



# **Western Water**

## **ESC's 2020 Water Price Review**

### **Draft Decision Response**

April 2020

## Traditional Owner acknowledgement

Western Water proudly acknowledges Aboriginal people as Australia's first peoples and the local Traditional Owners as the original custodians of the land and water on which we rely. We pay our deepest respects to their Elders, past, present and emerging.

We acknowledge the continued cultural, social and spiritual connections that Aboriginal people have with the lands and waters, and recognise and value that the Traditional Owner groups have cared for and protected them for thousands of generations.

In the spirit of reconciliation, we remain committed to working in partnership with local Traditional Owners to ensure their ongoing contribution to the future of the water management landscape while maintaining their cultural and spiritual connections.



## Table of Contents

Table of Contents .....	3
1. Executive Summary.....	4
2. Managing Risk .....	5
3. Engagement .....	6
4. Outcomes.....	6
5. Performance .....	6
6. Revenue Requirement.....	6
7. Capital Expenditure .....	14
8. Return on Regulatory Asset Base (RAB) .....	18
9. Tax Allowance.....	20
10. Growth Forecasts .....	21
11. Demand .....	21
12. Form of Price control .....	28
13. Prices & Tariff Structure .....	28
14. Adjusting Prices .....	39
15. New Customer Contributions .....	39
16. Financial Position .....	40
Attachment 1 – Demand Forecasting Methodologies .....	41
APPENDIX 1 - Schedule of Tariffs .....	45

## 1. Executive Summary

Western Water acknowledges the ESC's 2020 Water Price Review draft decision ('Draft Decision') proposing to approve a benchmark revenue allowance of \$290.7 million over the three-year period commencing 1 July 2020. Western Water welcomes the opportunity to provide this Draft Decision Response (Response) prior to the ESC delivering the Final Determination.

Western Water's Response achieves compliance with Western Water's 2020 Water Price Review Guidance released by the ESC in December 2018 and our interpretation of that guidance. The Response also reflects our understanding of the requirements of us as detailed in the Draft Decision and through further clarifications provided by the ESC subsequent to the release of the Draft Decision.

Uncertainty regarding the economic impact of coronavirus COVID-19 has prompted Western Water to further consider the risks associated with retaining the growth and demand forecasts that underpinned our 2020 Price Submission proposals and whether a review of these key assumptions is required prior to the establishment of the benchmark revenue allowance for the next three years. We have concluded it is in the best interests of Western Water, customers and stakeholders to progress the finalisation of our submission proposals allowing them to commence from 1 July 2020 as planned.

In coming to this conclusion, we have considered the difficulty in developing and supporting robust growth, demand and economic assumptions in the current uncertain economic environment. The decision also recognises that impacts arising from changes in the economic environment are likely to be lagged in respect to growth within our region, and impacts to water consumption are expected to remain within the range of variability that is experienced from changes inherent in climate and rainfall patterns. In addition, we have so far assessed that Western Water's financial position is sufficiently robust to absorb the financial risk arising from coronavirus COVID-19 impacts on the economy.

Western Water recognises the importance of ensuring continuity of its programs and thereby provide ongoing support of regional expansion, economic growth and liveability. We also appreciate the value that customers and stakeholders place on having certainty. Finalising the pricing outcomes delivers certain maximum prices for customers over the next three years.

Importantly the proposals contained in this response consider the challenging financial situation many of our customers are currently facing and as a result our pricing response proposals result in no increase in residential and non-residential customer bills (typical customer bills in real dollars) in 2020-21.

In developing its response, Western Water has considered the ESC's expectations presented within the Draft Decision, particularly in reference to a prioritised focus on the Water Industry Regulatory Order (WIRO) principle that pricing and tariff proposals are to signal to customers the efficient cost of providing water and sewerage services. As a result, Western Water's pricing and tariff proposals have been restructured to ensure they are better aligned with the WIRO in achieving the signalling

of efficient costs across all types of customers, while continuing to deliver against all other aspects of the pricing principles within the WIRO.

Detail of the real price path, as well as real bill impacts inclusive of an estimated cost of debt adjustment, are as follows.

- Typical residential owner occupier and equivalent non-residential bills will reflect a price path of -9.2% in 2020-21, then +2.1% in 2021-22 and also in 2022-23. Their corresponding bill, including the benefit of estimated lower debt cost savings that will be passed onto them, will be \$1,019<sup>1</sup> in 2020-21, \$1,023 in 2021-22 and \$1,030 in 2022-23.
- Typical residential tenant bills will reflect a 0.0% (zero) real price path over the three-year period, however their bill will increase each year by \$14.75 after 2020-21 due to a transitioned removal of the Efficiency Rebate.
- Residential landlord and vacant landowner bills will reflect a price path of -13.3% in 2020-21, +3.19% in 2021-22 and +3.15% in 2022-23. Their corresponding bill, including the benefit of estimated lower debt cost savings that will be passed onto them, will be \$672 in 2020-21, down from \$775 in 2019-20, and then \$676 in 2021-22 and \$683 in 2022-23.

These price paths reflect Western Water's proposed benchmark revenue requirement of \$296.1 million, down from a requirement of \$302.3 million proposed in the 2020 Price Submission, over the three-year period commencing 1 July 2020. This lower benchmark revenue requirement reflects a reduction in the return on equity to 3.9% as established by the ESC in the Draft Decision, a marginally lower return on debt reflecting more current interest rate information and reductions in both operating and capital expenditure proposed by the ESC in their Draft Decision.

Western Water has presented detail to support a position of not accepting some operating cost and capital expenditure reductions the ESC identified in their review of Western Water's 2020 Price Submission and detailed in the Draft Decision.

## 2. Managing Risk

The ESC expressed particular concern in its Draft Decision with aspects of the proposals contained in our 2020 Price Submission, and assessed that the submission did not meet the requirements for a 'Standard' rating for risk under the ESC's PREMO framework. Specifically, the ESC was concerned that our proposed tariffs introduced differential pricing for the same services that had not been justified and were inefficient. Further to this, the ESC considered that the proposed revenue requirement was not based on prudent and efficient costs, and that water demand forecasts appeared to be understated, which could expose customers to higher demand risk and lead to an over-collection of revenue.

This response has specifically sought to address these risk-related issues and to demonstrate a change in risk orientation that is consistent with a 'Standard' rating for managing risk. We would strongly support the ESC re-assessing the proposals now put forward in this response and advising

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<sup>1</sup> For residential owner occupiers a bill of \$1,019 in 2020-21 reflects no change from their 2019-20 bill, whereas for equivalent non-residential customers a bill of \$1,019 in 2020-21 reflects a fall of \$103 from their 2019-20 bill.

whether the ESC's concerns have been sufficiently addressed to the extent that a 'Standard' rating for risk could be justified in the final decision to be issued.

### 3. Engagement

In the ESC's Draft Decision, the ESC acknowledged the high level of engagement conducted by Western Water to inform its 2020 Price Submission.

Western Water submits that price and tariff proposals presented in this response to the Draft Decision in some instances vary from those presented to and considered by customers during the 2020 Price Submission customer engagement program. However, customer feedback and the key components of customer reference groups' recommendations have continued to inform and shape the proposals now presented in this response.

### 4. Outcomes

Western Water notes the ESC's acceptance of the 2020 Price Submission proposed service standards and guaranteed service level commitments. Western Water will engage further with the ESC when it prepares its summary outcomes report for 2019-20 reporting year.

### 5. Performance

Western Water is committed to delivering the customer proposals and outcomes presented to the ESC in the 2020 Price Submission, and implementing the pricing and tariff outcomes as determined by the ESC in the 2020 Water Price Review final decision. Performance will be demonstrated over the course of the 2020-23 regulatory period and in future pricing submissions presented to the ESC for the next regulatory period commencing 1 July 2023.

### 6. Revenue Requirement

The revenue requirement proposed in this response reflects Western Water's consideration and response to the ESC Draft Decision. It incorporates adjustments to reflect the revised proposals concerning operating costs, capital expenditure and return on debt.

**Table 1: Revenue Requirement 2020-21 to 2022-23, \$ million (\$2019-20)**

	2020-21	2021-22	2022-23	Total
Operating Expenditure	61.53	63.76	65.18	190.47
Return on Assets	18.97	20.90	23.10	62.98
Regulatory Depreciation on Assets	13.00	13.43	15.18	41.61
Tax Allowances	1.00	0.20	0.00	1.20
Offset of Non-prescribed revenue	(0.06)	(0.06)	(0.06)	(0.18)
<b>Total Revenue Requirement</b>	<b>94.44</b>	<b>98.23</b>	<b>103.40</b>	<b>296.08</b>



## 6.1 Operating Expenditure

The ESC in its Draft Decision presented several adjustments to Western Water’s proposed operating expenditure forecasts. The following sections discuss our proposed responses to each item.

## 6.2 Baseline Controllable Operating Expenditure

The ESC accepted Western Water’s 2018-19 baseline expenditure and the forecast net growth-efficiency factor applied to its baseline. However, the ESC did not consider that there was reasonable justification of corporate cost increases above the net efficiency factor, representing prudent and efficient expenditure. Additionally, the ESC removed labour costs on the basis they were forecast to be above the Victorian wages policy.

As shown in Table 2, the ESC’s Draft Decision total controllable operating expenditure forecast was below our net growth-efficiency adjusted baseline operating expenditure, when excluding variations.

**Table 2: Comparison of proposed baseline operating expenditure forecasts compared with ESC Draft Decision, \$ million (\$2019-20)**

	2020-21	2021-22	2022-23	Total
Total controllable operating expenditure – ESC Draft Decision	44.3	46.3	47.0	137.6
Baseline controllable operating expenditure (excluding variations)	45.2	46.5	47.5	139.2
Difference	-0.9	-0.1	-0.5	-1.5

While Western Water acknowledges that its net growth-efficiency factor is relatively high in comparison to other Victorian water businesses, it reflects the significantly higher customer growth in our region. Regardless, the business continues to focus on operating cost efficiency in the 2020 Price Submission period. This is demonstrated by the proposed average annual reduction in controllable operating expenditure per water connection of 2.6 per cent from the base year in 2018-19 to 2022-23. This is above average when compared with other metropolitan and larger regional water businesses projected over the 2018 regulatory period. In considering the proposed net growth-efficiency factor, consideration should be given to the operating efficiencies achieved in recent years. These are reflected in our low operating expenditure per connection, when compared with other regional businesses.

We also consider that maintaining our base level of operating expenditure is required to ensure delivery of business obligations, meet expected customer service levels and service new growth. Reducing our controllable expenditure below our baseline forecast could potentially impact our ability to do so.

On this basis we propose that our baseline operating expenditure be retained in forecast prices – other than in relation to the adjustment that reflects new information on electricity distribution and





transmission approved tariffs. Further discussion of our approach to baseline corporate costs and labour costs are outlined below.

### Approach to baseline operating expenditure – Corporate costs

The ESC adjusted corporate costs by \$2.4 million over the regulatory period as it considered that Western Water had not justified that its corporate cost escalations represent prudent and efficient expenditure.

Western Water has developed a bottom up build of its operating expenditure forecast over the three-year regulatory period, which is included in the Operating expenditure\_Breakdown tab of the financial model. This response to the Draft Decision has included some revisions from its original price submission allocation to individual cost categories.

Table 3 shows the breakdown of baseline operating expenditure across each category when excluding the variations to the baseline operating expenditure. We note there are variations in annual cost changes across each category although the total baseline operating expenditure forecast is within the net growth-efficiency factor, when excluding any variations. It also shows that when excluding any variations, growth in corporate costs over the next regulatory period are forecast to remain below the growth-efficiency factor.

On this basis Western Water proposes to not adjust its overall baseline corporate costs by \$2.4 million as put forward in the ESC’s Draft Decision. We consider that our revised corporate cost forecasts reflect an efficient level of expenditure, with a forecast growth rate in baseline corporate costs below the overall net growth-efficiency factor.

**Table 3: Breakdown of proposed baseline operating expenditure forecasts, \$ million (\$2019-20)**

	2018-19 Actual	2019-20 Forecast	2020-21	2021-22	2022-23
<b>Baseline operating expenditure – applying the net growth-efficiency factor – OPEX FO sheet</b>			<b>45.2</b>	<b>46.5</b>	<b>47.5</b>
<b>Baseline Operating Expenditure – excluding variations</b>					
Operations & Maintenance	7.4	7.7	7.5	7.3	7.3
Treatment	15.4	15.3	14.9	15.8	16.5
Customer Service and billing	4.7	5.6	5.4	5.5	5.7
Corporate	16.6	17.0	17.3	17.7	17.9
Other operating expenditure	0.0	0.1	0.1	0.2	0.1
<b>Total controllable baseline operating expenditure (Excluding variations)</b>	<b>44.2</b>	<b>45.6</b>	<b>45.2</b>	<b>46.5</b>	<b>47.5</b>
<b>Forecast variations to baseline operating expenditure</b>			0.3	1.3	1.1
<b>Total controllable operating expenditure</b>	<b>44.2</b>	<b>45.6</b>	<b>45.5</b>	<b>47.8</b>	<b>48.6</b>



## Labour Costs

The ESC in its Draft Decision did not accept Western Water's proposed labour costs and proposes to reduce them by \$0.5 million to reflect the government labour benchmark rate of two per cent, as opposed to:

1. Western Water's proposed two per cent labour benchmark rate increase and one per cent negotiated labour rate increase; and
2. baseline operating expenditure forecast reflecting employee expense cost increases associated with increases in employee end of band progression and escalation in performance payments arising from the escalated base rate.

The negotiated one per cent labour rate increase must be supported by negotiated equivalent value productivity improvements in order to meet the government policy. Western Water in its price submission forecasts did not seek additional costs for the one per cent above benchmark labour increase consistent with the government policy approach. The baseline operating expenditure forecasts incorporates the cost of the negotiated one percent.

Western Water in its price submission forecasts did not seek additional costs for the expenditure increases covering employee end of band progression and escalation in performance payments arising from the escalated base rate. The baseline operating expenditure forecasts incorporates the cost of these additional employee related expenses.

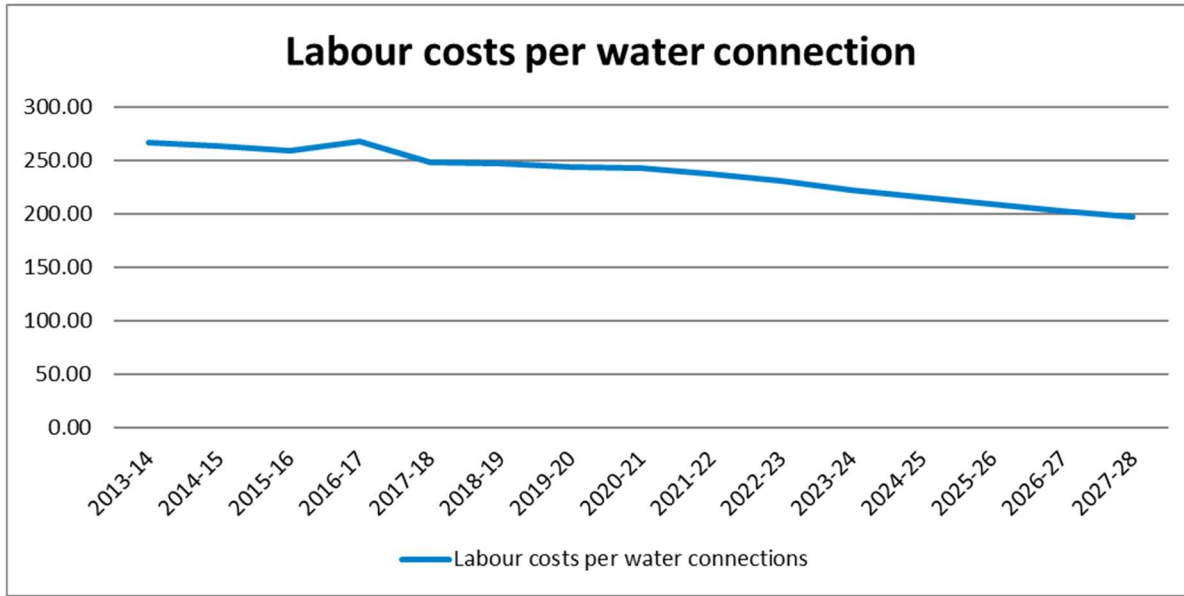
All labour costs were included in the baseline operating expenditure forecasts. The employee related expenditure above the government's labour benchmark rate of two per cent is funded within the baseline operating expenditure forecasts through negotiated enterprise agreement outcomes.

Western Water has reviewed the labour costs that were included in its 2020 Price Submission forecasts and is proposing to retain the baseline operating expenditure as presented in the 2020 Price Submission. These labour costs represented as a cost per connection continue to show a downward trend, refer to Figure 1.

Western Water is not proposing to adjust downward its overall baseline operating expenditure by \$0.5 million in relation to labour costs.



**Figure 1: Labour Costs per Water Connection, \$ (\$2019-20)**



**Energy costs**

Western Water accepts the ESC’s proposed expenditure reduction in baseline energy costs to reflect recent changes in regulator approved network distribution and transmission tariffs.

Overall, baseline energy costs have been adjusted by \$0.42 million to reflect this post submission regulated energy price change.

**IT costs**

The ESC proposed the removal of the \$2.03 million variation to the baseline increase in IT costs seeking further justification for these adjustments. Western Water has reviewed the IT cost variations to the baseline and proposed to retain \$0.96 million as discussed in Section 6.3.

The IT costs review identified \$1.39 million of IT expenditure required by the business over the 2018-19 base year expenditure. Of this \$0.96 million is proposed to be retained as a variation to baseline. The additional \$0.43 million is included in the baseline expenditure as it reflects expenditure committed in 2019-20.

**6.3 Variations to the baseline operating expenditure**

In preparing its price submission Western Water made a number of downward adjustments to its 2018-19 base year expenditure and sought a number of variations to the baseline over the 2020 Price Submission period. In preparing this response Western Water has further reviewed its variations to baseline for the 2020 Price Submission period.

## IT Costs

The ESC removed the proposed increase in IT costs from the baseline and suggested that Western Water provides additional material on items that can be justified over and above the efficiency factor and only include adjustment for those items.

Western Water has reviewed IT costs and has proposed to retain \$0.96 million of the IT cost adjustments to baseline that represent additional costs above the 2018-19 base for the following items:

- Compliance:
- Compliance Management and Reporting System to ensure compliance with legislative obligations - implemented in 2019-20
  - VendorPanel system additional subscription commencing in 2019-20 to achieve compliance with Public Construction Ministerial Direction 8.2 Supplier performance and shared reporting regime.
- Cyber Security:
- Cisco ISE Network Security Software being a planned investment to improve our IT security position and segregate corporate and guest devices as recommended by internal audit.
  - New investment is required to manage increasing security risk and meet an internal audit finding to segregate our corporate and Scada networks. Multiple devices with individually linked support & maintenance costs are currently being rollout out progressively in 2019-20 with estimated completion April 2020. Additional expenditure of \$0.025 million is required for ongoing maintenance.
- Business applications:
- Microsoft has ended its support for Windows Server 2003 and 2008 which presents a security risk for all IT Applications still operating on these legacy Operating Systems.
- Western Water's on-premise TechnologyOne finance system ran on Windows 2008. In March 2020 Western Water transitioned its existing version to the TechnologyOne cloud offering. The additional costs in the next regulatory period relate to the cloud server fee.
  - Western Water's Land Development system used for the processing of Land Developer applications operates on the Windows Server 2003. Security risk is currently being managed via the application being isolated from the Western Water corporate network. The system is scheduled in the capital expenditure program for replacement in 2020-21. The additional costs in the next regulatory period reflect additional estimated operating costs.

Table 5 provides a breakdown of the proposed variation to baseline operating expenditure relating to IT costs.

**Table 5: Breakdown of proposed IT variations to baseline expenditure forecasts, \$ million (\$2019-20)**

	2020-21	2021-22	2022-23
Compliance Management System	0.02	0.02	0.02
Contractor management - Vendor panel	0.01	0.01	0.01
Implement Cisco ISE Network Security Software	0.02	0.03	0.03
SCADA Check Point Firewall maintenance	0.03	0.03	0.03
Technology One - Finance one	0.07	0.07	0.07
Land Development System	0.09	0.21	0.21
<b>Total</b>	<b>0.24</b>	<b>0.36</b>	<b>0.36</b>

## Director Remuneration

The ESC accepted Western Water's proposed increase of \$0.22 million for director remuneration.

Western Water has retained this variation to the baseline operating expenditure forecasts.

## 2023 Price Submission

The ESC reduced Western Water's proposed additional expenditure of \$0.55 million to \$0.45 million.

Western Water accepts this adjustment and has retained a variation of \$0.45 million.

## Integrated Water Management

The ESC reduced Western Water's proposed additional expenditure of \$0.3 million to \$0.1 million.

Western Water accepts this adjustment and has retained a variation of \$0.1 million.

## Waterborne Gypsum trial

The ESC did not accept the proposed \$0.1 million allocation for this trial.

Western Water accepts this decision and has not included this variation in the response despite Western Water being committed to deliver it. As a result, Western Water will continue to deliver this trial that is not funded through pricing.

## Central Region South Sustainable Water Strategy

The ESC accepted Western Water's proposed additional \$0.15 million in costs over the next regulatory period.

Western Water has retained this as a variation to the baseline operating expenditure forecasts.



### Emissions Pledge costs

The ESC accepted the proposed additional expenditure of \$0.41 million for the purchase of large-scale renewable energy certificates to meet emission pledge costs.

Western Water has retained this as a variation to the baseline operating expenditure forecasts.

### Desludging costs

The ESC accepted the proposed additional expenditure of \$0.50 million for the desludging program across Western Water’s lagoons.

Western Water has retained this as a variation to the baseline operating expenditure forecasts.

## 6.4 Proposed controllable operating expenditure forecast

**Table 6: Proposed controllable operating expenditure forecast, \$ million (\$2019-20)**

	2020-21	2021-22	2022-23	Total
<b>Baseline taking net efficiency factor – OPERATING EXPENDITURE FO sheet</b>	<b>45.21</b>	<b>46.46</b>	<b>47.48</b>	<b>139.16</b>
<b>Variations to the baseline</b>				
IT Costs	0.24	0.36	0.36	0.96
Director Remuneration	0.06	0.08	0.08	0.22
2023 Price Submission	0.03	0.30	0.22	0.45
Integrated Water Management	0.06	0.02	0.02	0.10
Central Region South Sustainable Water Strategy	0.00	0.15	0.00	0.15
Emissions Pledge costs	0.13	0.16	0.13	0.41
Desludging costs	0.20	0.22	0.08	0.50
Energy costs	-0.44	0.12	0.32	0.00
<b>Total controllable forecast operating expenditure</b>	<b>45.53</b>	<b>47.79</b>	<b>48.63</b>	<b>141.95</b>

## 6.5 Non-Controllable operating expenditure forecasts

The ESC made a few relatively minor adjustments to Western Water’s forecast non-controllable operating expenditure forecasts.

Western Water accepts these changes as outlined in Table 7.

**Table 7: Proposed non-controllable operating expenditure forecast, \$ million (\$2019-20)**

	2020-21	2021-22	2022-23	Total
Bulk charges	12.88	12.92	13.54	39.35
Environmental Contribution	3.01	2.94	2.88	8.83
Licence Fees – ESC	0.04	0.04	0.06	0.14
<b>Licence Fees – DHHS</b>	0.03	0.03	0.03	0.08
Licence Fees EPA	0.05	0.05	0.050	0.16
<b>Total non-controllable operating expenditure</b>	16.04	15.98	16.56	48.58

## 7. Capital Expenditure

**Table 8: Proposed capital spend by service category 2020-21 to 2022-23, \$ million (\$2019-20)**

	2020-21	2021-22	2022-23	Total
Water	36.17	29.14	32.82	98.13
Sewer	43.54	52.49	54.87	150.89
Recycled Water	10.61	12.08	10.62	33.31
<b>Total Capital Expenditure</b>	<b>90.32</b>	<b>93.71</b>	<b>98.30</b>	<b>282.33</b>

**Table 9: Proposed capital spend by ESC Driver 2020-21 to 2022-23, \$ million (\$2019-20)**

	2020-21	2021-22	2022-23	Total
Growth	68.58	74.63	72.79	216.00
Renewal	14.59	14.41	22.09	51.09
Improvement/Compliance	7.15	4.67	3.43	15.24
<b>Total Capital Expenditure</b>	<b>90.32</b>	<b>93.71</b>	<b>98.30</b>	<b>282.33</b>

### 7.1 Overview of Capital Expenditure Planning and Delivery

Western Water accepts the comments provided in the Draft Decision on the shortcomings in the original submission and will achieve and demonstrate improvement in future submissions to the ESC. This improvement will be enabled by a dedicated Program Management Office and continuing development of infrastructure planning teams. Western Water is also reviewing the processes and systems linked to capital works delivery, in particular the implementation of a revised asset management program that will strengthen and support our future capital works justification, prioritisation and programming activities.

Western Water will ensure project feasibility and design are conducted early. This will provide robust business cases and information to fully support any future price submissions. It will also allow Western Water to be agile by having projects in a state of readiness to activate and proceed should there be a slow-down in growth or delays with the delivery of other capital projects.

The review and improvements will enhance our capital works planning, programming and delivery and ensure we provide more robust justification to support our capital program proposals for future price submissions.

Western Water is challenged with substantial and dynamic growth within its service region, which has meant that, in preparing the three pricing submissions over three years, each of these submissions has been affected by significant shifts in infrastructure works scenarios. Servicing plans have had to be substantively modified as the large-scale greenfield growth, that has included large pockets of out-of-sequence development, has evolved and changed.

Western Water has continued to strengthen relationships with urban land developers through forums and one-on-one engagement, to share the issues caused by out-of-sequence growth and emphasise the need for early engagement to better inform and improve our capital works planning and programming.

Processes are being assessed against the ESC's feedback to drive improvements across the business.

## **7.2 M2 Melton Recycled Water Plant (RWP) additional on-site recycled water storage stage 1**

The Deloitte report recommendation for the Melton RWP additional recycled water storage project is based on the assessment that, because the unit cost of providing storage at the Balliang site is cheaper than at Melton (Deloitte's assessment), the proposed 2020 Price Submission capital expenditure for the Melton storage should be adjusted to \$11.6 million (a reduction of \$3.54 million) reflecting the unit cost rate of storage at Balliang. Western Water acknowledges the future 800ML storage at Balliang is cheaper on a \$/ML unit rate comparison.

However, the Balliang site is unsuitable and considered high risk in terms of achieving the immediate storage requirements to comply with EPA licence conditions by 30 June 2022, and to meet the timing for initial seasonal storage to supply the new recycled water supply opportunities in the Western Irrigation Network (WIN) project.

The Balliang site is located on privately owned land with no agreement reached to purchase this land. Re-zoning of the site is also required prior to developing a storage, and it will take a number of years to obtain the required planning approvals and acquire the site. The natural topographical depression at the Balliang site does make it cheaper to construct a storage, but the site has high potential for archaeological deposits requiring complex cultural heritage assessment, as there are previously recorded Aboriginal Places situated on land adjacent to the site. The clearing of native vegetation on the site will also require Federal environmental approvals before any construction could commence.

In comparison, the Melton storage is located on land owned and controlled by Western Water and all necessary enabling investigations and approval requirements are resolved. The \$2.64 million expenditure to date (pre-PS20) on the Melton storage proposal has delivered a functional works design, cultural heritage artefact salvage and approvals, planning permit approval, detailed works



design, EPA works approval, tender documentation, and site preparation works. Given this, the Melton site is clearly the preferred site for the additional recycled water storage.

Tender documents for the construction of the Melton storage were released to the open market in March 2020 and tenders were received in the latter part of April 2020. This response has been informed by the market-based offers obtained through that public tendering process.

The detailed engineering design of the Melton storage included a Monte Carlo style assessment to establish P50 and P90 cost estimates. The engineering design and cost estimate were reviewed by an independent consultant (IDP Consulting). Further, three construction cost 'check' estimates were prepared and provided by competent construction businesses (Aquenta, Comdain and Downer). The tender assessment was based on a consolidation of these estimates and reviews.

Importantly, the market-based responses that will shortly lead to the engagement of a constructor to build the storage at Melton have validated the \$15.14 million (PS20) cost estimate.

Three relevant documents are also provided to support this particular response.

- a. A summary of the design estimate and the three construction estimates. The detailed reports behind these numbers can be provided if required.
- b. The IDP Consulting report
- c. A summary of the market responses (information and conditions of release subject to probity sign-off).

Western Water considers that there is now sufficient justification to retain the cost estimate of \$15.14 million for proposed expenditure for the Melton RWP additional storage and that the original estimate provided in PS20 should not be adjusted and reduced to \$11.6 million.

The Deloitte report raised questions about the timing of expenditure on the Melton storage, particularly the \$5.95 million expenditure proposed in FY22/23 after the expiry of EPA license discharge. The Melton storage project will be progressed to a partially complete status in readiness to be filled with recycled water in order to provide storage relief necessary to comply with EPA licence requirements. The remaining expenditure in FY22/23 is required for completing storage access ramp, service roads, removal of excess fill, revegetation and installation of internal erosion protection.

The Deloitte report questioned whether the Melton storage was the optimal location for the seasonal storage to supply the WIN Scheme. Western Water submits that these issues were addressed as part of our previous written response to the draft Deloitte report and in the follow-up meeting to discuss the response. No further information was requested at that time by the ESC's consultant.

The Melton storage is a site in close proximity to the main source of recycled water, and this is preferred over remote storage sites as it substantially reduces reliance on transfer infrastructure, and hence operational risk, to maintain EPA compliance during wet years.

Also, the adaptive pathways assessment in the WIN business case outlined the next best alternative options to the WIN scheme for managing recycled water from Melton and Bacchus Marsh, which is to connect the Melton RWP to the Melbourne sewerage system. Therefore, to

maximise future flexibility with the adaptive pathways approach, the major storage is best placed to be located closer to Melbourne sewerage network, further justifying the recommendation to locate the additional storage at Melton RWP.

Western Water maintains that the proposed Melton Storage is the most efficient option, in terms of cost and risk management, to deliver the storage requirements of the WIN Scheme and the Melton RWP Master Plan. Further, we submit that the PS20 estimates for the project are reasonable estimates and have been verified by the peer-reviewed design estimates and constructor 'check' estimates, and more recently validated by market tender responses to construct the storage which was further information not available when PS20 was prepared.

Western Water is committed to delivering the on-site storage at Melton RWP to meet the compliance requirements of the EPA. We submit that the original proposed budget provision of \$15.14 million should be retained as the prudent and efficient cost provision for this project in the 2020 Water Price Review final decision.

### **7.3 M7 Sewer Spill Prevention Strategy (SSPS) – sewer relining program**

Western Water accepts comments made by Deloitte during the consultant's review process and the ESC's decision reduce the capital expenditure provision presented in PS20 by \$1.45 million in the final decision.

Western Water accepts that the relevant data made available during the consultant's review needs to be improved, and this will occur with the progressive implementation of our optimised and more robust asset management system during 2020. However, we would point out that the data provided demonstrate that the previous investment in sewer rehabilitation works has driven down the occurrence of sewer spills and addressed the risk of deteriorating performance of our sewerage networks.

Western Water continues to enhance the CCTV inspection program for the sewerage networks, but around 50% of our sewer network is still to be inspected. The other point which must be considered is the changes to EPA legislation to introduce a general environmental duty, which will ensure duty holders such as Western Water are held to account for ineffective decisions that are made and lead to insufficient investment to address environmental risks and customer impacts. This legislative obligation is expected to result in stronger enforcement and sanctioning by the EPA for sewer spills, and this will drive up our sewer renewals costs and operational prevention program in future years.

As the ESC has adopted the findings made by Deloitte in the consultant's report and not supported Western Water's submission, we seek the ESC's understanding and acknowledgement that Western Water anticipates a rise in both capital investment and increased operational expenditure to effectively manage sewer network operational risks over the coming regulatory period. Our strategic approach to addressing this, and our basis for justifying proposals for future investment in our sewerage assets, will be more strongly demonstrated in the next price submission in 2023.

## 8. Return on Regulatory Asset Base (RAB)

### 8.1 Rolled forward RAB

The revised rolled forward asset base is outlined in Table 10 and Table 11. The RAB below reflects adjustment in capital expenditure to reduce the SSPS expenditure as detailed in the Draft Decision, updated depreciation and customer contributions (reduced for tax on gifted assets adjusted by the imputation credit factor of 0.5).

**Table 10: Regulatory asset base 2018/19 to 2022/23, \$ million (\$2019-20)**

	2018-19	2019-20	2020-21	2021-22	2022-23
<b>Opening asset base</b>	458.40	501.69	539.53	593.01	654.61
plus capex	70.96	74.70	90.32	93.71	98.30
Less government contributions	0.00	0.00	0.00	0.00	0.00
Less customer contributions	20.39	27.76	22.96	17.71	12.54
Less disposals	0.54	0.83	0.83	0.83	0.83
Less regulatory depreciation	6.74	8.26	13.0	13.43	15.18
<b>Closing asset base</b>	<b>501.69</b>	<b>539.53</b>	<b>593.06</b>	<b>654.80</b>	<b>724.54</b>

**Table 11: Regulatory asset base 2023/24 to 2027/28, \$ million (\$2019-20)**

	2023-24	2024-25	2025-26	2026-27	2027-28
<b>Opening asset base</b>	724.54	786.63	841.93	896.71	946.06
plus capex	92.07	90.41	92.75	89.76	91.52
Less government contributions	0.00	0.00	0.00	0.00	0.00
Less customer contributions	14.61	17.83	18.93	19.73	21.07
Less disposals	0.83	0.83	0.83	0.83	0.83
Less regulatory depreciation	14.54	16.45	18.21	19.85	21.37
<b>Closing asset base</b>	<b>786.63</b>	<b>841.93</b>	<b>896.71</b>	<b>946.06</b>	<b>994.30</b>

### 8.2 Regulatory Depreciation (Return of Capital)

Western Water's regulatory depreciation profile over the three-year pricing period is presented in Table 12. The depreciation reflects Western Water's application of straight-line depreciation to both existing and new assets.

The depreciation profile reflected in this response incorporates an asset hierarchy being implemented under the Optimisation of Asset Management (OAM) project where assets are recorded and therefore depreciated at a more granular level. Typically, Western Water is seeking to record assets at their lowest maintainable level together with their associated operating and renewal costs, as well as ensuring their rate of depreciation reflects whole-of-lifecycle assessments and predictions of remaining life based on asset condition and capacity risks. The OAM project will ensure that Western Water's activities are compliant with the State's Asset Management Accountability Framework.



**Table 12: Regulatory depreciation, \$ million (\$2019-20)**

	2020-21	2021-22	2022-23	3-year total	2023-24	2024-25	2025-26	2026-27	2027-28	8-year total
Depreciation \$	13.00	13.43	15.18	41.61	14.54	16.45	18.21	19.85	21.37	132.03
Average Depreciation rate	2.30%	2.15%	2.20%	2.22%	1.92%	2.02%	2.10%	2.15%	2.20%	2.13%

### 8.3 Return on Equity

Western Water accepts the Return on Equity factor proposed by the ESC in its Draft Decision of 3.9% (in real terms, after tax) and we acknowledge the assessment presented in the Draft Decision that certain proposals, and the supporting information for those proposals provided to the ESC, as part of the 2020 Price Submission did not meet the requirements for a 'Standard' rating under the PREMO framework for risk and management.

However, and as outlined in Section 2 of this document, we submit that the proposals and supporting information presented in this response, and specifically relating to water demand forecasts, tariffs and both capital and operating expenditure, adequately address the risk-related concerns outlined in the ESC's Draft Decision.

With respect to not meeting the requirements of a 'Standard' rating for management, we do acknowledge that a number of the shortcomings identified with our 2020 Price Submission should have been better addressed in that original submission.

### 8.4 Return on Debt

The revenue requirement presented in this response adopts the guidance approach to determining the return on debt including the guidance approach to the application of the 10-year trailing average cost of debt.

The three-year return on debt reflects a nominal 10 year trailing average cost of debt of 5.36%. This rate incorporates a 2019/20 nominal 10-year cost of debt rate of 3.20% as provided by the ESC on 20 April 2020.

Western Water remains of the view that the ESC's preferred method of applying the trailing average cost of debt – including the requirement for tariffs to be altered during the regulatory period – creates uncertainty and confusion for both customers and stakeholders. Western Water would prefer to adopt an approach that:

1. simplifies customer engagement that is focused on tariff charges and how those changes translate into customer bill outcomes;
  2. provides customers with increased transparency and greater certainty about the level of movement in prices over the regulatory period, which our customers have told us they prefer;
- and

3. enables signalling of the efficient costs inclusive of the cost of debt within the approved price path to provide customers, particularly low income and vulnerable customers, with adequate time to respond to future price movements.

Western Water would appreciate the opportunity to explore with the ESC and industry participants options to address the matters that we have raised prior to the next price review.

## 9. Tax Allowance

Western Water's Price Submission proposal incorporated a variation to the ESC's tax allowance calculation to exclude gifted asset tax expense from the allowance consistent with the approach adopted in the 2018 Price Submission. In accordance with the ESC's Draft Decision, Western Water has submitted additional information to the ESC on the proposal.

Western Water's resubmission proposal incorporates the variation to exclude gifted asset related taxation impacts from the tax allowance. The tax allowance presented in Table 13 incorporates this exclusion.

A significant contributor to Western Water's tax expense is New Customer Contribution revenue arising from land developer gifted assets. This non-cash revenue is assessable income resulting in an immediate tax expense that is returned through tax depreciation deductions over the life of the assets. Western Water's proposal removes the requirement for customers to fund the timing differences in the tax related assessable income and deduction cash flows. Western Water has elected to fund the cash timing difference by increasing its level of debt and thereby avoiding the need to seek the funding from all customers through higher tariffs (via inclusion of the tax cost in the tax allowance). To maintain Western Water's economic position, the gifted asset value removed from the regulated asset base is reduced by the present value of the tax timing cost.

The proposed approach aligns with the pricing principles in the WIRO through:

1. having regard to the interests of low income and vulnerable customers through a reduced revenue requirement of approximately \$13 million over the three-year period;
2. providing an appropriate pricing signal to all customers through ensuring prices are aligned with the efficient cost of supply and reflect the underlying cost of supplying services to all customers, noting the cost of tax on gifted assets does not reflect a cost of supply to existing customers; and
3. minimising intergenerational shifts in pricing that provides a fairer outcome for customers.

### *Risk Allocation:*

The proposed approach reduces risk to customers as it avoids the opportunity for Western Water to over-recover through the tax allowance in the event the gifted asset revenue is lower than the pricing proposal forecast.

Western Water increases its financial risk as its debt level increases as a result of funding tax on gifted assets over the life of the assets. The financial viability impact has been assessed and stress tested via scenario modelling.

**Table 13: Tax Allowance, \$ million (\$2019-20)**

	2020-21	2021-22	2022-23
Tax Allowance	1.00	0.20	0

## 10. Growth Forecasts

The ESC accepted Western Water's 2020 Price Submission proposed water and sewerage connection growth forecasts as reasonable as they are based on *Victoria in the Future* forecasts issued by the Victorian Government, overlaid with specific market information provided by local developers and Western Water land development data, such as Requests for Conditions and Statements of Compliance. Western Water has applied these forecasts in this response.

## 11. Demand

Western Water's demand forecasting is aligned with industry practice and the methodologies adopted are detailed in the sections below and Attachment 1 for reference. Western Water management supports the continued use of the demand forecasts as presented in 2020 Price Submission.

The following section provides further detail on the basis for setting the water consumption forecasts for the next regulatory period and seeks to address the issues raised by the ESC relating to demand forecasts in its Draft Decision.

### 11.1 Comparison of historical forecasts compared with actual volumes

The ESC in its Draft Decision commented that Western Water's actual water sales have been significantly greater than its demand forecasts over the past three years.

Western Water acknowledges that PS18 demand forecasts were low, based on aiming to achieve an ambitious and aspirational target of 155 litres per person per day by 2022, and that these forecasts under-estimated actual consumption in the comparative years.

This target aligned with Western Water's understanding of the Victorian Government's *Water for Victoria* (WfV) policy expectations which, at the time of preparing demand forecasts for the aforementioned planning requirements, included Western Water into the 'Target 155' program of greater Melbourne rather than the 'Target you Water Use' program that was introduced state-wide for regional urban water authorities. The inclusion into the 'Target 155' program was interpreted by Western Water at the time as a government policy directive. To reflect this interpretation, the Integrated Supply-Demand Planning (iSDP) end-use model assumptions that have been developed collaboratively by metropolitan Melbourne water utilities, were overridden to achieve the desired demand reduction aligned to the 'Target 155' program.

Based on water consumption patterns that have occurred since this decision and subsequent further analysis, it became clear in late 2018 that it is unrealistic to achieve a greater Melbourne

target of 155 litres per person per day by 2022 across the diverse Western Water service region. Subsequent discussion with the Department of Environment, Land, Water and Planning has altered this interpretation of the future timing for achieving 'Target 155' program outcomes for the Western Water service region. Additionally, further studies as to why the Western Water region has a higher per capita consumption to metropolitan Melbourne have been completed<sup>2</sup> which, along with actual data, support a revision of the demand targets set for the 2018-20 regulatory period.

This target has been revisited and per the capita demand is forecast to only have minor reduction over the next regulatory period resulting in the total demand volumes being higher over the next regulatory period when aligned with customer growth, as discussed further below.

Table 14 below replicates Table 2.8 from the ESC Draft Decision and includes Western Water’s actual reported sales and compares the forecast water sales using the same forecast methodology and assumptions that have been used in the 2020 Price Submission demand forecasts.

**Table 14: Actual water sales versus proposed forecasts**

Row label		2016-17	2017-18	2018-19	2019-20	Comment
a	Forecast sales	12,234	12,825	12,722	12,764	Replicate of ESC draft determination Table 2.8 – PS18 forecasts
b	Actual estimated sales	12,506	14,101	14,861	14,482	Replicate of ESC draft determination Table 2.8
c	Forecast sales using 2020 Price Submission method and assumptions	12,962	13,437	13,977	14,659	2020 Price Submission demand forecast for residential and non-residential.
d	Variance from forecast %	-4%	5%	6%	-1%	Variance using the 2020 Price Submission demand forecast, method and assumptions. Variance determined comparing row c with row b

Table 14 demonstrates that, using the demand forecast methodology and assumptions consistent with 2020 Price Submission, the forecast water sales variance to actual water sales (row d in Table 14) is within a reasonable margin for error, indicating that current forecast methodology and assumptions is sound.

Year-to-date billing data and bulk meter actual readings indicate that 2019-20 forecasts are likely to be over-estimating demand, as previously stated this is likely due to a wetter and milder end to the 2019-20 summer compared to average.

<sup>2</sup> Review of per capita water usage and customer segmentation – March 2019



## 11.2 Residential consumption forecasts

### Summary of Approach

Western Water's residential demand forecasts have been modelled through an iSDP model for each town or sub-region. The rationale of an individual end-use model for each town or sub-region is in recognition that each area demand pattern is somewhat unique to an area, and driven by local climate, property sizes and relative proportions of residential and non-residential water usage. The end-use assumptions in these models have been developed in collaboration with the Melbourne water retailers, then calibrated based on Western Water billing data and business assumptions related to water efficiency targets.

The outputs of the iSDP model are used as an input into the Water Mass Balance model to further disaggregate water demand requirements and assess how demand is impacted by various climate scenarios. For the purpose of forecasting water demand for the next regulatory period, Western Water has developed a forecast on a repeating year which represents average climatic conditions over the period of 1997-2017. Given the unpredictability of annual weather outcomes, this 'average climatic conditions' approach is used in forecasting annual water demand to 'normalise' the effects of demand volatility due to climate. As a result, it is expected that actual annual water consumption will be affected by the weather conditions that occur, and so actual consumption can vary from the 'normalised' forecast under 'average climate conditions'.

In addition to being developed for the setting of prices, these demand forecasts are also used for infrastructure planning and critical operational decisions. Further explanation of Western Water's approach to residential demand forecasting is provided in Attachment 1.

### Adjusting for climate conditions

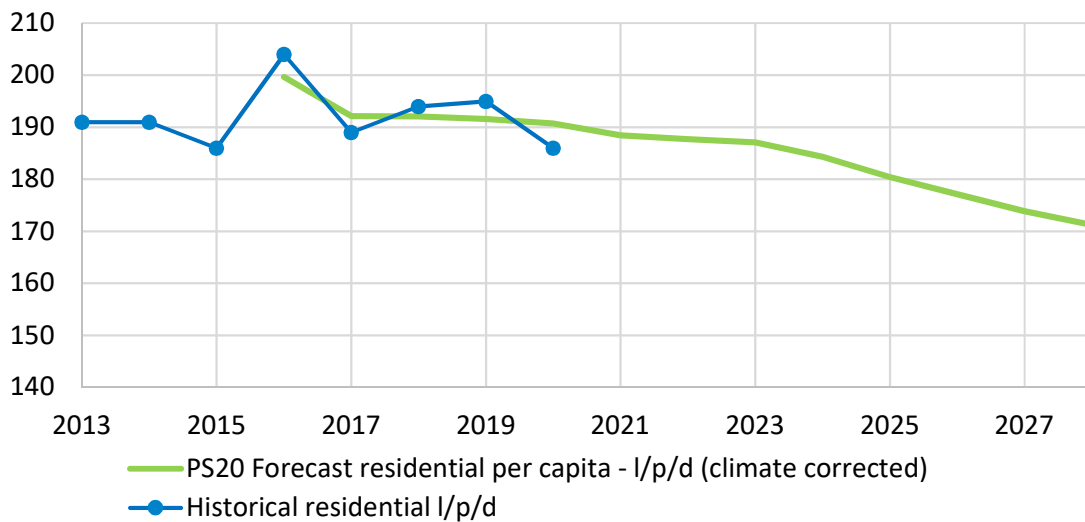
The ESC in its Draft Decision stated that Western Water's demand forecasts do not reflect recent actual consumption levels which appeared to be trending upwards.

Using the approach outlined above and in Attachment 1, we have taken into account recent historical customer growth and actual volumes, including the most recent 2019-20 actual water consumption to date. We consider that variations in most recent actual consumption have been affected by atypical seasonal changes in weather conditions rather than underlying trend in per capita usage. Based on year-to-date actuals, it is expected that the 2019-20 per capita consumption will be lower than the forecast included in the 2020 Price Submission - from 190 litres per person per day to 186 litres per person per day. We consider this is likely to have been driven by wetter and cooler than expected conditions over the 2019-20 summer and early 2020 autumn period. Similarly, in 2015-16 the per capita consumption was above the 190 litres per person per day and attributed to a significantly dry year.

The forecasts for the 2020 Price Submission are based on average climate conditions and do not reflect the inherent 'ups and downs' in consumption that will occur due to weather, as the future climate cannot be predicted with high certainty. Therefore, the inherent variations resulting from climate conditions have been averaged out. The following chart shows the litres per person per day

actuals, including an updated estimate for 2019-20, and the climate-corrected actuals and forecast based on 'average climatic conditions.

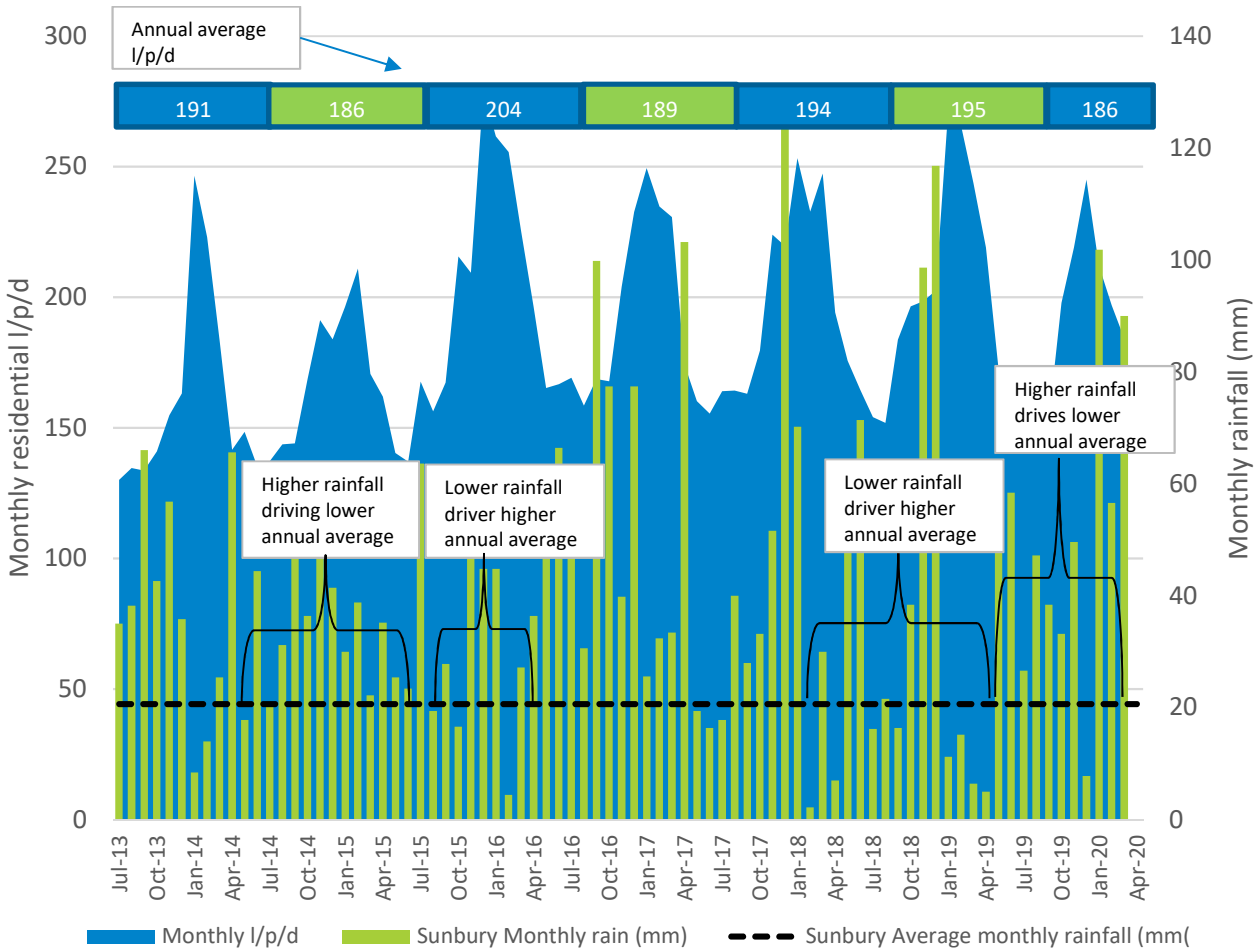
**Figure 2: Historical annual residential per capita and forecast residential per capita over the next two regulatory periods**



The impact that climate can have on demand is shown in Figure 2, presented by comparing the monthly total consumption in litres/person/day against monthly rainfall.



**Figure 3: Historical monthly residential per capita, annual residential per capita and monthly rainfall. Text boxes indicated weather periods that have influenced the residential consumption.**



### Per capita usage

Forecasting is presenting a decline in per capita consumption over the longer term, but it is only a modest reduction over the next regulatory period. This decline in per connection usage is primarily due to a higher proportion of new growth customers on smaller urban blocks and ongoing take up of more efficient water appliances, which have been factored into the end-use model. This trend is consistent with the demand forecasts used by the metropolitan retailers for setting prices in the 2018-23 regulatory period.

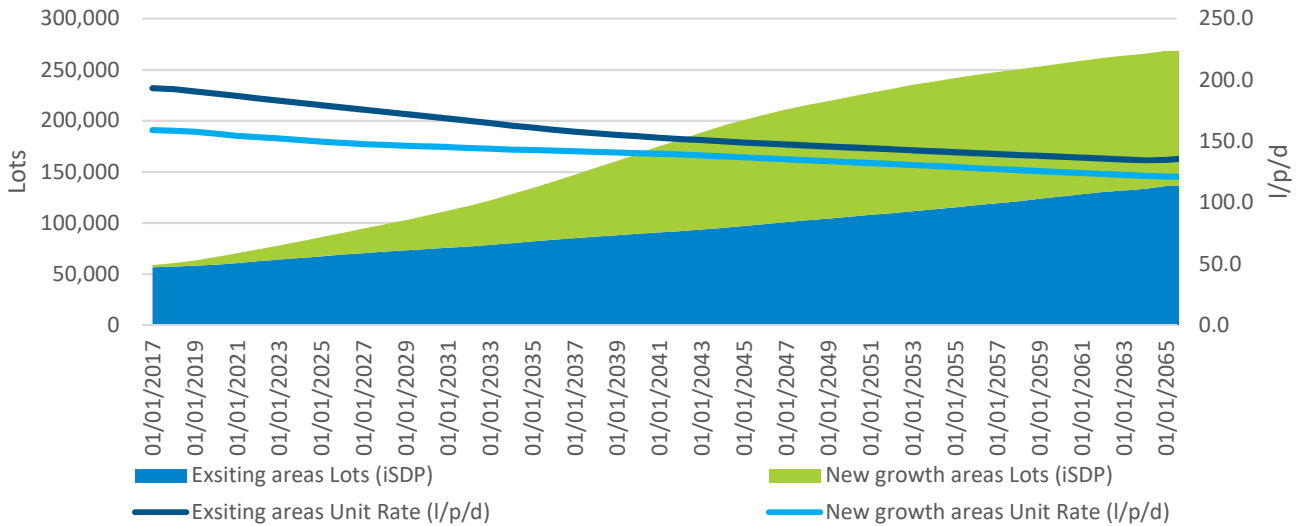
The forecast decline in demand in terms of litres per person per day is also affected by the growth in population being higher than connection growth. This implies that average household sizes are increasing.

Figure 4 shows the projected forecast increase in lots for both existing areas and new growth areas. Over the long-term forecast period to 2065, the customer base changes so that approximately half of all residential customers will be residing in new growth areas. Figure 4 also



shows that the unit rate of water consumption for new growth areas is expected to be lower than for existing areas due to smaller block sizes in new growth areas.

**Figure 4: Forecast lots and unit rates per new growth area and existing areas.**



In addition to the common iSDP end-use assumptions utilised by the metropolitan water retailers and Western Water, Western Water undertook a study to assess water consumption by property size and compare to similar customer segments in neighbouring water utilities<sup>3</sup>. The assessment found that Western Water’s relatively higher per capita usage compared to greater Melbourne is driven by a large customer base on bigger blocks. It also supports that customers on smaller blocks use less water (less outdoor usage and more efficient fixtures and appliances) and the logical assumption that an increase in this customer segment due to growth will organically lower the regional per capita consumption over time.

For the purposes of sensitivity assessment, primarily completed for water resource and sewerage planning, Western Water has a number of demand scenarios that it can utilise. The forecast used in 2020 Price Submission is the second highest forecast demand scenario available over the regulatory period. The only higher usage forecast available is a ‘flat line’ forecast that represents a continuation of the current per capita demand levels. Given ‘Target 155’ program objectives and consideration of the points previously highlighted, adopting the highest usage forecast is considered unrealistic.

### Proposed residential forecasts

Western Water proposes to retain its original price submission forecasts for residential demand as outlined in Table 15. These forecasts provide for a low level of reduction in per connection demand over the long term as the corporation strives as a regional water corporation to achieve the WfV objectives for the ‘Target 155’ program, which is applicable to a metropolitan Melbourne context, over the next 15 years.

<sup>3</sup> Review of per capita water usage and customer segmentation – March 2019

Any increases to the demand forecast would also have to be reflected in operational expenditure associated with bulk water purchases from the Melbourne supply system, pumping and treatment costs.

**Table 15: Residential Demand – actuals and proposed forecasts**

	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Total usage (ML)	11,054	10,550	11,961	12,407	12,313	13,039	13,705	14,301
Average kL per connection	193	179	184	189	187	186	186	186
Litres per person per day	204	189	194	195	186	188	187	186

### 11.3 Non-residential demand forecasts

Separate demand models have been prepared to forecast non-residential water consumption. Non-residential water forecasts group non-residential customers into two categories – typical use customers and intense use customers. Non-residential customers comprise approximately 4 per cent of the total customer base and the segment accounts for approximately 15 per cent of total water consumption.

For each non-residential customer group, forecast connections are multiplied by historical demand per non-residential connection (either typical or intense) with assumed demand efficiencies for the typical customer group. The typical customer group forecast number of connections increases in direct proportion to the forecast increase in residential property number, while larger intense usage customer numbers are held constant at the current number of connections. Historical consumption data is used to inform the forecasts dating back to mid-1990s for both non-residential customer groups.

Consistent with residential forecasts, we submit that it is reasonable to retain non-residential consumption forecasts for the next regulatory period as presented in Price Submission 2020.

**Table 16: Non-Residential Demand – actuals and proposed forecasts**

Financial year	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Total usage (ML)	2,119	1,956	2,140	2,455	2,169	2,308	2,413	2,521

## 12. Form of Price control

The ESC in its Draft Decision suggested that based on its review of demand forecasts, Western Water should consider proposing a revenue cap form of price control to account for significant differences in demand.

While Western Water has considered the ESC proposition to shift to a revenue cap form of price control, as discussed in the previous demand response section of this submission, we submit our demand forecasts for the next regulatory period are based on robust methodologies. The demands proposed for 2020 Price Submission reflect reasonable assumptions of a gradual decline in household consumption as compared with PS18 demand forecasts that were based on achieving a target 155 litres per person per day for residential water usage by 2022.

While Western Water did not directly engage with customers on the form of price control, there were no indications that customers were concerned with accepting risk on changes in demand. Also, the existing price cap control mechanism supports the overwhelming feedback from customers that they are seeking transparency, price certainty and smoothing over a regulatory period. Additionally, to determine an appropriate form of price control and hence sharing of demand forecasting risk, significant internal review and external engagement with customers would be required.

Western Water's response is based on retention of the current price cap form of price control for the next regulatory period as it:

1. supports customer preference for price certainty and smoothed pricing;
2. incentivises efficient water use by customers; and
3. provides simpler messaging for customers.

## 13. Prices & Tariff Structure

For specific tariffs refer to Schedule of Tariffs in Appendix 1.

### 13.1 Residential Proposed price adjustments

Western Water's revised pricing and tariff proposal reflects majority customer preferences for lower fixed service charges and extension of water conservation incentives, while ensuring a continued focus on supporting the vulnerable within the community. In addition, the proposal meets the ESC Guidance expressed requirement for no rebate and alignment with the WIRO pricing principles – with focus on signalling of efficient costs.

This proposal incorporates the following:

- **tariff reform to reduce the fixed service charges by 13.32% in year one** for most customers, delivered from efficiencies that fund the current regulatory period Efficiency Rebate
- **an increase of 3.19% in fixed service charges in year two and 3.15% in year three** for most customers and a **water usage Tier Three rate increase of 1.95% per annum**, combined reflecting an increased revenue requirement in the 2020 Price Submission pricing period



- An **estimated annual reduction in the fixed service charges of \$17 and \$32 in years two and three** respectively reflecting the forecast annual cost of debt adjustments, and
- Western Water absorbing a continued rebate, external to the 2020 Price Submission approved prices, to residential tenants that transitions from \$103.25 in year 1 to \$0 over eight years.

Western Water’s proposed tariff price outcome incorporating the tariff reform discussed above results in the average price path for the typical customer as detailed in Table 17. Table 18 presents the resulting bill path for each type of residential customer and Table 19 illustrates the residential bill paths net of adjustments that are applied external to the establishment of Final Determination tariffs.

**Table 17: Residential Customers Proposed Real Price Path, per cent**

	2020-21	2021-22	2022-23
Typical Owner Occupier	-9.20%	2.10%	2.10%
Typical Landlord and Vacant Landowner	-13.32%	3.19%	3.15%
Typical Tenant	0%	0%	0%

**Table 18: Residential Customers Proposed Bill Path, (\$2019-20)**

	2020-21	2021-22	2022-23
Typical Owner Occupier	\$1,019	\$1,040	\$1,062
Typical Landlord and Vacant Landowner	\$672	\$693	\$715
Typical Tenant	\$243	\$258	\$273

**Table 19: Residential Customers Proposed Bill Path including Adjustments, (\$2019-20)**

	2020-21	2021-22	2022-23
Typical Owner Occupier*	\$1,019	\$1,023	\$1,030
Typical Landlord and Vacant Landowner*	\$672	\$676	\$683
Typical Tenant**	\$243	\$258	\$273

• Adjusted to include an estimated Cost of Debt Adjustment

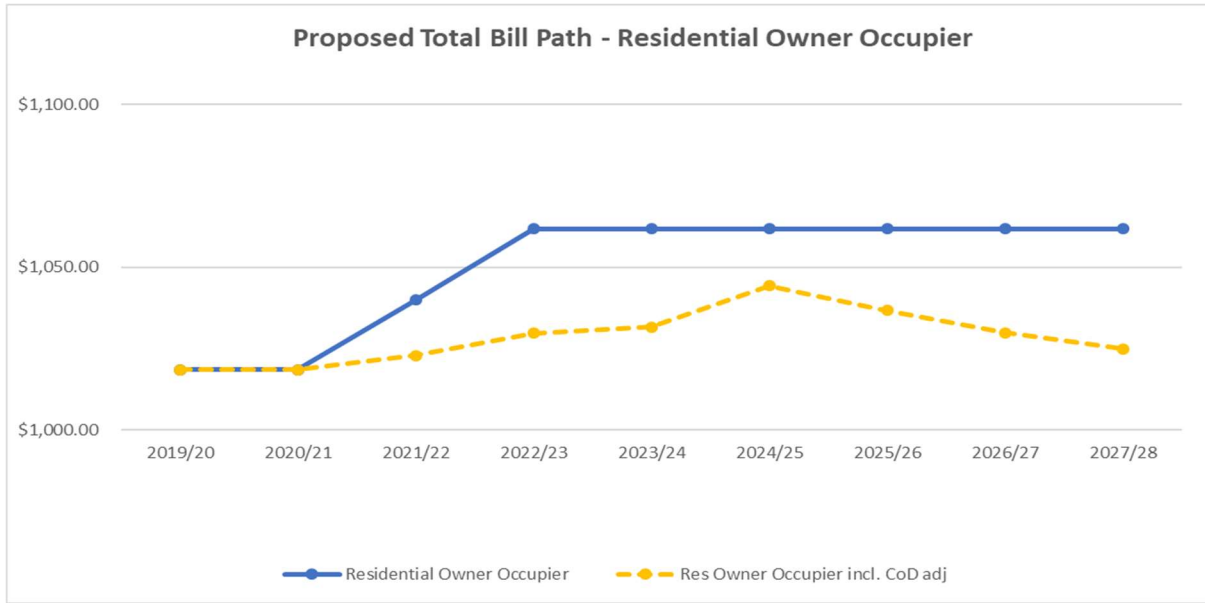
\*\* Adjusted to include the Efficiency Rebate unwind applied external to approved charges

The typical residential customer bill path outcomes are presented in Figure 5 Residential Owner Occupier and Figure 6 Residential Landlords and Vacant Landowners. The charts also provide detail of the bill path inclusive of an estimated Cost of Debt Adjustment that is applied to the fixed service approved tariffs in years two and three.





**Figure 5: Residential Owner Occupier Total Bill Path, \$ million (\$2019-20)**



**Figure 6: Residential Landlord and Vacant Landowner Total Bill Path, \$ million (\$2019-20)**

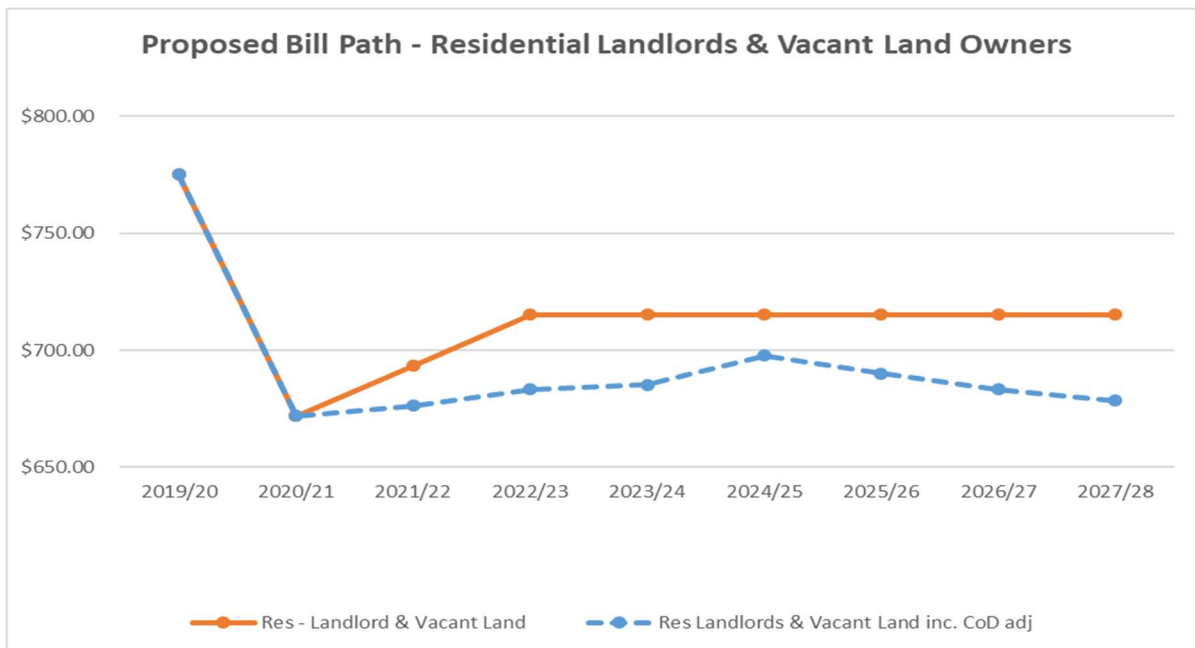
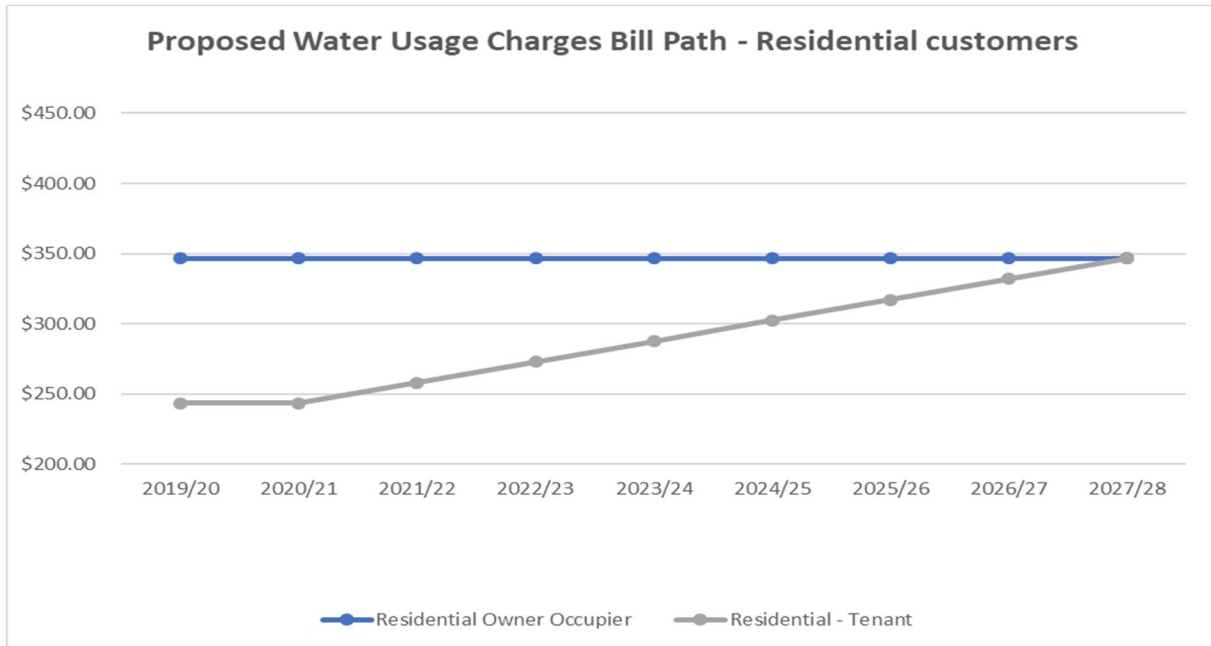


Figure 7 illustrates the Water Usage bill path for Residential Owner Occupiers and Tenants, with the Tenant bill path inclusive of the transitioned unwind of the Efficiency Factor.



**Figure 7: Residential Owner Occupier and Tenant Water Usage\* Bill Path, \$ million (\$2019-20)**



\*Tenant Water Usage Bill Path incorporates the transitioned unwind of the Efficiency Rebate external to ESC approved tariffs

Western Water’s pricing proposal (excluding any future cost of debt adjustment) is delivering against the WIRO pricing principles as detailed below.

*Enables customers or potential customers of the regulated entity to easily understand the prices charged by the regulated entity for prescribed services or the manner in which such prices are calculated, determined or otherwise regulated*

- Uniformity in fixed service charges across residential and equivalent non-residential customers is retained.
- Customers will see no change to the form of the tariff structure detailed on their bill. Customers can continue to easily identify the fixed charges and the variable charges.
- However, the approved price path may not be easily understood in respect to year one due to the embedding of the rebate resulting in a price path fall of 9.7% despite the customer seeing no change in the bill. As there is no 'easy to understand' explanation to provide customers, in presenting the proposal to customers Western Water will continue to focus on bill impact in year one. As the proposal is for no change to the year one bill in respect to service charges, focusing on the bill will allow for a simple message to customers. The price path movements in addition to bill impacts in years two and three can be presented to customers.
- The annual increase in the water usage tariff is consistent across the price period, transparent and easy to understand.

*Provides signals about the efficient costs of providing prescribed services to customers while avoiding price shocks where possible*

- The efficiency funded rebate is applied as a reduction to the fixed service charges and this has the benefit of more accurately signalling the efficient cost of service delivery through approved pricing. Applied as a rebate, customers were not provided with signalling on efficient costs.
- The increase in the water usage Tier Three rate signals to customers the increased marginal cost of water. Applying the price increase to the Tier Three rate provides a signal to reduce water for discretionary use (for most customers) to encourage water conservation and therefore reduce future price increases.
- Pricing proposal increases are contained within the ESC's tolerance level for price shock. Regardless, Western Water has transitioned price changes where feasible noting this is of particular focus now with COVID-19 impacting affordability for many customers.

*Takes into account the interests of customers of the regulated entity, including low income and vulnerable customers*

- The pricing proposal provides transparency, certainty and predictability of price outcomes facilitating customers to respond effectively to the price signals – to the extent they can reduce their water consumption.
- Western Water's proposed service charge increases are applied in years two and three as cost of debt adjustments are expected to be available to offset the impact of the price increases. The transitioned prices inclusive of the cost of debt adjustments avoids price shock and assists low income and vulnerable customers by aligning the price increases against the estimated cost of debt adjustments.
- Applying no real increase to the fixed service charges in year one supports customers in the current difficult COVID-19 period and provides customers with the opportunity to work with Western Water support teams to assist with the increase in prices in years two and three.

Further discussion on the tariff reform and the tier three rate increase are provided in Section 13.3 and section 13.4 respectively.

## 13.2 Non-residential Tariffs

In its Draft Decision the ESC has expressed concerns with Western Water's pricing proposals, but principally that Western Water failed to demonstrate how its proposals better satisfy the requirements of clause 11 of the WIRO, in particular the application of non-uniform fixed charges to different user types of the same service.

Western Water acknowledges that its submission provided insufficient cost-justified evidence to support non-uniform fixed charges to different user types of the same service. As a result, Western Water's revised proposal provides for uniform fixed charges to residential and non-residential equivalent user types of the same service.



The proposal incorporates the following:

- A **reduction in the fixed service charges by an average of 13.32% in year one** for most small business customers, delivered from efficiencies that fund the current regulatory period Efficiency Rebate
- An **increase of 3.19% in fixed service charges in year two and 3.15% in year three** for the majority of small business customers, and
- **No change to water usage charges.**

Western Water’s Price Submission detailed a commitment to undertake a review of non-residential tariffs to inform the 2020 Price Submission tariff proposal.

Western Water’s proposed tariff price outcome incorporating the tariff reform discussed above results in the average price path for the typical small commercial customer as detailed in Table 20. Table 21 presents the resulting bill path for each type of non-residential customer and Table 22 illustrates the residential bill paths net of the Cost of Debt adjustment that is applied to reduce fixed service charges.

**Table 20: Non-residential Customers Proposed Real Price Path, per cent**

	2020-21	2021-22	2022-23
Typical Small Commercial Owner Occupier	-8.50%	1.92%	1.92%
Typical Commercial Vacant Landowner	-13.30%	3.19%	3.15%
Typical Small Commercial Tenant	-8.47%	1.92%	1.92%

**Table 21: Non-residential Customers Proposed Bill Path, (\$2019-20)**

	2020-21	2021-22	2022-23
Typical Owner Occupier	\$1,116	\$1,137	\$1,159
Typical Commercial Vacant Landowner	\$672	\$693	\$715
Typical Small Commercial Tenant	\$1,116	\$1,137	\$1,159

**Table 22: Non-residential Customers Proposed Bill Path including Adjustments, (\$2019-20)**

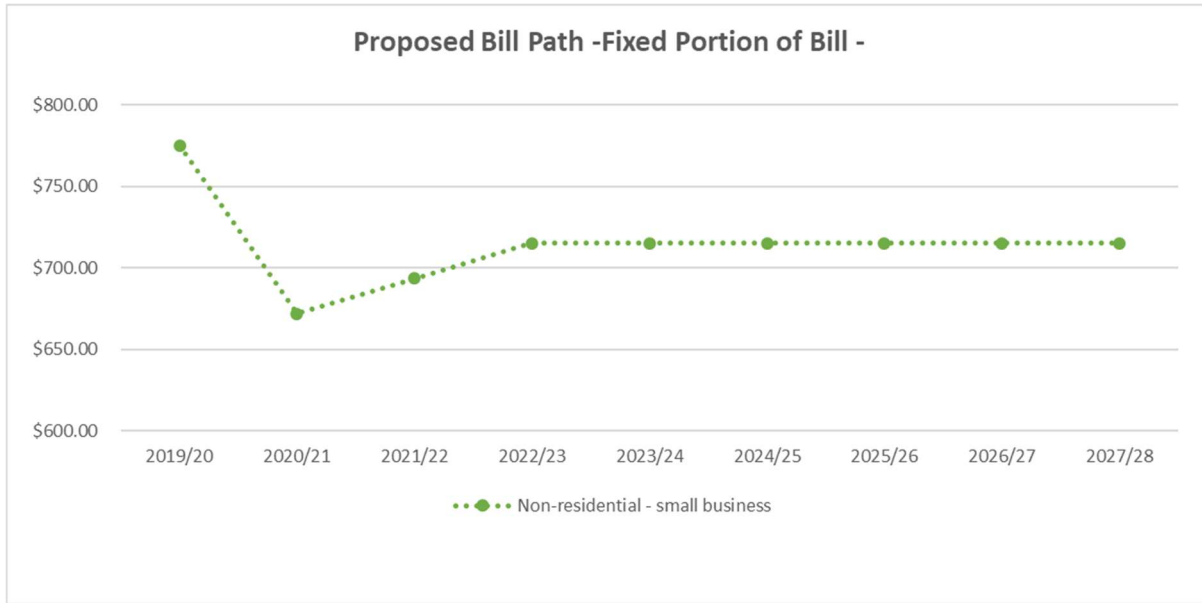
	2020-21	2021-22	2022-23
Typical Owner Occupier*	\$1,116	\$1,120	\$1,127
Typical Commercial Vacant Landowner*	\$672	\$676	\$683
Typical Small Commercial Tenant	\$1,116	\$1,120	\$1,127

- Adjusted to include an estimated Cost of Debt Adjustment

The typical non-residential customer fixed services charge bill path outcome is presented in Figure 8.



Figure 8: Non-residential Fixed Service Charges Bill Path, \$ million (\$2019-20)



Western Water’s non-residential customer pricing proposal is delivering against the WIRO pricing principles as detailed below.

*Enables customers or potential customers of the regulated entity to easily understand the prices charged by the regulated entity for prescribed services or the manner in which such prices are calculated, determined or otherwise regulated*

- Uniformity in fixed service charges across residential and equivalent non-residential customers is retained.
- Customers will see no change to the form of the tariff structure detailed on their bill. Customers can continue to easily identify the fixed charges and the variable charges.
- The approved price path for non-residential customers will be transparent, easy to understand and reflect changes in their bills.
- However, non-residential customers may not easily understand the profile of the price changes - being a reduction in pricing in year one and increases in the subsequent two years. Particularly as Western Water did not engage with customers in respect to the pricing changes.

*Provides signals about the efficient costs of providing prescribed services to customers while avoiding price shocks where possible*

- The reduction to the fixed service charges appropriately signals the efficient cost of service delivery through approved pricing. As non-residential customers do not receive the efficiency rebate, currently they are not provided with any signalling on efficient costs.
- Pricing proposal increases in years two and three are contained within the ESC’s tolerance level for price shock.

*Takes into account the interests of customers of the regulated entity, including low income and vulnerable customers*

- Applying a reduction to the fixed service charges for non-residential customers in year one supports these customers in the current and difficult COVID-19 pandemic situation. This supports the community more broadly assisting all customers.

### 13.3 Tariff reform – embedding the Rebate into tariffs

The price that Western Water’s customers currently pay (the “effective” price) comprises the combination of:

1. Western Water’s ESC approved water and sewerage prices; and
2. the efficiency rebate that Western Water has paid to certain customers.

The effect of this combination is that the current structure of the “effective” price to customers is characterised by, amongst other things:

- “effective” fixed charges that currently differ between customers, as the rebate (which is fixed in nature) has only been provided to residential customers that pay a usage charge (i.e. owner-occupiers and tenants), and
- complexity in the division of water and sewerage charges between landlords and tenants for leased properties given that the rebate (which is fixed in nature) is provided to the tenant, implying that landlords bears the headline fixed charge and the tenants, in effect, “pay” a negative fixed charge.

Accordingly, Western Water’s 2020 Price Submission proposal was to simplify its residential “effective” prices. This included to merge the current rebate arrangements into the ESC approved tariff structure to improve pricing transparency, but also to address inappropriate features that had been created in relation to leased residential premises, where for some customers “effective” usage charges had become very low (or in certain cases negative), thus giving inappropriate price signals and reducing incentives for water conservation. However, Western Water also proposed that this tariff reform be subject to a transition, including to enable potentially adversely affected parties to alter their behaviour where possible to ameliorate those potential negative impacts. The tariff reform proposal incorporated customer preferences identified through the recommendations of its customer engagement including those of the ‘Tariff Structure Review’ community panel, a short-form citizen’s jury convened to undertake a review of five elements of the tariff structure.

The proposed transition period was the current and next regulatory period (i.e. 8 years). At the end of the transition period the ESC approved fixed charge for all residential properties would be the same irrespective of whether they are leased, owner-occupied or vacant. In addition, in line with the ESC’s expressed views in relation to rebates, Western Water proposed to continue to absorb the “effective” negative fixed charge to residential tenants (i.e., the rebate) during this transition.

Higher “effective” fixed charges currently apply to non-residential premises as compared to equivalent residential properties, given no rebate applies to non-residential customers. Western Water’s tariff proposal excluded addressing this anomaly however in the Price Submission a commitment was provided that a review of non-residential tariffs will be completed to inform the PS23 tariff proposal.

A key concern to Western Water when considering options for tariff reform – as well as the appropriate transition path to tariff reform – is to focus on the charges that are actually being paid by customers today, which comprise the combination of the current ESC approved water and

sewerage charges and the efficiency rebate, in addition to the cost of debt adjustment. It is the change to this combination that will dictate the impact on customers, as well as the effect on the efficiency of use. Moreover, the feedback from our customers is that their focus is on the total of Western Water's charges and their ability to influence those charges, irrespective of their label.

In its Draft Decision the ESC has expressed concerns with Western Water's pricing proposals, but principally that Western Water failed to demonstrate how its proposals better satisfy the requirements of clause 11 of the WIRO; in particular the application of non-uniform fixed charges to different user types of the same service.

The ESC also expressed concerns with Western Water's ineffective provision of signals to customers about the efficient cost of providing water and sewerage services, and ensuring the proposal enables customers or potential customers of the regulated entity to easily understand the prices charged for prescribed services or the manner in which such prices are calculated, determined or otherwise regulated.

In developing the 2020 Price Submission tariff reform proposal Western Water assessed many approved tariff options that unwound the anomalies in "effective" prices however no option provided an outcome aligned to, or better satisfied all requirements of the WIRO.

In its proposal Western Water delivered against the WIRO pricing principles in that the pricing and tariff proposal:

1. took into account the views of customers
2. applied the efficiency funded rebate in fixed service prices to more accurately signal though approved pricing the efficient cost of delivering the services, albeit transitioned over 8 years for residential vacant landowners, landlords and tenants for leased properties
3. transitioned price changes to manage price shock and provide customers with sufficient time to understand the change in pricing, and
4. increased the variable component of the total charges to enable customers, with particular consideration to low income and vulnerable customers, to respond to the price signals so as to minimise the impacts.

In balancing the requirements of the WIRO, Western Water assessed the management of price shock as requiring a higher focus over immediate uniformity of approved tariffs. PS18 and 2020 Price Submission engagement activities supported Western Water's assessment of customer willingness and capacity to manage the impact of price shock.

However, Western Water acknowledges that its submission provided insufficient cost-justified evidence to support non-uniform fixed charges to different user types of the same service, including residential and equivalent non-residential users.

In the absence of such cost-justified evidence, Western Water's resubmission pricing proposal accepts a requirement for uniform approved fixed charges to apply to residential occupied, residential vacant and equivalent non-residential properties. Accordingly, the efficiencies that fund the rebate will be used to reduce fixed service charges in a manner that maintains uniformity in fixed tariffs and the rebate will no longer be paid in its current form. It is intended that the service



charge reduction be applied proportionate to the current split of water and sewerage fixed service charges to ensure pricing signals remain intact.

It is acknowledged that applying the rebate efficiencies in a way that retains uniform fixed service charges results in an immediate increase in the (effective) fixed charges for owner-occupiers and a corresponding benefit for customers in relation to vacant and equivalent non-residential properties, as well as landlords of residential leased properties. Implementing a change to tariff structures in this manner is not consistent with Western Water's preferred focus to minimise price shock for most customers, particularly low income and vulnerable customers and provide those customers with enough time to understand the pricing changes and respond accordingly.

Western Water's focus on minimising price shock is even more important now with the COVID-19 pandemic impacting a significant number of customers, with 92 per cent of respondents to a recent Western Water customer poll stating they are likely to be or are financially impacted by the pandemic. Accordingly, focused on the interests of customers, Western Water considers that it is appropriate to implement the tariff reform pricing outcomes over 3 years with no change in the real fixed service charges in year one and transitioning increases in years two and three.

In addition, Western Water's resubmission proposes to continue to transition and absorb, external to the revenue requirement, the "effective" negative fixed charge to residential tenants (i.e., the rebate) with no change to the 2020 Price Submission proposed eight-year transition period.

### 13.4 Tier three water usage charge

Western Water's 2020 Price Submission proposal included a real price increase of 1.95% per annum in the tier three water charges over the 2020 Price Submission and following regulatory period (i.e., 8 years). Western Water's resubmission pricing proposal retains the 1.95% per annum increase in tier three water charges over the 2020 Price Submission period.

Regional population growth and water demand forecasts, in combination with climate change impacts result in a requirement for additional permanent water sources over the medium term (required in the later years of the next regulatory period). Western Water's entitlement to water in the Melbourne system available through its existing Bulk Entitlements (BE) in combination with inflows into local storages is insufficient to meet this long-range forecast water demand.

Western Water has recently purchased an additional permanent water entitlement in the Merrimu system from the Department of Environment, Land, Water and Planning and has purchased water allocations (temporary water) from the Melbourne water system 'market' to assist in meeting future demand pending the opportunity to secure additional permanent water entitlements.

Future developments through the impending review of the Central Region Sustainable Water Strategy will consider future water demand and sourcing at a State policy level. It is expected that decisions regarding water infrastructure augmentation, including additional desalination water and/or alternate water sources and timing, will be confirmed under this revised strategy.

Western Water's proposed increase in the tier three usage tariff signals to customers the higher long run marginal cost of water assuming any purchase of permanent water entitlements will reflect the cost of the State's next major infrastructure water augmentation. Providing such price signalling within 2020 Price Submission provides customers with time to understand the pricing changes, assess their willingness to pay and respond to the price signals accordingly to manage the impact.

The extent of actual future price increases to our customers is subject to the volume of bulk water purchased at prices that are forecast to be higher in the future. Hence, water resource conservation driven from such transitioned price signalling on usage charges may encourage and lead to lower future water demands and therefore reduce upward pressure on future water prices in coming price periods.

The proposed increase in tier three water pricing has taken into consideration the views of customers. Customer engagement during PS18 and 2020 Price Submission supported a view that current water pricing does not adequately encourage wise water use, that is water use that recognises the value of water and water conservation. The 2020 Price Submission Tariff Structure Review panel supported retention of Western Water's three tier water usage pricing structure and assessed tier three as a suitable disincentive for high water use.

Western Water's tiered water usage pricing is structured such that tier one and tier two usage thresholds reflect the bounds of "normal water consumption" or "essential use" for typical customers. Applying only when a property uses more than 880 litres per day, tier three rates are charged on what is considered discretionary water use for typical customers. The proposed tier three usage price increase is targeted to reduce non-essential water use and therefore is expected to result in minimal impact to the typical customer bill – however peak summer use may result in the typical customer exceeding the tier two threshold and incurring tier three costs for a short period.

For the 2020 Price Submission period, Western Water has committed to providing greater support to assist customers adversely impacted by the rate increase. In particular, Western Water recognises increased tier three usage pricing will adversely impact high-volume water users and large families and to assist these customers Western Water undertakes to more widely promote the large family discount alongside all our other customer support offers (i.e. hardship program, e-billing, payment plans, concessions, leak allowances, URGs etc.). In addition, Western Water has established a demand management focus group to assess water demand management opportunities available to customers and Western Water.

### 13.5 Trade Waste Tariffs

The ESC acknowledged that Western Water proposed a continuation of existing trade waste tariffs which are calculated in accordance with the pricing principles in the guidance.

Western Water is not proposing any change to these tariffs.

## 13.6 Miscellaneous Tariffs

The ESC acknowledged that Western Water proposed a continuation of existing miscellaneous tariffs which are calculated in accordance with the pricing principles in the guidance.

Western Water is not proposing any change to these tariffs which reflect a fee for service established by Western Water Administration By-Law 97/2.

## 13.7 Prescribed Service Contract Revenue

No changes are proposed to the current agreement with City West Water for the receipt and transfer of bulk sewerage through the pipes, assets and catchment area of Western Water. The proposed revenue from this agreement is reflected in Table 23.

**Table 23: Proposed revenue from agreement with City West Water, \$ million (\$2019-20)**

	2020-21	2021-22	2022-23	Total
CWW Fixed Sewer Service Charge	\$0.128	\$0.128	\$0.128	\$0.384

## 14. Adjusting Prices

The ESC Draft Decision accepted Western Water's proposed adjustment mechanisms for;

1. existing uncertain and unforeseen events; and
2. pass-through of Melbourne Water's bulk water charges (including price and changes in cost of debt for Melbourne Water).

Western Water is not proposing any further changes to these approaches.

## 15. New Customer Contributions

New Customer Contribution (NCC) charges as proposed in the 2020 Price Submission remain unchanged in Western Water's response proposal, and have been recalculated based on updated NCC modelling aligned with the ESC guidance model.

The 2020 Price Submission transitioned approach to full cost recovery for greenfield NCC charges is retained to provide the urban land development industry with adequate response time to benefit from the signalling of efficient cost reflective NCC charges.

Western Water's NCC charges are aggregated for all services, and for customers requiring a variation to a standard water and sewer development then negotiated NCC charges apply.

The net NCC revenue is applied against capital spend to determine net capital spend.

**Table 24: Proposed NCC charge per lot, \$ (\$2019-20)**

	2020-21	2021-22	2022-23
Infill	\$2,696	\$2,696	\$2,696
Greenfield	\$5,662	\$5,945	\$6,243

**Table 25: Proposed NCC lots (#)**

	2020-21	2021-22	2022-23
Infill	489	346	288
Greenfield	4,894	3,455	2,280
<b>Total</b>	<b>5,383</b>	<b>3,801</b>	<b>2,508</b>

**Table 26: Proposed NCC Revenue, \$ million (\$2019-20)**

	2020-21	2021-22	2022-23
Infill	\$1.32	\$0.93	\$0.61
Greenfield	\$27.71	\$20.54	\$14.23
Incremental Financing Charges	\$0.28	\$0.68	\$0.59
<b>Total</b>	<b>\$29.31</b>	<b>\$22.15</b>	<b>\$15.43</b>

**Table 27: Proposed NCC Revenue net of Gifted Assets Tax, \$ million (\$2019-20)**

	2019-20	2020-21	2021-22	2022-23
Proposed NCC Revenue	\$32.01	\$29.32	\$22.15	\$15.43
Tax on Gifted Assets*	\$7.51	\$6.34	\$4.45	\$2.89
<b>Total</b>	<b>\$24.50</b>	<b>\$22.97</b>	<b>\$17.71</b>	<b>\$12.54</b>

\* Tax imputation rate applied

## 16. Financial Position

Western Water has reassessed its financial position in preparing this response. Stress testing of the financial profile has been undertaken to consider COVID-19 scenario outcomes. These are available to the ESC for review.

Table 22 provides detail of the ESC's key financial viability metrics relating to this revised position. Western Water's financial metrics for the 2020 Price Submission three-year period remain robust.

**Table 28: Key financials**

	2020-21	2021-22	2022-23
FFO Interest cover (times)	2.06	2.00	1.94
Net Debt/RAV (Gearing) %	67.7%	70.8%	72.7%
FFO/Net debt (%)	5.5%	4.8%	4.4%
Internal financing ratio (%)	31.5%	28.1%	25.9%

## Attachment 1 – Demand Forecasting Methodologies

### Approach to Demand Forecasting

Water demand forecasting is a key business-as-usual activity undertaken on an annual basis by Western Water. The forecast demand for water is a key operational data requirement that determines forward planning for bulk water needs that include extraction from local sources and purchases from a bulk water provider. Projected growth in demand also drives the timing of capital works expenditure, operational expenditure and customer revenue.

### Residential Demand

Western Water's residential demand forecasts have been modelled through an Integrated Supply-Demand Planning (iSDP) model for each town or sub-region. The rationale of an individual end-use model for each town or sub-region is in recognition that each area demand pattern is somewhat unique to an area, and driven by local climate, property sizes, urbanisation and relative proportions of residential and non-residential water usage.

The end-use assumptions in these models have been developed in collaboration with the Melbourne water retailers then calibrated to each Western Water sub-region using historical billing data. The end-use assumptions are supported by relevant end-use studies completed by the metropolitan water retailers<sup>4</sup>. For the purposes of preparing demand forecasts for Urban Water Strategies in 2017, a collaborative assumptions document was prepared which details, at a high level, the end-use assumptions each 'Melbourne' business uses in their respective iSDP models<sup>5</sup>.

The iSDP models have been used as the primary demand forecasting tool, which has previously been accepted by the ESC for price decisions and it is still considered to be a robust basis for the purposes of forecasting residential water consumption for pricing purposes. The iSDP model process was originally developed by the Institute for Sustainable Futures, University of Technology Sydney in association with the Water Services Association of Australia (WSAA). The outputs of the iSDP models are shown in Figure 9.

The Western Water demand forecasts have been modelled through an iSDP model for each town or sub-region. The end-use assumptions in these models have been developed based on a collaborative work package with the Melbourne retailers then calibrated based on Western Water billing data and business assumptions related to water efficiency targets.

The outputs of the iSDP have been used as input into the mass balance model to further disaggregate water demand requirements and how these are impacted by various climate scenarios. For instance, Western Water is required to generate demand requirements on the Melbourne system in preparation of annual Corporate Plans, capital programs, water resource strategies and provision of this information to Melbourne Water for similar tasks. Climate can have a large impact on how much water Western Water requires from the Melbourne system.

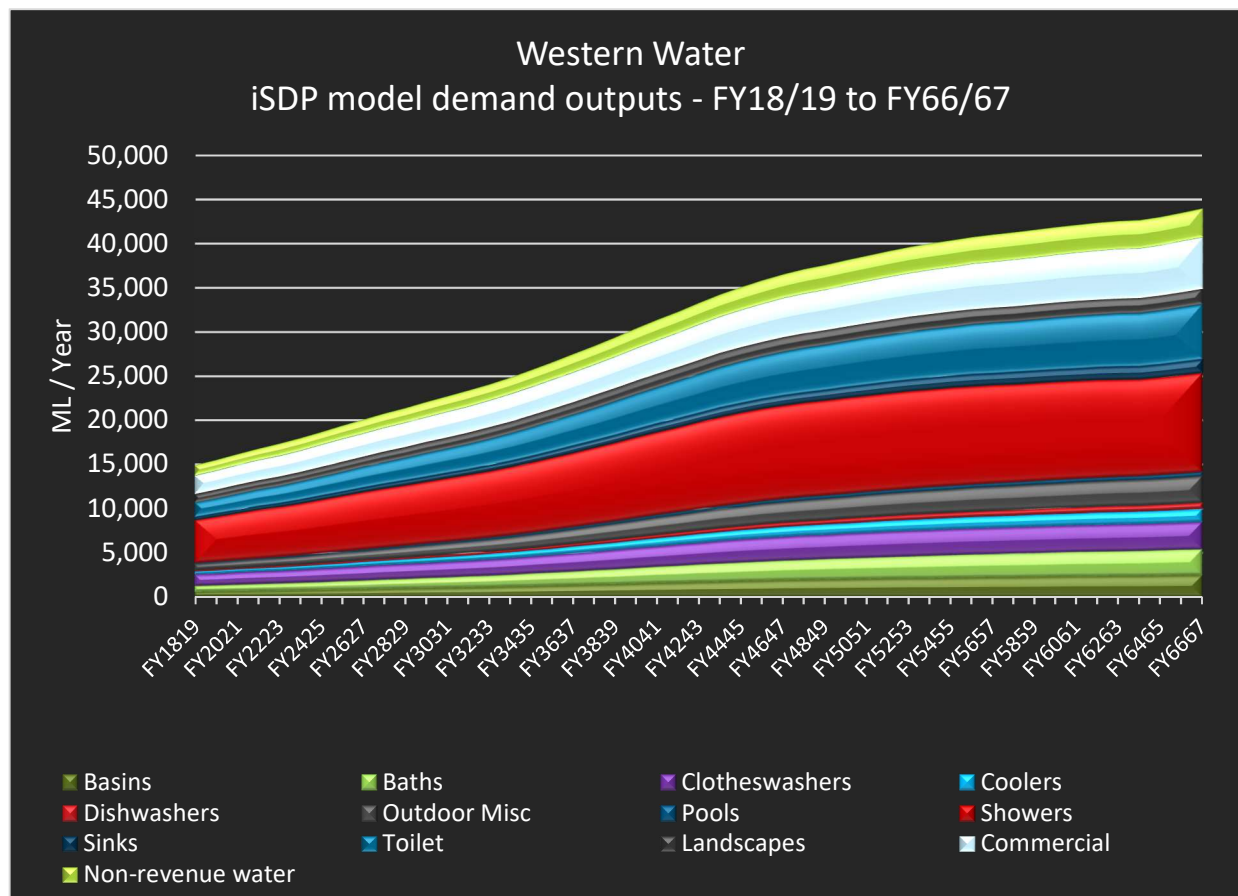
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<sup>4</sup> Residential end-use study reference.

<sup>5</sup> Urban Water Strategy Demand Forecasting Working Group Report – Amended in January 2019 to update Western Water assumptions.

The outputs of the iSDP models are shown in Figure 9, where each end-use (indicated by the different stacked colours), commercial and non-revenue water makes up the total forecast demand.

**Figure 9 – Total Forecast Demand – ISDP outputs**



## Adjusting for climate conditions

Demand can be heavily influenced by climate. Western Water has developed an integrated Water Mass Balance model using eWater Source<sup>6</sup>. The model has been independently reviewed in relation to key infrastructure projects. This model has the capabilities to test Western Water systems from catchment yields, drinking water treatment and transfer capacity, supply operating scenarios, sewage generation and sewage treatment to generate recycled water supply volumes using various climate assumptions. This model is critical for integrated businesses such as Western Water that need to manage and balance the needs of customers from source of water supply to disposal and recycling of treated wastewater.

The outputs of the iSDP are used as an input into the Water Mass Balance model to further disaggregate water demand requirements and assess how demand is impacted by various climate scenarios.

<sup>6</sup> <https://ewater.org.au/products/ewater-source/>

A regression model has been developed to estimate the relationship between climate variables and demand usage using 2-3 years of historic data. The following variables were included in the regression analysis.

- Maximum daily temperature.
- Total daily rainfall.
- Consecutive days of no rain.
- Days with maximum temperature greater than 30°C.
- Moving average of temperature over the previous seven days.

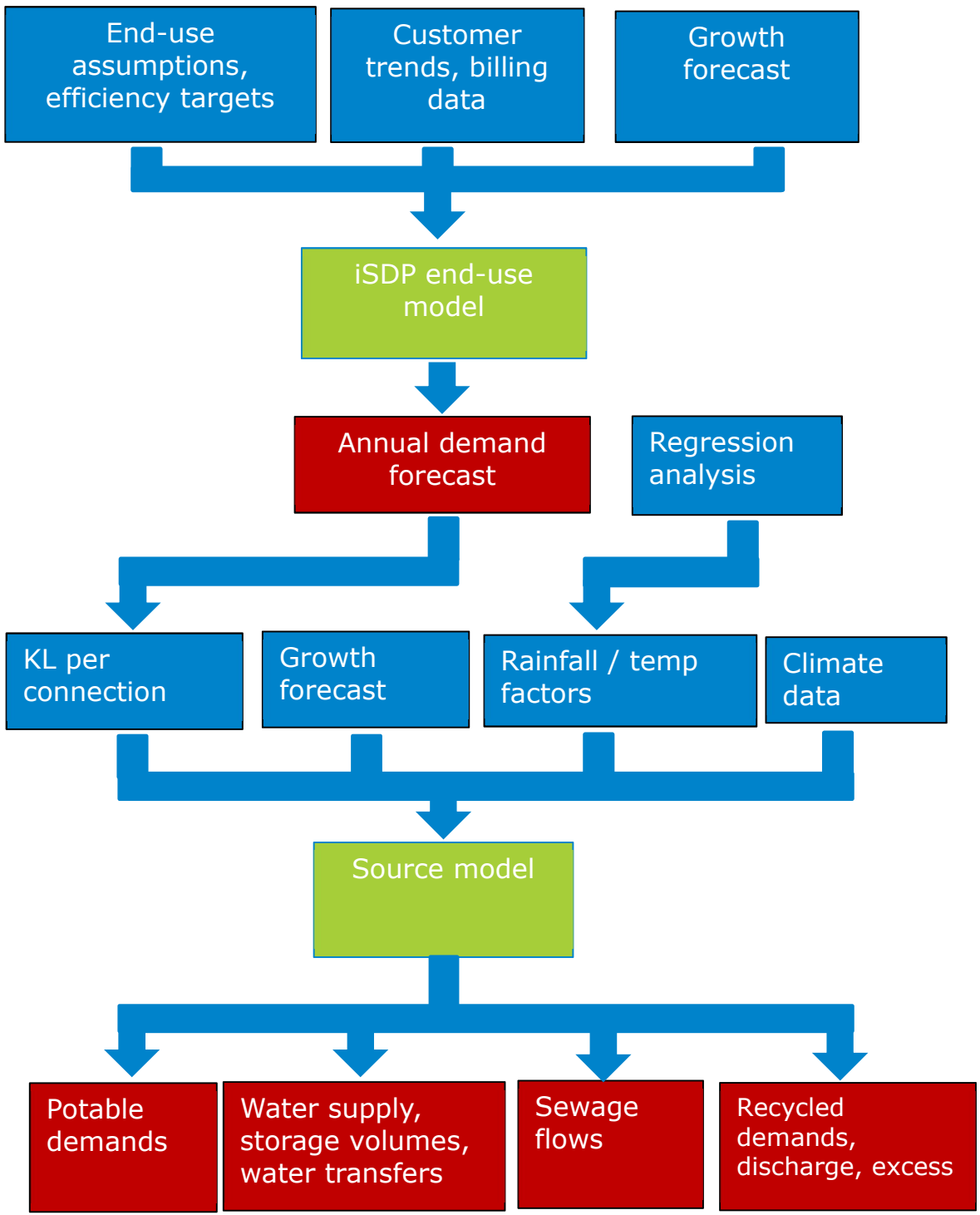
The regression model is applied in the Water Mass Balance model to forecast the daily demand under various climate sequences, using historical daily climate scenarios from 1997 to 2017. In essence, a relationship between demand and climate has been developed through the regression model. This relationship is applied in the Source model and will adjust daily demand depending on the climate information the Water Mass Balance model is using.

For the purpose of forecasting water consumption for the next regulatory period, Western Water has developed a forecast on a repeating year which represents average climatic conditions over the period of 1997-2017. Using this climate period is consistent with the Guidelines for Assessing the Impact of Climate Change on Water Supplies in Victoria issued by Department of Environment, Land, Water and Planning in December 2016.

The demand forecasting methodology adopted by Western Water is depicted in Figure 10.

A review of the of the mass balance model is completed at the end of each financial year to validate and calibrate the mass balance model to actual demand data. This includes running the mass balance model with the actual climate (rainfall and temperature) and service connections data from the previous financial year and comparing modelled daily demand to the recorded daily demand data. The outcomes and recommendations for improvement are documented at each validation. This process allows for continued improvement on how daily demand is being modelled to actual customer behaviour to varying daily weather conditions, such as maximum temperature and daily rainfall.

Figure 10 – Demand forecasting process used by Western Water in preparation of the Urban Water Strategy, Corporate Plans and Pricing Submission. Data inputs in blue, models in green and data outputs in red





# APPENDIX 1 - Schedule of Tariffs

## Schedule 2 - Prices

Variable water, sewerage, recycled water and trade waste charges are rounded down to 4 decimal places.

All other charges are rounded down to 2 decimal places

No adjustment for CPI

Tariff and Price Component	Price (1 July 2019)	Real 2020\$					
		% Price	Price	% Price	Price	% Price	Price
		Increase (1 July 20)	(1 July 2020)	Increase (1 July 21)	(1 July 2021)	Increase (1 July 21)	(1 July 2022)
<b>1.1 Residential water tariff</b>							
Service charge (per annum)							
20 mm	234.34	-13.22%	203.36	3.19%	209.84	3.15%	216.44
25 mm	366.16	-8.46%	335.18	3.19%	345.87	3.15%	356.76
32 mm	599.93	-5.16%	568.95	3.19%	587.09	3.15%	605.58
40 mm	937.41	-3.30%	906.43	3.19%	935.34	3.15%	964.80
50 mm	1464.73	-2.11%	1433.75	3.19%	1479.48	3.15%	1526.08
80 mm	3749.77	-0.83%	3718.79	3.19%	3837.41	3.15%	3958.28
100 mm	5859.04	-0.53%	5828.06	3.19%	6013.97	3.15%	6203.41
150 mm	13182.90	-0.23%	13151.92	3.19%	13571.46	3.15%	13998.96
Usage charge block 1 (0-440 litres/day) (per kL)	1.8580	0.00%	1.8580	0.00%	1.8580	0.00%	1.8580
Usage charge block 2 (441-880 litres/day) (per kL)	2.4652	0.00%	2.4652	0.00%	2.4652	0.00%	2.4652
Usage charge block 3 (881+ litres/day) (per kL)	3.7786	1.95%	3.8522	1.95%	3.9273	1.95%	4.0038
<b>1.2 Non-residential water tariff</b>							
Service charge – commercial / free access / benevolent (per annum)							
20 mm	234.34	-13.22%	203.36	3.19%	209.84	3.15%	216.44
25 mm	366.16	-8.46%	335.18	3.19%	345.87	3.15%	356.76
32 mm	599.93	-5.16%	568.95	3.19%	587.09	3.15%	605.58
40 mm	937.41	-3.30%	906.43	3.19%	935.34	3.15%	964.80
50 mm	1464.73	-2.11%	1433.75	3.19%	1479.48	3.15%	1526.08
80 mm	3749.77	-0.83%	3718.79	3.19%	3837.41	3.15%	3958.28
100 mm	5859.04	-0.53%	5828.06	3.19%	6013.97	3.15%	6203.41
150 mm	13182.90	-0.23%	13151.92	3.19%	13571.46	3.15%	13998.96
Usage charge (per kL)	2.4652	0.00%	2.4652	0.00%	2.4652	0.00%	2.4652
<b>1.3 Residential sewerage tariff</b>							
Sewer service charge (per annum) - Owner Occupier	540.88	-13.3625%	468.60	3.19%	483.54	3.15%	498.77
<b>1.4 Non-residential sewerage tariff</b>							
Service charge – commercial / free access / benevolent (per annum)	540.88	-13.36%	468.60	3.19%	483.54	3.15%	498.77
<b>1.5 Residential and non-residential recycled water tariff – class A</b>							
Service charge (per annum)							
20 mm	113.16	0.00%	113.16	0.00%	113.16	0.00%	113.16
25 mm	176.85	0.00%	176.85	0.00%	176.85	0.00%	176.85
32 mm	289.74	0.00%	289.74	0.00%	289.74	0.00%	289.74
40 mm	452.74	0.00%	452.74	0.00%	452.74	0.00%	452.74
50 mm	707.42	0.00%	707.42	0.00%	707.42	0.00%	707.42
80 mm	1811.03	0.00%	1811.03	0.00%	1811.03	0.00%	1811.03
100 mm	2829.77	0.00%	2829.77	0.00%	2829.77	0.00%	2829.77
150mm	6367.00	0.00%	6367.00	0.00%	6367.00	0.00%	6367.00
Usage charge class A recycled water – residential (per kL)	1.8580	0.00%	1.8580	0.00%	1.8580	0.00%	1.8580



## Schedule 2 - Prices Continued

Variable water, sewerage, recycled water and trade waste charges are rounded down to 4 decimal places.

All other charges are rounded down to 2 decimal places

No adjustment for CPI

Tariff and Price Component	Price (1 July 2019)	Real 2020\$					
		% Price	Price	% Price	Price	% Price	Price
		Increase (1 July 20)	(1 July 2020)	Increase (1 July 21)	(1 July 2021)	Increase (1 July 21)	(1 July 2022)
<b>1.6 Trade waste charges</b>							
Application fee – risk rank 1 (per application)	140.26	0.00%	140.26	0.00%	140.26	0.00%	140.26
Application fee – risk rank 2 (per application)	220.48	0.00%	220.48	0.00%	220.48	0.00%	220.48
Application fee – risk rank 3 (per application)	409.32	0.00%	409.32	0.00%	409.32	0.00%	409.32
Application fee – risk rank 4 (per application)	970.72	0.00%	970.72	0.00%	970.72	0.00%	970.72
Management fee – risk rank 1 (per annum)	272.55	0.00%	272.55	0.00%	272.55	0.00%	272.55
Management fee – risk rank 2 (per annum)	571.74	0.00%	571.74	0.00%	571.74	0.00%	571.74
Management fee – risk rank 3 (per annum)	1278.25	0.00%	1278.25	0.00%	1278.25	0.00%	1278.25
Management fee – risk rank 4 (per annum)	2600.58	0.00%	2600.58	0.00%	2600.58	0.00%	2600.58
Volumetric charge – category B (per kL)	1.7011	0.00%	1.7011	0.00%	1.7011	0.00%	1.7011
Volumetric charge – category C (per kL)	1.1909	0.00%	1.1909	0.00%	1.1909	0.00%	1.1909
<b>1.7 Trade waste quality charges — risk ranks 2, 3 and 4 (per kg)</b>							
BOD >400mg/L	0.3439	0.00%	0.3439	0.00%	0.3439	0.00%	0.3439
Suspended solids >400mg/L	0.2191	0.00%	0.2191	0.00%	0.2191	0.00%	0.2191
Total phosphorus >30mg/L	0.5120	0.00%	0.5120	0.00%	0.5120	0.00%	0.5120
Total combined nitrogen >60mg/L	0.6586	0.00%	0.6586	0.00%	0.6586	0.00%	0.6586
Total oxidisable sulphur >100mg/L	0.9515	0.00%	0.9515	0.00%	0.9515	0.00%	0.9515
Sodium >250mg/L	0.1457	0.00%	0.1457	0.00%	0.1457	0.00%	0.1457
Arsenic >0.2g/day	0.2191	0.00%	0.2191	0.00%	0.2191	0.00%	0.2191
Heavy metals — Cadmium >0.4g/day	0.2191	0.00%	0.2191	0.00%	0.2191	0.00%	0.2191
Heavy metals — Chromium (III & VI) >100g/day	0.2191	0.00%	0.2191	0.00%	0.2191	0.00%	0.2191
Heavy metals — Copper >100g/day	0.2191	0.00%	0.2191	0.00%	0.2191	0.00%	0.2191
Heavy metals — Lead >100g/day	0.2191	0.00%	0.2191	0.00%	0.2191	0.00%	0.2191
Heavy metals — Mercury >0.2 g/day	0.2191	0.00%	0.2191	0.00%	0.2191	0.00%	0.2191
Heavy metals — Nickel >10g/day	0.2191	0.00%	0.2191	0.00%	0.2191	0.00%	0.2191
Heavy metals — Selenium >10g/day	0.2191	0.00%	0.2191	0.00%	0.2191	0.00%	0.2191
Heavy metals — Zinc >100g/day	0.2191	0.00%	0.2191	0.00%	0.2191	0.00%	0.2191
<b>1.8 Trade waste penalty units</b>							
1st major breach	185.86	0.00%	180.00	0.00%	180.00	0.00%	180.00
2nd major breach	392.37	0.00%	380.00	0.00%	380.00	0.00%	380.00
3rd major breach	877.68	0.00%	850.00	0.00%	850.00	0.00%	850.00
4th major breach	1786.35	0.00%	1730.00	0.00%	1730.00	0.00%	1730.00
<b>1.9 Customer contribution (per lot)</b>							
Customer contribution — Infill	2696.34	0.00%	2696.34	0.00%	2696.34	0.00%	2696.34
Customer contribution — Greenfields	5392.69	5.00%	5662.32	5.00%	5945.44	5.00%	6242.71



## Schedule 2 - Prices Continued

Variable water, sewerage, recycled water and trade waste charges are rounded down to 4 decimal places.

All other charges are rounded down to 2 decimal places

No adjustment for CPI

Tariff and Price Component	Price (1 July 2019)	Real 2020\$					
		% Price	Price	% Price	Price	% Price	Price
		Increase (1 July 20)	(1 July 2020)	Increase (1 July 21)	(1 July 2021)	Increase (1 July 21)	(1 July 2022)
<b>2.0 Miscellaneous fees and charges</b>							
Water tapping fees – drinking and recycled water							
20 mm installation	435.31	0.00%	435.31	0.00%	435.31	0.00%	435.31
25 mm installation	803.63	0.00%	803.63	0.00%	803.63	0.00%	803.63
32 mm installation	1691.04	0.00%	1691.04	0.00%	1691.04	0.00%	1691.04
40 mm installation	2193.22	0.00%	2193.22	0.00%	2193.22	0.00%	2193.22
50 mm installation	3365.19	0.00%	3365.19	0.00%	3365.19	0.00%	3365.19
Water meter test – 20mm to 32mm (per test)	117.24	0.00%	117.24	0.00%	117.24	0.00%	117.24
Conditions of connection – sewer							
Residential standard (per application)	217.54	0.00%	217.54	0.00%	217.54	0.00%	217.54
Commercial standard (per application)	301.32	0.00%	301.32	0.00%	301.32	0.00%	301.32
Information statements – standard	66.86	0.00%	66.86	0.00%	66.86	0.00%	66.86
Plugging fees – drinking and recycled water	159.46	0.00%	159.46	0.00%	159.46	0.00%	159.46
Pressure and flow information	313.13	0.00%	313.13	0.00%	313.13	0.00%	313.13
Disposal of septic waste to treatment plants							
per load	440.93	0.00%	440.93	0.00%	440.93	0.00%	440.93
per kL	57.1277	0.00%	57.1277	0.00%	57.1277	0.00%	57.1277
Non-core miscellaneous services	Actual cost	0.00%	Actual cost	0.00%	Actual cost	0.00%	Actual cost