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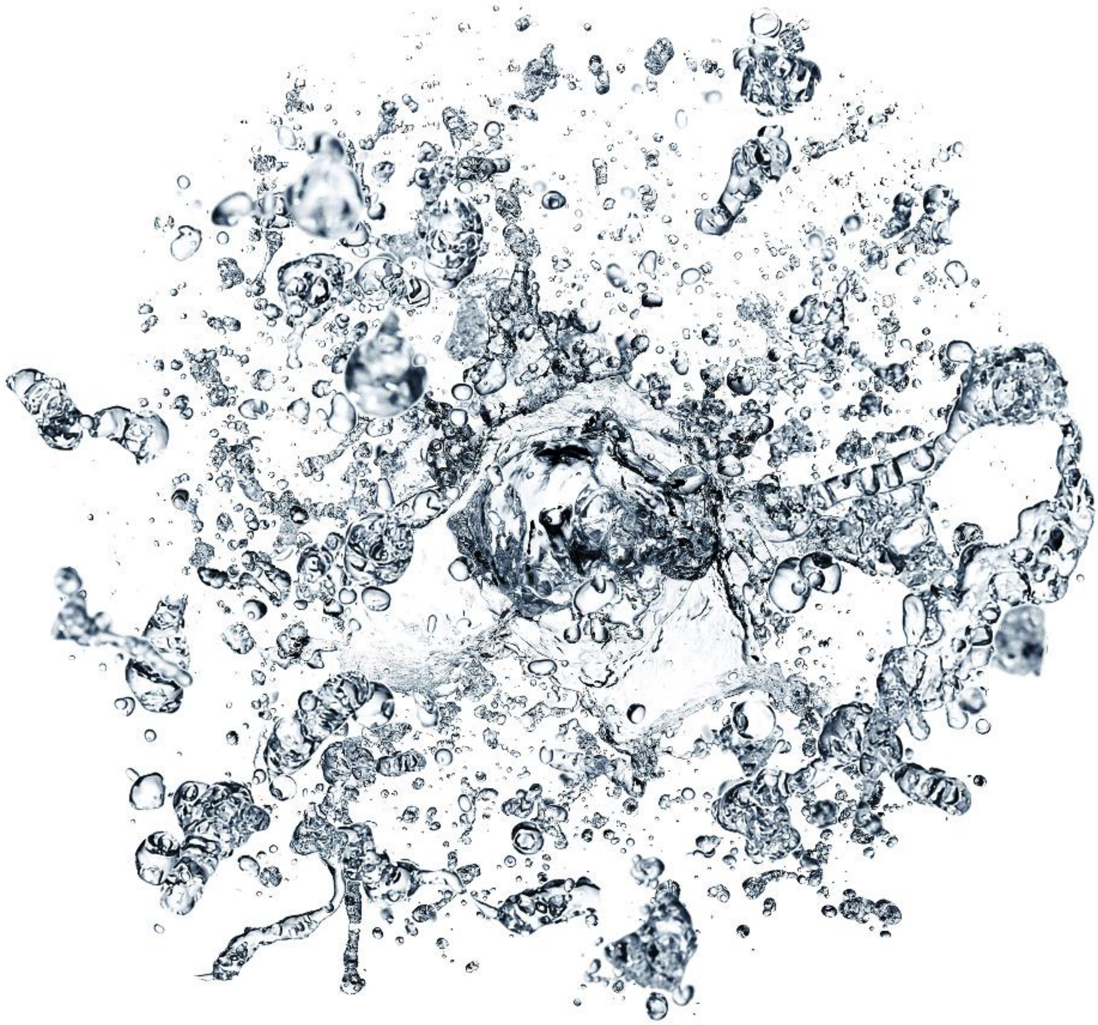

Expenditure review - Melbourne Water Response to Draft Decision

FINAL REPORT for the Essential Services Commission - Public

21 May 2021

Deloitte Access Economics

Contents

Glossary

Acronym	*Full name*
AAD	Average Annual Damages
AEP	Annual Exceedance Probability
BNI	Business Needs Identifier
CAGR	Compound annual growth rate
Capex	Capital expenditure
EPA	Environmental Protection Authority
ESC	Essential Services Commission
ETP	Eastern Treatment Plant
FBC	Functional Business Case
HBT	Health-based target
MW	Melbourne Water
Opex	Operating expenditure
PREMO	Performance, Risk, Engagement, Management and Outcomes
PS16	Pricing Submission 2016
PS21	Pricing Submission 2021
RP4	Regulatory Period 4
RP5	Regulatory Period 5
TSS	Total suspended solids
WDCC	Waterways and Drainage Customer Council
WHO	World Health Organisation
WIRO	Water Industry Regulatory Order
WSCC	Water and Sewerage Customer Council
WTP	Western Treatment Plant

1 Introduction

1.1 Background

The ESC is currently reviewing Melbourne Water's (MW) response to the ESC Draft Decision for the 2021 Price Submission. This period (1 July 2021 to 30 June 2026) is referred to in this document as 'the next regulatory period' or the 'fifth regulatory period' (RP5).

MW submitted its response to the ESC's Draft Decision in May 2021. The response includes revised forecasts and additional detail on operating expenditure (opex), capital expenditure (capex) and demand.

We understand the ESC intends to release a final decision in June 2021 that specifies the maximum prices that MW may charge.

1.2 Scope of review

The ESC has engaged Deloitte Access Economics (DAE) and Arup to review elements of MW's revised opex and capex forecasts and to provide advice on whether they are consistent with the requirements of the regulatory framework.

In undertaking this review, our key responsibilities are to:

- assess the appropriateness of the revised expenditure forecasts or requested reinstatement of removed expenditure in relation to the key objectives of the review
- provide advice to the ESC regarding the appropriateness of the forecasts and revised proposed expenditure.

Specifically, Deloitte Access Economics and Arup have been asked to review the following aspects of MW's response:

- operating expenditure
    - proposed adjustments to the water and sewerage baseline expenditure
    - proposed adjustments to the waterways and drainage controllable operating expenditure
    - proposed adjustments to energy forecast
- capital expenditure
    - allocation required for the Winneke Treatment Plant UV Disinfection Project
    - allocation required for the Western Treatment Plant 55E Activated Sludge Plant Project.

We have not reviewed MW's revised demand and growth forecasts proposed in response to the ESC's Draft Decision.

2 Operating expenditure assessment

This section provides analysis, conclusions and recommendations on key issues with respect to MW's opex forecasts.

Our review of MW revised operating expenditure has been undertaken in accordance with the Essential Services Commission's (ESC's) Guidance Paper that outlines a prudent and efficient opex forecast would have the following characteristics:

- baseline year expenditure is reflective of efficient operating costs and is used as a basis to forecast expenditure
- forecast opex incorporates expectations for a reasonable rate of improvement in cost efficiency
- expenditure requirements above the baseline year (adjusted for growth and efficiency improvements) are fully explained and justified; this includes how such expenditure is reflected in proposed customer outcomes and how they represent improved customer value.

The following sections review MW's response to:

- Our recommendation to remove $22m in relation to additional waterways and drainage opex
- Our recommendation to remove $0.8m in the base year in relation to a biosolids reuse innovation project
- Our analysis of a reasonable energy expenditure forecast.

As noted in section 1.2, MW's revised growth forecasts were not in the scope of our review of MW's response. However, our recommendation in our February review was to adopt a 1% growth rate in the net efficiency-growth rate applied to baseline opex. This growth rate was adopted as a placeholder, noting that we expected MW to provide an updated growth forecast in its response to the ESC's Draft Decision. In its response, MW accepted the recommended net growth-efficiency rate applied to baseline opex, including the 1% placeholder growth factor, despite proposing revised demand growth forecasts for pricing purposes. Upon the instructions of ESC, we have not reviewed this approach.

2.1 Waterways and drainage controllable operating expenditure

The ESC's Draft Decision proposed to remove "$22m, or an average of $4.4m per year, from the additional $43.5m controllable operating expenditure proposed by Melbourne Water."

MW has requested the reinstatement of $21.2m of the $22m removed from controllable operating expenditure, noting that MW has:

- accepted the removal of $0.5m for the litter program, acknowledging that although litter is a significant concern for the community it will be incorporated into the baseline expenditure.
- proposed to reduce the expenditure value for stormwater quality treatment systems by $0.3m.

Table 2.1 details MW's response to the ESC Draft Decision on key activities and drivers for increased waterways and drainage expenditure. It also details Deloitte's suggestion regarding whether the ESC should accept or reject the requested reinstatement amount.

Table 2.1: Activities and drivers for increased waterways and drainage expenditure highlighted by MW for reinstatement

Activity	February 2021 Deloitte recommended opex reduction over RP5 ($m)	Rationale for recommendation February 2021	Summary of MW response to ESC draft decision	Deloitte recommendation for ESC final decision – May 2021
Stormwater quality treatment systems (SWQTS)	$1.5m	We consider the anticipated new wetlands and land area handed over by developers (based on historical levels) is part of business as usual activities and should be adequately captured in the growth-efficiency baseline opex.	MW has requested the reinstatement of $1.2m based on updated cost per wetland assumptions ($0.3m total reduction). MW is obligated under the State Environmental Protection Policy to maintain new stormwater quality treatment assets. The proposed expenditure is based only on those assets which are designed and scheduled for construction – 45 in total or 9 per year over RP5 (in addition 43 assets are planned to be transferred). This represents an average annual growth of 4.1% over the period – significantly above a growth adjusted baseline. MW noted without the additional expenditure it will not be able to meet compliance obligations for these assets, increasing the degree of risk to the environment from poorly maintained and failing assets.	On balance we recommend the ESC accept the requested reinstatement of $1.2m. The proposed expenditure is a relatively immaterial value ($0.24m per annum) which we would typically consider should be captured within the ebbs and flows of baseline expenditure. However, in this instance we support the additional expenditure given the substantial growth in wetlands and land area that the assets represent. MW clearly has obligations in this area and we agree there is increased risk to the environment if these assets are not maintained. We also acknowledge the revised costs from MW and that proposed maintenance costs per wetland have been set lower than average cost based on existing activities and costs for the current portfolio of SWQTS.
Large scale stormwater harvesting and associated	$11.5m. • $4.5m - support the stormwater	MW provided Business Needs Identifier (BNI) case for three stormwater harvesting projects (Sunbury, Upper Merri Creek and	MW noted the proposed expenditure is required to meet legislative and regulatory obligations under the Water Act 1989, the Environment Protection Act 2017, the	We recommend the ESC accept $3.5m of the $11.5m requested reinstatement for this activity.

Activity	February 2021 Deloitte recommended opex reduction over RP5 ($m)	Rationale for recommendation February 2021	Summary of MW response to ESC draft decision	Deloitte recommendation for ESC final decision – May 2021
stormwater quality treatment assets activities	harvesting capital program • $3.5m - carry out further analysis and investigation work and the associated FTE • $3.5m - Fund research, informing policy and monitoring programs to understand effectiveness.	regional schemes), which identified the main driver as meeting objectives of the Healthy Waterway Strategy. We consider the BNI cases did not sufficiently demonstrate that each of the projects would result in a net incremental benefit. We also note that while the BNIs identified opportunities for stormwater harvesting, they did not identify how harvested water would be used, which would be a major driver for the potential benefits derived from a scheme. While there can be merit in stormwater harvesting schemes, further scoping of the proposed projects' uses and benefits, and undertaking a more robust cost-benefit analysis is necessary to justify the schemes. In addition, MW was not specific about the research project to be undertaken to inform most effective stormwater treatment systems and locations and therefore it is hard for us to assess the merits of this	Environment Protection Act 1970 and within the Statement of Obligation 2015. MW detailed the process for determining the appropriate level of investment to maintain waterway health. The works proposed (Sunbury, Upper Merri Creek and regional schemes), are of critical importance to prevent a decline in the health of waterways that would result from maintaining the current level of investment (i.e. business-as-usual). In addition to broader studies on the impact of stormwater on waterways (Uttigauer, 2016; Walsh & Kunapo, 2009; Wenger, et al., 2009), detailed studies have been completed by Melbourne University (Chee et al, 2020, Healthy Waterways Strategy 2008) which have identified that under a business-as-usual approach for Melbourne's waterways impacted by urban growth, there will be broad and irreversible loss of waterway values such as birds, fish, frogs, macroinvertebrates, platypus, amenity, community connection and recreation if appropriate stormwater management is not undertaken. Of specific note is that no action in the Sunbury region is likely to result in extinction of platypus within the Jacksons and Emu Creeks, and potentially the entire	We acknowledge the additional information that has been incorporated into the BNI business cases. MW has made a strong case that activities need to be undertaken to avoid potential harm to waterways (including threatened species) and that this investment is a better alternative than attempting to remediate waterways once harm has occurred. However, we do have concerns about the projects (capex and opex), including: • The intended end use for any harvested stormwater is not yet clear • The impact of COVID-19 on growth in the relevant catchments, given growth is the main business driver. MW has indicated that existing developments are proceeding, however we consider it likely that there will be a slow-down in developments beyond those that are currently in progress • That, according to MW, the projects shouldn't proceed until a certain threshold of impermeable surface has been attained. If growth is slower than forecast this will delay this threshold in some areas • To our knowledge stormwater harvesting infrastructure of this nature has not been delivered at this scale in Melbourne previously. • Whether the cost of the projects should be spread across the entire customer base (as MW is proposing), or whether the new

Activity	February 2021 Deloitte recommended opex reduction over RP5 ($m)	Rationale for recommendation February 2021	Summary of MW response to ESC draft decision	Deloitte recommendation for ESC final decision – May 2021
		expenditure over and above willingness to pay.	Maribyrnong River catchment. Platypus are now officially a threatened species and listed as 'vulnerable' in Victoria under Flora and Fauna Guarantee Act 1988 (Vic).	developments should pay for the full cost, given they drive the need for the expenditure. Given these uncertainties, we recommend that the ESC not include the capex projects in the RP5 capex program and the $4.5m opex to support the stormwater harvesting capital program. The scope of the other $7m requested for reinstatement for this activity remains unclear. The wording and explanation used to describe various sub-activities within the $7m appears to be different between the MW response to the ESC Draft Decision and the documentation provided to Deloitte in December 2020. However, we recognise the importance of maintaining waterway health and that these projects may be required (in some form) in the medium term, depending on actual customer growth. Therefore, in the absence of additional information, we recommend the ESC accept 50% ($3.5m) of this $7m to ensure further analysis, planning, investigation and research work can proceed.
Wetland condition	$1.5m	There are limited details regarding the benefits of this expenditure although we note that it is difficult to quantify benefits for projects of this nature.	Additional expenditure is required to meet legislative and statutory obligations to protect waterway health under the Water Act 1989.	We recommend the ESC does not accept the requested reinstatement of $1.5m.

Activity	February 2021 Deloitte recommended opex reduction over RP5 ($m)	Rationale for recommendation February 2021	Summary of MW response to ESC draft decision	Deloitte recommendation for ESC final decision – May 2021
			In addition, increased expenditure is required to: • protect 20 priority natural wetland sites by mitigating threats to wetland condition and values • contribute towards meeting 40 of the 298 wetland Performance Objectives in the Healthy Waterways Strategy • meet community expectations upon Melbourne Water to manage natural wetlands.	MW clearly has obligations in this area, and it is clear that wetlands are important part of the riverine ecosystem. We also acknowledge the business case that was provided. However, the business case does not provide clear evidence of why an increase over and above existing expenditure is necessary. Other than a broad reference that the extent and quality of wetland vegetation will continue to degrade over RP5, it does not provide, for example, information on: • The extent to which condition has already degraded • The extent to which it might degrade over RP5 in the absence of additional funding • Any changes in the nature or scope of MW obligations. Given the relatively small annual increase in costs we recommend that this cost should be absorbed in the normal ebb and flow of waterways expenditure.
Flood preparedness	$1.5m	Limited information regarding the net benefits (that is, avoided damages compared to expenditure required) for specific flood preparedness activities. MW has indicated that flood preparedness is a less mature program and requires further	Required to comply with legislative and statutory obligations to 'develop and implement plans and to take any action necessary to minimise flooding and flood damage' under the Water Act 1989 and to participate in flood response and recovery under the Emergency Management Act 2013.	We recommend the ESC not reinstate the $1.5 million. We acknowledge the business case that was provided - based on the additional information we consider the expenditure to be prudent and efficient. However, we note that the additional expenditure requested ($0.3m per annum) is a

Activity	February 2021 Deloitte recommended opex reduction over RP5 ($m)	Rationale for recommendation February 2021	Summary of MW response to ESC draft decision	Deloitte recommendation for ESC final decision – May 2021
		research for calculating these benefits. We endorsed MW's decision to undertake this research, however, we consider existing information is insufficient to justify the project at this time.	An estimated 200,000 properties across the Port Phillip and Westernport catchments are at risk of flooding and this is predicted to increase by 125% by 2100, due to urban infill development (increases the impervious surface area) and increased storm intensity and frequency. The annual average cost of flooding (referred to as annual average damages (AAD)) is assessed at $735 million The expenditure funds enhanced community education, warnings and collaboration of emergency agencies to improve flood preparedness.	relatively small amount which should be captured within the ebbs and flows of baseline expenditure. And unlike the stormwater quality treatment systems (SWQTS) project considered above, there are no new obligations or substantial increase in work requirements that might suggest the expenditure should be considered above the baseline allowance.
Flood mitigation	$3.5m	While we recognise it is a pilot program, the expenditure is relatively large for a relatively small number of private properties. Moreover, we question the prudency of $3.5m expenditure, to be spread across the whole customer base, to support a small number of private properties. Therefore, we have removed this project from the forecasts, pending the ESC's review of willingness to pay.	As above, required to comply with legislative and statutory obligations to 'develop and implement plans and to take any action necessary to minimise flooding and flood damage'. The expenditure is to fund two program improvements under the refreshed Melbourne Water Flood Strategy: • 'Program Innovation' seeks to supplement the existing suite of mitigation works (such as pipes and retarding basins) with new solutions. • 'Delivery Innovation' responds to a need to develop more tailored solutions that respond to local (or 'place-based') needs	On balance, we recommend the ESC accept the requested reinstatement of $3.5m. We acknowledge the business case that was provided and key outcomes of the pilot program: • addressing the challenges of flood mitigation where traditional infrastructure solutions are not viable • The development of place-based solutions that overcome initial stakeholder reluctance and enable earlier identification of barriers. In addition, we note that comparable data (based on same design approaches and principles) from a cost benefit analysis undertaken as part of the development of the Flood Resilient Building Guidance for Queensland Homes showed strong

Activity	February 2021 Deloitte recommended opex reduction over RP5 ($m)	Rationale for recommendation February 2021	Summary of MW response to ESC draft decision	Deloitte recommendation for ESC final decision – May 2021
			and to do so much earlier in the development of a project. MW noted these programs address the increasing challenge of implementing prudent and efficient flood risk reduction solutions, that are also supported by the community, in an increasingly congested and flood prone urban context, and enable MW to deliver on its function to minimise flooding and flood damage in areas where traditional infrastructure solutions are difficult. Melbourne Water also indicated that the pilot project has the potential to be extended to a much larger number of customers.	benefit cost ratios. We also note MW's arguments that while the pilot project benefits will be limited to a small number of consumers, they could be extended out to a greater number if the program is successful. Our only hesitation in approving the expenditure is that MW has conducted a range of research and pilot programs in this area (flood mitigation) in recent years. It could be argued that this pilot project should simply replace the previous work and thus does not require above-baseline expenditure. However, in the absence of information on this previous expenditure it is not possible to conclude that this is the case. Should the ESC approve the inclusion of this expenditure, given this is a pilot program we recommend the final decision note that the ESC expects the subsequent price review submission: • To exclude this project from BAU expenditure; and • To include an evaluation of the project's costs and benefits.
Community involvement in waterways	$2m	Limited justification beyond customer preferences from the willingness to pay study was provided for this activity.	Drivers for this program include legislative obligations, strategic commitments at State Government and organisational level, and community driven desire for increased engagement and education about waterways.	Given the nature of this expenditure it is not straightforward to form a view whether it should be included in the forecasts or not. Nevertheless, on balance we recommend the ESC accept the requested reinstatement of $2m.

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Activity	February 2021 Deloitte recommended opex reduction over RP5 ($m)	Rationale for recommendation February 2021	Summary of MW response to ESC draft decision	Deloitte recommendation for ESC final decision – May 2021
			It is MW experience that greater community involvement with nature results in lower future management and maintenance costs because these spaces are better cared for (e.g. less littering, vandalism). In addition, without an uplift in investment, it is difficult to target engagement and education, which risks leaving Culturally and Linguistically Diverse (CALD) and other diverse communities behind.	We recognise the academic literature that shows the benefits of greater interaction with green and blue spaces, and that greater community involvement may lead to reductions in costs (although MW has not identified the extent of these reductions, or factored them into forecasts). At the same time, is not clear that some individual elements of the program (e.g. augmented reality) can be justified on a stand-alone basis. Nevertheless, we accept that MW should have some scope to innovate in service delivery Ultimately our view that the expenditure be approved is largely on the basis that COVID has created a surge in demand for use of waterways and associated open space. While this increase in demand will no doubt reduce, we expect it to remain above previous levels. We therefore consider it reasonable for MW to increase investment in this area commensurate with the increase in demand.
Managing Litter and Pollution	$0.5m	The relatively small amount of additional litter expenditure should be able to be incorporated within baseline expenditure.	MW accepts the removal of $0.5m for litter program expenditure. Litter is a significant concern for the community, however, as per the Deloitte finding, MW will incorporate this into the baseline expenditure.	N/A

Deloitte Access Economics analysis based on:

- MW Price Submission 2021 – Response to ESC Draft Decision
- Supporting documents including the Community involvement in waterways Business Case, Flood mitigation Business Case, Flood preparedness Business Case, Natural Wetlands Management Program Business Case, New Stormwater quality treatment systems Business Case, overview of Stormwater Management Program, Regional Stormwater Harvesting for Healthy Waterways BNI Business Case, Sunbury Stormwater Harvesting Infrastructure 2021/22-2025/26 BNI Business Case and Upper Merri Creek Stormwater Harvesting 2021-26 BNI Business Case.

Recommendation

Based on the analysis above, we recommend reinstating $10.2m of the $22m over RP5 in relation to increased opex for waterways and drainage services. Therefore, we recommend a total reduction of $11.8m over RP5. We have applied an average reduction of $2.36m per annum. A summary of our recommendation for each service area is provided in Table 2.2 below.

Table 2.2: Revised recommended adjustment to waterways and drainage customer derived levels of service expenditure increase ($2020-21m)

Activity	Proposed Average annual uplift ($m)	Recommended position for ESC in final decision	Annual reduction					
			2021-22	2022-23	2023-24	2024-25	2025-26	Total RP5
Initial recommended reduction			4.40	4.40	4.40	4.40	4.40	22.00
Revised Deloitte recommendation on adjustments MW is seeking reinstatement								
Stormwater quality treatment systems	0.24	Accept full reinstatement	0.00	0.00	0.00	0.00	0.00	0.00
Large scale stormwater harvesting and associated stormwater quality treatment assets activities	2.3	Accept partial reinstatement	1.60	1.60	1.60	1.60	1.60	8.00
Wetland condition	0.3	Do not accept reinstatement	0.30	0.30	0.30	0.30	0.30	1.50
Flood preparedness	0.3	Do not accept reinstatement	0.30	0.30	0.30	0.30	0.30	1.50
Flood mitigation	0.7	Accept full reinstatement	0.00	0.00	0.00	0.00	0.00	0.00
Community involvement in waterways	0.4	Accept full reinstatement	0.00	0.00	0.00	0.00	0.00	0.00
Accepted or revised MW adjustments								
Managing Litter and Pollution	0.1	MW accepted reduction in response to ESC Draft Decision	0.10	0.10	0.10	0.10	0.10	0.50
Stormwater quality treatment systems	0.06	MW revised expenditure in response to ESC Draft Decision	0.06	0.06	0.06	0.06	0.06	0.30
Revised recommended reduction			**2.36**	**2.36**	**2.36**	**2.36**	**2.36**	**11.80**

Deloitte Access Economics analysis

2.2 Water and sewerage baseline expenditure

The ESC Draft Decision adopted our recommendation that $0.8m of baseline operating expenditure in relation to an historical Biosolids Reuse Innovation Project transaction be removed on the basis that the "Biosolids Reuse Innovation Project ($0.8m) which appears to be a one-off accounting item is not an ongoing expenditure likely to be incurred in the future".

MW responded that "Biosolids Reuse Innovation Project accounting item is entirely related to historical expenditure, impacting the 2017-18 and 2018-19 financial years only, and has no impact on the 2019-20 baseline expenditure or any future operating expenditure forecasts. The historical accounting item was disclosed to Deloitte only to explain an anomaly in the historical trend line for the external services cost category, in order to assist with their expenditure review".[1]

Recommendation

We agree with MW's response and support the reinstatement of the $0.8m removed from the baseline operating expenditure.

2.3 Energy forecasts

Our February recommendation was to accept MW's energy forecast of $154.8m. This includes a $7.5m upwards revision proposed by MW during the review process. We note that in ESC's Draft Decision only $147.3m was accepted on the basis it was not clear to the ESC whether the additional $7.5m was formally proposed as an adjustment to the ESC.

MW also indicated during the review that $35.2m in energy savings would be taken out as operational efficiencies under the net growth-efficiency improvement framework, such that only $119.6m would be recovered from customers. While we were unable to validate all aspects of MW's approach to energy, on balance we accepted the proposed expenditure on the basis that it was below what we determined a reasonable benchmark would be ($129.7m). However, we suggested MW provide greater clarity and transparency regarding the energy costs proposed to be recovered from customers in their response to the ESC's Draft Decision.

In response to the Draft Decision MW has put forward for the RP5 period:

(a) A formal upwards adjustment of $7.5m reflecting adjustments to consumption associated with pumping Desalinated Water from Cardinia to Silvan
(b) An $8.5m reduction for network tariffs based on our calculations presented in our review, which reflect price reductions proposed by the electricity network businesses in response to the AER's Draft Determination.
(c) A $3.7m reduction to water and sewerage energy costs associated with the lower growth forecasts adopted by MW.
(d) A $0.4m reduction to water and sewerage energy costs associated with the deferral of Cement Creek Diversion capital project.

Items (a) and (b) are discussed in section 2.3.1 below Item (c) is discussed in 2.3.2.

2.3.1 Revision for Desalinated Water Orders and Network Charges

The upwards revision of $7.5m reflects reduced wholesale charges of $6.5m and an increase in network charges of $14m associated with Desalinated Water Orders, in particular:

- Adjustment to remove consumption associated with pumping of desalinated water from Cardinia to Silvan
- Adjustment to add back hydro production associated with normal course of operation. This reflects the reduction in hydro production capacity when desalinated water is pumped from Cardinia to Silvan.

In our February review of MW's proposal we noted that in principle, we were comfortable with the adjustments associated with the removal of pumping energy related to Desalinated Water Orders. However, we did not receive the underlying methodology for how these cost adjustments were estimated, particularly in relation to the network charge increase of $14m over RP5. Therefore, we were unable to validate whether the adjustment was efficient and reasonable. Although MW made some minor wording revisions in its initial explanation of the adjustments, these did not provide any additional clarity.

[1] Melbourne Water PS21 – Response to ESC Draft Decision (page 80).

We spoke to MW on 11 May 2021 regarding these adjustments. MW suggested that the increased $14m for network costs was associated with network charges for Desalinated Water Orders, which MW indicated are not recovered in the desalinated cost pass through. We note that MW's submission in November did not specify whether the desalinated pumping cost pass through mechanism would cover all energy costs or only wholesale energy costs. In light of this, while cost pass throughs are not within the scope of our review, we suggest that if, and when, MW puts forward a pumping cost pass through, it should clearly exclude network charges. Moreover, we were not provided with the underlying methodology and calculations used to determine the increase, and therefore are unable to verify whether the method to calculate this adjustment is reasonable.

In reviewing MW's proposed energy forecast we also considered the impact of reduced network tariffs. Based on the electricity network businesses proposals to the AER, we calculated that a reasonable network charge would be $8.5m lower than that proposed by MW. MW has accepted this value. However, since our February review (and subsequent to MW providing its response to the Draft Decision) the AER has released its Final Determination for network businesses in Victoria, with forecast tariffs to be higher than what was proposed by the networks. Adopting the same methodology as set out in our February report with the final price path decision from the AER, we have recalculated the energy network charge reduction to be $3.1m (as presented in Table 3.3 below), rather than $8.5m.

Based on this we have calculated the reasonable benchmark allowance for total energy costs to be $135.1m. This continues to be significantly higher than the proposed costs to be recovered from customers.

Given the above, and despite our concerns that we were ultimately unable to reconcile MW's energy forecasts, we recommend accepting MW's energy forecasts. However, it would not be unreasonable for the ESC to increase the energy cost by $5.4m to reflect the increased network costs from the AER's Final Determination.

Table 2.3: MW forecast energy network charges ($2020-21m)

		2021-22	2022-23	2023-24	2024-25	2025-26	Total RP5
A	Original proposed network cost (November submission)[1]	8.42	8.54	8.70	8.88	9.33	43.87
B	Revised proposed network cost (email dated 11 December 2020)[1]	11.22	11.34	11.51	11.69	12.13	57.90
	February Review						
C	Weighted average X Factor for network tariffs	13.45%	0.46%	0.46%	0.46%	0.46%	
D	Calculated network cost	10.03	9.76	9.94	9.69	10.01	49.43
E	Calculated reduction (Difference between D and B)	-1.19	-1.59	-1.57	-2.00	-2.13	-8.47
F	MW proposed total energy costs to be recovered (reflects revised proposed $57.9m network cost)[2]	26.56	23.42	23.04	21.75	24.87	119.64
G	Deloitte reasonable benchmark allowance	27.13	25.12	24.97	24.73	27.76	129.72
	May review						
H	Weighted average X Factor for network tariffs	0.00%	1.31%	1.31%	1.31%	1.31%	
I	Deloitte calculated network cost	11.27	10.88	11.02	10.69	10.97	54.84
J	Calculated reduction (Difference between I and B)	0.04	-0.46	-0.49	-1.00	-1.16	-3.06

K	MW proposed costs to be recovered (reflects Deloitte's $8.5m recommended reduction in network costs)[3]	25.37	21.83	21.47	19.75	22.74	111.17
L	Deloitte reasonable benchmark allowance[3]	28.36	26.25	26.05	25.72	28.73	135.13

1. Excluding Western Treatment Plant Power Purchase Agreement
2. Excludes MW's acceptance of reduced network charges of $8.5m and growth-related adjustments of $4.1m (reviewed further below).
3. Excludes growth-related adjustments of $4.1m (reviewed further below).

2.3.2 Growth related energy adjustments

In its response to the Draft Decision, MW has proposed to adopt a new demand growth forecast based on the Centre for Population Projections December 2020 forecasts. MW has proposed a reduction in energy costs of $3.7m associated with the lower growth forecast, as well as a reduction of $0.4m as a result of the deferral of the Cement Creek Diversions project. MW has indicated its approach involved:

- Energy forecasts built at contract rates at the area level:
    - Winneke harvest and treatment
    - ETP
    - WTP
    - Sewage Transfer
    - Water transfer
    - Water treatment (at the level of each plant)
    - A small "other" category covers a small number of drainage pump stations which are flood event based and facilities including Melbourne Water's head office at 990 La Trobe Street, Docklands.
- Each area incorporates the new growth forecasts and capital project program into their forecast of energy costs at contract price, separating out changes in energy costs associated with growth and capital program
- A 'conversion factor' is then applied to the change in energy costs to determine the reduction at the benchmark price rather than the contract price
- Energy adjustments are not applicable to the waterways and drainage service as MW has proposed no change in demand.

In order to determine the reduction at the benchmark price, MW has applied an annual conversion factor of around 70%, based on the ratio of MW's proposed benchmarked electricity costs ($154.8m) to MW's actual energy cost forecast at contract prices ($221.0m). This includes network charges and behind-the-meter feed-in income. On a price per megawatt hour basis, the benchmark wholesale electricity price is only 50% of MW's contract electricity price. However, given change in volumes will also affect network charges the use of the higher conversion factor based on total wholesale and network costs is appropriate. We note that the inclusion of behind-the-meter feed-in income slightly increases the conversion factor (by approximately 6%), which we consider would not likely be materially affected by changes in growth, and therefore the reduction to energy costs may be marginally overstated.

MW did not provide any information regarding how changes to demand growth have translated to reduced energy volumes or underlying calculations on how the revised energy costs were calculated. As such, we are unable to verify the efficiency of the proposed reductions.

We note that MW's proposed energy costs to be recovered from customers remains below our estimated reasonable benchmark allowance, therefore on balance we accept growth and capex related reductions of $4.1m.

2.4 Summary of recommendations

Table 2.4 below summarises the recommended changes to controllable opex against MW's original submission in November[2]. We have recommended a reduction of $40.2m to MW's RP5 forecast

[2] Inclusive of revised energy costs submitted 11 December 2021.

controllable opex. This represents 2.1% of MW's proposed controllable opex over RP5. This includes recommendations we provided in our February review that have not been revisited in this analysis as they were accepted by MW.

We note this recommended reduction is $1.6m lower than the recommended reduction in our February review ($41.8m).

Table 2.4: Forecast controllable opex and recommended adjustments ($2020-21m)

Opex item	Actual	Forecast RP5					
	Base year 2019-20	**2021-22**	**2022-23**	**2023-24**	**2024-25**	**2025-26**	**Total**
Proposed controllable opex		**389.04**	**387.01**	**388.46**	**394.09**	**398.34**	**1,956.95**
Recommended adjustments							
W&S base year adjustment	-1.15	-1.15	-1.15	-1.15	-1.15	-1.15	**-5.73**
Waterways base year adjustment	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	**-2.39**
Growth rate adjustment to baseline		-0.52	-1.03	-1.55	-2.06	-2.57	**-7.72**
Waterways and drainage service increase		-2.36	-2.36	-2.36	-2.36	-2.36	**-11.80**
Energy network tariff reduction		-1.19	-1.59	-1.57	-2.00	-2.13	**-8.47**
Energy growth adjustments		-0.74	-1.08	-0.47	-0.94	-0.89	**-4.12**
Total recommended adjustments	**-1.63**	**-6.43**	**-7.68**	**-7.57**	**-8.98**	**-9.57**	**-40.23**
Recommended controllable opex		**382.61**	**379.33**	**380.89**	**385.12**	**388.77**	**1,916.71**

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3 Capital expenditure assessment

In re-assessing our recommended adjustments to expenditure included in the ESC Draft Decision, we have reviewed the information provided by MW in its response to the ESC Draft Decision. Our review has assessed whether the information is sufficient to modify our original recommendations on the prudency and efficiency of the capital expenditure.

Where we are satisfied that the information supplied provides the requisite information, we have modified our recommendations to allow the full expenditure (as per MW Submission); or some part of this full expenditure, if we believe there are still some concerns around the level of justification of the proposed expenditure.

Where we have not been satisfied as to whether the information provided does adequately demonstrate prudency and efficiency, we have left our original recommendations as to expenditure adjustments unchanged.

3.1 Winneke Treatment Plant UV Disinfection Project

The ESC Draft Decision included a recommended reduction of $8.5m to the capital expenditure for this project. This adjustment was based on the lack of justification of the increase in proposed capital expenditure between what was proposed for the current regulatory period ($34.6m) and what was proposed for the next regulatory period ($43.1m), specifically because the fundamental scope of works for the project appeared essentially the same as that previously proposed.

Melbourne Water requested that the full $43.1m be used in the capex forecast and provided some brief explanations for the proposed increase, stating that the increase resulted from:

- Additional early design and investigation to confirm project scope and risk
- Additional detailed designs based on the identified larger project scope
- Additional rock excavations required over what was previously anticipated
- Additional works required to existing systems to implement the UV disinfection system
- Duplication of the HV power to achieve plant reliability
- Additional larger pipework to reduce impacts to water supply during the commissioning process
- Cost escalations
- Increased construction costs (higher demand for contractors)
- Additional risk allowances for anticipated risks

Whilst no specific documentation was provided in its response to the Draft Decision to support the explanations outlined above, we accept that as projects move through the development cycle, detailed work continues and further information is identified which sometimes results in adjustments being required to the capital expenditure.

MW further stated that its Board has reviewed and approved the project's Functional Business Case with a revised cost estimate which was higher than the $43.1m sought. We requested and were provided with a copy of this Business Case. It identified that the proposed capital expenditure for the project had increased to $65.3m.

In our view the original capital cost estimates for this project should have anticipated a degree of uncertainty in the cost forecasts given the early stage of development of the project and included some contingency allowances which would ordinarily have accounted for this.

While we are concerned at the increase in estimated costs between Melbourne Water's original submission and the current estimate, we remain of the view that the project is necessary. A suitable level of certainty has now been achieved for the project's expenditure to be included in the next regulatory period, noting that the proposed inclusion of $43.1m is significantly lower than the most recent project estimates and the figure approved by MW Board.

Recommendation

We recommend including the capital expenditure as proposed by MW ($43.1m) in the forecast capex spend.

3.2 Western Treatment Plant 55E Activated Sludge Plant Project

The ESC's Draft Decision included a recommended reduction of $12m to the capital expenditure for this project. This adjustment was based on recent completion of MW 160S Nitrogen Removal Plant, and likely efficiencies which could be achieved through the project's detailed design and delivery process. In particular, it was noted that the recent completion of the 160S plant with similar throughput demonstrated that the costs of the proposed 55E Activated Sludge Plant were higher than the actual delivery costs of the 160S NRP project.

MW has provided further explanation of the differences between the 160S NRP project and the proposed 55E Activated Sludge Plant, seeking the approval of the full capital allocation for the project (i.e. rejection of the -$12m adjustment). However, the information provided in MW response was considered in the Draft Decision and does not present any materially new information to support the full capital allocation.

Recommendation

We are satisfied that the project is required and that the work undertaken to date has been undertaken to a reasonable level of detail for its inclusion in the Pricing Submission. However, we maintain that there are further efficiencies that could reasonably be expected for this project when considering the recent delivery of works at WTP, including the 160S NRP project. We therefore have not changed our position on this project and recommend the $12m reduction be maintained.

3.3 Summary of recommendations

Table 3.1 below summarises the recommended changes to proposed capex against MW's original submission in November.

In summary, we recommend:

- maintaining the $12m reduction for the WTP 55E ASP Upgrade
- accepting the proposed capex for the Winneke Treatment Plant UV disinfection system as per the original submission ($43.1m).

This results in a reduction of $288.3m over RP5, representing 7.8% of proposed capex. This includes recommendations we provided in our February review that have not been revisited in this analysis as they were accepted by MW. We note this recommended reduction is $8.5m lower than the recommended reduction in our February review ($296.8m).

Table 3.1: Summary of recommendations

		2021-22	2022-23	2023-24	2024-25	2025-26	Total for period
Total top 15	Proposed capex	198.53	388.58	205.46	202.78	60.17	1055.52
	Recommended adjustments	-12.78	-16.48	-27.97	-6.92	25.89	-38.26
	Recommended capex	185.75	372.10	177.49	195.86	86.06	1017.26
Remainder of program	Proposed capex	620.88	571.41	513.07	484.59	456.74	2646.70
	Recommended adjustments	-58.65	-53.97	-48.46	-45.77	-43.14	-250.00
	Recommended capex	562.24	517.44	464.61	438.82	413.60	2396.70

Total adjustments (including individual projects)	Proposed capex	819.41	959.99	718.54	687.37	516.91	3702.22
	Recommended adjustments	-71.43	-70.45	-76.43	-52.69	-17.25	-288.26
	Recommended capex	747.98	889.54	642.10	634.67	499.65	3413.96

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Limitation of our work

General use restriction

This report is prepared solely for the internal use of the Essential Services Commission. This report is not intended to and should not be used or relied upon by anyone else and we accept no duty of care to any other person or entity. The report has been prepared for the purpose of set out in our engagement letter of 26 October 2020. You should not refer to or use our name or the advice for any other purpose.

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