costs, and resources are allocated to their highest value uses
    - service providers have the means and incentives to efficiently invest in and maintain their supply networks over time, so that the supply of services meets customers' needs over the long-term.
- Equity – so that those parties that create the need for costs to be incurred and/or receive the benefits from the expenditure pay accordingly (rather than other parties having to face these costs).

Consistent with the above, economic regulators and other policy makers have generally favoured allocating costs and setting prices consistent with the impactor and/or beneficiary pays principles. In particular, the following cost allocation and funding hierarchy supports economic efficiency and equity:

- Preferably, the party that created the need to incur the cost (**the impactor**) should pay in the first instance.

[2] Pers comm from GWMWater, 5 June 2022 and 15 June 2022.

- If that is not possible, the party that benefits (**the beneficiary**) should pay. Further, it is preferable for direct beneficiaries to pay, but if that is not possible then indirect beneficiaries should pay. In some cases, the impactor and the beneficiary are the same.
- In cases where it is not feasible to charge either impactors or beneficiaries (for example, because of social welfare policy, public goods, externalities, or an administrative or legislative impracticality of charging), the government (taxpayers) should pay.[3]

This hierarchy suggests that GWMWater's costs in providing its services should be allocated amongst its customers in a way that reflects their respective contributions to the need to incur these costs or to the extent they benefit from these costs.

As the NWI Pricing Principles state when discussing the allocation of water planning and management costs:

> "The impactor pays approach seeks to allocate costs to different individuals, groups of individuals or organisations in proportion to the contribution that each individual, group of individuals or organisation makes to creating the costs, or the need for the costs to be incurred."[4]

Our approach to assessing GWMWater's prices to the Commonwealth

Our approach to assessing the reasonableness and transparency of GWMWater's prices to the Commonwealth comprised two elements:

- reviewing available information, including meeting with GWMWater and the ESC, to assess the methodology used to set GWMWater's prices to the Commonwealth against best practice cost allocation and pricing principles
- comparing GWMWater's prices to the Commonwealth to bulk water entitlement holders receiving similar services from GWMWater, taking account of differences in reliability.

In reviewing information to assess the methodology used to set prices, we examined:

- The Essential Services Commission's (ESC's) draft and final 2018 decisions on GWMWater's prices, and the Excel pricing model accompanying its final decisions
- GWMWater's September 2017 paper: *2018-23 Price Submission - Bulk Water Pricing Review*
- GWMWater's 2018-2023 price submission to the ESC, and its submission in response to the ESC's draft decision
- GWMWater's pricing model accompanying its pricing proposal (although this was protected, therefore we had limited visibility)

[3] For example, for a discussion of this funding and cost allocation hierarchy and its rationale, see: NSW Independent Pricing and Regulatory Tribunal (IPART), *Rural Water Cost Shares, Final Report*, 2019.

[4] For example, the NWI Pricing Principles state that the costs of water planning and management activities should be allocated between water users and governments using an impactor pays approach.

- Correspondence from GWMWater and the Commonwealth during the last ESC price review, as available on the ESC's review webpage
- GWMWater's Corporate Cost Allocation Framework.

We also met with GWMWater and sent follow-up information requests, and we met with the ESC.

We sought to understand:

- the services received by the Commonwealth and GWMWater's assets and activities involved in the delivery of these services
- the costs of delivering these services, including the capital and operating costs of the assets and activities involved in the supply of these services
    - this included seeking to understand how the initial Regulatory Asset Base (RAB) for headworks serving the Commonwealth was set, its opening value and how it was rolled forward/updated over time
- how these costs were allocated across recipients of these services (including the Commonwealth, amongst others) in setting prices – taking account of impactor/beneficiary pays principles and the volume and reliability of entitlements
- the rationale for, and methodology behind, the 3.1% per real price increase to the Commonwealth over the current pricing period (2018-19 to 2022-23).

Our findings

Our assessment of the methodology used to set GWMWater's prices

From the material we reviewed and the meetings we had with GWMWater and the ESC, we were unable to identify and understand the methodology used to set prices to the Commonwealth. For example, we were unable to determine:

- The initial RAB value of headworks serving the Commonwealth:
    - There appears to be some uncertainty from the material we reviewed, as the ESC's draft decision noted that it set the RAB value of GWMWater's rural assets at zero in 2004-05[5]; whereas GWMWater's response to the ESC's draft decision noted that it had an opening RAB of $77m across the business.[6]
- How this RAB value has been rolled forward. For example, has a separate headworks RAB been separately maintained and rolled forward, or is a more aggregated RAB rolled forward (comprising other assets that don't service the Commonwealth) and then this RAB allocated to specific services (eg, headworks)? And, if the latter, what is the allocation methodology and does this adequately reflect the initial rural RAB value of zero and efficient capital expenditure on headworks serving the Commonwealth since the establishment of the RAB?

5 ESC, GWMWater Draft Decision, 2018 Water Price Review, March 2018, p 30.

6 GWMWater, Essential Services Commission 2018, GWMWater draft decision: 2018 Water Price Review, GWMWater Response, May 2018, pp 12-13.

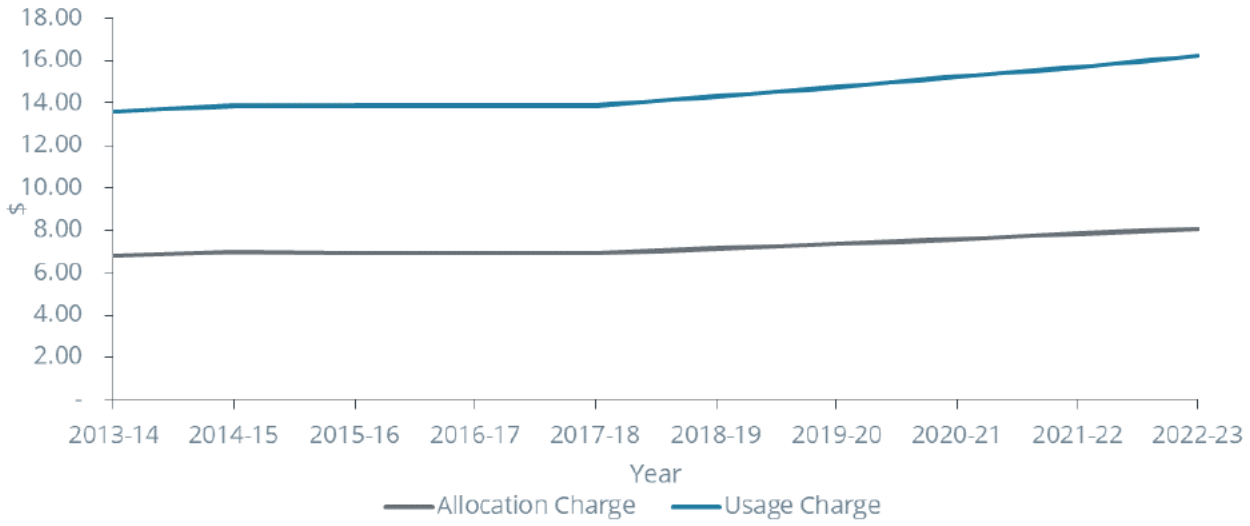
- The methodology(s) used to allocate a share of headworks capital-related (return on and off assets) and operating costs to the Commonwealth.
    - GWMWater advised (verbally) that the allocation amongst users of the headworks costs reflects volume of entitlement/use, reliability and historical price levels. GWMWater's 2017 Bulk Water Pricing Review Paper also notes: "The allocation of headworks costs and cost recovery principles are proportionate to total water supplies from all sources and total demands relative to water allocation security."
    - However, it is unclear what methodology was specifically applied to allocate costs to customers, including the Commonwealth, in setting prices. Therefore, we were unable to assess, for example, whether it is consistent with the impactor pays or beneficiary pays principles. We were also unable to determine specifically how reliability of entitlement was factored into cost allocation and price setting.
- The rationale for the real annual increases of about 3.1% per annum to GWMWater's prices to the Commonwealth over 2018-19 to 2022-23, when many other customers experienced no real increase and GWMWater's total revenue requirement increased by significantly less than 3.1% per annum (see **Table 1**).
    - Before 2018-19, GWMWater's prices to the Commonwealth seemed to be largely based on rolling forward historical prices (see **Figure 1**). These prices increased materially from 2018-19 onwards. However, neither GWMWater nor the ESC explained the methodology for historical prices or the methodology behind the 3.1% per annum increase in prices from 2018-19 – including how the Commonwealth's low level of reliability is factored into cost allocation and price setting.

Given the above, we were unable to determine the reasonableness of GWMWater's prices to the Commonwealth. We consider the methodology used to set these prices is not transparent.

Table 1: Annual real change in GWMWater's revenue requirement compared to annual real increase in GWMWater's prices to the Commonwealth

	2018-19	2019-20	2020-21	2021-22	2022-23
GWM's revenue requirement (all services, all users)	0.22%	0.92%	0.69%	0.87%	0.41%
GWM's prices to CEWO	3.1%	3.1%	3.1%	3.2%	3.2%

Figure 1: Prices paid for bulk water – environment ($2017-18)



Source: ESC

How GWMWater's prices to the Commonwealth compare to other entitlement holders

The prices paid by the Commonwealth are less than the prices paid by some other bulk water users. Currently, the Commonwealth pays $8.33 per ML of entitlement and $16.76 per ML of water delivered. For other bulk water users receiving 'Direct from Headworks' services these charges are $132.40 per ML of entitlement and $132.40 per ML of water delivered (or released).

While, as outlined above, the basis for this pricing is unclear, this suggests some accounting for the lower level of reliability of the Commonwealth's entitlement in prices. Further, the higher usage/fixed charge ratio for the Commonwealth acts to mitigate the lower level of reliability of its entitlement, to some extent.

Applying these prices, **Table 2** shows the 'effective' price of bulk water, assuming various levels (percentages) of entitlement delivered.

Table 2: Effective price per ML of entitlement used ($/ML)

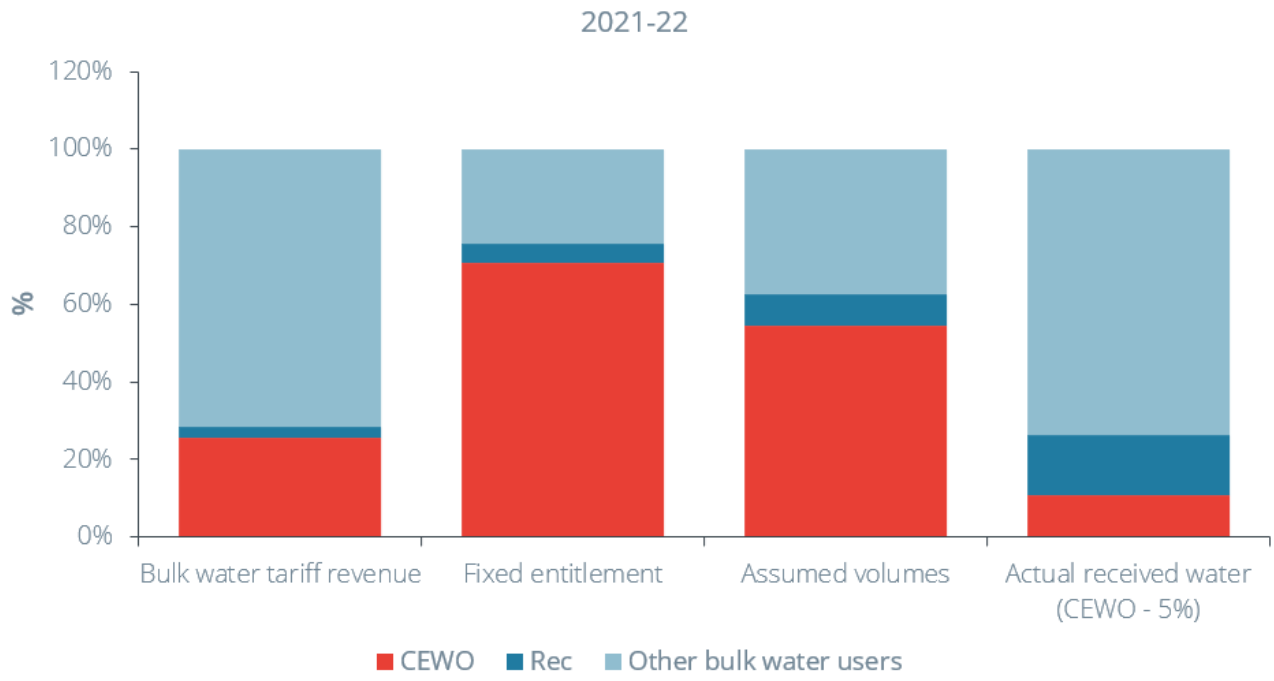
% of entitlement used:	'Bulk Water – Direct from headworks'	'Bulk water – environment'
5% allocation to bulk water	**2,780.40**	
10% allocation to bulk water	**1,456.40**	-
25% allocation to bulk water	**662.00**	-
50% allocation to bulk water	**397.20**	-
75% allocation to bulk water	**308.93**	-
100% allocation to bulk water	**264.80**	-
5% allocation to environment (CEWO)	As above	**183.36**
10% allocation to environment (CEWO)	As above	**100.06**
25% allocation to environment (CEWO)	As above	**50.08**
50% allocation to environment (CEWO)	As above	**33.42**
75% allocation to environment (CEWO)	As above	**27.87**
100% allocation to environment (CEWO)	As above	**25.09**

Source: ESC, GWMWater final determination 2018

By applying GWMWater's prices and forecast entitlement and usage volumes for the **Commonwealth (CEWO)**, **'Recreation Lake Water' (Rec)** and **'Headworks Directly Connected' (Other)** services/users, we calculated the forecast revenue to be collected from these 'Bulk Water – Headworks' services/users for 2021-22 under the ESC's current determination. This effectively represents the ESC's assessment of the 'Notional Revenue Requirement' (NRR), or efficient building block costs, of providing these services for 2021-22 under its current determination.

It is informative to compare the Commonwealth's share of costs (or NRR) to its share of available water amongst these users. For example, if the Commonwealth's share of costs was greater than its share of available water, this may suggest that its prices are too high. As shown in **Figure 2**, 2021-22 prices were set on the basis the Commonwealth would contribute around 25% of the above-mentioned NRR (first column). While it holds about 71% of bulk water entitlement amongst these users (second column), it very rarely receives its full entitlement. In fact, prices were set assuming the Commonwealth would receive 50% of its entitlement. If this occurred, and the other bulk water users received their full entitlement, the Commonwealth would account for around 55% of bulk water use in 2021-22 (third column). Notably, however, at 5% reliability (which reflects actual average availability of the Commonwealth's entitlement over the last 10 years), the Commonwealth would receive only 11% of available water amongst these users (fourth column) – which is significantly less than its 25% share of costs.

Figure 2: Share of bulk water tariff revenue Vs entitlements and volumes



Source: ESC, GWMWater and Frontier Economics analysis

The assumed level of reliability when allocating costs and setting prices

This raises the question of what is a reasonable level of reliability to assume for the Commonwealth's entitlement when allocating costs and modelling prices. In 2018, the ESC accepted GWMWater's proposal to assume that the Commonwealth would use 50% of its allocation. According to GWMWater, this was based on a post 1975 climate and current operations.[7] However, we also understand that the Commonwealth has received an average of 23% of its entitlement over the last 12 years and, as noted above, an average of 5% over the last 10 years – which is much lower than the 50% assumed when determining the proposed prices in 2017-18.

Inflow data indicates the resource availability in the region has undergone a step reduction since the start of the Millennium drought (see Attachment 1). This suggests that the expected reliability of the Commonwealth entitlement has also declined. Indeed, the Commonwealth's reliability is likely to be more adversely affected by a reduction in resource availability than other entitlement holders, as the Commonwealth only gains access to its entitlement once the available water resource is above a specified level and other users have gained access to their entitlements (see Attachment 1).

In this context, we note that the relative reliability of bulk water users' entitlements is often used to measure their contribution to the need to incur the costs of bulk water supply or their relative benefit received from the assets and activities used to supply bulk water (under the impactor and/or beneficiaries pays principles), and therefore volume of entitlements adjusted for differing levels of reliability of the entitlements has been used to allocate costs and set prices for bulk water supply across other systems in Victoria and in NSW.

7 GWMWater, Powerpoint Presentation: Grampians Reservoir System Overview, 17 February 2022.

For example, the NSW Independent Pricing and Regulatory Tribunal (IPART) has an established and transparent method for determining differences in the reliability and security of 'high' versus 'general' security entitlements, and for setting Water NSW's prices for the storage and release of high and general security entitlements to reflect these differences.[8]

We consider that GWMWater and the ESC should review and consider the reliability of the Commonwealth's entitlement relative to other entitlement holders over the upcoming determination period when allocating GWMWater's costs and setting its prices.

Conclusion

The methodology used to set GWMWater's prices to the Commonwealth is not transparent. Given this, we were unable to assess the reasonableness of the cost allocation and pricing methodology, considering factors such as water allocation reliability.

It appears that GWMWater's prices to the Commonwealth are based on historical prices for this entitlement holding, which have been rolled forward over time. However, we were unable to understand and therefore assess the case for the annual price increases from 2018-19.

A high-level comparison of GWMWater's prices to the Commonwealth against its prices for other similar services suggests that prices may be reasonable if the reliability of the Commonwealth's water entitlement was as assumed in the ESC's 2018 price determination. However, the actual reliability of the Commonwealth's water entitlement has been significantly lower over the last 10 years.

Water resource availability in the region appears to have undergone a step change since the start of the Millennium drought. This can significantly impact the reliability of the Commonwealth's entitlement, given other entitlements take precedence in accessing available water (see Attachment 1). This structural break in water resource availability and its impact on the reliability of the Commonwealth's entitlement should be transparently considered and factored into cost allocation/attribution and prices.

For the upcoming review of GWMWater's prices, we suggest the Commonwealth seeks clarity from GWMWater and the ESC on the:

- services it is paying for, and the assets/activities required to deliver these services
- efficient building block costs of these assets/activities, and the principles and approaches for allocating/attributing these costs to entitlement holders including the Commonwealth
- the assumed level of reliability of the Commonwealth's entitlement, the basis of this assumption and how this has been factored into cost allocation and pricing decisions – taking account of the impactor/beneficiary pays funding hierarchy outlined above.

Yours sincerely,

MEdgerton

Matthew Edgerton

Consultant

[8] For example, see: IPART, Review of Water NSW's bulk water prices from 1 October 2021 to 30 June 2025, Final Report, September 2021.

Attachment 1 — the Commonwealth's entitlement and its reliability

The Commonwealth Environmental Water Holder's entitlement

The Wimmera-Glenelg headworks system is managed and operated by GWMWater. The headworks system interconnects three major river basins: the Wimmera-Avon, Avoca and Glenelg. As the source bulk entitlement holder, GWMWater operates the system to supply other entitlement holders and customers, in addition to water for recreational and other purposes. The entitlements in the system are shown in **Table 3**.

Table 3: Entitlements in the system

Entitlement	Volume (ML)
Bulk Entitlement (Wimmera and Glenelg Rivers – GWMWater) Order 2010	
System operating water: • Pipeline and balancing storage losses	2,960
Commonwealth Environmental Water Holder	28,000
Glenelg compensation flow	3,300
Recreation	3,090
Wimmera-Mallee Pipeline product	44,720
Bulk Entitlement (Wimmera and Glenelg Rivers – Coliban Water) Order 2010	
Wimmera-Mallee Pipeline product	300
Bulk Entitlement (Wimmera and Glenelg Rivers – Coliban Water) Order 2010	
Wimmera-Mallee Pipeline product	2,120
Wimmera and Glenelg Rivers Environmental Entitlement 2010	
Wetlands	1,000
Wimmera-Mallee Pipeline product (managed by the VEWH)	40,560
Total	**126,050**

Source: Bulk Entitlement (Wimmera and Glenelg Rivers)

In 2012, the Commonwealth purchased an irrigation water entitlement and the associated losses (a total of 28 GL) to provide environmental water to the Wimmera-Mallee system. However, the Commonwealth only receives its full 28GL entitlement if 100% of the system's entitlement is available to

allocate. The allocation to the Commonwealth is pro-rated between 0GL and 28GL as the system's total allocation varies from 98.05GL to 126.05GL. If the total water resource available to the system is 98.05GL or less, then the Commonwealth receives none of its entitlement.

At the time of the Commonwealth's purchase, the 28 GL entitlement was modelled to have 81% reliability based on data from 1891 to 2009. By 2015, the reliability was modelled to be 90%, based on the CP15 post irrigation Murray Darling Basin Cap Model for the Wimmera-Mallee Valley (see **Table 4**). It was argued that investments in water savings led to an increase in reliability for the bulk entitlement.

Available water is affected by the reserve policy (the default reserve rule, which is to be adopted unless an alternative has been agreed). The reserve volume to be used depends on the volume of available water, and the allocation must not be increased until the reserve volume is equal to the value shown in the table below (see **Table 5**).

This means that the full reserve of 94.5GL must be accumulated before available water increases above 98.05GL — which is the level at which the Commonwealth begins to receive water.

Our understanding from these bulk entitlement characteristics is that the **Commonwealth entitlement is of significantly lower reliability than others in the system**.

Table 4: Progressive changes in Irrigation Product Water Reliability

Irrigation Entitlement Reliability (%)	Comment
71	Stated reliability in 2004 Bulk Entitlement Conversion
75	WMPP Business Case estimation of irrigation reliability post pipeline
81	Stated reliability in 2010 (post pipeline) Bulk Entitlement Order
83	Change in reliability when 2011 Storage Management Rules were configured in REALM Model
90	Irrigation reliability in 'CP15' – accredited 'post irrigation' REALM model for Murray Darling Basin Diversion Compliance
90	Modelled Irrigation reliability following 2014 Bulk Entitlement review

Source: GWMWater (2018), Essential Services Commission 2018, GWMWater draft decision: 2018 Water Price Review, 28 March, GWMWater Response, 8 May 2018

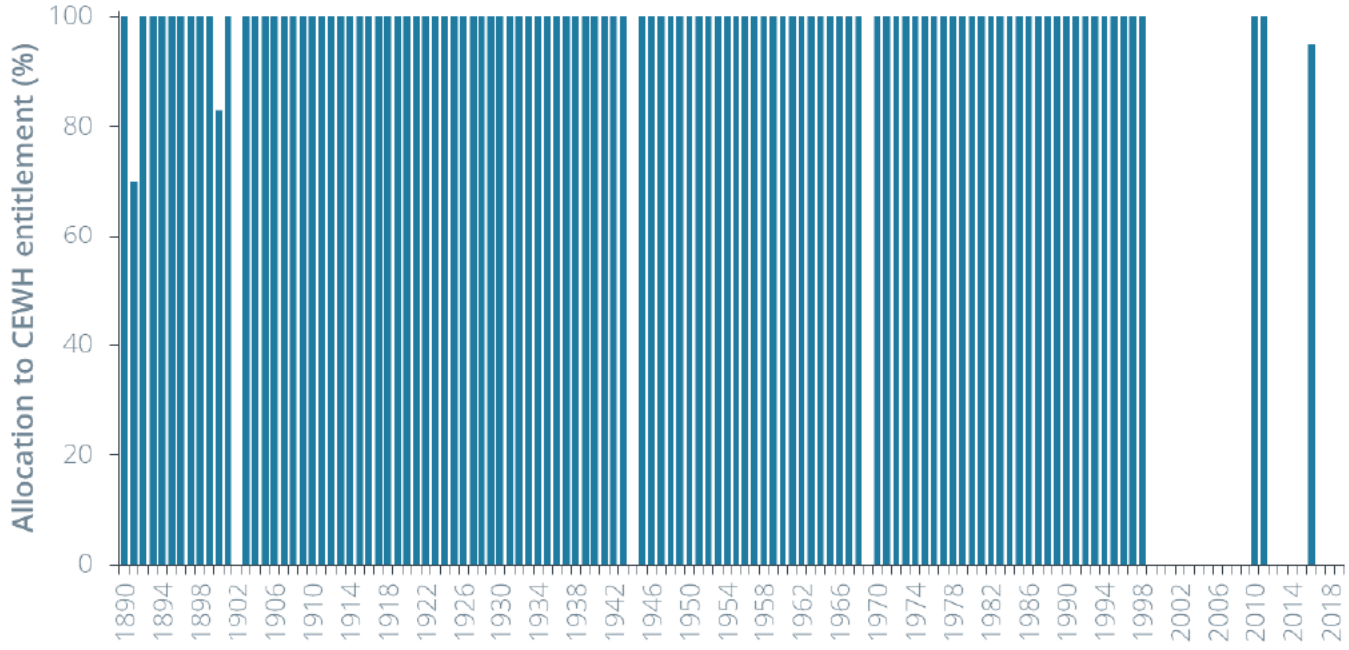
Table 5: Reserve policy

Column in Table 1 of Schedule 2	Available Water (ML)	Reserve Volume (ML)	
		Starting Reserve	Target Reserve
A	126,050	94,500	94,500
B	98,050	45,000	94,500
C	75,971	15,000	45,000
D	53,459	0	15,000
E, F	0 to 53,459	0	0

Source: Bulk Entitlement (Wimmera and Glenelg Rivers)

DELWP provided the latest available model run of the Wimmera-Mallee monthly model developed for the purpose of Basin Plan. This type of modelling is used to report the entitlement reliability estimate, such as reported in **Table 4**. This modelling shows that the Commonwealth entitlement would have achieved 100% in all but 5 years of the historical conditions in the period 1890-91 to 1998-99. However, since 1999-2000, historical conditions have been such that modelled allocation to the Commonwealth was 0% in all years except for three.

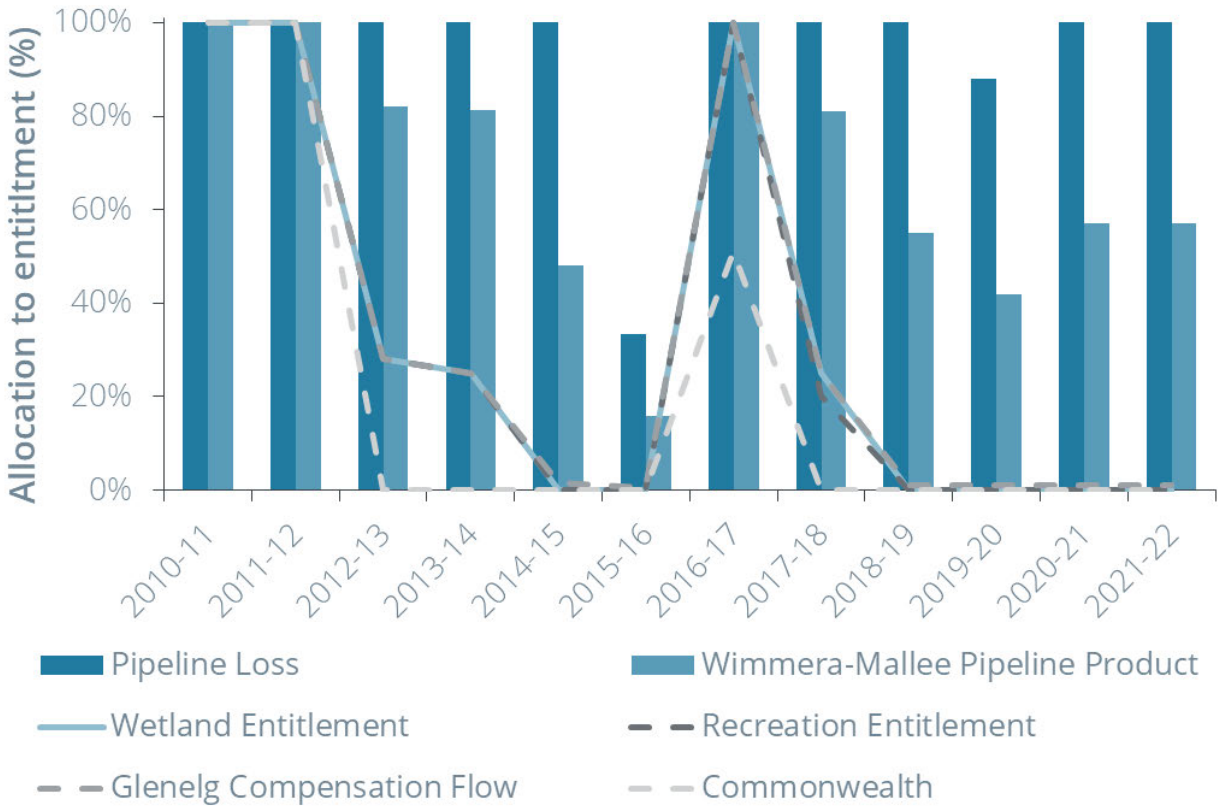
Figure 3: Modelled allocation to Commonwealth entitlement, under historical seasonal conditions



Source: pers. comm. DELWP.

The modelled allocation to the Commonwealth in 2016-17 of 95% did not eventuate, with 51% being allocated (**Figure 4**). Other entitlements, including the Wetland Entitlement and the Recreation Entitlement have also received 0% in many years in the past decade.

Figure 4: Observed allocations to Commonwealth and other entitlements, 2010-11 to 2021-22



Source: pers. comm. GWMWater.

It should be noted that, for the purposes of Water Resource Plans to be compliant with the Basin Plan, hydrological modelling is undertaken to assess Sustainable Diversion Limits and the modelling is undertaken over the historic climate period of July 1985 to June 2009 (Wimmera Mallee WRP, Appendix C, page 665). Our understanding is that this is the modelling that underpins the finding that the Commonwealth entitlements have a 90% reliability (see **Table 4**).

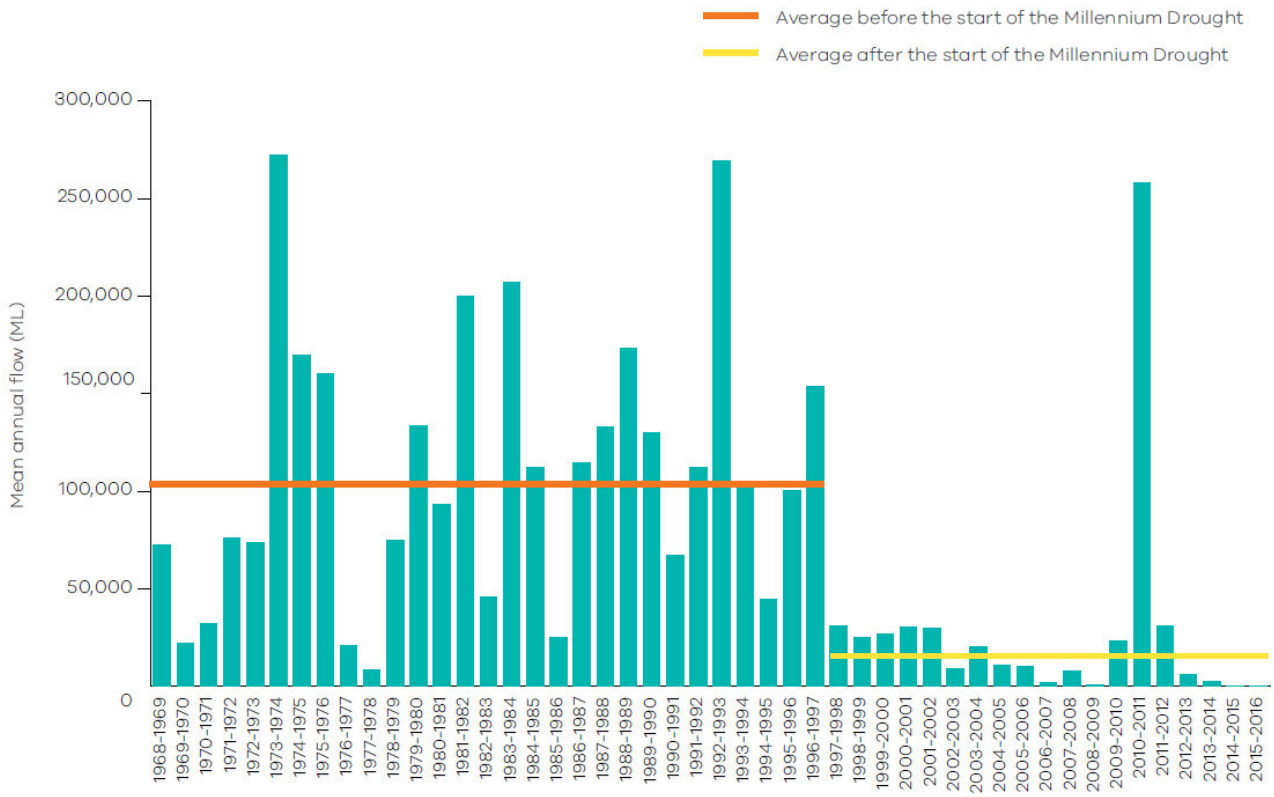
However, the Water Resource Plan has noted that resource availability in the region has undergone a step change since the start of the Millennium drought (**Figure 5**).

Similarly, GWMWater provided data showing that the inflows to headworks storages have experienced a -58% change since the Millennium drought (**Figure 6**).

This is also reflected in the SDL modelling (obtained from DELWP) of the allocations to Commonwealth entitlements (recall **Figure 3**).

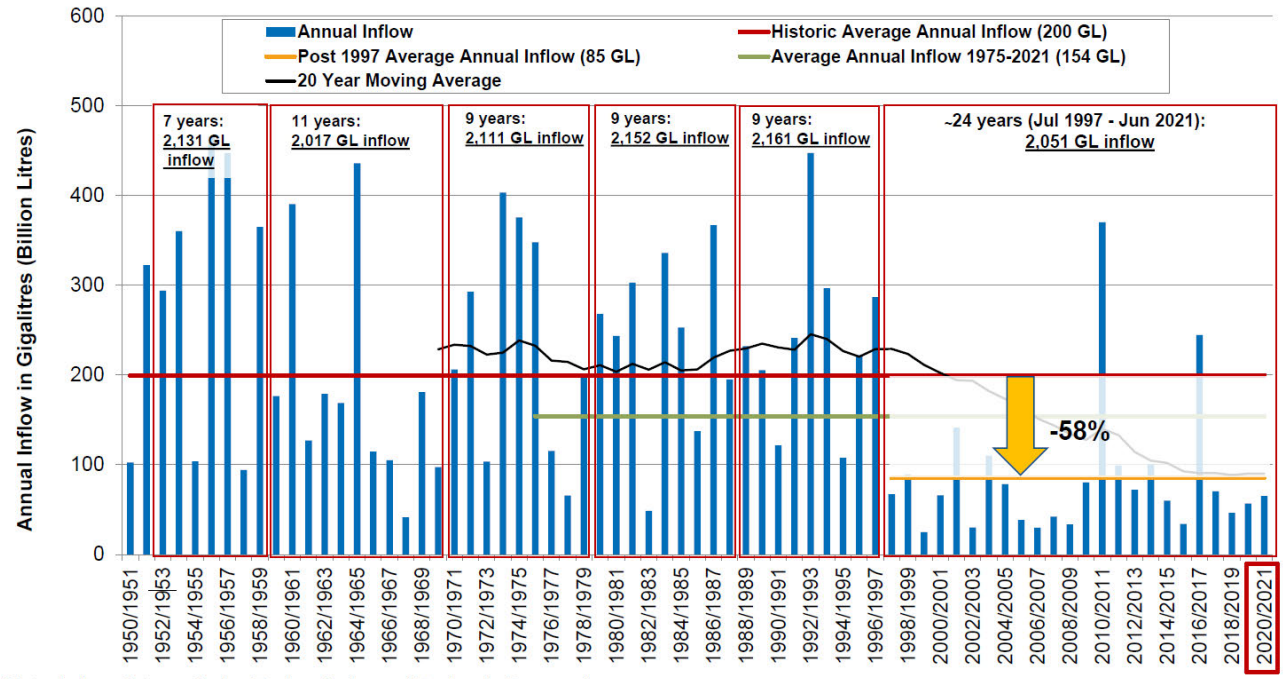
This suggests that the expected reliability of the Commonwealth entitlement looking forward is less than the 90% obtained from WRP modelling.

Figure 5: Annual Wimmera River flows 1968–2016 at Glenorchy (site 415201) as at March 2017, with average flow before and after the Millennium Drought



Source: Wimmera Mallee WRP, Part 4, page 36.

Figure 6: Inflow to Headworks Storages, 1950-2021



Note: Inflow data excludes Taylors Lake and Toolondo Reservoir.

Source: GWMWater