City West Water™

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28 September 2017

Dr Ron Ben-David
Essential Services Commission
Level 37
2 Lonsdale Street
MELBOURNE VIC 3000

Dear Ron,

On behalf of the Board of Directors we are pleased to submit City West Water's 2018 price submission (PS2018) for your consideration.

An Advanced submission

City West Water is proposing an *Advanced* submission having considered each of the elements of the PREMO framework and associated Essential Services Commission guidance. Our *Advanced* rating reflects our comprehensive customer engagement approach and the improved value we will be delivering our customers. The submission commits us to deliver improved customer outcomes based on what we heard, better allocates risk and, most importantly, delivers lower prices.

Strong and meaningful engagement with customers.

There is strong alignment between the customer focus of ESC's PREMO framework and our new business strategy *putting customers first, benefitting communities*. Accordingly, the voice of our customers has played a very strong role in the development of PS2018.

Engagement with our customers has been meaningful, timely, transparent, accessible and representative of our customer's diversity – we made sure that all customer segments had their say. With over 2,200 participants, our engagement approach provided breadth and depth of insights customers and we have used this to drive the development of PS2018.

PS2018 reflects a new set of customer outcomes with a stronger-than-ever focus on customer value. We have worked hard during the third regulatory period to find cost efficiencies and we will continue this commitment in the fourth regulatory period – for example, we will be increasing our controllable operating expenditure efficiency factor to 2.0%.

We will be holding ourselves to account during the fourth regulatory period. Our proposed output measures and guaranteed service levels are directly informed by customer engagement. We will be reporting annually on our performance through annual performance stewardship reports.

Outcomes that matter to our customers and the community we serve

In constructing our new service mix, we are aiming to deliver on six outcomes:

1. **Services to homes and businesses are safe, reliable and efficiently delivered** – for example, we have committed to making our potable water services more reliable and to implement more comprehensive Guaranteed Service Levels with higher payments if we breach our commitments.

2. **Customer service is accessible and enquiries are promptly resolved** – for example, we will be extending customer service hours and providing new channels through which customers can interact with us, including reopening face-to-face customer service.

3. **Billing and payment options are efficient and convenient** – for example, we will:

   - Drive down the number of estimated reads; and
   - Provide online services so customers can perform a range of transactions themselves, at times that suit them.

4. **Customers in hardship are supported** – for example, we are:

   - Implementing a comprehensive plan to support customers who may be affected by family violence;
   - Continuing the vulnerable customer programs we have developed over the third regulatory period including our partnerships with our peers and community advocates; and
   - Implementing a 'leakage tariff' to help customers avoid going into hardship as a result of an on-property leak.

5. **The whole of the water cycle is managed in an environmentally sustainable way** – for example we will be:

   - Continuing to provide customers with education and advice on how to be water efficient in their homes and businesses
   - Establishing a stormwater fund to support local governments in delivering local stormwater schemes.

6. **CWW is a valued partner in servicing a growing Melbourne** – for example, we will:

   - Move more transactions online and automate transactions where possible, while continuing to provide access to CWW expertise
   - Play a leadership role in standardising and streamlining plumbing requirements to improve compliance and consistency in plumbing standards across the industry.

Tariff structures are to be reformed and both bills and prices will be lower

We are implementing reforms to our tariff structures that will deliver lower prices, lower bills and less complexity that includes:

- The average house owner-occupier will see a 2.7% reduction in their annual bill;
- A weighted average price reduction across all customer segments of 10.6%;
- Two price steps only for residential potable water usage; and
- Substantial reductions in the sewage disposal fee.

On behalf of the City West Water Board, we are pleased to attest to the robustness of this submission in line with Section 3.17.2 of the Commission's Guidance paper.

Yours sincerely,

DAVID MIDDLETON
Chair

DAVID RYAN
Managing Director

City West Water™

PRICE SUBMISSION

2018

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Glossary

Term	Definition
2017-18 prices	(real) prices based on the ABS all groups average of eight capital cities CPI for March quarter 2017 – i.e. assumed inflation of zero
AFFIRM model	Asset Failure Forecasting & Investment Renewal Model – developed in-house
ARI	'average recurrence interval' used in reference to the number of years between significant storm events
ASR	aquifer storage and recovery
CALD	culturally and linguistically diverse
capex	capital expenditure
Customer Committee	Price Submission Customer Committee
Customers first, benefiting communities	CWW's new business strategy that was launched in December 2016
CWW	City West Water
CWW's 2013 determination	ESC, *Metropolitan Melbourne water price review, City West Water determination, 1 July 2013 – 30 June 2018*, June 2013
DAMS	CWW's Development Activity Management System – software to manage land and property development.
EMIS	CWW's Environmental Management Information System – software that stores all trade waste agreement information including customer requirements, sample results, site visit records.
EPA	Environment Protection Authority
ESC	Essential Services Commission
ESC 2013 final decision	Essential Services Commission, *Price Review 2013: Greater Metropolitan Water Businesses — final decision*, June 2013
ESC guidance	ESC, *2018 Water Price Review, Guidance paper*, November 2016
Gentrack	CWW's customer information and billing system
GIS	geographic information system
G-MW	Goulburn-Murray Water
GSL	guaranteed service level
HCB	house connection branch
ISQMS	Melbourne integrated sewage quality management system
ITDS	inorganic total dissolved solids
LRMC	long run marginal cost
Minister's standing directions	Standing Directions of the Minister for Finance 2016, Under the *Financial Management Act 1994*, June 2016 – clause 3.7.1, Risk management framework and processes
MW	Melbourne Water
MW's 2016 determination	ESC, *Metropolitan Melbourne Water Price Review 2016 Final Decision: Melbourne Water Determination*, June 2016
NCC	new customer contribution

Term	Definition
network fee	also commonly referred to as 'service charge/fee' or 'fixed charge/fee'
opex	operating expenditure
P0	price change between 2017-18 and 2018-19
P50	When probabilistic Monte Carlo type evaluations are adopted, there is a statistical confidence level for an estimate. P50 is defined as 50% of estimates exceed the P50 estimate (and by definition, 50% of estimates are less than the P50 estimate).
PFSC	private fire service connection
PPM	prescribed price movement – ESC-approved price change between years in the regulatory period
PREMO	The ESC's incentive mechanism for RP4 that links the return on equity earned by a water corporation to the level of ambition of its price submission for Performance, Risk, Engagement, Management and Outcomes.
price step	also commonly referred to as 'block' or tier': refers to the variations in volumetric price that arise with different levels of average daily water usage
PS2018	2018 price submission
PSC	property service connection
RMAC	Risk Management and Audit Committee
RP3	third regulatory period: 1 July 2013 to 30 June 2018
RP4	fourth regulatory period: 1 July 2018 to 30 June 2023
RP5	(assumed) fifth regulatory period: 1 July 2023 to 30 June 2028
SCADA	supervisory control and data acquisition
SIMALTO	Simultaneous Multi-Attribute Level Trade-Off online survey
Statement of Obligations	*Water industry Act 1994, Statement of Obligations (General)*, December 2015
totex	operating expenditure plus capital expenditure (opex + capex)
VDP	Victorian Desalination Project
VIF	*Victoria in Future*
WTP	(Melbourne Water's) Western Treatment Plant
WWSRP	West Werribee Salt Reduction Plant
Your Money. Your Say	CWW's online engagement platform

EXECUTIVE SUMMARY & CONTEXT

Executive summary

City West Water is proud to present its 2018 price submission. Our submission is a genuine representation of the viewpoints, needs and aspirations of the community we serve, achieved through close consultation and collaboration with our customers. Our proposed prices, scope of services and levels of service for the fourth regulatory period (1 July 2018 to 30 June 2023 or 'RP4') reflect our efforts in openly engaging, listening and proposing action to meet these expectations.

This dedication to our customers is underpinned in our new business strategy (*Customers first, benefiting communities*) launched in December of 2016 – which sets out our vision:

> *to be an exceptional service provider that puts customers first and benefits the community.*

Putting customers first – our engagement approach

City West Water has the privilege of serving more than one million customers from 130 different cultural backgrounds in Melbourne's central business district and western suburbs. We wanted our engagement process to provide opportunities for each segment of our diverse customer base to have a say. We achieved this through:

- a phased approach over 11 months
- providing a range of engagement channels with differing levels of complexity and involvement that included workshops, online surveys, price and service trade-off survey, pop-ups at shopping centres and community events, one-on-one meetings and a deliberative forum.

Through these channels we heard from more than 2,200 customers from a range of customer segments, including owners, tenants, large businesses, small businesses, industry, developers, and representatives from both culturally and linguistically diverse communities and consumer advocacy groups.

Our new levels of service

A significant milestone in the multistage engagement program was a quantitative trade-off survey that invited customers to prioritise the services (and levels of service) that were most important to them. Proposals for changes to existing services and levels of service were developed and subsequently re-tested with a group of customers that had participated in the survey and other engagement activities. Re-testing of proposals was conducted through an online forum to confirm what we heard was accurate and what we were proposing to deliver met customers' expectations. As a result of what we heard from our customers, we will be adjusting our levels of service to better reflect customer expectations of our business.

As part of this submission, we respond to what we heard from customers by committing to:

Being easier to do business with

- Extend customer access hours and offer automated call-backs.
    - (telephone) Contact Centre hours will be extended to 8:00am to 7:00pm (currently 8:30am to 5:00pm)
    - our proposed call-back service means we will have to slightly reduce the speed in which we respond to inbound calls, as we direct some resources to the call back service.
- Improve response times to emails and written correspondence – our email turnaround time will be within one business day (previously ten business days).
- Introduce new access channels. Recognising that our customers have different preferences in the way they wish to interact with us, the following access channels will be introduced:
    - a face-to-face customer service centre – re-opened so that customers can engage in personal visits to resolve their enquiries
    - live web-chat for customers to access online
    - online transactions including online accounts, online applications and online requests for information and data.

Providing support for customers who are experiencing hardship or are at risk of experiencing hardship

- Continue to deliver a range of programs to support customers in financial hardship that includes proactive identification of 'at risk' customers
- Provide greater financial relief to customers with verified leaks on the customer-side of the meter.

Continuing to deliver reliable water and sewerage services

- Continue to ensure that no customer will experience more than four unplanned water supply interruptions in a year – reflecting a continuation of our current service performance.
- No customer will experience more than three sewer blockages in a year – reflecting a relaxation of our current service performance of no more than two sewer blockages in a year. This change is in line with what our customers told us through the quantitative trade-off study and wider engagement process.

Assessing recycled water projects

- Continue to produce recycled water from facilities that supply our two recycled water zones (West Werribee and Greek Hill).
- Discontinue previous plans to extend recycled water supply into the Holden Zone (where development is yet to begin). This will help us redirect resources to services that are more highly valued by customers.

Investing in environmental and water cycle management

- Continue to meet our environmental obligations and will work towards achieving net-zero greenhouse gas emissions by 2030.
- Continue to partner with our stakeholders and other managers of water cycle services (including councils and Melbourne Water) through:
    - advocating for a greener west by taking a leadership position in the *Greening the West* partnership and participating in specific projects such as *Greening the Pipeline*
    - identifying opportunities to deliver new stormwater projects in partnership with key stakeholders.

Our focus on efficient, affordable services

Through our consultation, it was made clear that efficient, affordable services are highly valued by our communities and are integral to customer satisfaction.

During the third regulatory period (1 July 2013 to 30 June 2018, or 'RP3'), we have been successful in making significant efficiency savings in both operating expenditure and capital expenditure. This achievement allows us to deliver a fairer distribution of savings through prices for water and sewerage services.

We calculate we need $3,199m in revenue to provide our services over the fourth regulatory period – representing revenue of $1,363 per customer per annum,[1] or a decrease of 14.7% per customer per annum compared to revenue required in the third regulatory period (excluding the impact of inflation). The revenue requirement per customer can be attributed to five cost categories as outlined in Table 1.

Table 1 Change in revenue requirement per customer

Revenue requirement per customer	RP3 revenue requirement per customer*	RP4 revenue requirement per customer*	Change per customer*
Finance (return on capital)	$209	$170	-$39
Depreciation (return of capital)	$131	$159	$28
Taxation allowance	$10	$31	$20
City West Water operating expenditure	$279	$228	-$51
Other operating expenditure (bulk charges, access fees licence fees and environmental contributions)	$967	$775	-$192
Total	**$1,597**	**$1,363**	**-$234**

* per annum, 2017-18 prices.

[1] If it were to be apportioned equally over all customers (both residential and non-residential) paying a water network fee.

The changes in revenue requirement per customer shown in Table 1 reflect:

- for 'finance', a reduction in our regulatory rate of return from 4.5% in the third regulatory period to 4.2% in the fourth regulatory period, consistent with an 'Advanced' submission and a continuation of capital expenditure at levels similar to those actually incurred in the third regulatory period, significantly lower than our third regulatory period allowance
- for 'depreciation', an increase driven primarily by:
  - the incorporation into our existing asset base of several significant projects with shorter than average asset lives
  - a reduction in the depreciation override applied in the fourth regulatory period as compared to that applied in the third regulatory period
- for 'taxation', an increase driven primarily by:
  - continued strong growth in our service area that leads to increased developer revenues,[2] which leads to an increased taxation allowance
  - the removal of a taxation allowance override applied in the third regulatory period
- for 'City West Water operating expenditure', a continuation of the savings made during the third regulatory period as well as an increase in our operating expenditure efficiency factor to 2.0%
- for 'other operating expenditure' (the largest component of our revenue requirement), the continuation of significant savings made by our wholesale providers during the third regulatory period, offsetting an increase in the Environmental Contribution during the fourth regulatory period.

Our new price outcomes

We are pleased to put forward a submission that builds on the efficiencies we achieved in the third regulatory period, and proposes overall price reductions for our major customer groups.

This submission incorporates weighted average price movements for all customers of 10.6%, broken down by customer segment as follows:

- average residential price reduction of 12.6%
- overall non-residential price reduction (including trade waste) of 6.2%
- overall non-residential price reduction (water and sewer only) of 6.0%
- overall trade waste price reduction of 7.2%.

Our existing water tariff structure has three price steps, so the more water customers use, the higher price they pay for additional usage.

[2] Gifted assets (which are recognised as revenues) and new customer contributions.

Our detailed analysis of water usage patterns across our service area indicates that the current third price step can unreasonably impact customers at risk of financial hardship. Our engagement process, particularly with customer advocacy groups, highlights step pricing as an important reform opportunity in this submission.

To balance this, our customers have told us through the engagement process that they value the opportunity to control their bills well as reward efficient use of water. This submission proposes to move from three residential water usage price steps to two price steps (closely aligned with current step 1 and step 2 prices). This change represents a reasonable balance between the tariff principles set out in the Essential Services Commission's guidance and delivering a price approach that is valued by our customers.

What this means for water bills

All customers will receive real price reductions and we aim to minimise any significant adverse bill shock for those customers who may experience a bill increase resulting from redistribution of the existing $100 annual rebate to bills. In making changes to tariff structures to deliver more efficient outcomes we are very conscious of minimising the prospect of bill-shock and creating new inequities. This is achieved through the combination of:

- reducing the number of price steps for water usage
- reducing the volumetric fee on sewage disposal and trade waste
- redistributing the existing $100 annual rebate through lower prices for all customers.

Typical changes to bills as a consequence of altered price structures are outlined below.

Table 2 Typical changes to bills

Key customer group	2017-18 annual bill*	2018-19 annual bill*	Bill change	Weighted average price change
Owner occupier (155kL per annum)	$983	$957	-2.7%	-11.7% [a]
Tenant (145kL per annum)	$456	$446	-2.2%	-19.8% [a]
Small business (200kL per annum)	$1,226	$1,181	-3.7%	-3.7%
Medium business (500kL per annum)	$5,155	$4,831	-6.3%	-6.3%
Large trade waste customer (100,000kL per annum)	$44,440	$41,336	-7.0%	-7.0%

* 2017-18 prices.

[a] 'Bill change' differs from 'weighted average price change' in that:

- the former has applied the $100 Government Water Rebate to the 2017-18 bill
- the latter is calculated using CWW prices alone – i.e. as if the Government Water Rebate did not apply to the 2017-18 bill.

Continuing our support for vulnerable customers

City West Water's service area is home to a large and diverse community and we know that, unfortunately, some of our customers will be facing hardship or vulnerability.

We are constantly looking for ways to improve the way we support vulnerable customers, both through our day-to-day operations and through cross-sector initiatives like the *Thriving Communities Partnership* and Good Shepherd Microfinance's *Financial Inclusion Action Plan*. These initiatives help us develop clear deliverables to assist either customers or City West Water employees who may be vulnerable. Our price submission proposes to improve on our extensive support programs for residential customers facing hardship through:

- our *Water Assist* program[3]
- early identification of customers eligible for concession
- Utility Relief Grants
- continued participation in cross-sector initiatives.

Through our engagement process, our customers told us they wanted us to provide more financial support for customers who experienced high water bills as a result of leaks in their property. In order to address this concern, we propose to charge only the wholesale cost of water (rather than retail price of water) for the estimated volume of water lost due to the leak (once it has been verified and repaired by a licenced plumber).[4]

Our proposed PREMO rating

City West Water has developed this submission in line with its vision 'to be an exceptional service provider that puts customers first and benefits communities'. There is a natural affinity between our business strategy and the Essential Services Commission's PREMO framework, and a corresponding alignment between CWW's business strategy and this submission. We are pleased to put forward an 'Advanced' PREMO self-assessment (supported by detailed commentary set out in appendix E).

At a high level, our self-assessment is built on:

- **Performance:** Although not scored, we have met the majority of our key performance indicators and maintain high levels of customer satisfaction and industry leading (low) levels of complaints.

[3] See **Box 3: Water Assist**, p35.

[4] See **Box 2: Leakage tariff**, p34. This approach replaces our current practice of applying capped rebates on customers' bills in similar circumstance.

- **Risk:** Our refreshed approach to managing risk and risk allocation means we are able to put forward expenditure and demand forecasts with customers interests at heart – customers will no longer pay for what, in the past, may have been viewed as industry conservatism.[5] We're also holding ourselves to account more than ever by revising our guaranteed service level scheme to reflect higher standards of service for our customers, and bill rebates to customers if we fail to deliver.
- **Engagement:** The engagement program for this submission has been earlier, deeper and broader than ever before. We have provided a diverse range of forums for customers to 'have their say'. Our interactions with customers have been guided by a Customer Committee that has played a key role in ensuring our materials were accessible and fit-for-purpose. We have incorporated findings from this engagement wherever possible, calling out where, and explaining why, we were not always able to accommodate our customers' expressed preferences.
- **Management:** We have achieved our targeted savings under the Government Efficiency Program during the third regulatory period and have committed to deliver further savings through a 2% operating efficiency factor and continuation of capital expenditure at a similar rate to that in the third regulatory period.
- **Outcomes:** As a mature network utility, many of our services are taken for granted. Our customer focus drives us to deliver reliable water and sewerage services. Our services are fundamentally important to the health of our customers, the functioning of the local economy and the amenity of our service area. We have proposed a range of new performance measures across six key outcome areas that, coupled with price reductions, represent a significant improvement in customer value.

Attestation

The Board of Directors of City West Water has resolved to attest to the completeness and accuracy of this submission. The Board's attestation is included in appendix M.

[5] Examples of our more customer-centric approach include designation of uncertain projects, use of 'P50' cost estimates for all major projects and programs and adoption of best estimate demand forecasts.

Context for this submission

Our proposals for services and prices in this 2018 price submission (PS2018) are influenced by several separate elements beyond the guidance provided by the Essential Services Commission (ESC). Relevant key elements are outlined below.

Customer expectations

- PS2018 coincides with significant transition of our business from an engineering-focus to a customer-focus – we have asked what it is that customers value and we are adjusting our service offerings in order to honour customer preferences.

Customer growth

- For the past ten years, our customer base has been the fastest growing of any Victorian water business.
- We have significant customer growth through both one of the most rapidly growing municipalities in Australia (Wyndham) and also substantial infill development areas.
- During the third regulatory period (RP3) actual customer growth exceeded our forecasts but, compared to our RP3 forecasts, more of the growth occurred in infill areas rather than in greenfields areas. Recent trends suggest that the balance of development activity is now swinging back towards greenfields areas. This means that during the fourth regulatory period (RP4) we will need to invest in growth assets for both infill areas (to address emerging capacity constraints) and greenfield areas (to establish new networks).

Operational expenditure patterns and constraints

- We have achieved substantial savings on RP3 benchmarks, with savings passed back to customers in the form of a residential bill rebate.
- Arrow Program Release 3 was included in our 2013 price submission and RP3 prices incorporated operating cost efficiencies that would arise from Release 3. However, Arrow Program Release 3 did not proceed, saving $31.3m in capex over the course of RP3.
- Commissioning of the West Werribee Salt Reduction Plant (WWSRP) was delayed – forecast opex of $4.7m per annum in base year 2016-17 was not required.
- WWSRP is now expected to commence operating from 2017-18, building to full capacity (and cost) over the coming decade.

Capital expenditure patterns and constraints

- We are consciously reviewing the way we run our assets – using an improved understanding of engineering tolerances to maximise operating life and therefore delaying renewals capex.

- Water and sewerage network capacity constraints are now becoming apparent due to the substantial levels of infill development – particularly in and around Melbourne's CBD. Significant renewals and growth capex will be required in order to ensure our network can accommodate future system demands and customer expectations.
- A substantial amount of computing cost will shift from capex to opex in RP4 as transitions to cloud-based computing platforms are implemented.

SUBMISSION

1 Managing risk

1.1 Risk management framework

City West Water (CWW) has a long standing and comprehensive approach to risk management. Over the past year, CWW's Board has led a process to review and further improve risk management. This has resulted in key improvements to our overall risk framework including:

- separation of strategic and operational risks – which ensures Board and management risk discussions are targeted and focussed
- adoption of a fully updated Risk Appetite Statement – which ensures CWW is focussed on continuing to manage critical risks effectively, while also positioning CWW to take advantage of key opportunities that ultimately benefit its customers, the community and its shareholder.

CWW continues to take risk management very seriously – risk is a major focus of our Board discussions. We have a robust risk governance framework in place that incorporates:

- Risk Management and Audit Committee (RMAC) – a subcommittee of the Board
- Business Risk Committee – a committee consisting of the full Executive Team and supported by internal and, where appropriate, external risk professionals
- risk management policies and procedures consistent with the principles of ISO 31000
- a formal, Board approved, Risk Appetite Statement
- corporate risk registers split into strategic and operational risks
- an asset management framework consistent with the principles of ISO 55000
- an Asset Risk Management Model.

The Statement of Obligations, Part 5 (Risk Management), requires CWW to develop and implement plans, systems and processes, having regard to ISO 31000 Risk Management to ensure that risks associated with functions performed and services provided by CWW are identified, assessed, prioritised and effectively managed.

Risk management governance

RMAC plays a key role in verifying and attesting to CWW's compliance with the Minister's standing directions. All members of RMAC are independent Board members. RMAC assists the Board of Directors in fulfilling its corporate governance responsibilities by providing oversight and direction in relation to:

- financial reporting
- CWW's internal control systems
- legal and regulatory compliance processes
- auditing and reporting processes
- risk management systems.

CWW also has an executive level Business Risk Committee to provide strategic oversight and direction in relation to risk management and compliance for all CWW business activities – this committee reports through to RMAC.

Risk management policies and procedures consistent with ISO 31000

Under the Minister's standing directions, CWW is required to develop risk management frameworks consistent with ISO 31000. CWW has a Risk Management Policy (POL-20) and Risk Management Procedure (PRO-40) that are overseen by RMAC and the Business Risk Committee.

We have instituted adjustments to our approach that clarify the distinction between strategic and operational risks. In 2017, the CWW Board endorsed updates to our Risk Management Policy to reflect the separation of strategic and operational risks, clarify whose role it is to identify risks within the organisation and outline what role RMAC plays in risk management at CWW. Distinctions of this nature are an important means of ensuring all risks are appropriately managed by those best positioned to exert influence.

Risk Appetite Statement

An updated version of CWW's Risk Appetite Statement was approved by the CWW Board in September 2017. The Risk Appetite Statement is used as a tool to manage risks on a day-to-day basis. The Risk Appetite Statement assigns four levels of risk appetite, ranging from 'averse' (zero appetite) to 'very open' (high appetite) across nine key areas of risk:

1. safety and public health
2. regulatory compliance
3. financial
4. environment
5. customer/service delivery
6. technology
7. innovation
8. people
9. reputation

Each risk area has been assigned a specific risk appetite and an accompanying guidance statement that provides context for how risk is to be managed. There are some areas of the business where our proposed overall risk appetite is 'open' (moderate appetite). However the relevant guidance statement identifies where we will not accept any risk – e.g. safety and public health.

Corporate risk registers

Reflecting recent improvements to our risk management approach, CWW maintains two corporate risk registers: the Operational Risk Register and the Strategic Risk Register. These registers house the log of identified risks, their ratings, mitigations and residual risk rating. These risk registers were revised and redeveloped through 2016-17.

Asset Risk Management Model

CWW's Asset Risk Management Model is used to identify sections of CWW's water and sewerage networks that pose unacceptable levels of risk to customers and the public. The model assesses likelihood of asset failure by:

- asset age and material of construction
- asset failure history
- asset condition (where known).

The Asset Risk Management Model assesses the consequences of failure using a rating framework that refers to several impacts of failure on customers and the community. These ratings incorporate:

- types of customers affected
- location of the asset
- proximity of the asset to transport infrastructure
- the number of customers affected by failure
- the estimated duration of repair.

1.2 Risk assessment

CWW has conducted a strategic regulatory risk assessment to identify the risks relevant to delivering valued services to customers. Our philosophy with regard to risk allocation is as follows:

- CWW is best placed to understand, quantify and manage risk relating to operations, forecasting and expenditures.
- There are some risks outside CWW's control that can be prudently allocated to customers – e.g. annual adjustments to prices to account for inflation.
- Over the longer term, only the prudent and efficient costs of risk management should be borne by customers.

CWW's risk scan for RP4 is set out in Table 3. This risk scan is not intended to capture all of CWW's risk exposure, but rather those strategic risks that materially impact on:

- CWW's ability to deliver valued services to customers through RP4
- CWW's financial viability.

All identified risks have been assessed in accordance with our risk management framework.[6]

[6] Further information on how CWW considered and assessed the various options to manage these risks (including engaging with customers on risk allocation, where relevant), is available if requested by the ESC.

Table 3 Types of regulatory risks, risk mitigations and risk allocations proposed

Risk	Implication	PS2018 mitigations	How risk mitigation contributes to efficiency	Risk allocation summary
Demand forecasting risk				
Unexpected loss of a major customer or customer segment	Reduced demand for CWW services during RP4 leading to revenue shortfall.	Survey the largest trade waste customers for their future production and waste pre-treatment plans and incorporate findings into demand forecasts.	An accurate demand forecast will: ▪ maintain CWW's financial viability in RP4 ▪ avoid price shocks in the fifth regulatory period (RP5).	CWW bears the consequences of inaccurate (high) forecasts in RP4.
Inefficient bypass of trade waste services	Reduced demand for CWW services owing to the ability to avoid CWW's variable prices leads to inefficient customer investments that reduce CWW's revenues.	▪ No increases to variable prices. ▪ Reduce variable trade waste prices. ▪ Option to apply for tariff basket (i.e. reduce volumetric prices) should material inefficient bypass be observed during the regulatory period.	As a regulated monopoly provider with low short run marginal cost, customer utilisation of CWW assets is likely to be the least cost solution for trade waste disposal and therefore in the long term interests of consumers.	▪ CWW bears the consequences of inaccurate (high) forecasts in RP4. ▪ The optimal risk allocation is for cost reflective trade waste prices with volumetric prices set at long run marginal cost (LRMC). However this would require significantly higher fixed charges to recover regulated revenues. Such an outcome is counter to non-residential customer preferences as identified through engagement on tariff structures.

Risk	Implication	PS2018 mitigations	How risk mitigation contributes to efficiency	Risk allocation summary
Inaccurate demand forecasts	▪ In the case where actual demand is greater than forecast demand, CWW may recover excessive revenues, meaning customers are paying more for CWW services than its efficient costs. ▪ In the case where actual demand is less than forecast demand, CWW may recover insufficient revenues meaning customers are not paying CWW its efficient costs.	▪ Develop demand forecasts calibrated to recent actual demands. ▪ Reduce upside and downside demand-risk exposure by lowering sewage disposal fee – taking it closer to LRMC. ▪ CWW has options to: – pass back excess revenues (i.e. charge below caps) **if actual demand is greater than forecast demand** – apply for tariff basket **if actual demand is less than forecast demand** – apply for a reopener **if unforeseen events affecting demand occur**	Price certainty is important to customers to allow them to efficiently utilise CWW's services and make customer-side investments.	▪ CWW bears the consequences of inaccurate (high) forecasts in RP4. ▪ Without mitigations, customers bear the consequences of inaccurate (low) forecasts in RP4.
Inaccurate timing and location of growth forecast	▪ The overall rate of growth can change CWW's revenues, meaning that customer may be paying more or less than CWW's efficient costs. ▪ The location of growth (balance of infill to growth areas) can change CWW's infrastructure requirements.	▪ Liaise closely with planning and approvals agencies (VPA, councils) to determine the best estimate of growth by location. ▪ Continue to develop staged growth plans such that capital projects can be timed to match growth patterns. ▪ Only include 'certain' capital projects in PS2018.	▪ Staged growth plans allow CWW to invest only in prudent expenditure. ▪ Exclusion of uncertain projects means customers are not paying for speculative capex.	▪ CWW bears the consequences of inaccurate (low) forecasts in RP4. ▪ Without mitigation, customers would bear the risk of inaccurate (high) forecasts but CWW's use of 'uncertain' projects and staged investment plans mitigates this customer risk.

Risk	Implication	PS2018 mitigations	How risk mitigation contributes to efficiency	Risk allocation summary
Inflow risk				
Water shortage – leading to supply restrictions	▪ Customer satisfaction is reduced as access to water is rationed via restrictions. ▪ Revenue to CWW is correspondingly lower, placing financial viability at risk.	▪ Promote prevailing water policies, including *Target 155* and permanent water use rules. ▪ Provide joint desalinated water order advice to the Minster recommending a volume of water to be purchased in order to: – avoid water storages reaching the 'low zone' – minimise the prospect of water storages being in the 'medium zone'. ▪ Option to apply for tariff basket (i.e. reduce volumetric prices) should water sales reduce during the regulatory period. ▪ Reduce sewage disposal fees to work toward decoupling sewage revenues from water sales.	Maintaining security of supply provides customer confidence and avoids customers having to make prospectively inefficient investments in water conservation (or substitute supplies) as a consequence of water restrictions.	Risk allocation is shared: ▪ CWW bears the financial consequences of inaccurate (low) forecasts in RP4 as a result of any possible restrictions on water supply ▪ customers pay for desalinated water orders or reductions in satisfaction resulting from the application of water use restrictions.
Wet weather – demand less than forecast	Wet summers may reduce demand for outdoor water use, posing revenue risk to CWW.	▪ Reform stepped tariffs so as not to place undue reliance on revenue generated from usage in the higher price steps. ▪ Reduce sewage disposal fees to work toward decoupling sewage revenues from water sales.	Moving volumetric prices closer to LRMC promotes efficient investment and utilisation of CWW's networks.	CWW bears the consequences of inaccurate (high) forecasts in RP4.

Risk	Implication	PS2018 mitigations	How risk mitigation contributes to efficiency	Risk allocation summary
Operational risks				
Infrastructure failure causing breach of Department of Health and Human Services standards	Inability to provide drinking water to standards, placing at risk: ▪ public health ▪ customer satisfaction with water quality.	▪ Maintain operational arrangements relating to water quality monitoring and alerts under Bulk Water Supply Agreement with Melbourne Water. ▪ Maintain SCADA systems. ▪ Maintain water testing and disinfection program. ▪ Continuous reporting on drinking water quality. ▪ Maintain ability to provide alternative sources of supply.	Public trust in safe, high quality water supply is of fundamental importance. It is much more efficient for CWW to ensure water quality than to allow standards to slip and then place an onus on customers to: ▪ undertake their own water purification measures ▪ purchase bottled water.	▪ CWW bears the consequences of failure to deliver water to standard during RP4. ▪ Risks to community health and our reputation are managed within broad framework.
Infrastructure failure causing breach of Environment Protection Authority (EPA) conditions	▪ Inability to contain sewage in network under 1:5 average recurrence interval (ARI) events ▪ Inability to meet sewage treatment plant discharge requirements	▪ Maintain monitoring and testing programs. ▪ Maintain calibrated hydraulic models. ▪ Identify program of works and invest to maintain compliance.	Safe disposal of sewage is important to maintain sanitation and local amenity.	▪ CWW bears the consequences of a breach for 1:5 events that are not contained. ▪ Risks to community health, the environment and our reputation are managed within broad framework.

Risk	Implication	PS2018 mitigations	How risk mitigation contributes to efficiency	Risk allocation summary
Infrastructure failure causing inability to provide network services to customers	CWW's water, sewerage and recycled water networks and facilities deliver a range of essential services. Infrastructure failure can result in: ▪ disruption to supply ▪ failure to deliver customer outcomes ▪ failure to meet KPIs ▪ guaranteed service level (GSL) payments.	▪ Continuation/expansion of the GSL scheme ▪ Continuation of preventative controls such as: – SCADA monitoring – comprehensive asset management program – targeted renewals program – continuation of responsive actions.	▪ Customers told us they value safe and reliable services. ▪ Responsive costs can be controlled by taking preventative actions.	The risk allocation is shared: ▪ the consequences of not maintaining services that customers value will be borne by CWW in its 2023 price submission performance outcomes ▪ customers bear the risk of service disruption.
Major IT system failure	CWW's information technology systems support CWW's retail, distribution and treatment operations. IT system failure can result in: ▪ negative impact on service supply ▪ security of customer data compromised ▪ technical failure to SCADA, billing system, GIS, system ops, etc. ▪ financial loss ▪ short term business continuity problem ▪ increase in expenditure to rectify problem(s).	Implement a range of controls to address risks associated with IT service provision, including: ▪ effective data security approach ▪ recovery and backup program ▪ appropriate use of cloud computing services ▪ effective business continuity framework ▪ modernisation of IT systems to contemporary platforms.	▪ Reliable IT systems are fundamental to providing valued customer experiences and meeting compliance obligations. ▪ Response expenditure can be controlled by taking preventative actions.	The risk allocation is shared: ▪ CWW bears the consequences of not maintaining IT systems. ▪ customers bear the risk of inability to access online service portals.

Risk	Implication	PS2018 mitigations	How risk mitigation contributes to efficiency	Risk allocation summary
Business risks				
Decline in customer satisfaction	CWW exists to provide valued services to customers. There is a risk that the level of services provided does not meet customers' expectations.	▪ Develop set of customer-focussed outcome areas with key measures of performance based on engagement findings. ▪ Maintain continuous customer engagement to gain insights into and respond to changing customer expectations. ▪ Communicate performance through new performance stewardship reporting.	It is important for CWW to continually adapt its service offerings so as to only provide services (supported by corresponding expenditures) that are valued by customers.	CWW bears the reputational risk and 'performance' (PREMO) risk during RP4.
PREMO rating risk	CWW's proposed customer outcomes performance forms part of its PREMO rating. There is a risk that failure to deliver outcomes will result in a PREMO downgrade during RP4 that would be passed through to customers in the form of lower prices.	▪ Develop set of customer-focussed outcome areas with key measures of performance based on engagement findings. ▪ Maintain continuous customer engagement to gain insights into, and respond to, changing customer expectations. ▪ Communicate performance through new performance stewardship reporting.	CWW's PS2018 supports the set of prices and service levels that customers' value. CWW's delivery of the outcome commitments set out in PS2018 therefore represents an efficient outcome.	CWW bears the risk of a PREMO rating downgrade during RP4.

Risk	Implication	PS2018 mitigations	How risk mitigation contributes to efficiency	Risk allocation summary
Inability to meet performance targets	CWW's outcome commitments include: ▪ new performance measures ▪ reset service levels ▪ an updated GSL scheme. There is a risk CWW will not be able to achieve its new outcome commitments, leading to poor customer outcomes, higher GSLs payments and adverse performance findings.	▪ Select chosen levels of service and GSL payments with reference to actual historic performance. ▪ Consult with internal stakeholders on ability to perform to outcome targets. ▪ Quantify possible GSL payments under a range of performance outcomes.	CWW's PS2018 supports the set of prices and service levels that customers' value. CWW's delivery of the outcome commitments set out in PS2018 therefore represents an efficient outcome.	CWW bears the risk of a PREMO rating downgrade and GSL payments during RP4.
Acts of God	Major event (e.g. a natural disaster) creating widespread disruption and failure to deliver on services to agreed standard leading to large GSL payments.	▪ Maintenance of contingency plans and industry protocols. ▪ Water industry emergency response plan. ▪ Application for unforeseen and uncertain events mechanism.	It is prudent and efficient for CWW to plan for reasonably foreseeable events. The consequences of Acts of God are covered under the unforeseen events mechanism.	Customers will bear the risk associated with Acts of God.
Financial risks				
Inflation and financial market movements	Movements to financial parameters that are outside of CWW's control may lead to CWW either under- or over-recovering revenues from customers as compared to efficient financing costs.	CWW believes that it is not best placed to manage or hedge financial market movements and several financial pass throughs are proposed: ▪ transition to the ten year trailing average cost of debt as proposed by the ESC. ▪ adjust prices in response to the trailing average cost of debt ▪ indexation of prices to inflation.	The mitigations allow CWW to focus on its controllable costs and not bear risks associated with financial market movements.	In line with ESC guidance, CWW proposes pass through mechanisms for non-controllable financial market movements during RP4. CWW believes that the costs of CWW managing these risks through hedging are likely to be in excess of the benefits that might otherwise accrue to customers.

Risk	Implication	PS2018 mitigations	How risk mitigation contributes to efficiency	Risk allocation summary
Desalination cost changes	Victorian Desalination Project (VDP) security payments are subject to variation (up or down depending on refinancing arrangements outside CWW's control). There is a risk that CWW will either under- or over-recover funds required for payment of obligations associated with the VDP. Further, costs increase when desalinated water orders are placed.	Given CWW is not party to the desalination contract, CWW is not best placed to manage desalination cost variations. As such, CWW will maintain cost pass-through mechanisms for changes in VDP security payments and desalinated water orders.	Maintaining security of supply provides customer confidence and avoids customers having to make prospectively inefficient investments in water conservation (or substitute supplies) as a consequence of water restrictions.	With the proposed pass-through arrangements, customers will bear the risk associated with desalination costs.
Construction risk				
Cost estimation risk	CWW delivers a diverse range of capital projects. Not all projects will be delivered to the P50 budget (some will be under, some will be over). This may cause CWW to either under- or over-recover revenues relative to its efficient costs.	▪ CWW has built bottom-up cost estimates for projects and programs. ▪ We have used quotations where possible and probabilistic cost estimates at the P50 level based on recent projects. ▪ 'Uncertain projects' have been identified and excluded from the PS2018 capital program. ▪ CWW's capital program will be monitored and adaptively managed through RP4.	CWW's PS2018 retail prices reflect a revenue requirement based on the expected value of the capital program.	If we deviate from PS2018 approved capex during RP4 in a manner that is prudent, the difference in cost due to variations in (prudent) capex will be reflected in prices in RP5. During RP4 there is a short-lived risk that: ▪ CWW bears the risk of cost overruns ▪ customers bear the risk of cost underruns..

Risk	Implication	PS2018 mitigations	How risk mitigation contributes to efficiency	Risk allocation summary
Project delivery risk	CWW delivers a diverse range and scale of capital projects. There is a risk projects will not be delivered on time. Missed project delivery targets can result in: ▪ failure to meet KPIs ▪ failure to deliver customer outcomes ▪ project benefits not being captured ▪ CWW either under- or over-recovering revenues relative to efficient costs.	▪ 'Uncertain projects' have been identified and excluded from the PS2018 capital program. ▪ Deliverability of individual projects and programs assessed in project justifications. ▪ Capital program sized to be consistent with CWW's historical capability to deliver capital works. ▪ Continue existing risk controls including project governance, reporting, training procurement and auditing practices.	Retail prices reflect revenue requirement based on the expected timing of the capital program.	The risk allocation is shared during RP4 by including P50 cost estimates: ▪ CWW bears the risk of cost overruns ▪ Customers bear the cost of delays – i.e. without corresponding benefits. If, during RP4, we undertake capex that has not been previously approved, but is nevertheless demonstrably prudent, the cost of the additional capex will be recovered through prices in RP5.
Regulatory and policy risk				
Changes in standards, regulations and legislation	Changes in standards, regulations and legislation can have a material effect on costs. This may cause CWW to either under- or over-recover revenues relative to its efficient costs.	▪ CWW has incorporated all known changes in regulation in PS2018. ▪ CWW proposes to retain 'Changes in standards, regulations and legislation' as an event that would be covered by the uncertain and unforeseen events mechanism. ▪ Liaison with government departments and regulatory agencies. ▪ Liaison with other water corporations and VicWater.	CWW has assumed a continuation of current regulatory obligations and standards.	In the medium term, CWW bears the risk of any changes in standards that cause an increase in cost. In the longer term, there is a risk that prices will need to increase if CWW has to spend a lot more than we have allowed for in order to maintain compliance with regulation and standards.

2 Regulatory period

CWW proposes a five year regulatory period to run from 1 July 2018 to 30 June 2023.

3 Customer engagement

CWW's vision is to be an exceptional service provider that puts customers first and benefits the community. Understanding what matters most to our customers and then working to meet these expectations, is crucial to CWW being able to live up to this vision. To achieve this, PS2018 has been informed by a robust engagement process.

Central to the outcomes we propose to deliver is our clear understanding of customers' views on tariff structures, the quality of the services they want to receive and what it is about existing and prospective services that they (would) most value.

CWW used an independent engagement and research consultant to support the development of the engagement process and delivery of activities, to ensure the views of CWW's diverse customer base were accurately and fairly captured.

3.1 Engagement principles

Five key principles guided our engagement process, so as to provide customers with a reasonable and fair opportunity to provide their input into the development of PS2018. We committed to our engagement being:

- meaningful
- timely
- transparent
- accessible
- representative of our diverse customer base.

Meaningful

Our intent was to involve and collaborate with customers in meaningful ways to understand their views and values. To the fullest extent possible, we incorporated into PS2018:

- what we learned from customer involvement and collaboration
- detailed information on how customers' expectations have been met by what we propose to deliver.

PS2018 also clearly identifies (in section 4.3) the areas in which we will be unable to meet customers' expectations, and we have ensured the reasons why are clearly articulated.

A customer friendly overview of this document will be made publicly available following the publishing of PS2018. This overview will cover the key changes to our pricing structure, service provision and levels of service, as well as those provisions that we could not deliver (including the reasons why).

Timely

Understanding customers' expectations and values is an ongoing journey, one that began well before the engagement process for our PS2018, with the launch of *Customers first, benefiting communities*.

Customers were involved at the start of planning for PS2018, and continually throughout its development. Involving customers in this way ensured we had their interests and preferences front of mind through all stages of PS2018 development, and customers were given the opportunity to shape the outcomes of PS2018, rather than comment on pre-determined outcomes.

Transparent

Transparency in all activities and communications was central to:

- developing customer trust
- ensuring customers had the information they required to participate in informed conversations and make informed choices and decisions on the matters on which we were engaging.

We delivered transparency through:

- making engagement findings available on our online engagement platform, *Your Money. Your Say*
- developing a *Where Your Money Goes* infographic,[7] to show customers what their water bills paid for
- helping customers understand the costs associated with delivering different services and service levels
- helping customers understand how tariff structure changes would impact different customer segments.

A Customer Committee[8] was convened to provide a consistent customer voice throughout the development of PS2018. The Customer Committee met five times over the course of the process:

- participating in informed discussions about service options, service levels and pricing options
- providing input into engagement materials and receiving in-depth briefings about engagement findings.

[7] Available at: https://www.yoursaycww.com.au/2018prices/where-your-money-goes and provided to all customers in their bills.

[8] 30 people representing residents (owners and tenants), business owners and developers.

Accessible

Engagement activities were tailored to different customer segments to provide all customer demographics with appropriate opportunities to participate. A combination of qualitative and quantitative techniques were utilised across the process, including:

- focus groups
- interviews
- online discussion boards and forums
- online surveys
- workshops
- pop-ups at local community festivals and shopping centres.

For the duration of the engagement process, *Your Money. Your Say* was available so that customers could contribute at times most convenient to them. Through *Your Money. Your Say* customers had the opportunity to participate in:

- online discussions about the services we deliver
- surveys regarding customer value and the tariff structure.

Representative of our diverse customer base

We have many distinct customer segments: home owners, renters, developers, business owners (large and small) and industrial companies. Within our customer segments there is significant cultural and linguistic diversity. Our engagement process, paired with the expertise of our engagement and research consultant, ensured each of these groups and their interests were represented throughout.

We also recognise that some of our customers experience hardship or financial vulnerability, and we worked with consumer advocacy groups, financial councillors and vulnerable customers to ensure our proposals:

- took careful account of potential impacts that any changes may have on these groups
- avoided adverse impacts to the extent we practically could.

3.2 Engagement process

Guided by our engagement principles, we delivered our engagement process in four phases, enabling us to speak to and hear from more than 2,200 customers across our service area.

We adopted a phased approach to engagement in order to:

- enable us to gain a broad understanding of customers' views and values
- hone in on the service offerings and service levels customers most valued
- utilise the feedback from our customers to inform the development of PS2018.

Detailed reports on engagement findings as produced by our engagement consultants are provided as accompanying documents to this submission. A summary description of each engagement phase is provided below with more detailed information presented in appendix A.

Phase 1 – understanding customers' views and values

Phase 1 was qualitative in design, providing an opportunity for:

- customers to tell us what they valued about the services we deliver
- CWW to understand why customers held these views.

A series of workshops, focus groups, interviews, online discussion boards and pop-ups were undertaken to facilitate conversations with customers. These conversations identified several service areas, as well as specific aspects of those service areas, that resonated most strongly with customers. These findings formed the basis of the quantitative survey in Phase 2 – see Table 4.

Table 4 Services our customers valued the most

Service area	Service aspect
Delivery of network services	▪ Minimising the number of disruptions to water and sewerage services, and the inconvenience caused when disruptions occur
Customer service	▪ Speed of response to phone and email queries ▪ Availability of customer service assistance (hours and locations) ▪ Availability of assistance to those experiencing financial hardship ▪ Provision of checks on water efficiency ▪ Availability of account managers for businesses ▪ Access to information and assistance through an online portal or app ▪ Access to real-time information (digital metering)
Managing water into the future	▪ Future proofing for a growing population ▪ Future proofing for an uncertain climate ▪ Achieving targets for reducing carbon pollution from CWW activities
Liveability and community education	▪ Supporting activities to increase greening/urban cooling ▪ Providing community education to help customers know how to use the sewerage system in a way that reduces the risk of blockages or disruptions

Phase 2 – testing customer value

The services customers identified as most valuable in Phase 1 were used as the basis of the Phase 2 quantitative assessment using a Simultaneous Multi-Attribute Level Trade-Off (SIMALTO) online survey of our broad customer base.

Adopting a hands-on approach, survey participants were provided with a hypothetical budget to allocate to the services they most wanted and associated service levels – participants could then review (and change) their selection as different services were presented to them. This activity encouraged each participant to take ownership of their selection, and provided us with a strong indication of the services, service levels and price package that appealed most broadly to residential and non-residential customers.

With respect to service/price outcomes, SIMALTO results indicated that customers preferred a combination of:

- adjustments to the current service mix in the following ways:
  - better performance against some measures
  - lesser performance against other measures
  - some new services not previously offered
- slight reductions in current bill levels.

Preferred service packages for residential and non-residential customers, as indicated by the SIMALTO results, are depicted in Figure 1 and Figure 2, respectively.

Figure 1 Residential customers' optimal service mix at current price

DECREASED SERVICE
for 3 activities

- Max 3 sewer blockages experienced by a customer in a year (now 2)
- Maintain, but don't extend, recycled water coverage
- Answer the phone in 1 minute (now 45 seconds)

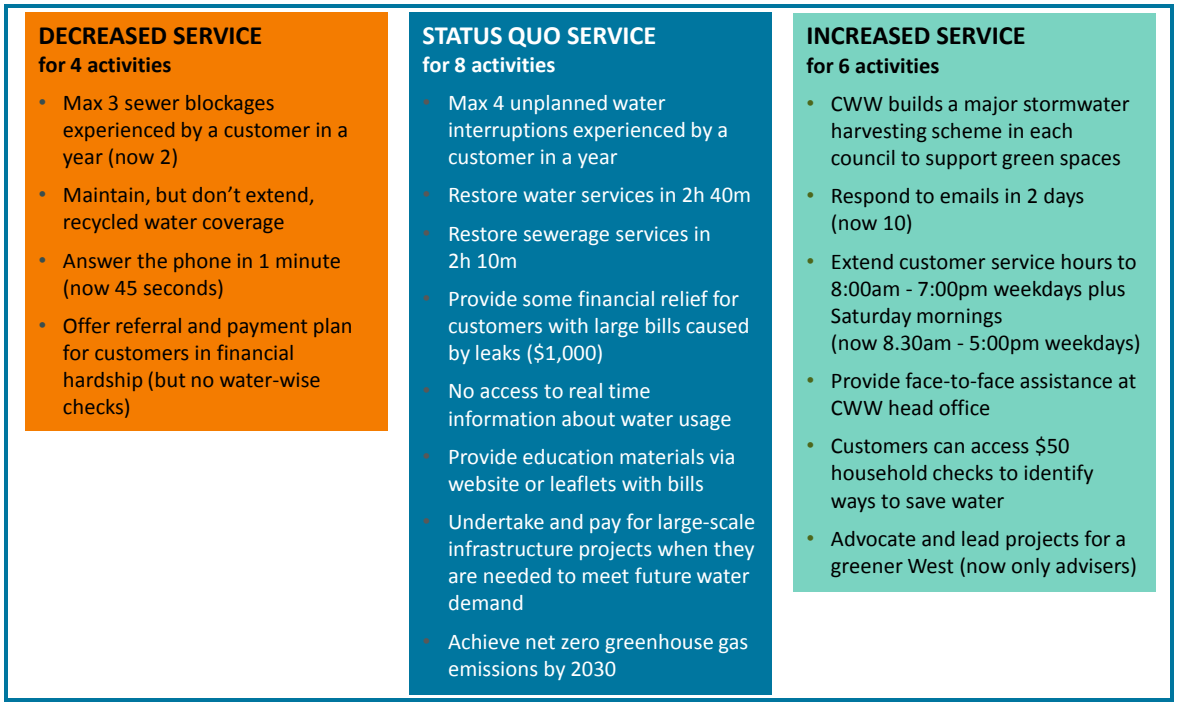
STATUS QUO SERVICE
for 7 activities

- Restore water services in 2h 40m
- Restore sewerage services in 2h 10m
- Offer referral, payment plan, water-wise checks to customers in financial hardship
- No access to real time information about water usage
- Provide education materials via website or leaflets with bills
- Undertake and pay for large-scale infrastructure projects when they are needed to meet future water demand
- Achieve net zero greenhouse gas emissions by 2030

INCREASED SERVICE
for 8 activities

- Max 3 unplanned water interruptions experienced by a customer in a year (now 4)
- CWW builds a major stormwater harvesting scheme in each council to support green spaces
- Respond to emails in 2 days (now 10)
- Extend customer service hours to 8:00am - 7:00pm weekdays plus Saturday mornings (now 8.30am - 5:00pm weekdays)
- Provide face-to-face assistance at CWW head office
- Customers can access $50 household checks to identify ways to save water
- Provide full financial relief for customers with large bills caused by leaks (now limited)
- Advocate and lead projects for a greener West (now only advisers)

Figure 2 Non-residential customers' optimal service mix at around current price



At all times we ensured customer views used to inform our decision making were drawn from samples that were representative of our customer base.

Phase 3 – testing alternative tariff structures

Through our engagement process, our customers told us they wanted to:

- better understand how CWW charges for services
- discuss alternative tariff structures.

In recognition of the challenge in understanding complex tariff structures, we held a deliberative customer forum[9] to facilitate an informed discussion. Following the customer forum, an online survey was conducted to gain an understanding of views from a broader set of customers.[10]

The proposed tariff structure outlined in section 13 represents the combined consideration of:

- the results of Phase 3 testing
- the ESC's pricing principles
- CWW's strategic direction.

[9] 27 residential customers and 15 non-residential customers.

[10] 505 residential customers and 190 non-residential customers.

Phase 4 – testing what we can deliver: responding to customers' views and values

The final phase of our engagement approach, Phase 4, sought to:

- advise customers how their input influenced our service proposals
- ensure we had captured, in full, what our customers had said[11]
- give customers the opportunity to provide feedback on what we were proposing to deliver.

Engagement in Phase 4 was facilitated by a *Customer Outcomes Proposal* outlining the set of services and service standards – as informed by prior phases of engagement – that we propose to deliver to customers through RP4:

1. services to my home and business are safe, reliable and efficiently delivered
2. bills are affordable and charges for services are fair
3. customer service is accessible and my enquiries are resolved promptly
4. billing and payment options are efficient and convenient
5. customers in hardship are supported
6. the whole of the water cycle is managed in an environmentally sustainable way
7. CWW is a valued partner in servicing a growing Melbourne.

The *Customer Outcomes Proposal* was:

- tested with customers[12] previously involved in the engagement process through a moderated online discussion forum
- discussed with the Customer Committee
- made publically available via our online engagement portal *Your Money. Your Say* and widely promoted.

After analysing the results from Phase 4 engagement, the proposed customer outcomes were confirmed. The confirmed outcomes are outlined in section 4.

Ongoing engagement

CWW recognises that great engagement is ongoing and, as such, we will produce a customer friendly overview version of PS2018 that will be made available to our customers and stakeholders to close the loop on the ESC's determination of our service standards and prices for RP4. This overview version of PS2018 will also include information on aspects of our submission that differ materially from the expectations of customer segments as revealed through our engagement program.

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[11] See section 4.2, *What we asked, what we heard and actions we will take*.

[12] 27 residential customers and 8 non-residential customers.

We will communicate and engage with our customers on an ongoing basis with respect to our activities and how we are performing through a range of channels including:

- **quarterly bill communications** – e.g. making use of bill inserts
- **performance stewardship reporting**:

  The reporting of our performance to customers will reflect 'best practice' and address the priorities as identified by our customers through engagement. We note there are many examples, both within Australia and internationally, of what effective reporting looks like – the UK water industry, in particular, has customer reporting models that may be worthy of emulation. The form of our reporting will evolve to reflect changing needs of our customers. We will be producing an annual customer friendly performance report[13] that focusses (at least) on:

  - how we are delivering compared to the promises we have made using each of the KPIs proposed in appendix B
  - how our performance lines up against industry average
  - the status of our major projects
  - our expenditures compared to regulated benchmarks
- **ongoing engagement programs** – that include a *Voice of the Customer* program[14] and ongoing campaigns through *Your Money. Your Say*.

Through our ongoing customer engagement programs, we will work to understand customers' satisfaction with the services we deliver and identify and implement improvements during RP4 to ensure we are:

- continuing to meet customers' expectations
- delivering services that customers value
- well positioned to reflect customer preferences in our 2023 price submission.

[13] The performance stewardship report will be available online. It will be summarised on customer bills with references to further information on CWW's website.

[14] *Voice of the Customer* program is tailored to monitor the various needs of each of our customer segments and to involve them in a meaningful way in our consultative processes.

4 Service outcomes

In consideration of all four phases of customer engagement – as outlined in section 3 – regarding customers' views and what customers told us they valued, we developed a set of outcomes we propose to deliver to customers in RP4:

1. services to homes and businesses are safe, reliable and efficiently delivered
2. customer service is accessible and enquiries are promptly resolved
3. billing and payment options are efficient and convenient
4. customers in hardship are supported
5. the whole of the water cycle is managed in an environmentally sustainable way
6. CWW is a valued partner in servicing a growing Melbourne.

A further customer-focussed outcome – bills are affordable and charges for services are fair – is discussed in section 13, *Prices and tariff structure outcomes*.

With respect to each of the six service outcome areas, the following outlines:

- why we believe the proposed outcomes are important
- what we asked our customers, what we heard from our customers, and the actions we will take in response.

Appendices to PS2018 outline:

- performance measures associated with proposed outcomes (appendix B)
- opex and capex associated with delivering each of the proposed outcomes (appendix C).

4.1 Why proposed outcomes are important

Outcome 1: Services to homes and businesses are safe, reliable and efficiently delivered

As part of our vision to be an exceptional service provider, we aim to provide safe and reliable water and sewerage services to customers, and fix network faults quickly and efficiently, while minimising impacts to customers.

Our customers deserve an assurance that:

- when they turn on a tap in the kitchen or bathroom, that water is safe for drinking and will flow at a reasonable pressure
- when they flush a toilet, let the plug out of a sink or have a shower, their wastewater will disappear (seamlessly) into the sewer
- businesses can plan based on continuity and quality of service
- if something does go wrong with either their water supply or wastewater disposal, the problem is attended to and resolved in a timely and efficient manner.

Outcome 2: Customer service is accessible and enquiries are promptly resolved

Our customer base is diverse and includes people of all ages, genders, cultural backgrounds, languages, socio-economic standings and technological abilities. Through *Customers first, benefiting communities* we have committed to providing services that are accessible and timely, with the highest levels of customer service, while encompassing and catering for this diversity.

Outcome 3: Billing and payment options are efficient and convenient

We aim to provide billing options that meet our customers' needs and to provide:

- simple, accurate and timely billing
- convenient options for how customers receive and pay bills.

Outcome 4: Customers in hardship are supported

We understand that customers can sometimes find it hard to pay their water bill for various reasons. Where cases of genuine or potential hardship are identified, we do all we can to ensure they are aware of all support services available to them and they can access their full suite of entitlements.

Sensitive treatment of customers affected by family violence

CWW recognises the impacts that family violence (in all its forms) may have on our customers – we will continue to build on a range of initiatives and programs to support customers or employees who may be affected.[15]

Managing the consequences of customers' water leaks

The nature of our network and water usage metering is such that there may be a significant delay between:

- the occurrence of a leak within a property
- identification of the leak through unusually high meter readings.

In such circumstances there is a risk that a large amount of water is lost – and billed to a customer – before a leak is repaired. We wish to avoid placing affected customers into financial hardship as a consequence of such circumstances.[16]

[15] For the actions we will take, see **Box 1: Supporting customers and employees affected by family violence**, p34.

[16] For the actions we will take, see **Box 2: Leakage tariff**, p34.

Outcome 5: The whole of the water cycle is managed in an environmentally sustainable way

We aim to responsibly manage our valuable water resources for the benefit of current and future generations. We commit to:

- carefully considering and mitigating the environmental impacts of providing water and sewerage services
- ensuring adequate water supplies are available now and into the future
- protecting the health of the community by ensuring sewage and trade waste is safely managed as treated effluent:
  - effluent meets all required environmental standards
  - recycled water is safe and fit-for-purpose
  - recovered biosolids are responsibly recycled
  - remnants of the treatment process that need to be sent to land fill are minimised
- being a valued partner of all water cycle stakeholders, which includes delivering the commitments in our *Reconciliation Action Plan* and incorporating Traditional Owners and Aboriginal values in our water cycle planning processes.

We are committed to pursuing the lowest cost initiatives to reduce emissions that are consistent with requirements outlined by the State Government.[17]

Outcome 6: CWW is a valued partner in servicing a growing Melbourne

As a service provider for some of Melbourne's fastest growing areas, we have a responsibility to support Greater Melbourne's rapid growth and future liveability through:

- rolling out new water and wastewater services in growth areas and residential infill areas – residential areas to the West of Melbourne are the fastest growing in Victoria
- delivering new and amended water and wastewater services to an ever-changing commercial and industrial customer base
- maintaining existing networks by ensuring service continuity and minimisation of inconvenience where services need to be disrupted.

To meet the needs of a growing Melbourne, we aim to work collaboratively with stakeholders in the development community to ensure waste and sewerage services are delivered in a timely and efficient manner.

[17] See **Box 4: Emissions targets**, p40.

4.2 What we asked, what we heard and actions we will take

Outcome 1: Services to homes and businesses are safe, reliable and efficiently delivered

What we asked …	What we heard …	Actions we will take…
What does service reliability mean to customers?	▪ Customers were generally satisfied with water/sewerage network reliability and service levels – that is, satisfied with frequency of service disruption and time taken to restore adequate service (should it be disrupted) after a network fault is reported. ▪ Customers take it as given that high quality water will come out of the tap and sewage will be removed from their property. ▪ As soon as a customer experiences a loss of water or low water pressure, they consider it a service disruption. ▪ Planned service interruptions should occur at times that cause least inconvenience for affected customers.	▪ Continue to provide safe, clean drinking water by maintaining our operational practices and working closely with our bulk water provider, Melbourne Water. ▪ Continue preventative maintenance and network renewal programs to maintain the service reliability that customers expect. ▪ Amend the GSL scheme, including GSL events, levels and rebates, to reflect customers' expectations of reliability (see Table 6, p46). ▪ Continue to prioritise planned and responsive works for water critical sites like hospitals and the CBD. ▪ Maintain the current accepted response and service restoration time targets – on average, water network faults fixed in around 2 hours 40 minutes and sewer blockages cleared in around 2 hours 10 minutes, following notification. ▪ Provide notifications and live updates on planned and unplanned works via our website, social media and/or SMS.
What are acceptable levels of disruption, speed and priority of response?	▪ Customers accepted current average service restoration timeframes (2 hours 40 minutes for water and 2 hours 10 minutes for sewer) and emphasised that extended service disruptions are a source of great frustration. ▪ No-one should experience: – three (residential) or four (non-residential) **water supply interruptions** a year – our current service performance is that no customer experiences more than four unplanned water supply interruptions a year – three **sewer blockages** a year – our current service performance is that no customer experiences more than two sewer blockages a year. ▪ Customers understand the need for us to prioritise work when responding to network faults – e.g. hospitals and schools should come first; large leaks should be attended to before small leaks. ▪ Customers preferred CWW take a proactive approach to managing the network – i.e. attending to risks in a planned manner before they become a source of unplanned service disruption.	

What we asked …	What we heard …	Actions we will take…
What are customers' views on GSLs and rebates made under the GSL scheme when a GSL isn't met?	**Residential customers** ▪ Customers had limited awareness of the GSL scheme and were pleased to know CWW held itself to account for service reliability. ▪ Customers felt a rebate was appropriate to recognise inconvenience caused by repeat interruptions, but felt that some of the GSL levels were too easily met by CWW. **Non-residential customers** ▪ Customers did not find universal GSLs relevant, as no two businesses are alike and service interruptions impact businesses differently. ▪ Some customers indicated a desire for individually negotiated GSLs.	
How satisfied are you with CWW services?	**2016-17 Customer Satisfaction Survey results** Our customers have indicated: ▪ 92% of customers are satisfied with water quality ▪ 96% of customers are satisfied with water supply reliability ▪ 94% of customers are satisfied with sewerage services.	

We identified meaningful performance measures for Outcome 1 through our customer engagement program. With respect to water services, customers told us that water quality, flow rate and reliability (duration off supply, frequency of supply interruption) were important. We propose to measure and report on the following performance indicators for water supply reliability and efficiency:

- customer satisfaction score on water quality via Customer Satisfaction Surveys
- water quality complaints per 1000 customers
- compliance with drinking water quality standards
- unplanned water supply interruptions restored within five hours
- average time taken (from notification) to restore unplanned water supply interruption
- planned water supply interruptions restored within five hours

- customers experiencing > 5 (i.e. 6+) unplanned water supply interruptions in a year
- customers experiencing > 3 (i.e. 4+) unplanned water supply interruptions in a year
- minimum water flow rates.

Similarly, with respect to sewerage services reliability, blockage duration and frequency were important measures. There was also strong sentiment towards the importance of minimising sewage spills within customer properties. We propose to measure and report on the following performance indicators for sewer reliability and efficiency:

- customers experiencing > 3 (i.e. 4+) sewer blockages in a year
- sewer blockages restored within five hours
- average time (from notification) to rectify blockage/spill from either a main or a house connection branch (HCB)
- sewer spills contained within five hours of notification
- sewer spills within a house, that are a result of a failure in our pipes
- sewer spills within a house, that are a result of a failure in our pipes, not contained within one hour of notification.

Outcome 1 performance measures are set out in full in appendix B.1.

Outcome 2: Customer service is accessible and enquiries are promptly resolved

What we asked …	What we heard …	Actions we will take …
How do customers want to contact us? How could we improve customer service?	▪ Customers wanted options when contacting us, and value quality customer service and prompt resolution of enquiries and complaints. ▪ Customers wanted more convenient access to our people through extended customer call centre hours and face-to-face opportunities - particularly customers from culturally and linguistically diverse (CALD) backgrounds. ▪ Customers want more options for digital interaction – through channels not currently available such as: – online live chat – self-service through web portal or app. ▪ Large business and trade waste customers valued having a dedicated CWW representative to contact and wanted this to continue. ▪ Small and medium businesses felt customer service could be improved – e.g. a dedicated business line or dedicated business customer service team with 'issue resolution' officers.	▪ Make contacting our customer call centre more convenient by: – extending opening hours – providing a call back service – offering live web chat – striving to resolve enquiries on the first call whenever possible. ▪ Provide a front desk service for face-to-face enquiries. ▪ Provide online services so customers can perform a range of transactions themselves, at times that suit them. ▪ Implement a non-residential account contact line and team that specialise in servicing these customers. ▪ Develop a separate customer charter for business customers that focusses on issues that matter most to them. ▪ Investigate the potential for digital metering so customers can access near real-time information about their water usage, including faster identification of customer-side leaks. ▪ Provide notifications and live updates on planned and unplanned works via our website, social
What response times do customers expect?	▪ Customers wanted faster responses to emails. ▪ Customers emphasised their customer service preference as follows: 1. quality of service and first call resolution 2. speed with which their call is answered.	
What do customers want to know about their water and sewerage services?	▪ Customers wanted more timely notifications regarding: – service interruptions (planned and unplanned) – unusual changes in water usage (alerts to possible leaks). ▪ Customers expressed an interest in gaining better insights into water usage – e.g. through apps and real time information facilitated by digital metering.	

What we asked …	What we heard …	Actions we will take …
How satisfied are you with CWW services?	**2016-17 Customer Satisfaction Survey results** CWW's Customer Satisfaction score for 2016-17 was 89.6% – primarily driven by: ▪ satisfaction with customer service, including how we respond to enquiries and complaints ▪ clarity of communication ▪ the courtesy, attitude and approach of our employees.	media and/or SMS.

We identified meaningful performance measures for Outcome 2 through our customer engagement program. Customers told us that responding to enquiries promptly was important, as was dealing efficiently with complaints. We propose to measure and report on the following performance indicators for customer service:

- calls resolved on first contact
- customer correspondence (emails) responded to within one business day
- customer correspondence responded to within ten business days
- residential customer satisfaction with response to an enquiry
- non-residential customer satisfaction with response to an enquiry
- residential customer satisfaction with response to complaint
- non-residential customer satisfaction with response to a complaint
- complaints to the Energy and Water Ombudsman of Victoria.

Outcome 2 performance measures are set out in full in appendix B.2.

Outcome 3: Billing and payment options are efficient and convenient

What we asked …	What we heard …	Actions we will take …
What are customers' preferred bill delivery and payment methods? How often do customers want to receive their bill?	▪ Customers expect bills to be accurate and timely, and want to receive and pay bills in ways that are convenient to them. ▪ Customers value an accurate and timely bill. Billing adjustments caused by estimated reads are a source of frustration for those that experienced them. ▪ Customers wanted choice in how they receive their bill (paper or email) but don't want to be penalised financially for opting to continue to receive a paper bill. ▪ Customers wanted to access account information online, and were interested in an online portal/app with functionality to pay current bills and view previous bills. ▪ Some customers were interested in: – bill smoothing and monthly billing to improve bill certainty and assist with budgeting – discounts for pay-on-time and eBilling. ▪ Non-residential customers expressed interest in being able to consolidate bills from multiple properties and accounts, including trade waste accounts. ▪ Trade waste customers indicated a desire for better alignment of trade waste sampling and billing timeframes to avoid billing adjustments.	▪ Continue to offer to install remote reading devices for inaccessible meters to reduce the number of estimated meter reads. ▪ Continue to work with our meter reading contractor to drive down the number of estimated reads. ▪ Work with our partners to provide more information on the services funded by other authorities' charges, where CWW is the billing agent. ▪ Support Parks Victoria as it considers changing the Parks Charge to a quarterly fee instead of yearly. ▪ Provide online services so customers can perform a range of transactions themselves, at times that suit them. ▪ Investigate options for consolidating bills across multiple sites and accounts. ▪ Continue to simplify and streamline trade waste pricing and billing processes.
What is customers' understanding about other authorities' charges on their bill?	▪ Customers expressed confusion about Parks Victoria's 'Parks Charge' and Melbourne Water's 'Waterways and Drainage Charge'. ▪ There is a general perception that these are CWW charges and limited knowledge of what activities are funded by the money collected. ▪ Customers were unaware of CWW's role as a billing agent for these authorities.	
How satisfied are you with CWW services?	**2016-17 Customer Satisfaction Survey results** ▪ While customer satisfaction with CWW's services is generally high, of the customers dissatisfied with our service, 'problems with water bills' was a major cause of dissatisfaction.	

Customers told us they are looking for greater flexibility in how they transact with us and, through our engagement program, we have identified a number of measures to track our performance on Outcome 3. We propose to measure and report on the following performance indicators for billing processes:

- payment issue complaints
- estimated meter reads used for billing
- customers with registered online accounts.

Outcome 3 performance measures are set out in full in appendix B.3.

Outcome 4: Customers in hardship are supported

What we asked …	What we heard …	Actions we will take …
What form of support should be provided to customers experiencing financial hardship?	▪ Customers generally supported continued assistance for those in hardship, but support should be reserved for those in genuine need: – residential customers wanted CWW to maintain its hardship processes and to continue to provide referrals, payment plans and subsidised water efficiency assistance programs. – non-residential customers preferred a slight reduction in hardship support for residential customers and felt the extension of hardship support to businesses was unnecessary. ▪ Rather than providing bill discounts, our customers expressed a preference that CWW work with customers in hardship to find ways to manage their bills and to be more water efficient. ▪ Customer advocacy groups supported CWW's existing activities and programs for vulnerable customers and customers in hardship. **Assistance with large bills due to leaks** ▪ Residential customers supported full financial relief for customers with a large bill due to a leak (currently limited to partial financial relief to a maximum of $1,000), subject to the leak being verified and repaired by a plumber. ▪ Non-residential customers expressed a preference that CWW maintains current levels of financial support for customers with a large bill due to a leak.	▪ We are developing a comprehensive plan to support customers who may be affected by family violence (see **Box 1: Supporting customers and employees affected by family violence**, p34) ▪ Maintain current hardship processes including referrals, payment plans and water efficiency assistance programs. ▪ Explore other programs and initiatives to support customers experiencing, or at risk of, hardship. ▪ Maintain programs to take all reasonable efforts to determine that a customer is not in hardship prior to restricting their supply or non-payment. ▪ For customers with a verified and fixed leak, charge the wholesale cost of water for the estimated volume of water lost due to the leak (see **Box 2: Leakage tariff**, 34).

What we asked …	What we heard …	Actions we will take …
How satisfied are you with CWW services?	**2016-17 Customer Satisfaction Survey results** ▪ 85% overall satisfaction with our services from residential customers experiencing hardship ▪ 93% satisfaction from customers who weren't experiencing hardship.	

Our customers supported us assisting those in genuine hardship and we have identified a set of meaningful performance measures for Outcome 4 through our customer engagement program – relevant measures are related to the number of customers in genuine hardship that we assist and our ongoing commitment to never restrict customers in hardship. We propose to measure and report on the following performance indicators for hardship support:

- customers on instalment plans
- residential customers receiving Hardship Grants
- number of customers taking up Water Assist (see **Box 3: Water Assist**, p35)
- prior to restriction being applied, CWW has undertaken reasonable endeavours to ensure customer is not in hardship.

Outcome 4 performance measures are set out in full in appendix B.

Box 1: Supporting customers and employees affected by family violence

Following the findings of the Royal Commission into Family Violence in 2016, CWW has been working with the ESC to develop and implement CWW's Family Violence Policy, which has been in place since 1 July 2017. We have supported the ESC, Financial Counselling Australia and the Financial & Consumer Rights Council at a number of industry forums on the topic. We have worked closely with our community partners (Kildonan UnitingCare, Good Shepherd, WEstjustice and Anglicare) to gain insights into the experiences of vulnerable customers, including those affected by family violence, to help shape our support services.

We will continue to develop our approach to supporting customers and employees affected by family violence. Activities underway and measures in place include:

for our customers …

- developing a family violence customer process, including customer identification and account management, discrete 'lockdown' processes for customer information, and establishment of a priority call group
- updating our Hardship Policy to include family violence as an indicator
- developing internal and external (service providers) communications plan.

for our people …

- establishing a cross-organisational working group established to drive family violence initiatives
- providing family violence awareness training to almost 300 employees and contractors, and delivery of an employee education and training plan in progress
- making specific HR support and allowances (including leave) available for victims of family violence
- developing a Family Violence intranet page, including referral services, created and communicated to employees
- hosting a White Ribbon Day event to raise awareness of family violence.

Box 2: Leakage tariff

CWW's customer engagement program found that residential customers supported greater financial relief for residential customers with a resolved leak, verified by a plumber. However, non-residential customers preferred a continuation of the current arrangements. To balance the interests of these two customer segments, CWW proposed to provide enhanced support to residential customers by way of a 'leakage tariff'. The leakage tariff will be set at the wholesale cost of water and will apply to the estimated volume of water lost due to the leak.

Box 3: Water Assist

The Water Assist Program is a residential water efficiency audit, appliance retrofit and advice program that has been offered to City West Water customers since 1 April 2014. Eligible customers have been identified as being in financial difficulty and experiencing high water use that is contributing to increased water bills.

The program aims to assist vulnerable customers with reducing their water and sewage usage charges to make their water accounts more affordable. Assistance includes general water efficiency advice as well as repair/replacement of leaking tap washers, showerheads, taps, toilets and pipes as well as adjustments and minor repairs to hot water services. Depending on the needs of each individual customer, up to $600 of products and services can be provided per property. Water Assist has provided support to 1066 customers to date and aims to assist 200 during 2017-18. DELWP currently support the program through the Community Rebate Program enabling a greater number of customers to benefit.

Outcome 5: The whole of the water cycle is managed in an environmentally sustainable way

What we asked …	What we heard …	Actions we will take …
Future water resources		
▪ What is CWW's role in managing water into the future? ▪ What are the priorities for managing long term water supplies? ▪ How should desalinated water and recycled water enter the mix of solutions to manage long term water supply security? ▪ How and when should we invest in securing water for the future?	▪ Customers accept and support CWW's important role in helping to guarantee a safe and reliable water supply for the future. ▪ Customers believed that recycled water should be provided at a discount as it is viewed as a lesser quality product, even though it is more costly to deliver than drinking water. ▪ Customers wanted us to continue to provide recycled water to properties that currently receive it, but were less supportive of extending the recycled water network to new housing or industrial developments. ▪ When informed of the costs and benefits of augmenting local water supplies now, customers expressed a preference to wait for large scale centrally-planned augmentations. ▪ Most customers were unsure about: – how the VDP is being used and could be used in the future – who would be receiving desalinated water. ▪ When asked about urban greening and keeping parks, gardens and sports fields green, customers indicated some preference for local stormwater solutions.	▪ Implement our *Urban Water Strategy*[18] actions to best utilise all available water supplies when appropriate, including the VDP and CWW's recycled water facilities, to balance supply and demand for water. ▪ Continuously review our recycled water investment plans to determine what provides best customer value. ▪ Take actions to economically limit the amount of water lost from the network due to leakages. ▪ Continue to work closely with our bulk water provider, Melbourne Water, other metropolitan water retailers and the Victorian State Government to understand and work to meet Melbourne's future water needs.

[18] Available at: https://www.citywestwater.com.au/urban_water_strategy.aspx.

What we asked …	What we heard …	Actions we will take …
Using water efficiently		
▪ What is CWW's role in helping customers become more water efficient?	▪ Customers consider water to be a precious resource, and are interested in being able to monitor their water usage and to learn about ways to save water. ▪ Customers well remember the millennium drought and believe that being wise with water is still very important. ▪ CWW's water efficiency assistance programs – currently provided at no cost to customers in hardship – should be made available at a small fee (around $50) to all customers. ▪ Community advocacy groups indicated that there were difficulties in applying water efficiency assistance programs to rental properties as the owner's approval is required to undertake works. ▪ For environmental and financial reasons, customers are very interested in learning about ways to save water – this interest was particularly pronounced among CALD communities. ▪ Councils strongly supported water saving initiatives that encourage and help customers to become water efficient. ▪ Customers were interested in real time information, facilitated by new metering technologies, to manage and monitor water usage. ▪ Non-residential customers expressed a view that it was important for CWW to be a centre of expertise on water savings. ▪ Non-residential customers were interested in better understanding how their water usage compares to that of similar businesses. ▪ Some customers felt CWW had taken too long to repair network leaks, which was a source of frustration when customers considered their own water saving efforts.	▪ Implement a user pays water efficiency assistance program available to all customers to help them find ways to save water, and provide participants with a rebate for participating. ▪ Continue to provide and support water efficiency programs – e.g. the toilet replacement program, showerhead exchange program and *Target 155*. ▪ Deliver water efficiency programs and education to schools and the community. ▪ Continue to provide customers with education and advice on how to be water efficient in their homes and businesses. ▪ Provide a mechanism to compare water usage between similar businesses. ▪ Investigate technology options for digital metering so customers can better understand their water usage and more quickly identify leaks.

What we asked …	What we heard …	Actions we will take …
Safe treatment and disposal of sewage		
▪ How can we better manage sewage and trade waste? ▪ Are there more trade waste services that CWW can provide?	▪ Customers believe that safe disposal of sewage and trade waste was of fundamental importance to a healthy environment. ▪ Sewerage services were not front of mind for residential customers. As long as the toilet flushed and water drained away from their property, they didn't think too much about these services. ▪ Non-residential customers indicated that managing trade waste easily and efficiently was very important to their business. ▪ Trade waste customers expressed limited interest in CWW: – taking over responsibility for trade waste flow meters – operating a greasy waste pump-out program. ▪ Some trade waste customers expressed interest in partnering with CWW to collect and utilise trade waste by-products on their site.	▪ Continue to meet the Environment Protection Authority's discharge licence commitments for our treatment plants and sewerage network performance. ▪ Explore innovative ways to utilise valuable resources from sewer and sewage treatment processes, continuing to move from a 'waste treatment and disposal' to a 'resource recovery' approach. ▪ Work with industrial customers to explore ways to extract value from waste that is not suitable for disposal through sewers.
Climate change		
▪ How quickly should CWW transition towards net-zero greenhouse gas emissions?	▪ Customers understood CWW's exposure to climate change but did not necessarily understand how CWW contributed to greenhouse gas emissions. ▪ Most customers accepted the need for CWW to set greenhouse gas emissions targets for itself, provided the targets do not lead to bill shock for customers. ▪ Councils had their own carbon targets, were supportive of CWW's target and open to partnerships to achieve these. ▪ Non-residential customers were concerned that greenhouse gas emission targets may lead to significant bill increases. ▪ Given the different environmental and cost impacts of moving towards net-zero greenhouse gas emissions, on balance, 2030 is the preferred target timeframe for this goal for most customers, although some larger business (trade waste) customers were more inclined towards earlier (2020) timeframes.	▪ Work towards progressively reducing our greenhouse gas emissions and a pathway to achieving net-zero emissions by 2030 (see **Box 4: Emissions targets**, p40). ▪ Explore opportunities to partner with councils and industry in achieving greenhouse gas savings.

What we asked …	What we heard …	Actions we will take …
Liveability – our role in urban greening		
▪ What is CWW's role in urban greening – keeping public parks, gardens and sports fields green – on customers' behalf?	▪ Customers view our role in urban greening, facilitated by partnerships, as our way to contribute to improving the liveability of the west and the wellbeing of our community. ▪ Customers supported CWW being an advocate for a greener west. ▪ Customers felt CWW should contribute to those aspects of environmental performance that relate most directly to its remit – e.g. stormwater harvesting should be prioritised over funding for tree planting. Customers supported us funding local stormwater solutions to help keep public parks, gardens and sports fields green. ▪ Councils were very interested in opportunities to use recycled water and valued CWW's technical capability in recycled water project design.	▪ Develop partnerships with local governments, Melbourne Water and the private sector to extend/increase the number of our stormwater harvesting sites. ▪ Establish a stormwater fund to support local governments in delivering local stormwater schemes. ▪ Continue to advocate for a greener, more liveable west through leading programs such as *Greening the West*.

Customers had a strong affinity for our role in managing water cycled services and we identified meaningful performance measures for Outcome 5 through our customer engagement program. We propose to measure and report on the following performance indicators for stewardship responsibilities for different aspects of the water cycle:

- water lost from the network
- water storage levels per the water outlook zones in our Urban Water Strategy
- emergency relief structures compliant with the requirement to not spill in dry weather
- compliance with the Environmental Protection Authority's licence requirements with respect to discharge of treated wastewater and the deposit of biosolids to land
- progress towards our goal of achieving net-zero emissions by 2030 (climate change) – see **Box 4: Emissions targets**, p40
- number of stormwater partnerships we have in place.

Outcome 5 performance measures are set out in full in appendix B.5.

Box 4: Emissions targets

Water for Victoria requires that the four metropolitan water corporations will examine an early path to achieve net-zero greenhouse gas emissions by 2030. Consistent with this expectation, CWW has pledged to the Victorian Government that, by 1 July 2025, we will reduce our greenhouse gas emissions by 80% (from a baseline of average total emissions between 2011-12 and 2015-16), with an interim target of 70% reduction by 2023. This commitment is being incorporated into our Statement of Obligations.

To meet this commitment we will pursue a range of initiatives, with a strong focus on energy efficiency and renewable energy at our sites. We are committed to pursuing the lowest cost initiatives to reduce emissions that are consistent with requirements outlined by the State Government

Outcome 6: CWW is a valued partner in servicing a growing Melbourne

What we asked …	What we heard …	
How can we better work together to deliver plumbing and development services to a growing Melbourne?	▪ Customers said that CWW's advice is trusted, and employees are responsive and easy to deal with. ▪ Councils expressed a strong desire to better understand our long term works program and to coordinate works to minimise disruption to communities. ▪ Developers, plumbers and builders: – indicated that turn-around time for applications was critical and were willing to pay for a priority service – would like us to continue to address any inconsistencies between metropolitan water corporations' rules, standards and access to information – want us to provide online options for standard enquiries and applications, but have a strong desire for us to maintain access to expertise via phone and email. ▪ Developers: – would like the opportunity to have input into our network servicing plans – expressed that standard consultancy reimbursements were insufficient to cover cost of works and a sliding scale was preferred. ▪ Plumbers: – were interested in being able to contact CWW before standard business hours in order to set up on their job site for the day – were interested in staged payment options for water meters.	▪ Continue to consult on the timing of developments when preparing our network servicing plans. ▪ Move more transactions online and automate transactions where possible, while continuing to provide access to CWW expertise. ▪ Provide processing time commitments for key plumbing and land development services, working to reduce turnaround times wherever possible. ▪ Continue to work, and improve relationships and communications, with councils to better serve our customers. ▪ Continue to play a leadership role in standardising and streamlining plumbing requirements to improve compliance and consistency in plumbing standards across the industry. ▪ Explore staged payment options for the provision of water meters. ▪ Implement priority service arrangements. ▪ Explore when connections and technical services representatives are available to receive calls and assess applications.

Customers using our plumbing and development services told us that turnaround time on applications are critical, as is the ability to complete transactions online. We propose to measure and report on the following performance indicators of our value as a service partner:

- time taken to complete plumbing applications
- time taken to complete pressure and flow information applications
- time taken to process asset information applications
- time taken to complete standard new customer contribution applications
- time taken to complete standard potable water meter assembly & installation.

Outcomes 6 performance measures are set out in full in appendix B.6.

4.3 Customer preferences we were unable to address

Our approach to the development of PS2018 was underpinned by our customers' values and preferences – every effort was made to incorporate our customers' feedback into the submission. However, as part of the process, we needed to take into account occasionally competing customer priorities and the practical considerations of running an essential services business. As such, we were not able to accommodate all customer preferences. A summary of the preferences we could not accommodate, and our rationale for taking a different direction, is provided in Table 5.

Table 5 Customer preferences we were unable to accommodate

Outcome area	Customer preference	CWW rationale for taking a different direction
Outcome 1: **Services to homes and businesses are safe, reliable and efficiently delivered**	As soon as a customer experiences a loss of water or low water pressure, they consider it to be a service disruption.	To remove subjectivity around definition of a service disruption, CWW proposes to retain the REW 5 definition that an interruption is a "total loss of water supply".
	▪ Some non-residential customers did not find universal GSLs relevant, with some customers indicating a desire for individually negotiated GSLs. ▪ Non-residential customers indicated a desire for some form of negotiated GSL in the event of a disruption that impacts their operations.	Negotiating individual standards is impractical given the integrated nature of the network – i.e. networks services cannot be differentiated for customers connected to the same pipeline. In the case of non-residential customers, while we will take all reasonable steps to ensure continuity of supply, business insurance arrangements should cover any supply disruption that impacts their operations.
Outcome 3: **Billing and payment options are efficient and convenient**	Customers were interested in bill smoothing and monthly billing to improve bill certainty and assist with budgeting.	Accurate monthly billing would require monthly meter reading. We consider monthly meter reading for the entire meter fleet to be cost prohibitive. CWW will explore options for digital metering that may allow us to meet this request in the future.
	Some customers were interested in discounts for pay-on-time and eBilling.	We heard that some customers would like discounts for eBilling and we also heard that it was unfair for customers to pay more for retaining paper bills. Our view is that customers' preferences for pay-on-time discounts are driven by their experiences in the contestable energy market where very large discounts are offered. As a regulated entity, CWW is not able to offer such large discounts and CWW considers the discounts it could offer would be so small that administrative costs would exceed benefits.
	Some non-residential customers indicated a desire for a volume discount on water.	We consulted on non-residential tariff structures and found strong support to maintain current structures.

Outcome area	Customer preference	CWW rationale for taking a different direction
	Some councils indicated a desire for alternative rates for irrigation, rather than non-residential rates.	We propose to retain the current non-residential tariff structures for all council usage. CWW believes it is fairer that the beneficiaries of irrigation (council rate payers) contribute to this service rather than the broad customer base.
Outcome 4: **Customers in hardship are supported**	▪ Non-residential customers preferred a slight reduction in hardship services. ▪ Non-residential customers preferred CWW to maintain the current level of support provided to customers experiencing a leak.	CWW notes the difference of views between non-residential and residential customs regarding management of hardship programs. Through efficiencies and reallocation of resources elsewhere, we can afford (and intend) to: ▪ maintain current hardship services and increase support to customers in hardship ▪ while also reducing prices for both residential and non-residential customers.
Outcome 5: **The whole of the water cycle is managed in an environmentally sustainable way**		
Future water resources	Customers preferred recycled water to be provided at a cheaper price than potable water. There is a perception that recycled water is of lesser quality than potable water and an assumption that using recycled water will save money.	CWW will continue to apply discounts to recycled water by: ▪ limiting the residential recycled water prices to the step 1 rate for residential potable water ▪ setting the non-residential recycled water price to 85% of the non-residential customer potable price. CWW will be looking at options to partner with councils to jointly invest in new stormwater schemes and to leverage existing grants and funding opportunities.
Using water efficiently	Some customers indicated CWW needs to address the speed with which network leaks are repaired – customers felt CWW takes too long given customers' water saving efforts.	CWW will be providing real time information on the status of faults and leaks during RP4. However, we will continue to optimise our response to leaks based on priority order, which may involve some leaks being fixed on a timescale longer than some customer would prefer.
Liveability	Councils indicated a desire for stormwater harvesting schemes to be provided at a discounted rate.	CWW will be looking at options to partner with councils to jointly invest in new stormwater schemes.

5 Guaranteed service levels

CWW recognises the vital role our services play in the lives of our customers, and the impact any disruption of these services can have on our customers.

CWW's approved GSL scheme applies automatic rebates to residential customers that experience a level of service less than the relevant GSL trigger.

Following consultation with our customers, CWW proposes to:

- continue all GSLs as currently approved,
- significantly increase the payment applied to every breach of an existing GSL
- introduce four new GSL events.

We believe the proposed GSL payment structure is more reflective of a customer-centric organisation and customers' expectations of CWW to deliver high levels of service.

On the basis of feedback received during the customer engagement process, CWW is proposing to introduce four new GSL events:

- No more than three unplanned water supply interruptions within any 12 month period.

  This event is in keeping with the higher value residential customers place on water network reliability as revealed through our quantitative research Phase 2.

- Failure to give at least two business days' notice of a planned water supply interruption.

  Not being aware of planned interruptions was a source of frustration for customers with that experience. This GSL will not apply to unplanned interruptions. This proposed event is in keeping with our policy for notification of planned works and reflects customer feedback from engagement Phase 1.

- No planned water supply interruptions during peak hours (5am - 9am and 5pm - 11pm).

  Residential customers told us that water service availability during busy times of the day was highly valued. This proposed event is in keeping with feedback from engagement Phase 1.

- Sewage spill in a house, caused by CWW or a failure of CWW's system(s).

  This proposed event is in keeping with feedback from engagement Phase 1.

Table 6 shows CWW's proposed GSL events and payments. All GSLs will take the form of automatic rebates applied to residential customer bills.

Table 6 Proposed guaranteed service levels

	Proposed GSL payment for RP4*	Current GSL payment*
Unplanned water supply interruption not restored within five hours of notification	$100	$50
No more than three unplanned water supply interruptions within any 12 month period	$100	NA
No more than five unplanned water supply interruptions within any 12 month period	$200	$50
No more than three sewer blockages within any 12 month period	$100	$50
Failure to give at least two business days' notice of a planned water supply interruption	$75	NA
No planned water supply interruptions during peak hours (5am to 9am and 5pm to 11pm)	$50	NA
Sewer blockages not restored within five hours of notification	$75	$50
Sewage spill not contained within five hours of notification	$75	$50
Sewage spill in a house, caused by the business or a failure of the business' system(s)	$1,000	NA
Sewage spill in a house, caused by the business or a failure of the business' system(s), not contained within one hour of notification	$3,000	$1,000
Restricting the water supply of, or taking legal action against, a residential customer prior to taking reasonable endeavours (as defined by the ESC) to contact the customer and provide information about help that is available if the customer is experiencing difficulty paying.	$300	$300

* Payments are not adjusted for inflation.

The proposed size of GSLs is based on our view of the value customers place on relevant services – these values were informed by our Phase 1 engagement findings and tested in Phase 4.

6 Revenue requirement

CWW has used the ESC's financial template to generate the proposed revenue requirement for RP4. This includes:

- opex
- a return on our regulated asset base
- regulatory depreciation – we have applied straight-line depreciation and continue to apply a depreciation override on existing assets to better reflect asset utilisation
- an allowance for taxation – based on the formula in the ESC guidance (section 3.10.2).

CWW's forecast revenue requirement for each of RP4 and RP5 is set out in Table 7 and Table 8 that show CWW's revenue requirement to be generally stable over RP4 and also generally stable in RP5, albeit at a lower level than in RP4. The causes of this are twofold:

- Regulatory depreciation is forecast to decline in RP4:
  - Several significant short-life assets, some software in particular, will fully depreciate over RP4.
  - CWW has excluded uncertain capital projects for RP4 and RP5 from PS2018 – e.g. the potential future roll out of digital meters.
  - Although uncertain projects have been excluded from proposed RP4 capex, we are nevertheless preparing for their eventual emergence – e.g. we have scaled-back our conventional meter replacement program in anticipation of a future digital meter roll out.[19]
- The benchmark tax allowance is forecast to decline in line with the forecast declining revenue requirement.

Table 7 Revenue requirement for RP4

	2018-19*	2019-20*	2020-21*	2021-22*	2022-23*
Opex	476.3	475.0	467.3	468.0	468.5
Return on assets	78.8	79.8	80.5	80.5	80.5
Regulatory depreciation of assets	76.8	75.7	76.0	78.5	65.1
Tax allowance	16.4	15.5	14.7	14.3	10.9
Total revenue requirement	**648.3**	**646.0**	**638.5**	**641.2**	**625.0**

* $m, 2017-18 prices
[a] Depreciation override applied.

[19] Inclusion of uncertain projects would tend to increase revenue requirement for RP5 over what is shown in Table 8.

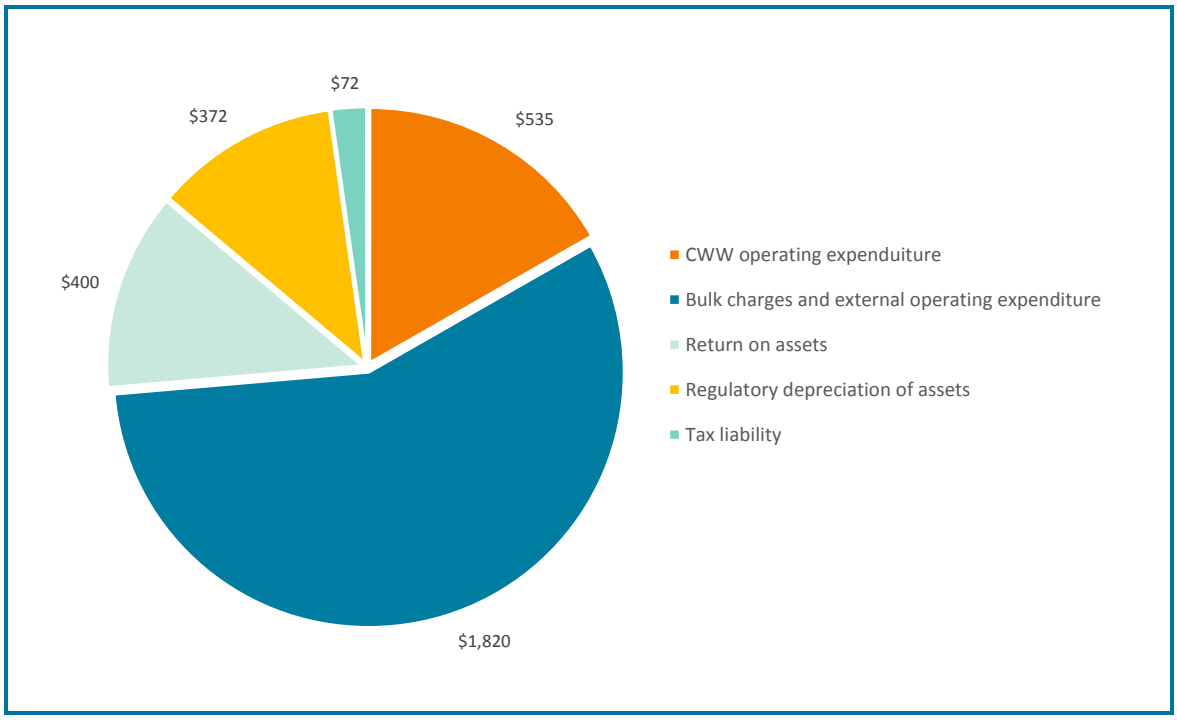
Table 8 Indicative revenue requirement for RP5

	2023-24*	2024-25*	2025-26*	2026-27*	2027-28*
Opex	468.6	468.3	468.0	467.6	467.2
Return on assets	80.9	82.0	82.6	82.4	81.6
Regulatory depreciation of assets	55.4	56.7	56.8	58.5	58.0
Tax allowance	8.4	8.0	7.5	7.4	7.0
Total revenue requirement	**613.3**	**615.1**	**614.9**	**615.9**	**613.8**

* $m, 2017-18 prices

The breakdown of components of our total revenue requirement across RP3, RP4 and RP5 is depicted in Figure 3.

Figure 3 Revenue requirement 2013-14 to 2027-28



7 Forecast operating expenditure

CWW has achieved significant savings in opex during RP3 as compared to the ESC 2013 final decision benchmark – e.g. CWW delivered average opex savings of $12.4m per annum, totalling $61.9m during the period. These savings have contributed to funding the $100 Government Water Rebate. Figure 4 shows the proposed continuation of these efficiency savings into RP4. Savings are primarily the result of CWW's delivery of its targets under the Government Efficiency Program. These operating cost efficiencies are proposed to be carried forward into RP4 controllable opex forecast as described in section 7.1.

Table 7 (p47) and Table 8 (p48) show that CWW's operating expenditures are forecast to remain steady over RP4 and RP5. Figure 3 (p48) shows that almost three-quarters of CWW's revenue requirement relates to operating expenditures, the majority of which is regulated bulk charges. For the purposes of PS2018, known changes in Melbourne Water (MW) prices[20] are incorporated in RP4 through to 2020-21. For the remainder of RP4 and RP5, relevant MW prices are assumed to be unchanged, on the understanding that any departures from this assumption will be passed through to retail customers via future MW price determinations.

CWW's controllable operating costs are forecast to trend upwards in line with 'customer growth less cost efficiency improvements' and several adjustments. Total controllable opex is forecast to increase by only 3.4% in real terms over the ten years of RP4 and RP5 notwithstanding expected customer growth in excess of 20% over the same period.

7.1 Controllable costs

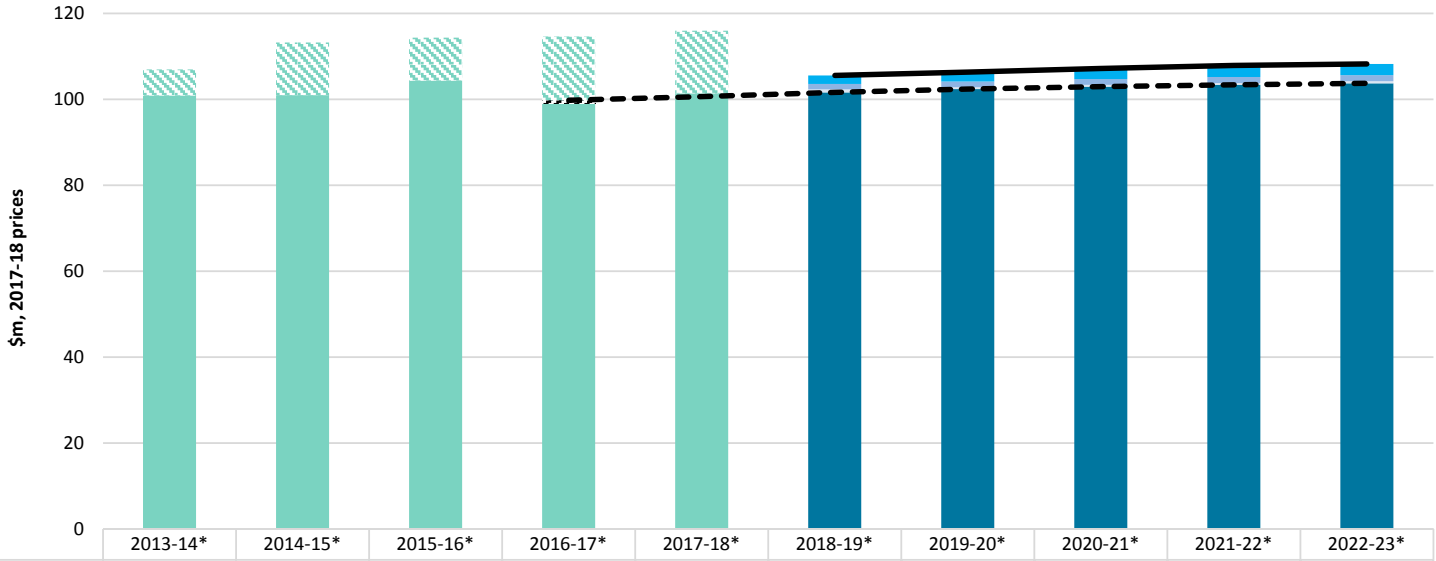
The controllable opex forecast for PS2018 has been developed using the base-year adjusted opex framework (and associated steps) set out in the ESC guidance.

Base year controllable operating expenditure

The 2016-17 financial year opex forms the 'baseline' opex. CWW's actual prescribed controllable opex in the base year was $99.1m (2017-18 prices). In accordance with Box 3.1 of the ESC guidance, CWW proposes four adjustments to its actual 2016-17 controllable opex to generate base year opex. These adjustments are set out in Table 9 (p51).

[20] As flagged through MW's 2016 determination.

Figure 4 Controllable opex (RP3 benchmark, RP3 actual and PS2018 forecast)



	2013-14*	2014-15*	2015-16*	2016-17*	2017-18*	2018-19*	2019-20*	2020-21*	2021-22*	2022-23*
Adjustment 1 - cloud computing						2.0	2.2	2.4	2.6	2.6
Adjustment 2 - WWSRP operation						1.3	1.3	1.4	1.4	1.5
Adjustment 3 - non-diversifiable energy market exposure						0.7	0.4	0.4	0.4	0.5
Adjusted baseline controllable opex						101.6	102.4	102.9	103.4	103.7
RP3 benchmark prescribed controllable opex	6.1	12.2	10.0	14.9	14.6					
Baseline controllable opex adjustment				0.7						
RP3 actual prescribed controllable opex	100.9	101.0	104.4	99.1	101.4					
Adjusted baseline controllable opex trend				99.8	100.6	101.6	102.4	102.9	103.4	103.7
Controllable opex forecast						105.6	106.3	107.1	107.8	108.2

* $m, 2017-18 prices

Table 9 Adjustments required to establish base year prescribed controllable opex

	Description	Level or change*
Actual	Actual 2016-17 prescribed controllable opex	99.1
Adjustment 1	CWW withheld some payments to its maintenance service provider to reflect some contracted performance targets that were not met. This abatement is not forecast to be applied in future years and, as such, $1.0m is proposed to be added into the base	1.00
Adjustment 2	CWW's 2016-17 opex included $0.035m on purchasing carbon offsets to meet a business target of 20% emissions reduction in 2016-17. Purchase of carbon offsets do not form part of CWW's future response to climate change and they have been removed from the base	-0.04
Adjustment 3	CWW's sponsorship of the international *WaterAid* program – reflecting CWW's view that this should be funded corporately, rather than by customers	-0.05
Adjustment 4	Payments under CWW's GSL scheme have been removed from the base year such that, in future, this scheme will be funded by CWW rather than by its customers	-0.18
Base year	Actual opex adjusted for one-off or non-recurrent expenditure	99.80

* $m, 2017-18 prices

Forecast controllable operating expenditure

CWW developed a top-down opex forecast with adjustments for change in circumstances during RP4. Forecast opex by service and classification is generally stable, in line with customer engagement findings that customers weren't necessarily looking for bill reductions but did express a preference for a package of services that are a little different to what we currently deliver. The controllable opex profile for RP3 and RP4 is provided in Figure 4.

The following outlines the steps taken by CWW to develop the forecast.

Step 1: Estimate the 2018-23 customer growth rate

The customer growth forecast is based on an assessment of the new lots created in CWW's service area. This draws on information from *Victoria in Future*, and our consultations with:

- local governments in the areas we serve to gain insights into the status of developments in the approval stages
- developers regarding the forecast timing of developments and lot releases.[21]

These information sources indicate that strong growth will continue for the short term but the rate of growth will begin to decline through RP4. Table 10 shows CWW's forecast customer growth rate, with more details in appendix F.

[21] Forecasts are based on analysis documented in a detailed CWW memorandum, *PS2018: Residential growth forecast*. This memorandum will be made available to the ESC on request.

Table 10 Customer growth forecast

2018-19	2019-20	2020-21	2021-22	2022-23
3.0%	2.7%	2.5%	2.4%	2.3%

Step 2: Specify the operating cost efficiency improvement rate

Our customers told us that it is important to continue to control our costs to help keep bills as low as possible. CWW has worked hard to deliver savings associated with the Government Efficiency Program. We have achieved significant savings in opex as compared to RP3 benchmarks, allowing us to return $100 per annum to residential water users through the Government Water Rebate. Although CWW has already made substantial efficiency gains, strong cost controls will continue through RP4 and deliver further efficiencies amounting to 2.0% of controllable operating expenditure per annum – see Table 11.

Table 11 Proposed opex efficiency improvement rate

2018-19	2019-20	2020-21	2021-22	2022-23
2.0%	2.0%	2.0%	2.0%	2.0%

The elements of improved operational practice and their relative contribution to CWW's ability to achieve further efficiencies are as follows:

- returns to scale (expected to deliver one percentage point of the 2% efficiency gain) – whereby our controllable operating expenditures do not increase as fast as customer numbers
- business process improvements derived from online transactional capability (0.5 percentage points) – facilitating:
    - reduced print and postage costs through email billing
    - faster, more efficient call resolution with a new customer records management system
    - customers transacting on their own terms through online accounts
    - customer self-service for a range of land and property development applications and data requests
- streamlined workflows arising from *Customers first, benefiting communities* and subsequent business structure realignment (0.25 percentage points)
- new innovative analytical tools and technologies (0.25 percentage points) that will assist CWW to optimise resource utilisation and overhead costs – including:
    - new data analytics platform
    - predictive asset management software
    - asset and environment optimisation software
    - new HR, OHS and payroll systems.

Step 3: Apply forecast variations to baseline operating expenditure

Through our engagement, customers demonstrated a preference for us to rebalance our expenditures to deliver an adjusted mix of services and service levels rather than adding to our expenditure base. CWW's proposed service offering reflects these preferences. However, as detailed Table 12, there are three areas where noteworthy increases to baseline opex will occur – cloud computing, WWSRP operations and energy costs. Further explanation of relevant factors is provided in the following section.

Table 12 Forecast variations to baseline opex

	2018-19*	2019-20*	2020-21*	2021-22*	2022-23*
Cloud computing costs (shift from capex to opex)	2.0	2.2	2.4	2.6	2.6
West Werribee Salt Reduction Plant operations	1.3	1.3	1.4	1.4	1.5
Non-diversifiable wholesale energy market exposure	0.7	0.4	0.4	0.4	0.5

* $m, 2017-18 prices

Factors creating noteworthy increases to baseline operating expenditure

Cloud computing costs (shift from IT capex to IT opex)

With new models of IT service provision, CWW is seeking to take advantage of 'software as a service' or 'cloud computing' opportunities. This proposal is consistent with priorities and objectives of the Victorian Government's Information Technology Strategy and results in new opex to replace what would previously have been capex for IT housed on-site.

CWW began utilising cloud services in 2017-18 and will continue to integrate these services into its business systems, in line with our focus on dynamic technology as outlined in *Customers first, benefiting communities*. Cloud computing services provide CWW with a set of discrete modular services that allows us to better manage our IT risk profile through the provision of secure off-the-shelf solutions.

There will be significant cloud-based elements incorporated in delivery of the following capex programs:

- Information management and data security – see appendix D, Table 57
- Maintaining essential IT capability – see appendix D, Table 55
- Billing, customer records management and customer data management – see appendix D, Table 59.

Shifting the funding of major projects from capex to opex, where prudent, is consistent with ESC guidance and helps to relieve pressure on prices for the benefit of our customers.[22]

[22] The justification for the quantum of the estimated transfer of costs from capex to opex is contained within the detailed business cases for each of the above programs that will be made available to the ESC on request.

Figure 5 (p55) shows CWW's forecast cloud computing opex relative to IT totex (opex + capex) for RP3 and forecast IT totex for RP4. Figure 5 also shows that after accounting for the shift to cloud opex, CWW will still be reducing its IT totex in the RP4 (average totex spend $26.0m) as compared to RP3 (average totex spend $28.0m).

Opex associated with the start of production of recycled water from WWSRP

CWW will be commissioning the WWSRP in 2017-18. The WWSRP uses reverse osmosis technology to desalinate Class A recycled water from Melbourne Water's Western Treatment Plant for supply to CWW's recycled water customers in the West Werribee Zone and Greek Hill Zone. There was no opex associated with recycled water production in the 2016-17 base year.

As part of its SIMALTO survey, CWW asked customers if they supported the supply of recycled water to customers from existing recycled water schemes. SIMALTO indicated customers supported the continued use of existing facilities but did not wish the cost of new recycled water schemes to be borne by the general customer base.

Table 12 (p53) shows CWW's forecast opex for the WWSRP. These costs are significantly lower than forecast opex from RP3 owing to: (1) a better understanding of demands for recycled water; and (2) CWW taking over ownership and operation of the plant.[23]

Opex associated with the wholesale electricity market

CWW currently has a fixed rate contract for electricity in place. This contract expires at the end of 2017-18 and CWW will then be exposed to prevailing market rates. CWW has used the ASX electricity futures market to forecast likely electricity costs over RP4. Our forecast shows wholesale electricity costs increasing from 4.5c/kWh under CWW's current contract in 2017-18, peaking at 9.2c/kWh in 2018-19 before levelling off to 7.5c/kWh thereafter. This trend corresponds to the current uncertainty in the wholesale energy market.

The non-diversifiable wholesale energy market exposure in Table 12 represents the variations to baseline opex driven by costs associated only with the change in the forecast average wholesale spot market rate for electricity. CWW's greenhouse gas emissions reductions obligations are not included in Table 12 – although customers supported CWW to meet a 2030 timeframe for achieving net-zero emissions, they did not want this to impact on CWW's bill level. The forecast set out in Table 12 nevertheless does account for CWW's reduced energy demands owing to installation of 'behind the meter solar' and energy efficiency programs – both of which are features of CWW's greenhouse gas pledge.[24]

Further detailed analysis is documented in a CWW memorandum.[25]

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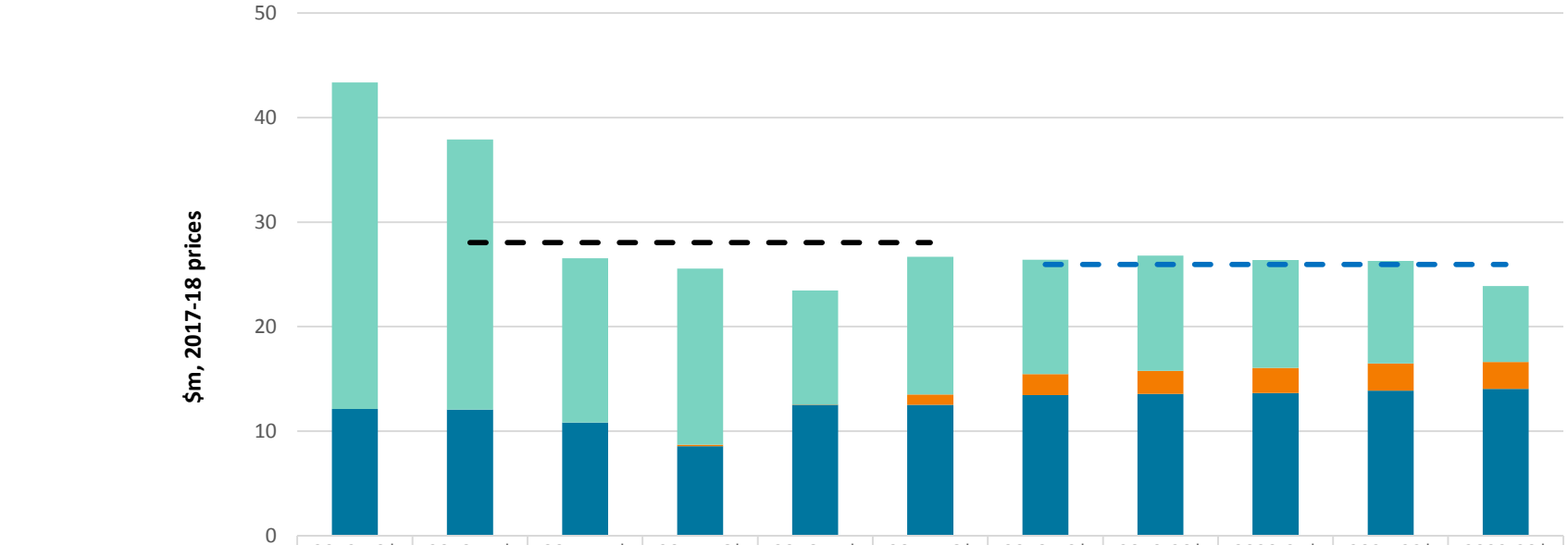
[23] Further detail regarding the opex for WWSRP is contained in a project summary and a standalone Excel model, each of which will be made available to the ESC on request.

[24] See **Box 4: Emissions targets**, p40.

[25] *PS2018: Electricity demand and cost forecast*. This memorandum will be made available to the ESC on request.

Figure 5 IT totex (RP3 actual and PS2018 forecast)



	2012-13*	2013-14*	2014-15*	2015-16*	2016-17*	2017-18*	2018-19*	2019-20*	2020-21*	2021-22*	2022-23*
Capital expenditure	31.2	25.9	15.7	16.8	10.9	13.2	11.0	11.0	10.3	9.8	7.2
Cloud expenditure	-	-	-	0.1	0.0	1.0	2.0	2.2	2.4	2.6	2.6
Operating expenditure	12.1	12.1	10.8	8.6	12.5	12.5	13.5	13.6	13.6	13.9	14.0
PR3 average totex		28.0	28.0	28.0	28.0	28.0					
PS2018 average totex							26.0	26.0	26.0	26.0	26.0

* $m, 2017-18 prices

7.2 Non-controllable costs

In addition to CWW's controllable costs, CWW incurs non-controllable opex that include: charges for bulk service provision; licence fees to our regulators; and the Environmental Contribution. CWW's approach to forecasting each of these non-controllable opex is set out below. Relevant values are contained within CWW's financial model.

Melbourne Water and Goulburn-Murray Water bulk charges

Bulk charges from Melbourne Water arise from:

- bulk water services provided under the *Bulk Water Supply Agreement*
- bulk sewerage services provided under the *Bulk Sewage Transfer, Treatment and Disposal Agreement*
- bulk Class A recycled water services provided under a negotiated bulk recycled water contract.

These costs are forecast to grow in line with CWW's demand for bulk services and, in the case of water and sewage, in line with the price paths set out in MW's 2016 determination, with stable prices assumed thereafter. CWW has assumed that current negotiated rates for bulk recycled water will remain stable. For the final two years of RP4, which are outside MW's 2016 determination, CWW has assumed MW's prices will remain constant.

CWW pays storage management and regional urban storage ancillary fees to Goulburn-Murray Water (G-MW) for water held under its Northern Victorian bulk entitlements in the Goulburn and Murray Systems. As the Connections Project nears completion, G-MW costs have been forecast to grow in line with prices set out in G-MW's 2016 determination and the increasing volume of water stored by G-MW on behalf of CWW.

Network access costs

There are two areas in which higher opex associated with network access activities in fact represent substantial benefits for CWW customers.

Renting access to the Melbourne-Geelong Pipeline

CWW has entered into an agreement with Barwon Water to rent access to the Melbourne-Geelong Pipeline at a cost of $180k per annum. This access allows CWW to defer (for seven years) close to $50m capex (and $175k ongoing annual pumping costs) that would otherwise be required to construct and operate assets to deliver potable and recycled water to the Greek Hill Zone.

Interconnection of sewerage assets

CWW and Western Water have entered into an agreement to interconnect sewerage network assets in the Plumpton and Werribee North sewerage catchments. Werribee North network is a 100% gravity system and Plumpton catchment will have a pumping transfer system. This interconnected solution represents a significant community saving compared to the costs of separate CWW and Western Water standalone solutions.

Compared to a standalone solution to service CWW customers only:

- the interconnected solution will have additional ongoing opex of $137k per annum to CWW as a fee to access Western Water infrastructure.
- CWW will avoid $1.7m capex to construct rising mains and consequently also avoid associated ongoing opex

Western Water will also make significant saving in both capex and opex in both catchments by avoiding construction of a long distance pumping transfer system.

Licence fees

CWW pays licence fees to the Environmental Protection Agency and the ESC. These licence fees are forecast to remain constant.

Environmental Contribution

CWW's Environmental Contribution (EC) is forecast to increase in 2018-19, in line with the Gazetted Tranche 4 announcement. Consistent with past regulatory precedent, CWW has assumed that the EC will remain at its 2018-19 level in nominal terms for the 5 years of RP4.

Shared costs

CWW does not have any shared costs.

8 Forecast capital expenditure

8.1 Capital expenditure savings in RP3

CWW is forecasting total capex of $504.4m (2017-18 prices) over the full RP3. When compared with the RP3 capex benchmark of $750.8m (2017-18 prices), the RP3 forecast represents savings of $246.4m (2017-18 prices) or approximately 33%, all while maintaining service standards and meeting regulatory obligations. Table 13 (p59) outlines variations between RP3 benchmark capex and RP3 actual + forecast capex for key drivers, along with some commentary as to reasons for the significant variations.

The capex underspend contributes to CWW's ability to finance the Government Water Rebate.

Figure 6 (p60) shows the year by year difference between CWW's RP3 capex benchmark and RP3 actual capex and also shows CWW's proposed PS2018 capex profile.

8.2 Features of RP4 capex proposals

The PS2018 forecast capex reflects CWW's strong continued focus on prudent efficient delivery of capex that supports the levels of service customers value. Major drivers for RP4 capex are:

- Increased renewals activity that:
  - targets the levels of service customers value, which influences the renewals we undertake in order to meet our KPIs
  - delivers works in a planned, preventative manner rather than a reactive manner – in line with customers' preferences to repair assets before they fail, which influences the renewals undertaken to manage environmental and social risks.
- Higher overall customer growth rate and shifts in the source of growth

  During PR3, growth shifted from greenfield to infill areas – manifested, for example, by the apartment boom in the inner city and activity centres. Since 2015-16, there has been a subsequent (and rapid) shift back to development in greenfield areas.

  Consequently, greenfield area growth assets that we delayed during RP3 now need to be constructed. Proposed investment includes extending CWW's networks beyond the CWW growth front to connect to Western Water's growth areas, so as to provide the lowest community cost sewerage solution for those areas.

  Assets also need to be constructed in the inner city (Spencer Street and Lonsdale Street sewer upgrades), to relieve the consequences of rapid growth in that area.
- Our billing system needs to be replaced to control our risks and provide the range of online service options customer told us they expect. This project was previously part of the Arrow Program,[26] the business process benefits of which were incorporated into (i.e. removed from) CWW's RP3 operating expenditure allowances.

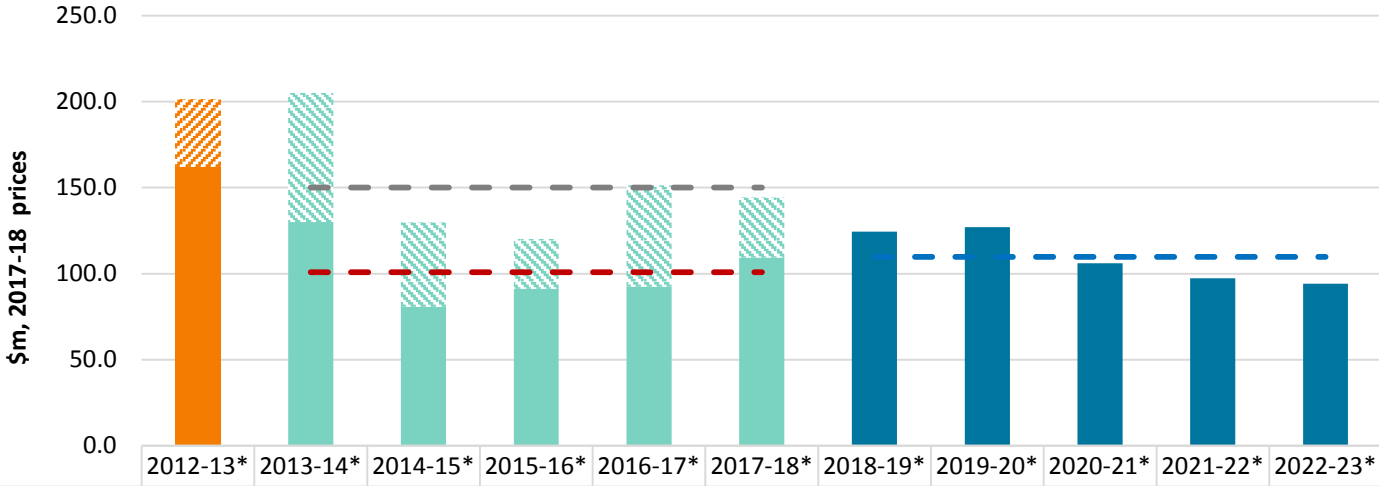
[26] Upgrades to critical customer management systems (Gentrack, DAMS and EMIS) were within the scope of Arrow Program Release 3, which was included on our 2013 price submission and associated capex, but did not proceed.

Table 13 Variations between RP3 benchmark and RP3 actual + forecast for key capex drivers

	RP3 bench-mark* (A)	RP3 actual + forecast* (B)	(A) – (B)*	Comment
Water supply				
Water – compliance	10.8	7.2	-3.6	
Water – growth	137.4	69.1	-68.3	Shift in growth to infill areas allowed CWW to delay growth capex
Water – renewal	132.4	100.9	-31.6	Water renewals optimised
Total water supply	*280.6*	*177.2*	*-103.5*	
Sewerage				
Sewer – compliance	15.7	9.1	-6.7	Shift in growth to infill areas allowed CWW to delay hydraulic compliance
Sewer – growth	105.0	58.8	-46.2	Shift in growth to infill areas allowed CWW to delay growth capex
Sewer – renewal	59.4	62.6	3.2	
Total sewerage	*180.1*	*130.4*	*-49.7*	
Reuse				
Recycled water – growth	136.8	83.2	-53.7	Shift in growth to infill areas allowed CWW to delay growth capex
Recycled water – compliance	38.6	11.0	-27.6	Contracting model for WWSRP changed (in house) and program will be delivered under-budget
Recycled water – renewal	4.6	0.9	-3.7	
Total reuse	*180.0*	*95.0*	*-85.0*	
Corporate				
Corporate – buildings	13.3	12.0	-1.4	
Corporate – IT	88.8	82.6	-6.2	CWW did not proceed with Arrow Program Release 3
Corporate – minor plant & equipment	8.0	7.3	-0.7	
Total corporate	*110.1*	*101.8*	*-8.3*	
TOTAL CWW FUNDED CAPEX	**750.8**	**504.4**	**-246.4**	

* $m, 2017-18 prices

Figure 6 Capex (RP3 benchmark, RP3 actual and PS2018 forecast)



	2012-13*	2013-14*	2014-15*	2015-16*	2016-17*	2017-18*	2018-19*	2019-20*	2020-21*	2021-22*	2022-23*
RP2 actual not yet rolled in	39.5										
RP2 actual	162.1										
PS2018 proposed							124.5	127.1	106.1	97.3	94.1
RP3 bechnmark		74.9	49.0	28.9	58.9	34.7					
RP3 actual		130.1	80.9	91.3	92.5	109.5					
RP3 benchmark average		150.2	150.2	150.2	150.2	150.2					
RP3 average actual		100.9	100.9	100.9	100.9	100.9					
PS2018 proposed (average)							109.8	109.8	109.8	109.8	109.8

* $m, 2017-18 prices

8.3 CWW's ongoing capital controls

CWW recognises it could have made better use of the uncertain capital projects mechanisms in RP3. For RP4, CWW proposes to maintain its current capex for the purposes of pricing, but make use of the uncertain projects mechanisms as set out in the ESC guidance.

The capital expenditure is covered by two categories:

- projects that have not yet been demonstrated to be prudent
- programs with opportunity for efficiency improvement.

Projects not yet demonstrated as prudent

Some projects under investigation by CWW are (as of September 2017) uncertain in terms of timing, technology choice, costs and benefits – these projects do not yet have positive business cases or sufficient demonstrated customer value. Examples of such projects include:

- Black Forest Road stormwater harvesting scheme
- the West Werribee brine pipeline
- renewals at CWW's Altona Treatment Plant (sewage)
- the widespread roll out of digital meters.

CWW proposes to continue developing business cases for these projects with the intent to implement each during RP4 provided they are determined to be prudent and efficient through a robust business case or demonstrated value to customers.

Programs with opportunity for efficiency improvement

Programs where there is opportunity for efficiency improvement include water and sewerage network renewals. CWW has developed program cost estimates from first principles, including the number of renewal activities and their median costs. However, CWW believes it can work to optimise the scope and costs of its renewals program over RP4. As such, CWW is not proposing to incorporate all expenditure from its program justifications into PS2018.

Factors that assist CWW in optimising its capital program and deliver customer value include:

- revitalisation of CWW's centralised procurement and capital improvements roles
- review of CWW's Asset Management Framework and Asset Risk Management Model
- moving further towards certification of ISO3100 and ISO55000
- implementation of new:
    - data analytics platform
    - project management and time sheeting
    - predictive asset management tools
    - asset and environment optimisation processes.

8.4 Classification of the PS2018 capital program

For the purposes of PS2018, CWW's forecast capex has been disaggregated into:

- **major capital projects** – the 'Top 10' discrete projects
- **uncertain major projects** – projects in various stages of development that may proceed during RP4 if certain conditions are met. However, they do not contribute to capex for the purposes of PS2018
- **capital programs** – capital allocations to programs of work that will be ongoing throughout RP4
- **other capital expenditure** – capex not associated with major projects or programs but needed for CWW to perform regulated functions and provide services that customers value.

Proposed capex under each capital classification is summarised in Table 14, Table 15 and Table 16. Appendix D contains the information satisfying the requirements for forecast capex as set out in the ESC guidance. Each major project and capital program is supported by a detailed expenditure justification document (to be made available to the ESC on request) that describes the options considered, risk analysis, proposed procurement strategy and basis of cost estimation.

Table 14 Major capital projects – summary

Project	Service	Driver	P50 estimate*	Cost included*
CBD sewerage strategy Stage 2 (Lonsdale Street)	Sewerage	Growth	27.9	27.9
Billing and collection system replacement	Corporate	Renewal	15.0	15.0
CBD sewerage strategy Stage 1 (Spencer Street)	Sewerage	Growth	12.2	12.2
Ravenhall outlet sewer	Sewerage	Growth	10.2	10.2
Tarneit West outlet sewer (Section 1)	Sewerage	Growth	8.7	8.7
Nicholson Street water main renewal	Water	Renewal	8.2	8.2
Greek Hill water supply (Dohertys Rd, Derrimut Rd & Davis Rd mains and Melbourne-Geelong Pipeline interconnection)	Water	Growth	6.2	6.2
West Werribee sewage pump station upgrade	Sewerage	Compliance	5.6	5.6
Mt Atkinson outlet sewer	Sewerage	Growth	4.9	4.9
Greek Hill recycled water supply (Dohertys Rd, Derrimut Rd & Davis Rd mains)	Recycled	Growth	3.4	3.4
Total major capital projects			**102.3**	**102.3**

* $m, 2017-18 prices

Table 15 Uncertain major capital projects – summary

Project	Service	Driver	Range of costs*	Cost included*
Altona Treatment Plant works	Sewerage	Renewal / compliance	7.2 – 14.0	7.2
Digital metering widespread roll out	Water	Improved service	80 – 120	0
West Werribee Salt Reduction Plant brine pipeline	Recycled	Compliance	6.0 – 7.0	0
Black Forest Road stormwater scheme	Recycled	Growth	5.0 – 7.0	0

* $m, 2017-18 prices

Table 16 Major capital programs – summary

Program	Service	Driver	P50 estimate*	Cost included*
Major capital programs				
Water KPI renewals	Water	Renewal	97.6	84.1
Sewer growth – developer works	Sewerage	Growth	65.5	65.5
Sewer KPI renewals	Sewerage	Renewal	66.1	56.1
Meter services and meter procurement	Water	Growth	40.5	40.5
Water risk renewals	Water	Renewal	37.8	37.8
Sewer hydraulic compliance	Sewerage	Compliance	21.2	21.2
Water growth – developer works	Water	Growth	20.1	20.1
Recycled water growth - developer works	Recycled	Growth	18.7	18.7
Maintaining essential IT capability	Corporate	Renewal/ improvement	17.9	17.9
Sewer risk renewals	Sewerage	Renewal	18.0	15.5
Information management and data security	Corporate	Renewal	8.1	8.1
Water property service connection renewals	Water	Growth	8.6	7.6
Billing, customer records and data management	Corporate	Renewals	7.2	7.2
Minor capital programs				
Water meter replacement	Water	Renewal	3.5	3.5
Aquifer storage and recovery	Recycled	Growth	2.5	2.5
Renewable energy installations	Corporate	Improvement	2.0	2.0
Total capital programs			**435.4**	**408.4**

* $m, 2017-18 prices

CWW's 'other' capex not covered in Table 14, Table 15 and Table 16, totals approximately $6.5m per annum, or a total of $32.5m over RP4.

8.5 Total capital expenditure by driver and service

Table 17 and Table 18 set out CWW's proposed capex by driver and service respectively.

Table 17 Capex by driver

	2018-19*	2019-20*	2020-21*	2021-22*	2022-23*	RP4 total
Net capex - renewals	56.0	61.5	65.0	62.9	54.2	**299.6**
Net capex - growth	39.4	36.5	13.8	7.9	12.0	**109.6**
Net capex – improvements/compliance	4.7	4.7	3.1	2.3	4.2	**19.0**
Government contributions	0.0	0.0	0.0	0.0	0.0	**0.0**
Customer contributions	24.3	24.5	24.2	24.2	23.8	**121.0**
Total prescribed capex	**124.5**	**127.1**	**106.1**	**97.3**	**94.1**	**549.1**

* $m, 2017-18 prices

Table 18 Capex by service

	2018-19*	2019-20*	2020-21*	2021-22*	2022-23*	RP4 total
Water	49.3	46.0	50.3	45.7	43.2	**234.5**
Sewerage	58.2	67.6	48.0	44.3	44.4	**262.5**
Recycled water	16.9	13.5	7.9	7.3	6.6	**52.1**
Total prescribed capex	**124.5**	**127.1**	**106.1**	**97.3**	**94.1**	**549.1**

* $m, 2017-18 prices

9 Return on the regulatory asset base

9.1 Rolled forward regulatory asset base

The changes in the rolled forward regulatory asset base for each of RP3, RP4 and RP5 are outlined in Table 19, Table 20 and Table 21 respectively.

Table 19 Regulatory asset base 2012-13 to 2017-18

	2012-13*	2013-14*	2014-15*	2015-16*	2016-17*	2017-18*
Opening asset base	**1,648.6**	**1,785.1**	**1,854.2**	**1,857.7**	**1,835.0**	**1,836.3**
plus capex	190.5 [a]	130.1	80.9	79.3	92.5	109.5
less customer contributions	17.6	17.0	21.5	27.9	33.1	21.2
less government contributions	0.6	1.2	5.0	2.5	0.0	-
less regulatory depreciation	35.4	42.0	50.1	55.0	57.2	59.6
less disposals	0.4	0.8	0.8	16.6	0.9	0.5
Closing asset base	**1,785.1**	**1,854.2**	**1,857.7**	**1,835.0**	**1,836.3**	**1,864.5**

* $m, 2017-18 prices
[a] Adjusted to reflect 2012-13 actual expenditure per ESC guidance section 3.9.1.

Table 20 Forecast regulatory asset base for RP4

	2018-19*	2019-20*	2020-21*	2021-22*	2022-23*
Opening asset base	**1,864.5**	**1,887.3**	**1,913.7**	**1,919.1**	**1,913.3**
plus capex	124.5	127.1	106.1	97.3	94.1
less customer contributions	24.3	24.5	24.2	24.2	23.8
less government contributions	0.0	0.0	0.0	0.0	0.0
less regulatory depreciation	76.8	75.7	76.0	78.5	65.1
less disposals	0.5	0.5	0.5	0.5	0.5
Closing asset base	**1,887.3**	**1,913.7**	**1,919.1**	**1,913.3**	**1,918.0**

* $m, 2017-18 prices

Table 21 Forecast regulatory asset base for RP5

	2023-24*	2024-25*	2025-26*	2026-27*	2027-28*
Opening asset base	**1,918.0**	**1,936.6**	**1,968.6**	**1,966.5**	**1,955.1**
plus capex	98.0	112.3	77.9	70.0	54.6
less customer contributions	23.5	23.2	22.7	22.4	22.1
less government contributions	0.0	0.0	0.0	0.0	0.0
less regulatory depreciation	55.4	56.7	56.8	58.5	58.0
less disposals	0.5	0.5	0.5	0.5	0.5
Closing asset base	**1,936.6**	**1,968.6**	**1,966.5**	**1,955.1**	**1,929.0**

* $m, 2017-18 prices

9.2 Return on debt

CWW will apply the ten year trailing average cost of debt as set out in the ESC guidance.

9.3 Return on equity

CWW has used the ESC's PREMO assessment tool as set out in the Attachment 5 of the ESC guidance. CWW proposes an 'Advanced' PREMO rating for PS2018 on the basis of a PREMO self-assessment. Detailed rationale behind our self-assessment is provided in appendix E.

The following are key aspects of the scoring methodology applied by CWW:

- **Point scores assigned to each example:** for each REMO[27] element we have assigned a score between 1 and 4 to each of the detailed examples provided in the ESC guidance.[28]
- **Deriving an aggregate score:**
  - within each REMO element, the scored detailed examples have been given equal weighting to derive an average element sub-score (that is rounded down to the nearest 0.25).
  - the rounded element sub-scores are summed to derive the aggregate score.

A summary of our self-assessment scores is provided in Table 22.

There are examples of requirements under the 'Management' element of PREMO that we have not scored, because we do not believe they contribute to an above 'Standard' rating. To score these items would, in our view, create inappropriate bias in the element average score.

[27] For PS2018, the ESC is not scoring performance – the "P" in PREMO.

[28] Our scoring is in accordance with ESC guidance, Attachment 5, Table A.

Table 22 PREMO graded scoring system – CWW self-assessment

Element	Self-assessment
Risk	3.00
Engagement	3.00
Management	3.00
Outcomes	2.75
Total score	**11.75**
Rating	**Advanced**

Full details of our PREMO self-assessment are in appendix E.

10 Tax allowance

The regulated return on investment is expressed in post-tax terms rather than a tax adjustment being included in the specification. As such, it is necessary to include an estimate of tax liabilities in the revenue requirement.

CWW has calculated its allowance for taxation for each of RP4 (Table 23) and RP5 (Table 24) based on the formula in the ESC guidance (section 3.10.2).

Table 23 Tax allowance for RP4

2018-19*	2019-20*	2020-21*	2021-22*	2022-23*
16.4	15.5	14.7	14.3	10.9

* $m, 2017-18 prices

Table 24 Tax allowance for RP5

2023-24*	2024-25*	2025-26*	2026-27*	2027-28*
8.4	8.0	7.5	7.4	7.0

* $m, 2017-18 prices

11 Demand

11.1 Recap on demand during RP3

CWW experienced strong growth in demand for its services over the period 2013-14 to 2016-17. Several factors contributed to this growth including:

- 'bounce back' in water consumption per connection following the easing of water restrictions (2007-2012) – permanent water use rules have been in place since 2012.[29] Water demand per residential customer has increased from 139kL per household per annum in 2011-12 to 155kL per household per annum in 2016-17.
- strong growth in CWW's customer base that has averaged 3.4% per annum (to date) over RP3.

11.2 Assumptions underlying demand forecasts

CWW has prepared a detailed report describing demand forecasts that support PS2018. This section provides a summary of the demand forecasts and key issues addressed within them.

Key assumptions

The following assumptions are inherent in CWW's demand forecast:

- growth in customer numbers will be consistent with our lot forecast based on *Victoria in Future* (VIF) 2016 but adjusted to better reflect the growth observed in CWW's service area. This is further described in appendix F.1.
- recycled water demand will continue to account for a small but growing share of end uses
- there will be a continuing shift towards the installation of water efficient appliances
- there will be no further 'bounce back' from the millennium drought – i.e. bounce back has already occurred[30]
- permanent water use rules will remain in place and there will be no move to introduce new water use restrictions over RP4
- climatic conditions during RP4 will be similar to those that prevail through RP3

[29] As yet, we have no solid evidence that the bounce back has either concluded or will continue. However, we have studies in the field that attempt to go beyond analysis of average consumption per capita by seeking to also identify how water is being used within different household types.

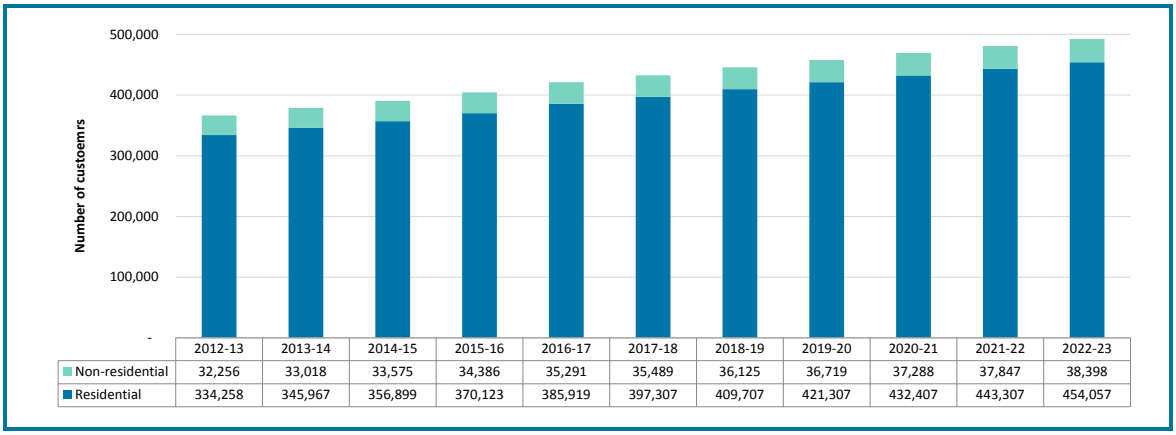
[30] See footnote 29.

- tariff reforms (reduced water prices) require the application of price elasticity.[31] In practice CWW has prepared bottom-up demand forecasts and applied elasticities through the financial model to best account for price effects on demand
- given the impracticalities of metering sewage, billed sewage disposal fees will continue to be estimated based on customers' billed water usage
- trade waste forecasts are based on interviews with our 17 largest customers,[32] for remaining customers, forecasts are based on trends in key industrial segments.

Key trends in demand forecasts

Growth in customer numbers and water demand are the key drivers of CWW's water and sewerage demand forecasts. Figure 7 and Figure 8 (p71) show the expected continued growth in CWW's core demand forecasts for revenue purposes – being network fee assessments and water consumption respectively. Note that Figure 8 accounts for the proposed reform to remove usage price step 3 from the residential water tariff.

Figure 7 Customers paying water network fees (RP3 actual and PS2018 forecast)



	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Non-residential	32,256	33,018	33,575	34,386	35,291	35,489	36,125	36,719	37,288	37,847	38,398
Residential	334,258	345,967	356,899	370,123	385,919	397,307	409,707	421,307	432,407	443,307	454,057

Overall, water demand continues to grow in line with underlying customer growth. Water consumption per customer is forecast to grow at a rate less than customer growth due to:

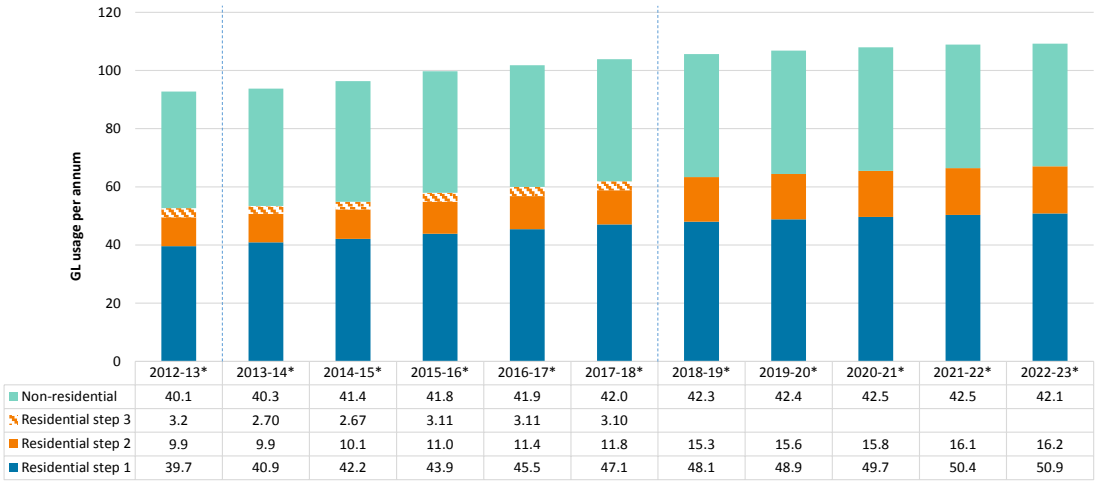
- (for residential consumption) a continued demographic shift towards more water efficient housing stock on smaller residential lots
- (for non-residential consumption) a sustained trend away from higher water usage in manufacturing processes.

This is shown graphically in Figure 15, appendix F.2.

31 The elasticities previously applied (Sydney Water, 2011) are assumed to continue to hold – i.e. a 1% change in price will result in a -0.1% change in overall non-residential usage and -0.14% change in higher price step water usage. This has the effect of marginally increasing water usage.

32 Customers that individually represent at least 1% of 2014-15 trade waste revenue and collectively represent (approximately) 60% of all trade waste revenue

Figure 8 Billed water consumption (RP3 actual and PS2018 forecast)



	2012-13*	2013-14*	2014-15*	2015-16*	2016-17*	2017-18*	2018-19*	2019-20*	2020-21*	2021-22*	2022-23*
Non-residential	40.1	40.3	41.4	41.8	41.9	42.0	42.3	42.4	42.5	42.5	42.1
Residential step 3	3.2	2.70	2.67	3.11	3.11	3.10					
Residential step 2	9.9	9.9	10.1	11.0	11.4	11.8	15.3	15.6	15.8	16.1	16.2
Residential step 1	39.7	40.9	42.2	43.9	45.5	47.1	48.1	48.9	49.7	50.4	50.9

* GL per annum

A detailed discussion of the methodologies applied to developing demand forecasts for the various customer segments can be found in appendix F. Forecast demands for RP4 and RP5 can be found in appendix G.

12 Form of price control

CWW proposes to retain the same form of price control as has been applied in the current pricing period – i.e. individual price caps.[33] As previously agreed with the ESC, the price cap form of control balances:

- the needs of our business for revenue certainty
- the needs of customers for price certainty
- customer desire to control their bills.

In proposing to retain the current form of price control, CWW has considered the following:

- Customers' views – CWW customers told us that they valued stable prices. This was discussed at CWW's tariff forum where the consensus from non-residential customers in particular was for a known price that assists businesses for budgeting and investment purposes. CWW believes that moving to a revenue cap does not provide sufficient certainty for customers.
- Risk allocation – CWW believes that this form of price control provides customers with certainty and stable incentive signals for the duration of RP4, given we are using our best estimate of forecast demand.

[33] As set out in CWW's 2013 determination and subject to certain conditions being met, CWW understands the existing option to apply, during RP3, to move to a tariff basket approach would continue to be available in PR4.

13 Prices and tariff structure outcomes

In summary, the key features of our proposals for RP4 prices and tariff structures are as follows:

- The majority of our tariff structures remain unchanged.
- We will move to a two price step tariff structure for residential water usage.

  Removing the third residential price step delivers a price reduction of more than 10% for the water currently consumed in the step 3 volume threshold. This change:

  - brings prices closer to alignment with efficient signals
  - unwinds some specific inequities – e.g. the impact of step 3 fee on high water using low income customers
  - is applied equitably across the customer base.
- The non-residential price for water usage will continue to be the weighted average of the residential step prices. The reduction in the non-residential price for water usage represents a move towards more efficient price signals.
- The residential sewage disposal fee will be substantially lower in RP4 – a move in the direction of removing the sewage disposal fee.
- Revenues will be rebalanced in line with our cost base – i.e. sewerage tariffs will reduce more than water tariffs.
- We will readopt the way we charged for titled and connected properties prior to RP3.

  Reflecting our current billing practice, we will not charge in respect of occupancies on a title under s259(9) of the *Water Act 1989*. Note that for RP3, prices were set on the assumption that we would be receiving revenue from occupancy-based fees. Prices for RP4 have been set on the basis that we will not be receiving revenue from occupancy-based fees.
- Savings made under the Government Efficiency Program will be converted into price reductions.

  All customers will see real price reductions. Some fees (sewage disposal fees and trade waste volume fees) will decrease by more than 10% as we target these fees to return savings to customers. However, owing to the discontinuation of the temporary Government Water Rebate, the Q1 bills of some customers will increase but all subsequent bills (Q2 to Q4) will decrease.[34]
- We will reintroduce network fees for private fire service connections (PFSCs).

[34] These customers are low water users who have been receiving a disproportionate share of CWW's savings – our objective is to more equitably share the savings via price reductions.

13.1 Our approach to considering changes to tariff structures

In considering appropriate tariff structures for RP4, CWW has balanced three considerations:

- the views of our customers
- the tariff principles set out at section 3.13 of the ESC guidance
- CWW's experience administering its tariffs and price levels.

13.2 Customer consultation

How we engaged

Throughout our engagement program, tariff structures have been a topic of customer interest. CWW asked about tariff structures in Phase 1 of its engagement program. Phase 3 of CWW's engagement program involved a deliberative customer forum on tariffs that built on Phase 1 insights and focussed on four aspects of CWW's tariff structure:

- the proportion of bills that are fixed and variable
- the residential price steps for water
- the residential sewage disposal fee
- the single network fee and whether CWW should move to network fees tied to meter size.

The customer forum was followed by a quantitative survey on potential alternative tariff structures.

What we heard

In response to what we asked about tariff structures:

- Customers told us they supported continuation of a relatively high proportion of the bill being variable – i.e. usage prices higher than LRMC. This was particularly the case for residential customers.
- Customers indicated mixed views on the merits of continuing residential price steps. CWW posed three options: (1) retain the three price steps; (2) reduce to two price steps; or (3) apply a single price for all water usage.

  Customers generally supported retaining the three price steps but less than half of customers surveyed felt this structure was fairest. Also, less than half of customers surveyed felt that this structure was easy to understand.
- Customers indicated they were evenly split on the merits of continuing the residential sewage disposal fee, with their position largely determined by the estimated bill impacts on the individual under a move to a fully fixed fee.
- Non-residential customers indicated they believed a move to meter-based charging was, in principle, fairer. However, customers' overall views were heavily tied to the estimated bill impacts on the individual business.

13.3 Proposed changes in tariff structure

Proposed changes

Our proposed tariff reforms in this price period include:

- two-part (fixed + variable) tariffs will be retained for both water and sewerage services but we will be moving to a two price step structure for residential water usage (the volumetric or variable component) – i.e. combining the second and third residential price steps
- continuing to set all water prices higher than LRMC, in line with customer preferences for a high degree of control over bills
- significantly reducing the residential sewage disposal fee
- aligning the non-residential water usage prices to the weighted average of the residential price steps
- reintroducing network fees for PFSCs in line with the practice of our peers and reflecting the costs we incur in providing this essential service – see appendix H for a justification for re-introduction of network fees for PFSCs.

Proposed key tariffs for residential, non-residential and trade waste customers are outlined in Table 25, Table 26 and Table 27 respectively.

Table 25 Proposed residential tariffs

	Units	2017-18*	2018-19*	Change (P0)
Residential water tariff				
Water network fee	$/year	$231.20	$226.88	-1.9%
Water usage fee – price step 1	$/kL	$2.4440	$2.4440	0.0%
Water usage fee – price step 2	$/kL	$2.8766	$2.8766	0.0%
Water usage fee – price step 3	$/kL	$4.2744	$2.8766	-32.7%
Residential sewerage tariff				
Sewerage network fee	$/year	$256.56	$251.76	-1.9%
Sewage disposal fee	$/kL	$1.8805	$0.8500	-54.8%
Residential recycled water tariff				
Recycled water network fee	$/year	$30.54	$29.97	-1.9%
Recycled water usage fee	$/kL	$2.4440	$2.4440	0.0%

* 2017-18 prices

Table 26 Proposed non-residential tariffs

	Units	2017-18*	2018-19*	Change (P0)
Non-residential water tariff				
Water network fee	$/year	$336.76	$330.46	-1.9%
Water usage fee	$/kL	$2.7186	$2.5486	-6.3%
Non-residential sewerage tariff				
Sewerage network fee	$/year	$453.08	$444.61	-1.9%
Sewage disposal fee	$/kL	$1.8294	$1.6750	-8.4%
Non-residential recycled water tariff				
Recycled water usage fee	$/kL	$2.3849	$2.1663	-9.2%

* 2017-18 prices

Table 27 Proposed trade waste tariff

	Units	2017-18*	2018-19*	Change (P0)
Trade waste disposal volume	$/kL	$0.9776	$0.8000	-18.2%
Biochemical oxygen demand	$/kg	$0.9954	$0.9768	-1.9%
Suspended solids	$/kg	$0.5393	$0.5292	-1.9%
Nitrogen	$/kg	$1.9155	$1.8797	-1.9%
Total dissolved solids	$/kg	$0.0195	$0.0191	-1.9%

* 2017-18 prices

In making changes to tariff structures to deliver more efficient outcomes we are very conscious of minimising the prospect of bill-shock and creating new inequities. We have provided all customers with real price reductions. We aim to minimise any significant adverse bill shock for those residential customers who may experience a bill increase resulting from redistribution of the existing $100 annual rebate to bills – this is achieved through:

- reducing the number of price steps
- reducing the volumetric fee on sewage disposal
- redistributing the existing $100 annual rebate on residential water usage bills.

All miscellaneous service fees are set in accordance with pricing principles laid out in CWW's 2013 determination. Appendix I details the path for tariffs and fees for core miscellaneous services over the full five years of RP4. Appendix J provides a description of the core miscellaneous services for which we propose to have regulated prices.

Rationale for stepped pricing

Evidence collected from our customer engagement forums indicates that:

- (when informed of the existence of price steps) customers supported stepped tariff structures in the belief that an inclining stepped structure provides some incentive to minimise water use
- customers are generally comfortable with the existing proportions of fixed and variable charges.

Our own analysis of the effectiveness of the current tariff structure indicates:

- customers are already paying far above LRMC for incremental water use
- the price signal provided to customers is weak – water usage thresholds for moving from one price step to the next are very difficult for customers to actively manage because water usage is mostly billed quarterly and in arrears
- in CWW's service area, customers in low income suburbs (particularly renters) tend to use more water than customers in high income suburbs and, therefore, sharply inclining step tariff structures can have the effect of exacerbating disadvantage.

Any change to tariff structures to improve the efficiency of pricing signals will affect different customers in different ways. The existing three price steps contribute to a complex pricing structure with attendant difficulties in explaining to customers how their bill has been derived. In particular, the current step 3 price is 75% higher than the step 1 price, with the step 1 price already far above LRMC. Such a high step 3 price creates real difficulties for some customers including:

- large families
- water lost through leaks behind the customer meter
- tenants with little ability to control systemic leaks on their rented properties.

From the perspective of simplicity and economic efficiency, retaining two price steps for residential water usage is not ideal. However, moving from three steps to two steps is a move on the right path – it seems to be a worthwhile compromise to a sudden shift to just one price step that would impose significantly adverse bill shocks on some customers. Proposed changes represent a reasonable balance between the tariff principles set out in the ESC guidance and delivering outcomes that are valued by our customers.

Rationale for reducing the sewage disposal fee

The ESC and the Productivity Commission have previously noted the two part (fixed + variable) sewerage tariff approach is unusual in Australia – retail sewage tariffs are typically charged as a single fixed fee per billing period on the basis of either 'per property' or 'meter size'. The Productivity Commission has also noted it is unlikely that demand for domestic sewerage services can be influenced by price to the same degree as overall demand for water. Indoor water use determines the need for wastewater disposal. Households have less scope to adjust their use of indoor water (as opposed to outdoor water) in response to price changes.[35] CWW's intention is to work towards phasing out the residential sewage disposal fee starting with a significant price reduction in 2018-19.

[35] Productivity Commission, *Australia's Urban Water Sector Draft Report*, April 2011, pp160-161

CWW's proposal to reduce the sewage disposal fee is an interim step that brings the sewage disposal fee closer to the estimated LRMC (currently taken as the MW bulk sewerage treatment fee) and brings CWW's sewerage service tariff revenues closer to CWW's costs of service provision. A corresponding, albeit lesser magnitude, reduction in the non-residential sewage disposal fee and trade waste volume fees are likewise intended to bring closer alignment between:

- CWW's tariffs and LRMC
- CWW's sewerage service costs and tariff revenues.

Future refinement to trade waste fees

CWW is considering two changes to trade waste prices during the next regulatory period:

- review and amendment of the inorganic total dissolved solids (ITDS) load fee with a potential move to a 'sodium' load fee
- review and amendment of the 'biochemical oxygen demand' load fee to 'chemical oxygen demand' load fee

However, CWW does not yet have sufficient information to propose amended tariffs or fee levels in PS2018. A joint program of investigations among metropolitan Melbourne water corporations is proposed for the first two to three years of RP4. A proposal to amend CWW's relevant trade waste fee structure will be put forward at the time of MW's 2021 price review. Appendix K provides some detail as to the current status and a proposal for each of the two changes flagged above.

14 Adjusting prices

CWW proposes the following mechanisms to adjust prices during RP4:

- continuation of annual adjustment of prices for prescribed price movements and CPI
- continuation of approved existing desalination cost pass through mechanisms
- pass through of adjustments for trailing average cost of CWW's debt
- retention of existing uncertain or unforeseen events mechanism.

14.1 Prescribed price movements and CPI

CWW proposes to maintain its annual price adjustment formula, accounting for any prescribed price movements and updates in the Consumer Price Index.

14.2 Adjustments for trailing average cost of debt

CWW proposes the following steps to pass through changes in the ten year trailing average cost of debt

- **Step1:** convert the real cost of equity to a nominal value using the Fisher equation:

$$CoE^{nominal} = (1 + \pi) \times (1 + CoE^{real}) - 1$$

- **Step 2:** obtain the updated nominal cost of debt:

$$CoD_t^{nominal} = \sum_{j=t-10}^{t-1} \frac{CoD_j^{nominal}}{10}$$

- **Step 3:** calculate the nominal regulated rate of return accounting for the update to the ten year trailing average nominal debt series:

$$RRR_t^{nominal} = 0.4 \times CoE_t^{nominal} + 0.6 \times CoD_t^{nominal}$$

- **Step 4:** convert the nominal regulated rate of return to a real regulated rate of return using the Fisher equation:

$$RRR_t^{act} = \frac{(1 + RRR_t^{nominal})}{1 + \pi} - 1$$

- **Step 5:** pass through adjustments to retail prices using the following formula:

$$\mathrm{P_t^i} = \mathrm{P_{t-1}^i} \times \frac{CPI_t}{\mathrm{CPI_{t-1}}} \times \left(1 + \mathrm{PPM_t^i}\right)$$

$$+ \times (RRR_t^{act} - RRR_t^{det}) \times RAB_t \times \frac{CPI_t}{CPI_{base}}$$

Where:

CoE	is the cost of equity
CoD	is the cost of debt
RRR	is regulated rate of return
P	is price
CPI	is the consumer price index
PPM	is prescribed price movement
RAB	is the regulated asset base in year
$nominal$	represents dollars of the day
$real$	represents year "t" values excluding inflation
t	represents the year in which the update will be applied
det	represents determination
act	represents actual
i	represents fee "i"
j	represents year "j" contributing to the ten year debt series
π	represents inflation
$base$	represents the base year 2018-19

14.3 Pass through mechanisms

As identified in Table 3, and throughout this document, CWW's new approach to risk management identified several financial implications arising from risks that are outside of CWW's control. These are best managed by pass through mechanisms. CWW proposes to continue applying the following previously approved pass through price adjustments:

- changes in MW's bulk charges for changes in its cost of debt
- changes in desalinated water order contract costs
- changes in desalinated water order costs
- any changes in bulk charges resulting from MW's 2021 determination.

CWW proposes a new pass through mechanism to adjust for any changes in the Environmental Contribution post Tranche 4 from 2020-21. The form of price control is the same as that proposed in section 14.4.

14.4 Uncertain or unforeseen events

CWW supports the retention of the uncertain or unforeseen events mechanism – as outlined in clause 4 of CWW's 2013 determination – to ensure that events outside our current understanding can be adequately dealt with.[36] CWW proposes to continue the current set of excisions, including events that are within CWW's control and events that should have been known by CWW at the time of this submission.

[36] This would include events not covered by insurance.

Examples of uncertain and unforeseen events that CWW proposes be included in an unforeseen events mechanism include:

- actual licence fees or contributions payable by CWW to the Department of Health and Human Services, the EPA and the ESC
- changes in timing, scope or cost of expenditure by CWW on major capital projects that are not reasonably foreseeable or are outside our control
- material differences in demand that are not reasonably foreseeable
- changes in the following acts and any regulations made under them:
  - *Water Act 1989*
  - *Safe Drinking Water Act 2003*
  - *State Owned Enterprises Act 1992*
  - *Environment Protection Act 1970*
- changes to any of the following:
  - Environmental Contribution
  - statements of obligations applying to CWW
  - any relevant tax

CWW proposes the following mechanism to adjust prices for unforeseen events:

$$RR_t^{det} - RR_t^{proposed} = \sum_i^n (P_t^{i,det} - P_t^{i,proposed}) \times Q_t^{i,det}$$

Where:

RR	is revenue requirement
P	is price
Q	is quantity
t	represents the year in which the unforeseen event will affect prices
det	represents determination
$proposed$	represents as proposed by CWW
i	represents fee "i" (to be adjusted in response to the event)

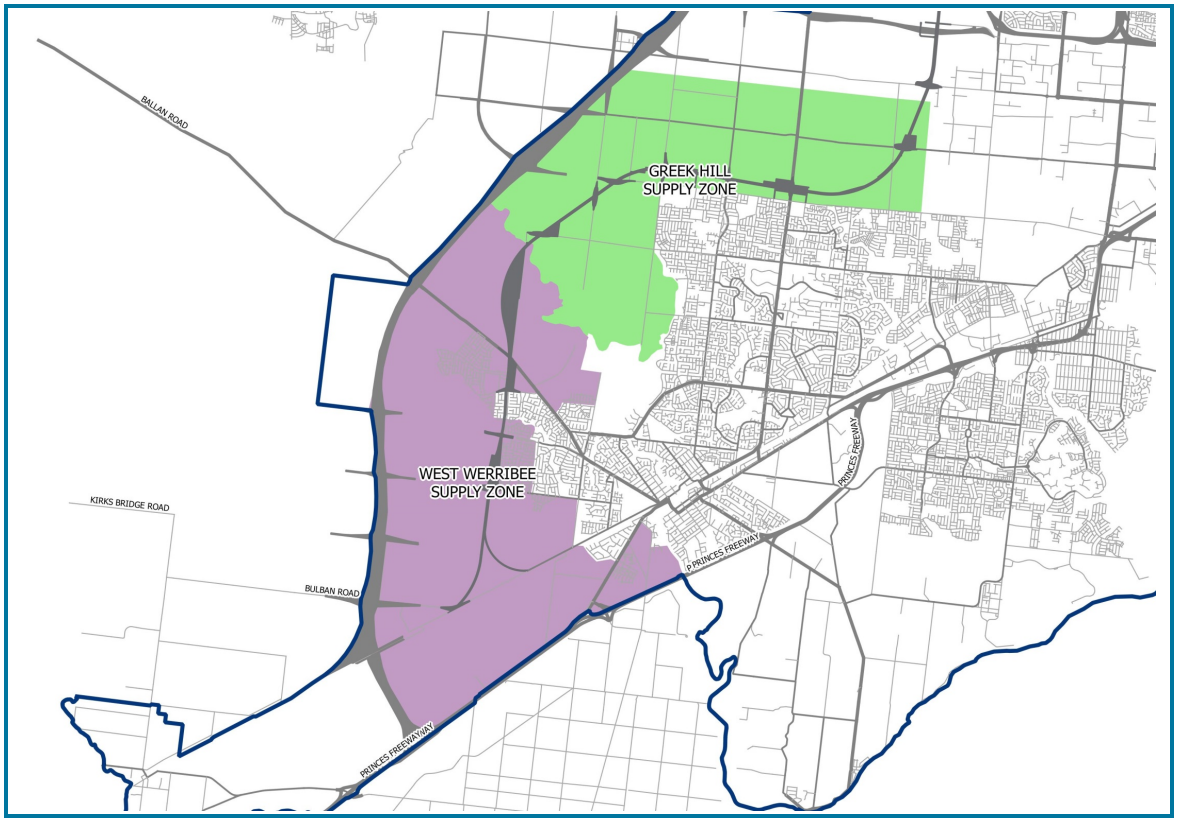
15 New customer contributions

15.1 Proposed standard new customer contributions

CWW proposes to continue to apply its existing standard new customer contributions (NCCs) for water and sewerage services as approved in the ESC 2013 final decision. The current prices for these NCCs will remain at their 2017-18 price levels (in real terms) through RP4.

CWW is proposing to discontinue its standard Holden Zone recycled water NCC.[37] There has been no development in the Holden Zone and the servicing strategy for this area has not confirmed that CWW should supply recycled water to that zone. As such, CWW is proposing to remove its standard recycled water NCC, but remains open to negotiating NCCs with any future developers in the Holden area under the ESC's approved NCC negotiating framework – as set out in CWW's Land Development Manual. CWW proposes to retain the standard recycled water NCC for the West Werribee Zone and the Greek Hill Zone (Figure 9).

Figure 9 **Proposed extension to recycled water supply covered by standard new customer contributions.**



[37] Land development is yet to proceed in this zone and no fees have yet been collected.

15.2 Applying ESC NCC principles to recycled water services in the West Werribee and Greek Hill zones

The ESC guidance sets out three core principles with regard to pricing NCCs. ESC principles state that:

- water corporations should have regard for the incremental costs of connection
- water corporations should have regard for the incremental revenues from connection
- NCCs should be greater than avoidable cost and less than standalone cost of connection.

With reference to the ESC's third principle, CWW has three data points relevant to the calculation of the recycled water NCC:

- **First principles estimate – mid point.** CWW's estimate of the NCC based on application of ESC principles 1 and 2, from scheme inception, is $4,476/lot.[38]
- **Incremental cost only – lower bound.** CWW's estimate of an NCC based on incremental capex basis is $335/lot. This calculation excludes sunk costs.[39]
- **Standalone cost – upper bound.** CWW's estimate of standalone cost is between $10,000 and $20,000 based on a *Choice* magazine article (2014) on the cost to install a Class A greywater system in a new house.[40]

For the purposes of pricing NCCs, CWW is proposing to apply a recycled water NCC of $2,500 that is slightly above the current applied West Werribee Zone and Greek Hill Zone NCC ($2,379), but within CWW's estimate of standalone and incremental cost.

15.3 Forecast NCC revenues

NCC revenue forecasts are based on the continued water and sewer NCC prices (Table 28) and the proposed new recycled water NCC price. NCC lot forecasts (Table 29) are based on detailed analysis documented in a CWW memorandum.[41] The resultant forecast NCC revenues are set out in Table 30.

Table 28 Proposed NCC prices

	2017-18*	2018-19*	2019-20*	2020-21*	2021-22*	2022-23*
Water	691.29	691.29	691.29	691.29	691.29	691.29
Sewer	691.29	691.29	691.29	691.29	691.29	691.29
Recycled	2,379.00	2,500.00	2,500.00	2,500.00	2,500.00	2,500.00

* $/lot, 2017-18 prices

38 Detailed evidence of calculations will be made available to the ESC on request.

39 Detailed evidence of calculations will be made available to the ESC on request.

40 https://www.choice.com.au/home-improvement/water/saving-water/articles/guide-to-greywater-systems

41 *PS2018: Residential growth forecast*. This memorandum will be made available to the ESC on request.

Table 29 Forecast NCC numbers

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Water	13,200	12,400	11,600	11,100	10,900	10,750
Sewer	13,200	12,400	11,600	11,100	10,900	10,750
Recycled	2,045	2,871	3,369	3,558	3,634	3,572

Table 30 Forecast NCC revenues

	2017-18*	2018-19*	2019-20*	2020-21*	2021-22*	2022-23*
Water	7.0	8.6	8.0	7.7	7.5	7.4
Sewer	7.0	8.6	8.0	7.7	7.5	7.4
Recycled	7.3	7.2	8.4	8.9	9.1	8.9
Total	**21.2**	**24.3**	**24.5**	**24.2**	**24.2**	**23.8**

* $m, 2017-18 prices

16 Financial position

CWW's financial model shows that CWW's financial viability remains sound, with ratios in the ESC's model within appropriate operating bands. The ESC's primary indicator for financial viability is FFO interest cover that is estimated to average 2.2 (ESC target is > 1.5 times).

CWW will supply an independent credit opinion.

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APPENDICES

A CWW's engagement process

Phase	Overview	Activity timeline
Phase 1 – understanding customers' views and values	Through a series of workshops, focus groups, interviews, online discussion boards and pop-ups, we spoke to customers and stakeholders in depth to understand what they valued about the services we provided and what service aspects were most important to them, and why they held these views. Areas of discussion included: ▪ delivery of water and sewerage services ▪ customer service, billing and hardship ▪ managing water for the future ▪ climate change ▪ liveability and community education ▪ tariff structure. The outcomes of Phase 1 were used to inform Phase 2 activities.	**Nov 2016** A co-creation workshop was held with residential and non-residential customers to identify service aspects that would be subject to a 'deep dive' throughout Phase 1. We convened a Customer Committee of 30 people representing residents (owners and tenants), large and small business owners and developers, to test our approach and levels of customer understanding and to provide a consistent customer voice throughout the development of PS2018. The Customer Committee met five times over the course of the engagement process, participating in informed discussions about services and service levels, pricing options and providing input into engagement materials. We launched *Your Money. Your Say (*our online engagement platform), providing customers with the opportunity to participate in discussions on a range of topics, and an ability to access engagement outcomes throughout development of PS2018. **Nov 2016 – Feb 2017** Recognising the value of face-to-face engagement as well as digital platforms (particularly for CALD and vulnerable customers), CWW held meetings with a diverse range of customer groups: ▪ ten residential focus groups (including two with the Burmese and Sudanese communities, recognising these communities as newly arrived to our service area) ▪ interviews with: local governments (6); businesses (16); community groups (6); customer advocacy groups (6); and industry advocacy groups (8). The objectives of these meetings were to: ▪ build on the outcomes from the co-creation workshop ▪ explore in depth what customers valued about the services we deliver ▪ explore what standards of service our customers expect ▪ explore what we can do to better meet customer expectations.

Phase	Overview	Activity timeline
		Feb 2017 – March 2017 We spoke to more than 300 customers at pop-up information stalls at six community festivals and four local shopping centres to provide an opportunity for customers to talk to us about their views towards the services we provide, bill levels and the tariff structure.
		April 2017 To further explore matters of interest to business customers identified through individual interviews, we held two non-residential workshops with a total of 30 customers. Particular focus was given to customer service, network services, trade waste and CWW's tariff structure.

Phase	Overview	Activity timeline
Phase 2 – testing customer value	Based on what we heard in Phase 1, the services our customers valued the most with customers were quantitatively tested with our broader customer base via a Simultaneous Multi-Attribute Level Trade-Off (SIMALTO) online survey. SIMALTO is an empowering quantitative survey technique that provides participants with a budget to allocate to the services they want the most, and the ability to review (and change) their selections as different service choices are presented. This activity provided an indication of the service and price package that appealed most broadly to residential and non-residential customers. It found that customers were, in general, seeking: ▪ adjustments to the current service mix: – better performance against some measures – lesser performance against other measures – some new services not previously offered ▪ slight reductions in current bill levels. Eighteen activities were tested under four broad headings: ▪ delivery of network services: – number and duration of water and sewerage services disruptions – access to recycled water. ▪ customer service: – access to and speed of customer service – online and digital services – hardship assistance. ▪ managing water into the future: – future proofing for a growing population and climate change – target for reducing carbon pollution. ▪ liveability and community education: – CWW's role in urban greening and water efficiency education	**April 2017** In order to test the value placed by customers on different levels of service, a representative sample of customers (500 residential and 160 non-residential) participated in SIMALTO. We used these SIMALTO results to inform our decision making processes for PS2018 and have proposed to retain or improve services and service levels in line with customers' preferred service and price package. A further 266 residential customers segmented by experience and situation also completed SIMALTO to identify similarities and differences of their preferences compared to the preferences of the representative sample above. These 266 customers were segmented by: ▪ **experience** – e.g. those who contacted our Customer Service Centre; experienced a water disruption or a sewer blockage ▪ **situation** – e.g. water usage in price step 1, price step 2 or price step 3; or having access to recycled water SIMALTO was also made publically available via *Your Money. Your Say* with a further 83 residential customers completing the survey. The results of this segment were similarly aligned to the representative sample.

Phase	Overview	Activity timeline
Phase 3 – testing alternative tariff structures	Conversations with our customers throughout Phase 1 indicated customers had a desire to: ▪ better understand how CWW charged for services ▪ discuss alternative tariff structures. Recognising that the tariff structure can be complex, we held a deliberative customer forum (residential and non-residential) to facilitate an informed discussion of several tariff structure items. Customers were given an opportunity to: ▪ learn about how CWW currently charges for services ▪ ask questions about the tariff structure ▪ fully understand the implications of different tariff structures on different customers. Following the customer forum, an online survey was conducted to gain an understanding of views from our broader customer base. Tariff structure aspects subjected to deliberation included: ▪ balance of service (fixed) and usage charges ▪ change of residential water usage fee structure ▪ how residential sewerage services are charged ▪ network fees based on meter size.	**May – June 2017** A deliberative customer forum was held with residential (27) and non-residential (15) customers to explore: ▪ different tariff structure options ▪ how changes to the tariff structure may impact different types of customers in detail. A representative sample of residential (505) and non-residential (190) completed an online tariff structure survey to help us understand broad customer views on the tariff structure items with respect to criteria of personal preference, simplicity and fairness. The proposed tariff structure outlined in section 13 represents the combined consideration of: ▪ the results of Phase 3 testing ▪ the ESC's pricing principles ▪ CWW's strategic direction.

Phase	Overview	Activity timeline
Phase 4 – testing what we can deliver in response to customers' views and what they value	In response to customers' views and what they told us they valued, we developed a *Customer Outcomes Proposal* for customer and stakeholder feedback. Designed as a concise, customer-facing document, it outlined what we could deliver under seven customer outcome areas: 1. Services to my home and business are safe, reliable and efficiently delivered. 2. Bills are affordable and charges for services are fair. 3. Customer service is accessible and my enquiries are resolved promptly. 4. Billing and payment options are efficient and convenient 5. Customers in hardship are supported. 6. The whole of the water cycle is managed in an environmentally sustainable way. 7. CWW is a valued partner in servicing a growing Melbourne. We provided the following information for each of the outcomes: ▪ an overview of what we asked customers and what we heard. ▪ what we could do in response to what we heard. ▪ proposed performance measures. Through Phase 4, using the *Customer Outcomes Proposal* as a base, we sought to: ▪ confirm with customers how their input had influenced our service activities ▪ ensure we had captured, in full, what our customers had said ▪ give customers an opportunity to provide feedback on what we were proposing to deliver. As a result of analysis of results from Phase 4 engagement, the proposed customer outcomes were confirmed. The confirmed outcomes are outlined in section 4.	**August 2017** To validate what we'd heard from customers and test what we could deliver in response to this, a moderated online forum was held with customers (30 residential and 10 non-residential) who had previously been involved in the engagement. Through this forum we also tested proposed changes to the GSL scheme (applicable to residential customers only). By involving customers who had previously taken part in the moderated online forum, we were able to close the loop with customers who had directly influenced what we could deliver in the future. The Customer Committee participated in an in-depth discussion about what we could deliver in response to customer feedback. The *Customer Outcomes Proposal* was also made available to our broader customer and stakeholder base through *Your Money. Your Say* across August. We promoted it widely with previously engaged customer and industry advocacy organisations and community groups, and to our broader customer base via traditional and social media, promotion on our website and email notifications to *Your Money. Your Say* subscribers.

B Performance measures associated with proposed outcomes

B.1 Services to homes and businesses are safe, reliable and efficiently delivered

	Proposed performance target for RP4	Basis of target	Past performance					
			2012-13	2013-14	2014-15	2015-16	2016-17	Average
Drinking water quality								
Customer satisfaction score on water quality via Customer Satisfaction Surveys	**91%**	5 year average	92%	90%	90%	92%	92%	**91%**
Water quality complaints per 1000 customers	**0.7**	5 year average	0.7	0.4	0.6	0.6	1.0	**0.7**
Compliance with drinking water quality standards	**100%**	5 year average	100%	100%	100%	100%	100%	**100%**
Water and recycled water service reliability								
Unplanned water supply interruptions restored within five hours	**99%**	5 year average	99.0%	99.3%	99.3%	98.7%	99.0%	**99.1%**
Average time taken (from notification) to restore unplanned water supply interruption, minutes	**120**	Tied to engagement findings	120.7	115.4	112.1	119.5	175.4	**128.6**
Planned water supply interruptions restored within five hours	**97%**	5 year average	97.7%	97.3%	98.2%	95.9%	95.2%	**96.8%**
Customers experiencing > 5 (i.e. 6+) unplanned water supply interruptions in a year, number	**0**	5 year average	-	-	-	-	-	**-**
Customers experiencing > 3 (i.e. 4+) unplanned water supply interruptions in a year, number	**86**	5 year average	-	154	97	21	156	**86**

	Proposed performance target for RP4	Basis of target	Past performance					
			2012-13	2013-14	2014-15	2015-16	2016-17	Average
Minimum water flow rates	**20mm: 20 L/min 25mm: 35 L/min 32mm: 60 L/min 40mm: 90 L/min 50mm:160 L/min**	Continuation			Not previously measured			
Sewerage service reliability								
Customers experiencing > 3 (i.e. 4+) sewer blockages in a year, number	**10**	Tied to engagement findings	1	0	2	0	6	**1.8**
Sewer blockages restored within five hours	**98%**	Maintain per engagement	99%	99%	99%	98%	97%	**98%**
Average time (from notification) to rectify blockage/spill (main and HCB), minutes	**124**	Maintain per engagement	112	117	118	123	150	**124.1**
Sewer spills contained within five hours of notification	**100%**	Maintain	100%	100%	100%	99%	100%	**100%**
Sewer spills within a house, that are a result of a failure in our pipes, number	**13**	5 year average	9	6	16	11	23	**13**
Sewer spills within a house, that are a result of a failure in our pipes, not contained within one hour of notification	**0%**	Continuation of recent performance	100.0%	100.0%	0.0%	0.0%	0.0%	**23%** [a]

a Weighted average

B.2 Customer service is accessible and enquiries are promptly resolved

	Proposed performance target for RP4	Basis of target	Past performance					
			2012-13	2013-14	2014-15	2015-16	2016-17	Average
Calls resolved on first contact	**75% for 2018-19 80% for 2019-20 85% for 2020-21 90% for 2021-22 90% for 2022-23**	Estimated achievable performance			Not previously reported			
Customer correspondence (emails) responded to within one business day	**95%**	Estimated achievable performance			Not previously reported			
Customer correspondence responded to within ten business days	**100%**	Maintain	100%	100%	100%	100%	100%	**100%**
Residential customer satisfaction with response to an enquiry	**85%**	Estimated achievable improvement on current performance			80%	83%	88%	**84%**
Non-residential customer satisfaction with response to an enquiry	**85%**	Estimated achievable improvement on current performance			80%	83%	78%	**80%**
Residential customer satisfaction with response to complaint	**50%**	Estimated achievable improvement on current performance			34%	44%	45%	**41%**
Non-residential customer satisfaction with response to a complaint	**50%**	Estimated achievable improvement on current performance			45%	17%	40%	**34%**
Complaints to the Energy and Water Ombudsman of Victoria (excluding all referrals) per 1000 customers	**0.1**	Estimated achievable improvement on current performance	0.15	0.08	0.12	0.10	Data not yet available	**0.11**

B.3 Billing and payment options are efficient and convenient

	Proposed performance target for RP4	Basis of target	Past performance					
			2012-13	2013-14	2014-15	2015-16	2016-17	Average
Payment issue complaints per 1000 customers	**1.2**	Estimated achievable improvement on current performance	1.2	1.6	1.2	2.7	0.9	**1.5**
Estimated meter reads used for billing (proportion of total reads)	**≤3% for 2018-19** **≤2% for each of 2019-20 to 2022-23**	Estimated achievable improvement on current performance	3.4%	3.5%	3.3%	2.2%	4.5%	**3.4%**
Customers with registered online accounts (proportion of all accounts)	**0% for 2018-19** **10% for 2019-20** **20% for 2020-21** **25% for 2021-22** **30% for 2022-23**	Estimated take-up of this new service offering	Online accounts did not exist					

B.4 Customers in hardship are supported

	Proposed performance target for RP4	Basis of target	Past performance					
			2012-13	2013-14	2014-15	2015-16	2016-17	Average
Customers on instalment plans (per 1000 customers)	**65**	Estimated increase in take-up				62	60	**61.4**
Residential customers receiving Hardship Grants (per 1000 customers)	**1.2**	5 year performance	1.4	1.4	1.0	0.8	1.3	**1.2**
Number of customers taking up Water Assist	**200**	Estimated take-up of this new service offering	No equivalent previous program					
Prior to restriction being applied, CWW has undertaken reasonable endeavours to ensure customer is not in hardship	**100%**	Maintain current performance	100%	100%	100%	100%	100%	**100%**

B.5 The whole of the water cycle is managed in an environmentally sustainable way

	Proposed performance target for RP4	Basis of target	Past performance					
			2012-13	2013-14	2014-15	2015-16	2016-17	Average
Future water resources								
Water lost from the network (% of total water supplied)	**9.3%**	5 year average	9.3%	9.3%	9.4%	9.4%	9.3%	**9.3%**
Water storage levels remain at or above 40% (in November) as per the water outlook zones in our Urban Water Strategy	**>40%**	Minimum acceptable level	81.4%	80.6%	79.10%	72.40%	72.40%	**77.2%**
Safe treatment and disposal of sewage								
Emergency relief structures compliant with requirement to not spill in dry weather	**100%**	Maintain current performance	100%	100%	100%	100%	100%	**100%**
Compliance with the Environmental Protection Authority's discharge licence requirements	**100%**	Maintain current performance	100%	100%	100%	100%	100%	**100%**
Climate change								
Progress towards our goal of achieving net-zero emissions by 2030 (climate change)	**0% for 2018-19** **5% for 2019-20** **5% for 2020-21** **60% for 2021-22** **70% for 2022-23**	In line with CWW's greenhouse gas pledge	Not previously measured					
Liveability – our role in urban greening								
Stormwater partnerships in place	**7 by 2018-19** **7 by 2019-20** **8 by 2020-21** **8 by 2021-22** **9 by 2022-23**	Estimated number of partnerships	0	4	4	6	7	

B.6 CWW is a valued partner in servicing a growing Melbourne

	Proposed performance target for RP4	Basis of target	Past performance					
			2012-13	2013-14	2014-15	2015-16	2016-17	Average
95% of standard [a] plumbing applications completed within x business days	x = 10 for 2018-19 x = 10 for 2019-20 x = 5 for 2020-21 x = 5 for 2021-22 x = 5 for 2022-23	Current performance to improve as new business systems coming online	Not previously measured					
95% of pressure and flow information applications processed within x business days	x = 10 for 2018-19 x = 10 for 2019-20 x = 5 for 2020-21 x = 5 for 2021-22 x = 5 for 2022-23	Current performance to improve as new business systems coming online						
95% of asset information applications processed within x business days	x = 10 for 2018-19 x = 10 for 2019-20 x = 2 for 2020-21 x = 2 for 2021-22 x = 2 for 2022-23	Current performance to improve as new business systems coming online						
95% of standard [b] new customer contribution applications processed within x business days	x = 45	Maintain current performance						
95% of standard [a] 20mm new meter supply and assembly installed within x business days of application	x = 10	Maintain current performance						

[a] 'Standard' (in this context) means a single residential development where all CWW assets are available for connection and customer has provided all requested information.
[b] 'Standard' as defined in section 15.1.

C Allocation of expenditures to outcomes

Analysis of how the allocation of opex and capex to outcomes reveals the following with respect to changes from RP3 to RP4:

- Outcome 1: Services to homes and businesses are safe, reliable and efficiently delivered

  CWW will generally maintain aggregate levels of opex and capex to deliver and maintain core network services via its operations, maintenance and renewals programs. However, within this outcome, expenditures will be profiled to refine service levels in alignment with customer preferences.

- Outcome 2: Customer service is accessible and enquiries are promptly resolved

  Opex and capex are forecast to increase slightly as CWW delivers a range of enhanced service offerings in line with customer preferences – these offerings include: extended opening hours; new and improved communications channels; and access to customer information.

- Outcome 3: Billing and payment options are efficient and convenient

  Opex and capex are forecast to increase slightly as CWW delivers a range of enhanced billing functions, including a renewal of CWW's existing billing system to a standard capable of delivering the enhanced value that customers now expect from their utility service providers.

- Outcome 4: Customers in hardship are supported

  CWW will continue to deliver leading hardship support programs through maintaining current levels of expenditure on hardship support. We will forge new partnerships with our stakeholders and peers to best address the needs of this segment of the customer base.

- Outcome 5: The whole of the water cycle is managed in an environmentally sustainable way

  CWW will maintain compliance with environmental obligations and take a leadership position on several issues important to our customers, including climate change and promoting a greener west. Opex will decline as CWW becomes more efficient and targets spending toward programs prioritised by customers. Capex will decline as CWW completes a series of major investments in recycled water production facilities.

- Outcome 6: CWW is a valued partner in servicing a growing Melbourne

  CWW's service area continues to grow rapidly. Growth capex is forecast to increase in response to the need to both respond to rapid growth in central Melbourne and to cater for the development of growth areas in Melbourne's outer west – including the provision of some bulk sewerage services to Western Water. Opex for this outcome area is forecast to decline as CWW opens new online communications and applications channels for the plumbing and land development communities.

Table 31, Table 32, Figure 10 and Figure 11 outline further detail with respect to the allocation of expenditures to outcomes.

Table 31 Allocation of CWW controllable opex and capex to outcomes for RP4 – year-by-year

	2018-19*	2019-20*	2020-21*	2021-22*	2022-23*
Outcome 1: Services to homes and businesses are safe, reliable and efficiently delivered					
Opex	51.9	52.3	52.7	53.0	53.2
Capex	43.5	46.6	49.6	47.6	43.7
Outcome 2: Customer service is accessible and enquiries are promptly resolved					
Opex	21.6	21.8	21.9	22.1	22.2
Capex	6.2	6.2	1.0	0.9	2.3
Outcome 3: Billing and payment options are efficient and convenient					
Opex	17.2	17.3	17.4	17.5	17.6
Capex	0.8	0.7	8.3	6.7	2.0
Outcome 4: Customers in hardship are supported					
Opex	1.0	1.0	1.0	1.0	1.0
Capex	0.0	0.0	0.0	0.0	0.0
Outcome 5: The whole of the water cycle is managed in an environmentally sustainable way					
Opex	10.1	10.1	10.2	10.3	10.3
Capex	21.1	16.9	10.0	10.9	10.4
Outcome 6: CWW is a valued partner in servicing a growing Melbourne					
Opex	3.8	3.9	3.9	3.9	3.9
Capex	52.9	56.6	37.1	31.1	35.8
TOTAL OPEX AND TOTAL CAPEX					
Opex	*105.6*	*106.3*	*107.1*	*107.8*	*108.2*
Capex	*124.5*	*127.1*	*106.1*	*97.3*	*94.1*

* $m, 2017-18 prices

Table 32 Allocation of CWW controllable opex and capex to outcomes for RP3 and RP4

	RP3*	RP4*	Difference*
Outcome 1: Services to my homes and businesses are safe, reliable and efficiently managed			
Opex	247.9	263.2	15.3
Capex	238.4	231.1	-7.3
Outcome 2: Customer service is accessible and enquiries are promptly resolved			
Opex	93.3	109.5	16.2
Capex	5.6	16.7	11.0
Outcome 3: Billing and payment options are efficient and convenient			
Opex	71.2	87.0	15.8
Capex	3.1	18.6	15.4
Outcome 4: Customers in hardship are supported			
Opex	4.3	5.0	0.7
Capex	0.0	0.0	0.0
Outcome 5: The whole of the water cycle is managed in an environmentally sustainable way			
Opex	68.5	51.0	-17.6
Capex	128.9	69.3	-59.6
Outcome 6: CWW is a valued partner in servicing a growing Melbourne			
Opex	21.6	19.4	-2.1
Capex	128.4	213.5	85.2
TOTAL OPEX AND TOTAL CAPEX			
Opex	*506.8*	*535.2*	*28.4*
Capex	*504.4*	*549.1*	*44.7*

* $m, 2017-18 prices

Figure 10 Opex by outcome for RP3 and RP4

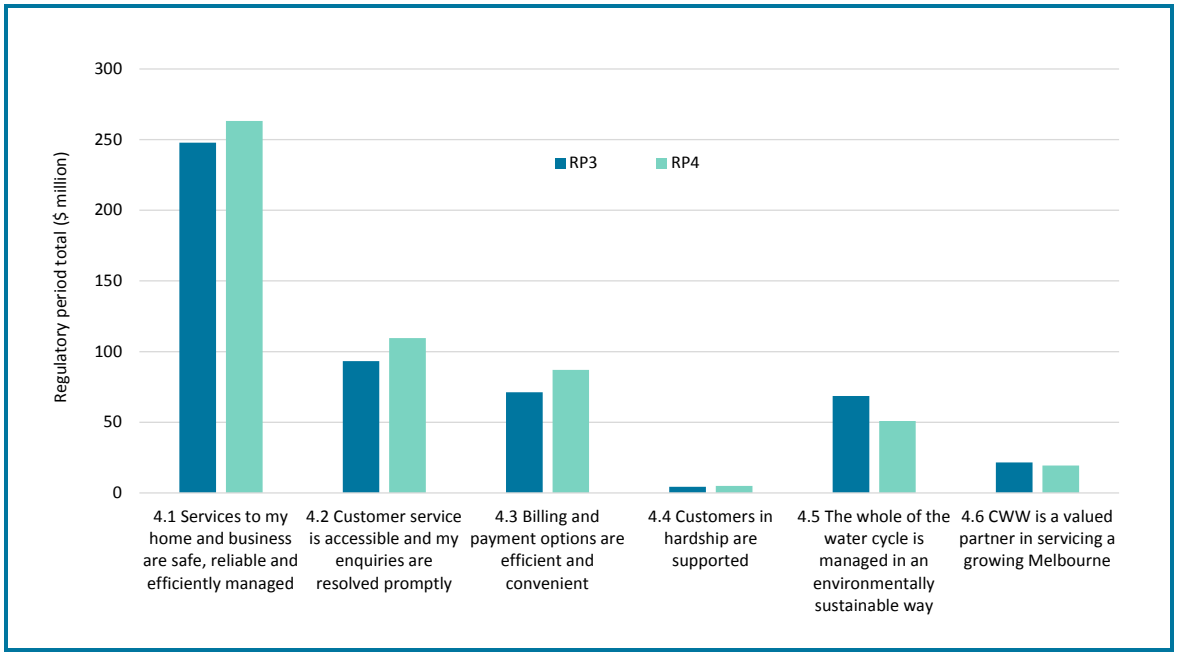
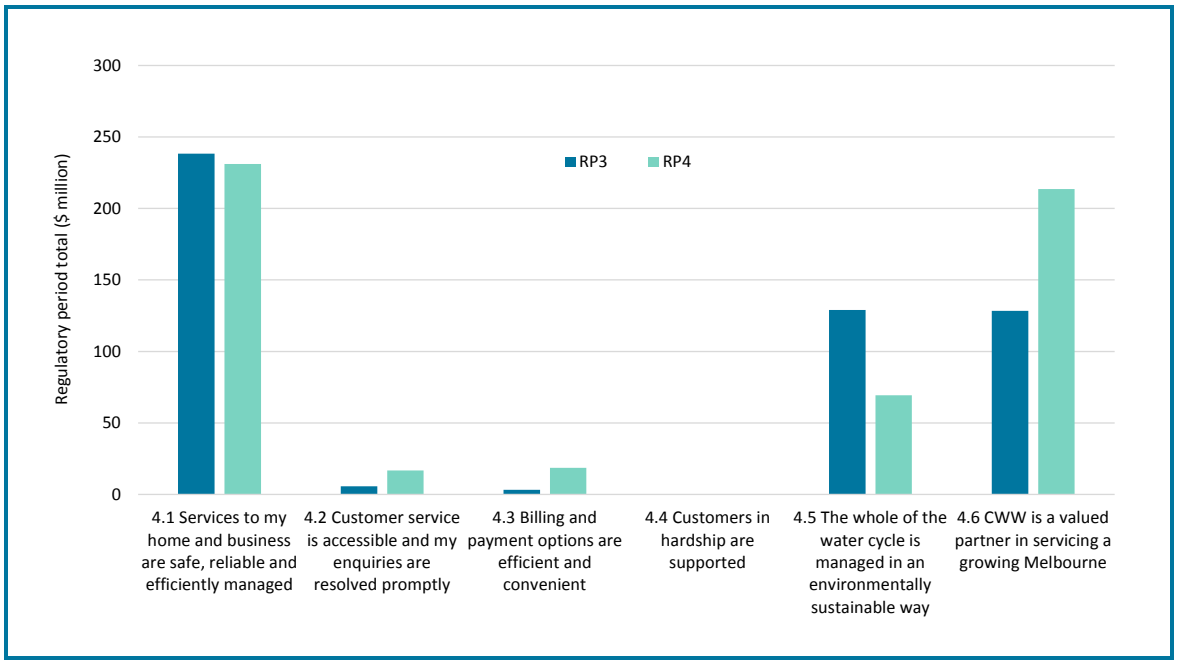


Figure 11 Capex by outcome for RP3 and RP4



D CWW capital program detail

For the purposes of PS2018, CWW's forecast capex has been disaggregated into four classifications:

(i) **Major capital projects** – the 'Top 10' discrete projects.[42]

(ii) **Uncertain major projects** – projects in various stages of development that may proceed during RP4 if certain conditions. However, they do not contribute to capex for the purposes of PS2018.

(iii) **Major capital programs** – capital allocations to programs of work that will be ongoing through RP4.

(iv) **Minor capital (other) programs** – capex not associated with major projects or programs but nevertheless integral to CWW carrying out its regulated functions and providing service that customers value.

With reference to the requirements of section 3.8.2 of the ESC guidance, each major project and major program is described below with a one page outline. Full business cases for each of these projects and programs will be made available to the ESC on request. Minor capital programs are included in CWW's financial model.

[42] See Figure 12, p115 for a map of the locations of each project.

D.1 Major capital projects

Table 33 CBD sewerage strategy Stage 2 (Lonsdale Street)

Information requirement	Comment					
Asset class	Large sewerage mains					
Driver	Growth					
Overview and scope	The CBD, Elizabeth St and Swanson St sewerage catchments have experienced strong growth. Spare capacity in the sewers draining these catchments is steadily being eroded. This project is intended to relieve the CBD, Swanston St and Elizabeth St sewerage catchments, minimising the risk of sewage spills. The project will provide a new CBD outlet sewer along Lonsdale Street between Spencer St and Swanston St. The new outlet sewer will relieve the Elizabeth St and Swanston St sewerage catchments both of which continue to experience strong growth in the residential, retail, commercial and education sectors.					
Why now?	Calibrated hydraulic models, direct observations from sewer system performance under wet weather and future growth forecasts (VIF) demonstrate it is necessary to augment now.					
Start and finish dates	Construction across three years: 2018-19 to 2020-21					
Outcomes	The project supports continued safe and efficient removal of sewage from the CBD – supporting public amenity, hygiene and continued commercial development in this high profile and economically important part of CWW's service area. The project supports the customer outcome areas of: ▪ services to homes and businesses are safe, reliable and efficiently delivered ▪ the whole of the water cycle is managed in an environmentally sustainable way ▪ CWW is a valued partner in servicing a growing Melbourne.					
How this project has been informed by engagement	CWW's engagement program found that sewerage services are not front of mind for customers. They take for granted the ability to dispose of sewage from the sanitary drains on their properties without impact on their local environment However, when asked to think about sewerage services, customers recognise that safe sewage disposal is of fundamental importance to a healthy community. Customers also supported CWW continuing to meet its compliance obligation in relation to water supply and sewage disposal.					
Basis of cost estimate	Based on quote from Phase 1					
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	5.0	20.0	2.9	-	-	**27.9**

Table 34 Billing and collections system replacement

Information requirement	Comment					
Asset class	Corporate – information technology					
Driver	Renewal and improvement in service					
Overview and scope	Current performance problems with our customer management and billing system, Gentrack, are a barrier to achieving the customer experience our customers expect. Gentrack, is at end of life. This project will replace the current version of the Gentrack system with the latest version of the Gentrack system.					
Why now?	The Gentrack system was originally purchased in 1996, upgraded in 2006 and has not been upgraded since. Gentrack was designated for replacement by the third release of the Arrow Program when the program was initiated in 2012. As Arrow Program Release 3 did not proceed, the replacement of Gentrack is now overdue. The version now in use cannot be upgraded to the latest release and a new implementation is required.					
Start and finish dates	Implementation over three years: 2020-21 to 2022-23.					
Outcomes	The project supports CWW's core retail functions including the customer outcome areas of: ▪ customer service is accessible and enquiries are promptly resolved ▪ billing and payment options are efficient and convenient.					
How this project has been informed by engagement	CWW's engagement program highlighted that customers valued accurate and timely bills, and that they want to be able to transact more online. There was strong feedback that customers are seeking to access information we hold about their accounts, usage and past bills either online or via an app. Customers also indicated a desire for CWW to extend its Customer Call Centre operation hours, which is currently constrained due to existing Gentrack batch processing operations. The billing system replacement will allow us to offer greater flexibility to provide smoother and better retail service offerings to our customers.					
Basis of cost estimate	P50. Based on costs of a recent water sector implementation.					
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	-	-	7.7	6.0	1.3	**15.0**

Table 35 CBD sewerage strategy Stage 1 (Spencer Street)

Information requirement	Comment
Asset class	Large sewerage mains
Driver	Growth
Overview and scope	The CBD has experienced strong growth in residential and retail development in recent decades. This is forecast to continue. Spare capacity in the sewers draining the CBD is steadily being eroded and this project is intended to relieve the sewerage catchment minimising the risk of sewage spills. The project will augment the existing 300mm sewer along Spencer St between Flinders St & Little Lonsdale St with a new 850mm sewerage main.
Why now?	Calibrated hydraulic models, direct observations from sewer system performance under wet weather and future growth forecasts (VIF) demonstrate it is necessary to augment now.
Start and finish dates	Construction across two years: 2017-18 and 2018-19.
Outcomes	The project supports continued safe and efficient removal of sewage from the CBD – supporting public amenity, hygiene and continued commercial development in this high profile and economically important part of CWW's service area. The project supports the customer outcome areas of: ▪ services to homes and businesses are safe, reliable and efficiently delivered. ▪ the whole of the water cycle is managed in an environmentally sustainable way. ▪ CWW is a valued partner in servicing a growing Melbourne.
How this project has been informed by engagement	CWW's engagement program found that sewerage services are not front of mind for customers. They take for granted the ability to dispose of sewage from the sanitary drains on their properties without impact on their local environment. However, when asked to think about sewerage services, customers recognise that safe disposal of sewage is of fundamental importance to a healthy community. Customers also indicated they expect CWW to proactively manage the water and sewerage networks such that infrastructure is renewed and proactively maintained as required to reduce the likelihood of service disruptions (e.g. sewage spills or water leaks). Pre-construction engagement with key stakeholders directly affected indicated strong support for the project. In particular, the project will support the unprecedented increase of commuters using Southern Cross Station (which has already reached its 2050 capacity targets) and the projected growth of residential developments in the CBD (60,000 new apartments over the next 35 years). Customers also supported CWW continuing to meet its compliance obligation in relation to water supply and sewage disposal.
Basis of cost estimate	Quote

Proposed annual capex ($m, 2017-18 prices)	2018-19	2019-20	2020-21	2021-22	2022-23	RP4 total
	12.2	-	-	-	-	**12.2**

Table 36 Ravenhall outlet sewer

Information requirement	Comment
Asset class	Large sewerage mains
Driver	Growth
Overview and scope	Melton is a rapidly growing municipality with large areas of land within the Urban Growth Boundary. The Ravenhall outlet sewer is a 900mm diameter, 5.5km long gravity sewer from Clarkes Road / Western Highway to CWW's Derrimut Interceptor Sewer in Robinsons Road. The Derrimut Interceptor Sewer ultimately delivers sewage to Melbourne Water's Western Trunk Sewer for treatment and disposal at the Western Treatment Plant. The Ravenhall outlet sewer project supports land development occurring in the Mt Atkinson, Plumpton and Kororoit sewerage catchments for both Western Water and CWW, including: ▪ Western Water: 16,500 residential lots and 230 Ha of non-residential land ▪ CWW 4,500 residential lots and 440 Ha of non-residential land. There will be an agreement in place with Western Water that will, among other things, describe: ▪ the operational arrangements for the service ▪ cost recovery mechanisms.
Why now?	Development is currently occurring in the Mt Atkinson, Plumpton and Kororoit sewerage catchment and a permanent sewerage solution is required.
Start and finish dates	Construction across two years: 2021-22 to 2022-23 (design in 2020-21).
Outcomes	The project supports continued safe and efficient removal of sewage from the Melbourne's growing western suburbs. The project supports the customer outcome areas of: ▪ services to homes and businesses are safe, reliable and efficiently delivered ▪ the whole of the water cycle is managed in an environmentally sustainable way ▪ CWW is a valued partner in servicing a growing Melbourne.
How this project has been informed by engagement	CWW's engagement program found that sewerage services are not front of mind for customers. They take for granted the ability to dispose of sewage from the sanitary drains on their properties. However, when asked to think about sewerage services, customers recognise that safe sewage disposal is of fundamental importance to a healthy community. CWW consulted with Western Water, councils, developers and planning authorities on the optimal timing of CWW assets in the growth area. Network servicing plans were developed taking into consideration growth forecasts and stakeholders' proposed development timings which were collected through the consultation.
Basis of cost estimate	P50. Based on recent costs of similar works. Expenditure for defects liability continues after this time.

Proposed annual capex ($m, 2017-18 prices)	2018-19	2019-20	2020-21	2021-22	2022-23	RP4 total
	-	-	0.4	5.0	4.8	**10.2**

Table 37 Tarneit West outlet sewer (Section 1)

Information requirement	Comment					
Asset class	Large sewerage mains					
Driver	Growth					
Overview and scope	Wyndham is one of Australia's fastest growing municipalities with large areas of land within the Urban Growth Boundary. This project supports the development of the Tarneit West sewerage catchment that will house some 20,000 new dwellings (and 50 Ha of associated commercial and community infrastructure) within the municipality of Wyndham. This project is the first 5km section of the proposed 13km long, 900mm Tarneit West outfall sewer that will transfer sewage from the Tarneit West catchment to Melbourne Water's Western Trunk Sewer for ultimate treatment and disposal at the Western Treatment Plant. This first 5km section will connect the Tarneit West catchment to CWW's existing West Werribee main sewer. Subsequent sections of the Tarneit West outfall sewer will be delivered to relieve the West Werribee sewer main as sewage volumes increase in line with growth in the area.					
Why now?	Development is currently occurring in the Tarneit West sewerage catchment and a permanent sewerage solution is required.					
Start and finish dates	Construction across two years: 2021-22 to 2022-23 (design in 2020-21).					
Outcomes	The project supports continued safe and efficient removal of sewage from the Melbourne's growing western suburbs. The project supports the customer outcome areas of: ▪ services to homes and businesses are safe, reliable and efficiently delivered ▪ the whole of the water cycle is managed in an environmentally sustainable way ▪ CWW is a valued partner in servicing a growing Melbourne.					
How this project has been informed by engagement	CWW's engagement program found that sewerage services are not front of mind for customers. They take for granted the ability to dispose of sewage from the sanitary drains on their properties. However, when asked to think about sewerage services, customers recognise that safe sewage disposal is of fundamental importance to a healthy community. CWW consulted with councils, developers and planning authorities on the optimal timing of CWW assets for all sewers in the growth area. Network servicing plans were developed taking into consideration growth forecasts and stakeholders' proposed development timings which were collected through the consultation.					
Basis of cost estimate	P50. Based on recent costs of similar works.					
Proposed annual capex ($m, 2017-18 prices)	2018-19	2019-20	2020-21	2021-22	2022-23	RP4 total
	-	-	0.3	4.3	4.0	**8.7**

Table 38 Nicholson Street (Carlton / Carlton North) water main renewal

Information requirement	Comment					
Asset classes	Water mains – reticulation and distribution					
Driver	Renewals					
Overview and scope	This project forms part of the water reticulation and distribution main risk renewal program. Renewal of 2,340 metres of 450mm water main in Nicholson Street (predominantly cast iron constructed in 1886) with 2,570 metres of 750mm water main.					
Objective	CWW has a responsibility to manage the risk its critical infrastructure poses to its customers, stakeholders and the community. This project also assists CWW to meet agreed objectives comprising: ▪ minimise water supply interruptions in accordance with regulated and business KPIs ▪ minimise water main breaks in accordance with regulated and business KPIs.					
Start and finish dates	Implementation over three years: 2017-18 to 2019-20.					
Outcomes	The project supports the customer outcome area of: ▪ services to homes and businesses are safe, reliable and efficiently delivered.					
How this project has been informed by engagement	Water network reliability was discussed qualitatively in several forums as well as in CWW's quantitative survey. Engagement highlighted and confirmed that customers expect and take as a given access to safe, clean water. Customers recognised that CWW operates a complex network. They expressed an expectation that CWW proactively managed the water and sewerage networks such that infrastructure is renewed and proactively maintained, rather than a 'run-to-fail and repair' mode. Customers also prioritised the reliability of water supply to key sites such as the central business district and key hospitals. Customer also expressed great frustration at seeing water lost from CWW's network through bursts and leaks.					
Basis of unit costs	P50 based on costs of recent renewals					
Basis of volumes	CWW uses its Asset Risk Management Model to identify the consequence and likelihood of failure of each length of pipe in the CWW network registered in GIS. The assessment has identified that approximately 3km of replacement or rehabilitated water reticulation and distribution mains is required per annum for RP4.					
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	6.0	2.2	-	-	-	**8.2**

Table 39 Greek Hill water supply (Dohertys Rd, Derrimut Rd & Davis Rd mains and Melbourne-Geelong Pipeline interconnection)

Information requirement	Comment					
Asset class	Water mains					
Driver	Growth					
Overview and scope	Greek Hill is a new CWW water supply zone covering the outer western parts of the municipality of Wyndham where significant land development is occurring. A large number of water supply assets will be installed by developers on behalf of CWW. However, a suite of four critical projects will be delivered by CWW. These are: ▪ Davis Rd water main ▪ Dohertys Rd water main ▪ Derrimut Rd water main ▪ Melbourne-Geelong pipeline connection works.					
Why now?	Wyndham is one of Australia's fastest growing municipalities with large areas of land within the Urban Growth Boundary. The current water supply system must be extended to deliver water to new housing estates in the advanced stages of planning.					
Start and finish dates	Construction across two years: 2018-19 to 2019-20					
Outcomes	The project supports the delivery of clean, reliable water to Melbourne's growing western suburbs. The project supports the customer outcome areas of: ▪ services to homes and businesses are safe, reliable and efficiently delivered. ▪ CWW is a valued partner in servicing a growing Melbourne.					
How this project has been informed by engagement	CWW's engagement program confirmed that customers take safe, reliable water services provided by CWW to be a given. CWW consulted with councils, developers and planning authorities on the optimal timing of CWW asset delivery for the water growth program. Network servicing plans were developed taking into consideration information such as growth forecasts and stakeholders' proposed development timings which were collected through the consultation.					
Basis of cost estimate	P50. Based on recent costs of similar works.					
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	4.9	1.4	-	-	-	**6.2**

Table 40 West Werribee sewage pump station upgrade

Information requirement	Comment					
Asset class	Sewage pump station					
Driver	Compliance					
Overview and scope	CWW's Werribee West sewerage catchment discharges to Melbourne Water's Western Trunk Sewer via CWW's Werribee West Sewage Pump Station (SPS44). Due to rapid growth in the upstream catchment, SPS44 is no longer able to pass 1 in 5 ARI storm events without spilling in the upstream catchment. As such, CWW proposes to replace the existing ageing (1976) SPS44 which is not suitable for further minor upgrades and to construct a new sewage pump station and decommission the existing SPS44. The works will involve: ▪ a new 7m diameter, 11m deep wet well able to house pumps with a total pump design capacity of 1,200 L/s that will be capable of passing current and ultimate future flows ▪ approximately 180m of 1,300mm, diameter sewerage pipeline to transfer flows into the new pump station ▪ a new connection into Melbourne Water's Western Trunk Sewer.					
Why now?	With rapid growth in its upstream Werribee West sewerage catchment, SPS44 is no longer able to discharge sufficient flows to Melbourne Water's Western Trunk Sewer under wet weather conditions. Hydraulic modelling and recent spills demonstrate that the Werribee West sewerage catchment is not compliant with State Environment Protection Policy (Waters of Victoria) requirements to contain a 1 in 5 year ARI storm event.					
Start and finish dates	Construction across three years: 2017-18 to 2020-20.					
Outcomes	The project supports continued safe and efficient removal of sewage from the Melbourne's growing western suburbs. The project supports the customer outcome areas of: ▪ services to homes and businesses are safe, reliable and efficiently delivered ▪ the whole of the water cycle is managed in an environmentally sustainable way.					
How this project has been informed by engagement	CWW's engagement program found that sewerage services are not front of mind for customers. They take for granted the ability to dispose of sewage from the sanitary drains on their properties without impact on their local environment. However, when asked to think about sewerage services, customers recognise that safe sewage disposal is of fundamental importance to a healthy community. Customers also supported CWW continuing to meet its compliance obligation in relation to water supply and sewage disposal.					
Basis of cost estimate	P50. Based on recent costs of similar works and an independent risk based cost assessment. Note $0.35m (design component) to be spent in 2017-18.					
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	4.0	1.6	-	-	-	**5.6**

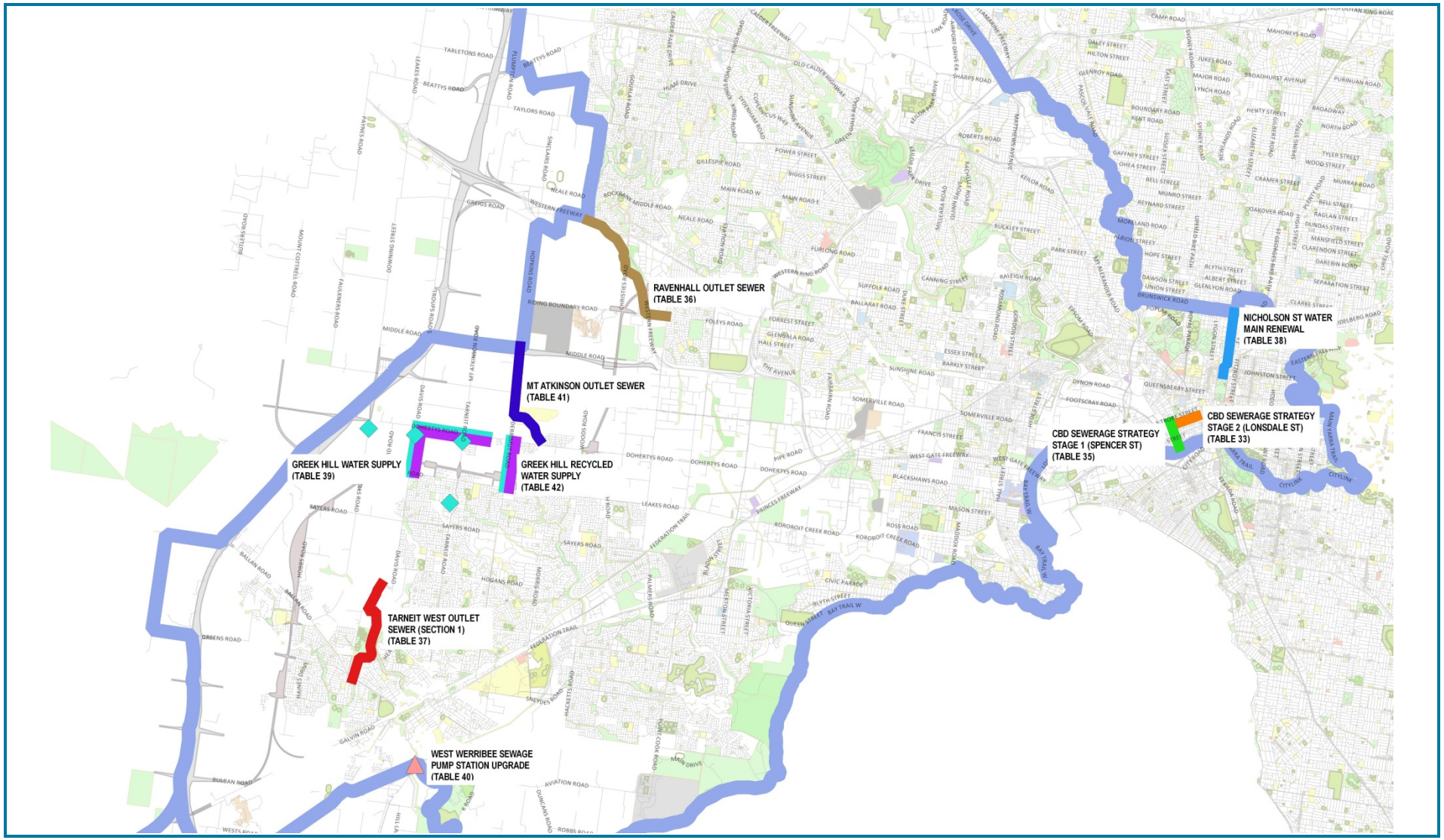
Table 41 Mt Atkinson outlet sewer

Information requirement	Comment					
Asset class	Large sewerage mains					
Driver	Growth					
Overview and scope	The Mt Atkinson Precinct Structure Plan (within Western Water's service area) is expected to start development during 2017-18. The Mt Atkinson outlet sewer is a 600mm, 3km long sewer providing a new gravity outlet required to service development at Mt Atkinson. The sewer will connect to CWW's existing Werribee North Sewerage system that ultimately discharges to Melbourne Water's Western Trunk Sewer. The sewer will serve 5,200 dwellings plus 560 hectares of non-residential land in Mt Atkinson. There will be an agreement in place with Western Water that will, among other things, describe: ▪ the operational arrangements for the service ▪ cost recovery mechanisms.					
Why now?	As development in the Mt Atkinson Precinct is expected to start during 2017-18, a permanent sewer outlet must be provided to transfer sewer flows from this area into CWW's downstream sewerage network.					
Start and finish dates	Construction across two years: 2019-20 to 2020-21.					
Outcomes	The project supports continued safe and efficient removal of sewage from Melbourne's growing western suburbs. The project supports the customer outcome areas of: ▪ services to homes and businesses are safe, reliable and efficiently delivered ▪ the whole of the water cycle is managed in an environmentally sustainable way ▪ CWW is a valued partner in servicing a growing Melbourne.					
How this project has been informed by engagement	CWW's engagement program found that sewerage services are not front of mind for customers. They take for granted the ability to dispose of sewage from the sanitary drains on their properties. However, when asked to think about sewerage services, customers recognise that safe sewage disposal is of fundamental importance to a healthy community. CWW consulted with Western Water, councils, developers and planning authorities on the optimal timing of CWW assets in the growth area. Network servicing plans were developed taking into consideration growth forecasts and stakeholders' proposed development timings which were collected through the consultation.					
Basis of cost estimate	P50. Based on recent costs of similar works.					
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	-	2.2	2.7	-	-	**4.9**

Table 42 Greek Hill recycled water supply (Dohertys Rd, Derrimut Rd & Davis Rd mains)

Information requirement	Comment					
Asset class	Recycled water mains					
Driver	Growth					
Overview and scope	The recycled water growth program delivers recycled water mains to new residential and non-residential developments in the West Werribee Zone and Greek Hill Zone of CWW's service area. This supports the diversification of CWW's water supply portfolio and makes best use of CWW's West Werribee recycled water production facility. However, a suite of three critical projects will be delivered by CWW. These are: ▪ Davis Rd recycled water main ▪ Dohertys Rd recycled water main ▪ Derrimut Rd recycled water main.					
Why now?	Wyndham is one of the Australian fastest growing municipalities with large areas of land within the Urban Growth Boundary. The existing recycled water supply system must be extended to deliver recycled water to new housing estates currently in the advanced stages of planning.					
Start and finish dates	Construction across two years: 2018-19 to 2019-20.					
Outcomes	The project supports the delivery of clean reliable water to Melbourne's growing western suburbs. The project supports the customer outcome areas of: ▪ services to homes and businesses are safe, reliable and efficiently delivered ▪ CWW is a valued partner in servicing a growing Melbourne.					
How this project has been informed by engagement	CWW asked its customers: ▪ if recycled water should be supplied from existing facilities ▪ if the recycled water network should be expanded. CWW heard from customers that recycled water should continue to be supplied from existing facilities but that any new recycled water schemes should not add to customer bills. CWW consulted with councils, developers and planning authorities on the optimal timing of CWW assets for the water growth program. Network servicing plans were developed taking into consideration information such as growth forecasts and stakeholders' proposed development timings which were collected through the consultation.					
Basis of cost estimate	P50 based on recent costs of similar works.					
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	2.0	1.4	-	-	-	**3.4**

Figure 12 Locations for RP4 major capital projects in CWW's service area



D.2 Uncertain projects

Table 43 Altona Treatment Plant works

Information requirement	Comment					
Asset classes	Sewage treatment					
Driver	Compliance and renewal					
Why the program is uncertain	CWW will be developing an Altona Treatment Plant capacity and contingency master plan (Master plan) in the early years of RP4 and this may result in significant business cases to either: ▪ improve the capacity of components of the plant ▪ renew components of the plant in the later years of RP4. Necessary expenditures following on from the Master plan have not been included in RP5					
What could trigger the project to proceed in RP4	A completed Master plan that demonstrates a need for significant renewals and/or treatment upgrades.					
Overview and scope	Altona Treatment Plant is an ageing asset that requires works to maintain the required functionality – i.e. safely treat and dispose of 4.5GL per annum of sewage and trade wastes from the suburbs of Altona and Laverton. This program may include major renewals and upgrades of civil and process components of the plant to ensure safety is maintained and CWW meets compliance with a range of environmental requirements. Minor upgrades are also required to update out of date technologies used at the plant.					
Objective	Safe and efficient treatment and disposal of sewerage is fundamental to healthy, growing communities. The program is required to ensure CWW continue to maintain 100% compliance with our EPA discharge licence and to ensure safe, reliable and efficient operation of the plant.					
Outcomes	The renewal and upgrade works delivered under this program have been identified due to end of life/condition assessment findings. This program supports CWW's key customer outcome areas of: ▪ services to homes and businesses are safe, reliable and efficiently delivered ▪ the whole of the water cycle is managed in an environmentally sustainable way ▪ asset management is focussed on customer outcomes.					
How this program has been informed by engagement	CWW's engagement program found that sewerage services are not front of mind for customers. They take for granted the ability to dispose of sewage from the sanitary drains on their properties without impact to the local environment. However, when asked to think about sewerage services, customers recognise that safe sewage disposal and treatment is of fundamental importance to a healthy community.					
Basis of unit costs	Capital cost estimates for the program are based on recent similar projects, recent tenders and through consultation with the wider industry. Many projects within the program have a business case approved with detailed costing completed as part of the approval.					
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	2.9	2.7	0.8	0.8	-	**7.2**

Table 44 Digital metering widespread roll out

Information requirement	Comment					
Asset classes	IT and water meters					
Driver	Improvement in service / renewal					
Overview and scope	CWW is participating in collaboration with Yarra Valley Water and South East Water to investigate the viability of a widespread roll out of digital metering technology to the utilities water customers. CWW has many years' experience with digital metering technology, having required digital meters to be installed in high-rise developments over 5 storeys since 2013. Some Melbourne businesses are also using this technology to help detect leaks and can alert customers if their home or business has one. Along with reducing water wastage, digital meters will also provide information on how water is used. Because it's digital, customer will be able to access water information online, enabling greater insights on usage and control of bills.					
Why the program is uncertain	There is not currently customer support for a widespread roll out of digital meters given the costs required for such a program.					
What could trigger the project to precede in RP4	CWW proposes to conduct a number of trials of digital metering technology, and make existing digital meter data more accessible to customers. These efforts will go towards refining a business case for digital meters during RP4. A positive business case, customer support and DTF approval would be a requirement for a widespread roll out of digital metering technology during RP4.					
Objective	To modernise CWW's meter fleet and provide improved access to customers meter data.					
Outcomes	▪ Replacement of CWW's conventional accumulation meter fleet with a digital meter fleet. ▪ Customer access to real time information, usage alerts and leakage alerts.					
How this program has been informed by engagement	CWW's engagement program found that customers were interested in access to real time water usage information but not if it cost them more. Accordingly, CWW will be working to understand the costs and benefits of digital metering technologies during RP4.					
Basis of unit costs	The project is uncertain and no costs have been included in RP4					
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	-	-	-	-	-	**-**

Table 45 West Werribee Salt Reduction Plant brine pipeline

Information requirement	Comment
Asset classes	Recycled water
Driver	Compliance
Overview and scope	As part of the West Werribee dual water supply project, CWW constructed the WWSRP to treat recycled water from Melbourne Water's Western Treatment Plant (WTP). A key issue in the operation of WWSRP is disposal of the reverse osmosis concentrate – MW is seeking for CWW to avoid discharging 'salt heavy' water to the WTP main inlet carrier. WWSRP is located on land leased from MW. The lease permits CWW to discharge brine into the WTP main inlet carrier only during the initial stages of WWSRP operation. Under these conditions, there would be an increase in the saltiness of water subsequently taken by MW for treatment. This is not considered by MW to be a viable long term solution due to the potential to exceed their salinity licence limit. The long term alternatives being considered are: ▪ a brine pipeline that would have WWSRP reverse osmosis concentrate discharging to the salty 'old lagoons' ▪ 'at source' salt reduction opportunities with trade waste customers that would reduce total dissolved solids discharged to MW's main inlet carrier. 'At source' salt reduction has the potential to provide a much greater reduction in total dissolved solids load at MW's main inlet carrier at significantly less cost than the brine pipeline. If 'at source' salt reduction proves viable, it would represent a better value to the community than the brine pipeline. MW is committed to working with CWW to ensure the best solution is identified and implemented
Why the program is uncertain	As the brine pipeline has not yet been constructed due to delays in commissioning WWSRP, a review revealed that since the original lease agreement in 2011 the current demand forecasts indicate WWSRP will not operate at full capacity until about 2036, which is significantly later than the original forecast of 2019, and a significant decrease in main inlet carrier influent salinity from 1,000 mg/L to approximately 870 mg/L, which is now well below the influent total dissolved solids licence limit of 1,000 mg/L.
What could trigger the project to precede in RP4	Triggers for project implementation: ▪ increase in main inlet carrier influent salinity to above the 1,000 mg/L limit ▪ at source salt reduction opportunities with trade waste customers are proven as non-viable ▪ review for next water plan justifies need of pipeline.
Objective	To make best available use of water sources within CWW's service areas.

Information requirement	Comment
How this program has been informed by engagement	CWW asked its customers whether: ▪ recycled water should be supplied from existing facilities ▪ the recycled water network should be expanded. CWW heard from customers that recycled water should continue to be supplied from existing facilities but that any new recycled water schemes should not add to customer bills. The brine pipeline would support the outcome that 'the whole of the water cycle is managed in an environmentally sustainable way through mitigating potentially adverse impacts on the receiving environment.
Basis of unit costs	The project is uncertain and no costs have been included in RP4

Proposed annual capex ($m, 2017-18 prices)	2018-19	2019-20	2020-21	2021-22	2022-23	RP4 total
	-	-	-	-	-	-

Table 46 Black Forest Road stormwater scheme

Information requirement	Comment					
Asset classes	Recycled water					
Driver	Growth					
Overview and scope	The Black Forest Road stormwater harvesting scheme would consists of harvesting stormwater from two proposed lakes in the planned Harpley Estate development located within the Black Forest Road development area. Stormwater would be diverted into the lakes from a 7,000 Ha catchment (the Lollypop Creek catchment), targeting excess runoff from existing and future urban areas only. The captured stormwater would then be treated to a quality suitable for non-potable domestic uses prior to supply through CWW's Western Growth Corridor recycled water network. The scheme would contribute towards the optimisation of recycled water supply from WWSRP.					
Why the program is uncertain	While the project is expected to deliver multiple benefits to multiple stakeholders, it also involves additional costs and risks due to its complexity. A key risk is the uncertainty with the ownership of the proposed lakes and their ongoing management. Other risks, which are more manageable, are confirmation of a suitable site for the treatment plant.					
What could trigger the project to precede in RP4	Triggers for Project Implementation: ▪ resolution of lake ownership ▪ confirmation of site for treatment facility ▪ strategic review and confirmation on timing on when this resource will be required					
Objective	To make best available use of water sources within CWW's service areas.					
How this program has been informed by engagement	CWW's customers supported the beneficial use of stormwater to provide local supplies.					
Basis of unit costs	The project is uncertain and no costs have been included in RP4					
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	-	-	-	-	-	-

D.3 Capital programs

Table 47 Water KPI renewals

Information requirement	Comment
Asset classes	Water reticulation mains
Driver	Renewals
Overview and scope	The works under this program are made up of the on-going abandonment of existing water mains and the construction of new mains, to the required standards, to meet hydraulic compliance and design life resilience in accordance with WSAA's water supply design code.
Objective	The objective of the water KPI attainment renewal programs is to ensure CWW delivers an agreed level of service and reliability for water services to customers as measured by the number of customers receiving multiple interruptions in a year. CWW is proposing to maintain the customer experience of no more than four water supply interruptions in a year. This is directly informed by CWW SIMALTO survey where non-residential customers wanted an improvement in service (no more than 3) and non-residential customers wanted a maintenance of performance (no more than 4).
Start and finish dates	Ongoing
Outcomes	This program supports the customer outcome area of: ▪ services to homes and businesses are safe, reliable and efficiently delivered. Consistent with SIMALTO results below, CWW is proposing to maintain the current service level of no more than four water supply interruptions in a year. However, CWW will include a residential GSL for no more than three water supply interruptions in recognition of the higher value residential customers place on water supply reliability.
How this program has been informed by engagement	CWW asked customers in a quantitative trade off survey (SIMALTO) to select their preferred level of water service reliability (as measured by repeat interruptions). Residential customers, including those who had recently experienced water supply interruptions, preferred to improve service reliability from no customer to experience more than four interruptions a year, to no more than three water supply interruptions in a year. However, non-residential customers preferred to remain at the current service level of no customer to experience more than four water supply interruptions a year.
Basis of unit costs	The P50 unit cost for the renewal of water mains is $600,000 / km based on the average of recent renewals.

Information requirement	Comment
Basis of volumes	CWW uses the Asset Failure Forecasting & Investment Renewal Model (AFFIRM model) to estimate the number of interruptions on the water network for different levels of renewal capex and preventative maintenance. Using the AFFIRM model, CWW has estimated that this program will result in the replacement of approximately 30km of reticulation water main each year to deliver an outcome of less than 1,650 failures per annum. Proposed activities are required to continue to deliver no more than four repeat interruptions. The AFFIRM model has shown that the observed increasing trend in repeat interruptions will continue without increased investment. Therefore, while CWW proposes to maintain its level of service it also proposes to increase its level of expenditure to do so. This scenario is consistent with what was presented to customers in the SIMALTO trade off analysis.

Historic costs ($m, 2017-18 prices)	2013-14	2014-15	2015-16	2016-17	2017-18	RP3 total
	16.4	10.6	9.8	11.5	12.8	**61.1**
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	16.2	16.9	18.5	17.2	15.3	**84.1**

Table 48 Sewer growth – developer works

Information requirement	Comment
Asset classes	Sewer pipelines
Driver	Growth
Overview and scope	The sewer growth program delivers sewer mains to new residential and non-residential developments in the growth areas of CWW's service area. The assets to be delivered under this program will be constructed by developers.
Objective	Safe and efficient removal of sewerage is fundamental to healthy, growing communities. The scope of the program is to deliver all sewer assets to new customers to ensure all sewage flows are contained in accordance with the requirements of the State Environment Protection Policy (Waters of Victoria).
Start and finish dates	Ongoing
Outcomes	The sewer mains delivered under this program will connect new developments to CWW's existing sewerage network for ultimate treatment and disposal at Melbourne Water's Western Treatment Plant. This program supports CWW's key customer outcome areas of: ▪ services to homes and businesses are safe, reliable and efficiently delivered ▪ the whole of the water cycle is managed in an environmentally sustainable way ▪ CWW is a valued partner in servicing a growing Melbourne.
How this program has been informed by engagement	CWW's engagement program found that sewerage services are not front of mind for customers. They take for granted the ability to dispose of sewage from the sanitary drains on their properties without impact to the local environment. However, when asked to think about sewerage services, customers recognise that safe sewage disposal is of fundamental importance to a healthy community. CWW consulted with councils, developers and planning authorities on the optimal timing of CWW asset delivery for the water growth program. Network servicing plans were developed taking into consideration information such as growth forecasts and stakeholders' proposed development timings which were collected through the consultation.
Basis of unit costs	Capital cost estimates for the program are based on recent similar projects, and recent tenders.
Basis of volumes	The sewer growth program has been developed through consultation with a wide range of stakeholders, including councils, developers and planning authorities, to ensure CWW invests efficiently in prudent infrastructure. The program optimises the size, general alignment and timing of assets and utilises the most efficient delivery mechanism to ensure we can provide services at the lowest total community cost.

Historic costs ($m, 2017-18 prices)	2013-14	2014-15	2015-16	2016-17	2017-18	RP3 total
	2.3	2.0	5.5	8.8	9.9	**28.4**
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	12.8	17.6	16.3	6.9	11.8	**65.5**

Table 49 Sewer KPI renewals

Information requirement	Comment					
Asset classes	Sewer reticulation mains and house connection branches (HCB)					
Driver	Renewals					
Overview and scope	The works under this program are made up of the on-going renewal of old and deteriorated sewer reticulation mains and HCBs.					
Objective	The objective of the sewer KPI attainment renewal programs is to manage customer sewer faults, including blockages and spills onto customer properties and inside customer buildings.					
Start and finish dates	Ongoing					
Outcomes	This program supports the customer outcome area of: ▪ services to homes and businesses are safe, reliable and efficiently delivered ▪ the whole of water cycle is managed in an environmentally sustainable way. As informed by the SIMALTO survey results, CWW is proposing to deliver a level of service that results in *no more than three sewer blockages in a year*.					
How this program has been informed by engagement	CWW asked customers in a quantitative trade off survey (SIMALTO) to select their preferred level of sewerage service reliability (as measured by repeated blockages). Customers, including those who had recently experienced a sewer blockage, felt that no-one should experience more than three sewer blockages in a year – a relaxation of the current level of service. The current level of service is no more than two sewer blockages.					
Basis of unit costs	Based on recent jobs, the P50 unit cost for the sewer reticulation main renewals is $350,000 / km and HCB renewals costs $3,320.					
Basis of volumes	CWW uses the AFFIRM model to estimate the number of blockages on the sewerage network for different levels of renewal capex and preventative maintenance. To achieve no more than 3 sewer blockages, CWW has estimated that 28km of main and 963 HCBs require renewal each year. The AFFIRM model has shown that the observed increasing trend in repeat sewer blockages will continue without increased investment. CWW proposes to both slightly relax the service standard (in line with customer feedback) and increase the amount of expenditure on KPI renewals. This scenario is consistent with what was presented to customers in the SIMALTO trade off analysis.					
Historic costs ($m, 2017-18 prices)	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**RP3 total**
	9.1	4.2	7.2	6.1	6.3	**32.9**
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	10.1	10.9	11.3	13.3	10.6	**56.1**

Table 50 Meter services and meter procurement

Information requirement	Comment					
Asset classes	New property service water connections, new PFSCs, new meters					
Driver	Growth					
Overview and scope	This program covers the installation of new property service water connections, PFSCs and installation of water meters for predominately newly developed properties to satisfy customer demand.. CWW's conditions of connection require all new customers to have a meter installed. Further, where a physical meter read cannot be easily obtained (e.g. in high-rise developments) CWW requires that remote metering devices and/or systems be installed.					
Objective	The objectives of this program are to meet customer demand, improve quality of water connection installation, ensure customers can be connected to CWW's pipelines and ensure their water usage can be accurately measured.					
Start and finish dates	Ongoing					
Outcomes	This program supports the customer outcome area of: ▪ CWW is a valued partner in servicing a growing Melbourne.					
How this program has been informed by engagement	CWW's engagement program found that customers take safe, reliable water services provided by CWW to be a given. CWW consulted with the building and plumbing industry to identify opportunities for improvement in the quality and reliability of water connection installations and the timeliness of processing plumbing applications for connection. CWW has reviewed: ▪ its water connection procedures ▪ processing times for property development services. CWW will continue to work to reduce turnaround times and improve connection quality wherever possible.					
Basis of unit costs	The costs of the assets provided under this program are set under two contracts: ▪ a 5 year contract (maximum) with our meter services contractor (Select Solutions) ▪ a 3 year meter procurement contract with numerous water meter suppliers.					
Basis of volumes	New property service water connections, new PFSCs, new meters					
Historic costs ($m, 2017-18 prices)	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**RP3 total**
	5.0 [a]	4.5 [a]	6.6 [b]	6.8 [b]	7.6 [c]	**30.5**
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	8.1	8.0	8.0	8.2	8.3	**40.5**

[a] Meters only – 'tappings' and 'tappings under pressure' costs treated as opex.
[b] Meters plus tappings costs.
[c] Property service installations introduced and included in total cost of meter service from 2017-18.

Table 51 Water risk renewals

Information requirement	Comment					
Asset classes	Water mains – reticulation and distribution					
Driver	Renewals					
Overview and scope	The program is made up of the replacement of water mains that have been verified as posing risks beyond those acceptable to CWW per its risk appetite statement. The renewal works are diverse, using a variety of renewal techniques and replacing a diverse set of water main assets in terms of age, size and material.					
Objective	The purpose of this renewal program is to reduce the risk posed by CWW assets to customers and the broader community from unexpected water main failures. Water main failures can cause extensive property and utility damage, serious disruption to transportation and, in extreme cases, can lead to injury to members of the public.					
Start and finish dates	Ongoing					
Outcomes	The project supports CWW's core retail functions including the customer outcome area of: ▪ services to homes and businesses are safe, reliable and efficiently delivered.					
How this program has been informed by engagement	Water network reliability was discussed qualitatively in several customer forums as well as in CWW's quantitative survey. Engagement highlighted and confirmed that customers expect and take as a given access to safe, clean water. Customers recognised that CWW operates a complex network. They expressed an expectation that CWW proactively managed the water and sewerage networks such that infrastructure is renewed and proactively maintained, rather than a 'run-to-fail and repair' mode. Customers also prioritised the reliability of water supply to key sites such as the central business district and key hospitals. Customers also expressed great frustration at seeing water lost from CWW's network through bursts and leaks.					
Basis of unit costs	▪ Reticulation risk renewal P50 unit rate: $834,000 / km ▪ Distribution risk renewal P50 unit rate: $3,400,000 / km					
Basis of volumes	CWW uses its Asset Risk Management Model to identify the consequence and likelihood of failure of each length of pipe in the CWW network registered in GIS. The assessment has identified that approximately 3km of replacement or rehabilitated water reticulation and distribution mains is required per annum for RP4.					
Historic costs ($m, 2017-18 prices)	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**RP3 total**
	9.2	4.2	4.3	5.2	3.0	**26.0**
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	0.6	7.2	11.7	9.0	9.3	**37.8**

Table 52 Sewer hydraulic compliance

Information requirement	Comment					
Asset classes	Sewers					
Driver	Compliance					
Overview and scope	CWW has identified several swerage catchments with hydraulic constraints including Youell Street, Stony Creek, Taylors Creek and Steele Creek catchments. A program of works is proposed to bring these catchments into compliance during RP4. A range of works is proposed under the program, including: ▪ pipeline duplication ▪ flow diversion ▪ storage ▪ wet weather pump stations.					
Objective	The purpose of this program is to satisfy the State Environment Protection Policy (Waters of Victoria) policy of containment within CWW's sewers of flows resulting from a 1 in 5 year ARI storm event. The requirement protects the public and broader community from sewer spills that can cause extensive property and utility damage, serious disruption to transportation and, in extreme cases, can lead to injury or health concerns to members of the public.					
Start and finish dates	Ongoing					
Outcomes	This program supports the customer outcome areas of: ▪ services to homes and businesses are safe, reliable and efficiently delivered ▪ the whole of the water cycle is managed in an environmentally sustainable way.					
How this program has been informed by engagement	CWW's engagement program found that sewerage services are not front of mind for customers. They take for granted the ability to dispose of sewage from the sanitary drains on their properties without impact on their local environment. However, when asked to think about sewerage services, customers recognise that safe sewage disposal is of fundamental importance to a healthy community. Customers also supported CWW continuing to meet its compliance obligation in relation to water supply and sewage disposal.					
Basis of unit costs	Costs are estimates provided by GHD based on their (GHD's) cost curves for similar works, incorporating information provided by CWW regarding recent projects.					
Basis of volumes	Using measured flow, rainfall data and SCADA data, CWW's sewer hydraulic models have been calibrated and validated such that they are regarded to accurately represent the performance of CWW's sewerage system. The models, used to predict the performance of the sewerage network, identified sewer spills during a 1 in 5 year ARI storm event in the Youell Street, Stony Creek, Taylors Creek and Steele Creek catchments.					
Historic costs ($m, 2017-18 prices)	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**RP3 total**
	1.6	1.0	0.1	-	-	**2.8**
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	3.0	4.0	3.5	5.4	5.4	**21.2**

Table 53 Water growth – developer works

Information requirement	Comment					
Asset classes	Water pipelines					
Driver	Growth					
Overview and scope	The water growth program delivers water mains to new residential and non-residential developments in the growth areas of CWW's service area. The assets to be delivered under this program will be constructed by developers.					
Objective	The objective of this program is to deliver safe, clean, safe drinking water to new communities in Melbourne's west.					
Start and finish dates	Ongoing					
Outcomes	This program supports CWW's key customer outcome areas of: ▪ services to homes and businesses are safe, reliable and efficiently delivered. ▪ the whole of the water cycle is managed in an environmentally sustainable way. ▪ CWW is a valued partner in servicing a growing Melbourne.					
How this program has been informed by engagement	CWW's engagement program found that customers take safe, reliable water services provided by CWW to be a given. CWW consulted with councils, developers and planning authorities on the optimal timing of CWW assets for the water growth program. Network servicing plans were developed taking into consideration information such as growth forecasts and stakeholders' proposed development timings which were collected through the consultation.					
Basis of unit costs	Capital cost estimates for the program are based on recent similar projects, and recent tenders.					
Basis of volumes	The water growth program has been developed through consultation with a wide range of stakeholders, including councils, developers and planning authorities, to ensure CWW invests efficiently in prudent infrastructure. The program optimises the size, general alignment and timing of assets and utilises the most efficient delivery mechanism to ensure provision of the services at the lowest total community cost.					
Historic costs ($m, 2017-18 prices)	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**RP3 total**
	1.6	3.7	3.9	3.3	3.4	**15.9**
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	5.3	3.6	3.6	3.8	3.8	**20.1**

Table 54 Recycled water growth – developer works

Information requirement	Comment
Asset classes	Recycled water pipelines
Driver	Growth
Overview and scope	The recycled water growth program delivers recycled water mains to new residential and non-residential developments in the West Werribee Zone and Greek Hill Zone of CWW's service area. This supports the diversification of CWW's water supply portfolio and makes best use of CWW's West Werribee recycled water production facility. The assets to be delivered under this program will be constructed by developers.
Objective	The objective of this program is to deliver high-quality recycled water through 'third pipes' to new communities in Melbourne's west.
Start and finish dates	Ongoing
Outcomes	This program supports the customer outcome areas of: ▪ services to homes and businesses are safe, reliable and efficiently delivered. ▪ the whole of the water cycle is managed in an environmentally sustainable way. ▪ CWW is a valued partner in servicing a growing Melbourne.
How this program has been informed by customer engagement	CWW asked its customers: ▪ if recycled water should be supplied from existing facilities ▪ If the recycled water network should be expanded. CWW heard from customers that recycled water should continue to be supplied from existing facilities but that any new recycled water schemes should not add to customer bills. In response, CWW is not proposing any new recycled water schemes in PS2018. Further, CWW will limit the extent of recycled water supply to the Greek Hill (high level) Zone and will no longer plan to provide recycled water to the Holden Zone. CWW will continue to deliver recycled water distribution assets into the Greek Hill (low level) Zone and the West Werribee Zone to make best use of developer investments in recycled water reticulation pipework in those zones and to best utilise the capacity of the West Werribee recycled water production facility and aquifer storage and recovery scheme. CWW consulted with councils, developers and planning authorities on the optimal timing of CWW assets for the recycled water growth program. Network servicing plans were developed taking into consideration information such as growth forecasts and stakeholders' proposed development timings which were collected through the consultation.
Basis of unit costs	Capital cost estimates for the program are based on recent similar projects, and recent tenders.
Basis of volumes	The recycled water growth program has been developed through consultation with a wide range of stakeholders, including councils, developers and planning authorities, to ensure CWW efficiently invests in prudent infrastructure. The program optimises the size, general alignment and timing of assets and utilises the most efficient delivery mechanisms to ensure we can provide services at the lowest total community cost.

Information requirement	Comment					
Historic costs ($m, 2017-18 prices)	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**RP3 total**
		0.5	1.4	2.3	3.2	**7.5**
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	5.5	3.4	3.2	3.6	2.9	**18.7**

Table 55 Maintaining essential IT capability

Information requirement	Comment
Asset classes	IT
Driver	Renewals (79.9%), compliance / improvement in service (20.1%)
Overview and scope	The maintaining essential IT capability program will maintain the capability of our information systems at the level required to operate our business, meet our regulatory requirements, maintain systems security and maintain the performance levels expected by our customers. This program also forms the foundation for the majority of other technology investments planned; particularly cloud and data focussed investments. Components include: ▪ desktop hardware ▪ IT infrastructure (processing, data storage and IP telephony) ▪ human resource information system (HRIS) and payroll ▪ legacy minor software renewals ▪ integration and automation ▪ IT service desk renewal ▪ project management and time sheeting ▪ Oracle renewal ▪ occupational health & safety (OHS) software ▪ renewal of standard operating environment ▪ GIS and SCADA updates
Objective	The scope of our maintaining essential IT capability program covers elements of our entire IT landscape, including: ▪ ensuring that operating and application software and hardware are up-to-date, leveraging Victorian Government agreements wherever possible ▪ introducing critical applications to replace manual processes (human resources and health/safety) ▪ modifying systems as required addressing changing business and regulatory requirements ▪ ensuring our fleet of desktop and laptop computers is kept up to date and fit-for-purpose ▪ renewing core capabilities to ensure that planning and administration capabilities are efficient ▪ enabling the introduction and integration of cloud-based technology ▪ leveraging new technology where it can improve safety, transparency and efficiency.
Start and finish dates	Ongoing
Outcomes	This program underpins all customer outcome areas.
How this program has been informed by engagement	Customers expect CWW to meet its regulatory and compliance obligations and to deliver its service efficiently and effectively. The sub-projects under the maintaining essential IT capability program are enabling services that allow CWW 'back-office' functions to operate efficiently and effectively.
Basis of capital costs	Cost estimates have been developed for each individual sub-project based on experience with previous projects of similar types. Where possible project estimates are based on the actual costs of previous projects.

Information requirement	Comment					
Operating cost implications	A move to cloud computing, in which IT is procured as a service rather than as a fixed asset, would drive an increase in opex – but with a decrease in capex. Because of the short life of IT assets, this is not anticipated to have a significant price impact. Refer to section 7.1 (under *Forecast controllable operating expenditure*) where CWW describes its overall IT spend.					
Cloud computing opex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	0.9	0.9	1.0	1.2	1.2	**5.1**
Historic capital costs	The new nature of this IT program and the shift to cloud computing costs does not lend itself well to comparison of past expenditure on this program.					
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	4.2	5.1	1.8	3.0	3.8	**17.9**

Table 56 Sewer risk renewals

Information requirement	Comment					
Asset classes	Sewer mains – reticulation and distribution					
Driver	Renewals					
Overview and scope	The program is made up of the replacement or rehabilitation of sewers that have been identified as posing risks beyond a level acceptable to CWW per its risk appetite statement. The renewal works are diverse, using a variety of renewal techniques and replacing a diverse set of sewer main assets in terms of age, size and material.					
Objective	The purpose of this renewal program is to protect the public and the broader community from unexpected sewer main failures that can cause extensive property and utility damage, serious disruption to transportation and, in extreme cases, can lead to injury or health concerns to members of the public.					
Start and finish dates	Ongoing					
Outcomes	This program supports the customer outcome area of: ▪ services to homes and businesses are safe, reliable and efficiently delivered ▪ the whole of water cycle is managed in an environmentally sustainable way.					
How this program has been informed by engagement	CWW's engagement program found that sewerage services are not front of mind for customers. They take for granted the ability to dispose of sewage from the sanitary drains on their properties. However, when asked to think about sewerage services, customers recognise safe sewage disposal is of fundamental importance to a healthy community. Customers recognised that CWW's operates a complex network, and expressed an expectation that CWW proactively managed the water and sewerage networks such that infrastructure is renewed and proactively maintained, rather than a 'run-to-fail and repair' mode.					
Basis of unit costs	The P50 unit rate used for sewer reticulation and transfer main renewals is $475,000 / km – based on a CWW database of actual renewals expenditure.					
Basis of volumes	CWW uses its Asset Risk Management Model to identify the consequence and likelihood of failure of each length of sewer in the CWW network registered in GIS. The Asset Risk Management Model has identified that, on average, approximately 5.4km of sewer mains require renewal per annum to maintain CWW's risk profile at an acceptable level.					
Historic costs ($m, 2017-18 prices)	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**RP3 total**
	6.6	4.0	1.5	1.6	1.9	**15.6**
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	3.1	3.1	3.1	3.1	3.1	**15.5**

Table 57 Information management and data security

Information requirement	Comment
Asset classes	IT
Driver	Renewals (49.6%), compliance (10.8%), improvement in service (39.6%)
Overview and scope	This program is comprised of a series of separate but intimately related projects, each of which is intended to progress the utility and compliance of CWW's data environments over the next 5 years. Components include: ▪ data and analytics ▪ asset and environment analytics ▪ predictive asset management ▪ meter data management and meter analytics ▪ records and information management, messaging, email, productivity, and collaboration (Office365) ▪ VPDSS compliance and cybersecurity.
Objective	As a retailer distributor, CWW is heavily reliant on customer and asset data to deliver the retail and network services that customers expect. This program supports secure, accessible, and proactively-managed information whilst renewing and uplifting analytics, self-service reporting, and information collaboration services. The program provides the foundation for storage and management of data from a new generation of sensors and devices and will renew existing records/document management capabilities. The program will renew cybersecurity infrastructure, cybersecurity operational services, provide cybersecurity awareness training, and deliver VPDSF/VPDSS compliant IT security policy, standards, and control guidelines.
Start and finish dates	Ongoing
Outcomes	This program supports the customer outcome areas of: ▪ customer service is accessible and enquiries are promptly resolved ▪ billing and payment options are efficient and convenient The data and security program will allow us to: ▪ identify opportunities for improving operational efficiency and customer service, ultimately providing better value services for customers ▪ ensure that customer data is kept secure ▪ support customer access to meter data and usage information ▪ improve the efficiency of asset planning, maintenance and replacement programs ▪ track our performance against our strategic drivers and our KPIs.
How this program has been informed by engagement	Throughout CWW's customer engagement, customers told us they: ▪ expect their information to be held securely ▪ want better access to their meter, account and billing information ▪ want us to offer more transactions online.
Basis of capital costs	Cost estimates have been developed for each individual sub-project based on experience with previous projects of similar types. Where possible project estimates are based on the actual costs of previous projects.

Information requirement	Comment					
Operating cost implications	A move to cloud computing, in which IT is procured as a service rather than as a fixed asset, would drive an increase in opex – but with a decrease in capex. Because of the short life of IT assets, this is not anticipated to have a significant price impact. Refer to section 7.1 (under *Forecast controllable operating expenditure*) where CWW describes its overall IT spend.					
Cloud computing opex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	0.6	0.7	0.8	0.8	0.8	**3.7**
Historic costs	The new nature of this IT program and the shift to cloud computing costs does not lend itself well to comparison of past expenditure on this program.					
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	3.3	2.7	0.4	0.4	1.3	**8.1**

Table 58 Water property service connection renewals

Information requirement	Comment					
Asset classes	Property service connections (PSCs)					
Driver	Renewals					
Overview and scope	The works under this program are made up of the on-going abandonment of existing deteriorated PSCs that are prone to failure and the construction of new PSCs between the water main and the customer property.					
Objective	The purpose of this renewal program is to prevent service failure on deteriorated water PSCs, minimise the unplanned disruptions of water supply to customers, and manage reactive maintenance activities and the associated costs within a sustainable level. The outcomes delivered by this program are consistent with CWW's SIMALTO findings that residential customers prioritise a higher level of water supply reliability in their preferred bill and service mix.					
Start and finish dates	Ongoing					
Outcomes	This program supports the customer outcome area of: ▪ services to homes and businesses are safe, reliable and efficiently delivered. As informed by the SIMALTO results, CWW is proposing to maintain the current service level of no more than four water supply interruptions in a year. However, CWW will include a residential GSL for no more than 3 water supply interruptions in recognition of the higher value residential customers place on water supply reliability.					
How this program has been informed by engagement	CWW asked customers in a quantitative trade off survey (SIMALTO) their preferred level of water service reliability (as measured by repeat interruptions). Residential customers, including those who had recently experienced water supply interruptions, preferred to improve service reliability from no customer to experience more than four unplanned water supply interruptions in a year, to no more than three unplanned water supply interruptions in a year. However, non-residential customers preferred to remain at the current service level of no customer to experience more than four water supply interruptions in a year.					
Basis of unit costs	The P50 unit cost for the renewal is $1,695/PSC based on the average of recent renewals.					
Basis of volumes	CWW uses the AFFIRM model to estimate the number of interruptions on the water network for different levels of renewal capex and preventative maintenance. Together with the PSC renewal strategy, CWW proposes to renew 1,012 PSCs per annum (on average) over RP4. Proposed activities are required to continue to deliver no more than four repeat interruptions per annum.					
Historic costs ($m, 2017-18 prices)	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**RP3 total**
	0.6	0.3	0.6	0.4	1.2	**3.2**
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	1.7	1.4	1.6	1.5	1.5	**7.6**

Table 59 Billing, customer records management and customer data management

Information requirement	Comment
Asset classes	IT
Driver	Renewals (92.6%), improvement in service (7.4%)
Overview and scope	Although CWW is not proceeding with Arrow Program Release 3, a compelling case remains for a major overhaul of our customer management systems. This case is further supported by the findings from our recent customer engagement process that shows customers now expect to be able to connect with us using web-based, digital mechanisms. As such, CWW proposes to modernise its customer interfaces and customer records systems. Components of this program include: ▪ billing system (Gentrack) stabilisation and enhancements prior to replacement ▪ a new customer relationship management (CRM) capability ▪ a new customer applications platform ▪ replacing the customer records management system ▪ replacing the land and property development system (DAMS) ▪ a new customer portal and content management ▪ replacing the trade waste customer management (EMIS) system ▪ a new customer and operational insights platform.
Objective	At the completion of this program we will have replaced our end-of-life customer management systems with new capability that will allows us to: ▪ meet customers' expectations to access account information online and interact with us through digital channels ▪ provide a more personalised and efficient interaction with customers (focussed on quality of response) ▪ continue to meet our regulatory obligations ▪ continue to meet or exceed our customer service KPIs, including customer satisfaction ▪ increase the operational efficiency of our customer service employees.
Start and finish dates	Ongoing
Outcomes	This program supports the customer outcome areas of: ▪ customer service is accessible and enquiries are promptly resolved ▪ billing and payment options are efficient and convenient. The projects included in this program directly address customers' preferences and priorities as revealed in CWW's recent customer engagement research. This program will enable CWW to deliver improved and more accessible interactions with customers, including: ▪ providing online access to customer accounts ▪ more applications and transactions being made available online ▪ proactive customer notification of significant usage changes or of disruptions to supply (either planned or unplanned) ▪ significantly improved response time for email correspondence (while accepting a slightly longer response time for phone calls, in line with customer feedback) ▪ facilitate extended customer contact centre hours by making core systems available for a greater proportion of the day.

Information requirement	Comment					
How this program has been informed by engagement	Engagement highlighted that customers want options when contacting us. While they want to be able to transact more online (e.g. web chat and online self-service), they also want the option to be able to speak with us face-to-face and to call us at times that suit them. Better understanding their water usage and receiving timely notifications of changes to water usage and of disruptions to supply was also highly valued.					
Basis of capital costs	Cost estimates have been developed for each individual sub-project based on experience with previous projects of similar types. Where possible project estimates are based on the actual costs of previous projects.					
Operating cost implications	A move to cloud computing, in which IT is procured as a service rather than as a fixed asset, would drive an increase in opex – but with a decrease in capex. Because of the short life of IT assets, this is not anticipated to have a significant price impact.					
Cloud computing opex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	0.5	0.6	0.6	0.6	0.7	**3.0**
Historic capital costs	The new nature of this IT program and the shift to cloud computing costs does not lend itself well to comparison of past expenditure on this program. Refer to section 7.1 (under *Forecast controllable operating expenditure*) where CWW describes its overall IT spend.					
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	2.5	3.2	0.4	0.3	0.7	**7.2**

Table 60 Water meter replacement

Information requirement	Comment					
Asset classes	Water meters					
Driver	Renewals					
Overview and scope	The works under this program are made up of the replacement of ageing water meters. Water meter accuracy deteriorates over time – tending to read slow, resulting in potentially inaccurate meter readings that contribute to CWW's non-revenue water balance.					
Objective	The purpose of this renewal program is to maintain CWW's meter fleet within National Metering Institute standards.					
Start and finish dates	Ongoing					
Outcomes	This program supports the customer outcome area of: ▪ billing and payment options are efficient and convenient.					
How this program has been informed by engagement	CWW's engagement program indicated that customers expect bills to be accurate and that customers have a strong preference for a 'user pays' water system – this requires accurate measurement of water usage. Inaccurate meter readings and/or estimated readings were also key drivers of customer dissatisfaction. As such, CWW proposed to maintain a program of meter replacements targeting those cohorts of meters that do not register accurately. The proposed costs in this plan for 2017-18 onwards are significantly less than prior years due to a more cautious approach to planned meter replacements. With the digital metering strategy being the potential driver for future meter replacement programs across our network of meters, the number of planned meter replacements and proposed costs could significantly increase.					
Basis of unit costs	The average cost of replacement is $150 / meter.					
Basis of volumes	CWW proposes to replace approximately 3,500 meters per annum – subject to digital metering project timelines.					
Historic costs ($m, 2017-18 prices)	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**RP3 total**
	2.7	1.9	2.0	0.3	0.6	**7.4**
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	0.4	0.4	0.4	0.5	0.5	**2.2**

Table 61 Aquifer storage and recovery

Information requirement	Comment					
Asset class	Recycled water – storage					
Driver	Growth					
Overview and scope	The aquifer storage and recovery (ASR) scheme augments the WWSRP by storing excess recycled water deep underground during periods of low demand. Stored water can then be extracted for supply during summer peak demand periods. The majority of the ASR scheme was constructed in RP3. However, some additional works are required during RP4, including facilities to filter and treat the source water and modification of the headworks and installation of submersible pumps.					
Why now?	This project is carried over from RP3 and it is prudent to conclude the project to enable the production of the underground recycled water storage.					
Outcomes	The project supports the customer outcome area of: ▪ the whole of the water cycle is managed in an environmentally sustainable way.					
How this project has been informed by engagement	CWW asked its customers: ▪ if recycled water should be supplied from WWSRP and Altona Salt Reduction Plant ▪ if the recycled water network should be expanded. CWW heard from customers that recycled water should continue to be supplied from CWW's facilities but that any new recycled water schemes should not add to customer bills. As such CWW proposes to complete the ASR project to make best use of the West Werribee recycled water facility.					
Basis of cost estimate	P50. Functional design estimate.					
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	0.3	1.9	0.1	0.1	0.1	**2.5**

Table 62 Renewable energy installations

Information requirement	Comment					
Asset class	Corporate – renewable energy					
Driver	Compliance with the Statement of Obligations (emissions reduction)					
Overview and scope	As part of the Victorian Government's response to climate change, CWW has pledged to reduce its baseline greenhouse gas emissions by 80% by 2025. CWW has also committed to having net-zero emissions by 2030, a timeframe that aligns with revealed CWW customer preferences. To achieve these emissions reductions CWW is required to comply with the Guiding Principles established by the Department of Environment, Land, Water and Panning. There are diverse opportunities to reduce carbon emissions and CWW has prioritised 'behind the meter' solar given its cost effectiveness as compared to other options. This project is made up of a suite of solar energy installations at CWW sites, including: ▪ 100kW of small scale solar installations at tank sites and other distributed CWW land holdings ▪ 400kW large scale solar installation at CWW's Altona Treatment Plant ▪ 450kW large scale solar installation at CWW's WWSRP.					
Why now?	CWW's Statement of Obligations (emissions reduction) obliges CWW to reduce its baseline greenhouse gas emissions by 80% by 2025. Behind the meter solar is a cost effective solution and is expected to save money in the long term.					
Outcomes	The project supports CWW's core retail functions including the customer outcome area of: ▪ the whole of the water cycle is managed in an environmentally sustainable way.					
How this program has been informed by engagement	In a quantitative trade off survey (SIMALTO), we asked customers about their preferences for CWW to achieve achieving net-zero emissions by (in order of decreasing cost) 2020, 2030 and 2050. Customers preferred a price and service package that included CWW achieving net-zero emissions by 2030.					
Basis of cost estimate	P50. Quoted prices.					
Proposed annual capex ($m, 2017-18 prices)	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**RP4 total**
	0.1	0.1	0.9	-	0.9	**2.0**

E Detailed PREMO assessment

The following pages provide a detailed assessment of PS2018 against each of the following elements of the PREMO framework:

- Risk
- Engagement
- Management
- Outcomes.

E.1 Risk

Average score for this element = 3.00

Guiding questions	Expectations of a 'standard' submission	Additional requirements for 'advanced'	Additional requirements for 'leading'	Risk of downgrade to 'basic'	CWW strategic response	Rating	Confidence level	Score
To what extent has the business demonstrated a robust process for identifying risk, and how it has decided who should bear these risks? To what extent does the proposed guaranteed service level (GSL) scheme provide incentives for the business to be accountable for the quality of services delivered, and provide incentives to deliver valued services efficiently?	The business meets the requirements of the Commission's Guidance Paper in relation to risk.	The business has implemented a new approach that reduces prices through better risk management.	The business has implemented an approach that reduces costs through better risk management, to a level that sets it apart from industry peers.	The business has not met the requirements of the Commission's Guidance Paper in relation to risk. The business has sought to transfer risk to customers which is not supported by customer views. The business has not sought to minimise cost and/or price impacts from risk management.	▪ CWW has met the requirements of the guidance paper in relation to risk. ▪ In line with CWW's new business strategy "putting customers first" and "proving fair returns to the shareholder", CWW has recently revised its risk management frameworks. As compared to RP3 benchmark, PS2018 allocates less risk to customers such that customers are not paying for conservatism on the part of CWW – e.g.: – the RP4 capex program uses P50 cost estimates – contingencies are excluded from cost estimates for the purposes of pricing – uncertain projects have been removed from the RP5 capex program – CWW's demand forecasts are our best estimates. ▪ Throughout RP3, CWW has implemented new approaches to expenditure management and monitoring that have allowed CWW to deliver savings. Examples include: – 'just in time' growth servicing strategies – changes to peak day demand assumptions reduced for network planning to optimise pipe size (and cost) – revision of CWW's Asset Risk Management Model to optimise asset risk management expenditure.	Advanced	Very confident	3.5
The business demonstrates compliance with risk standards specified in the Statement of Obligations (e.g. ISO 55000).	The business has been accredited for compliance with risk standards specified in the Statement of Obligations.			The business cannot demonstrate compliance with risk standards specified in the Statement of Obligations.	▪ CWW uses ISO 31000 (Risk Management) as the basis of its risk management framework. The Chair of CWW's Board also annually certifies compliance with the Minister's standing directions that also adopts ISO 31000 as its basis. ▪ CWW is substantively compliant with ISO 55000, as demonstrated by a recent gap analysis report (Marchment Hill, January 2017). CWW is implementing a work program to move towards an asset management framework that is capable of certification against ISO 55000.	Standard	Confident	2.25

Guiding questions	Expectations of a 'standard' submission	Additional requirements for 'advanced'	Additional requirements for 'leading'	Risk of downgrade to 'basic'	CWW strategic response	Rating	Confidence level	Score
	The business can demonstrate that it has thoroughly evaluated the feasibility of commencement and completion dates for major projects. Business cases are available for all major projects.	The business can demonstrate a robust optimisation process that has informed what projects need to be completed, and the timing of those projects. For example, real options analysis has informed planning.		Projects are proposed that have incomplete scope, no business cases, or are not feasible in terms of timelines for delivery.	▪ All major projects and programs have expenditure justifications (business cases) that include completion dates (for projects). ▪ All major projects have an options analysis, including a "do nothing option" ▪ Through designating certain projects "uncertain", CWW maintains the option to proceed at a future date ▪ CWW has optimised its capital spend by removing 'uncertain projects' from the PS2018 forecast and setting stretch targets to deliver service outcomes at a lower cost than our 'bottom up' program justifications. ▪ CWW has profiled its renewals programs (i.e. reduced in the early years of RP4) to accommodate major investments in sewer growth assets. Likewise, once these sewer growth assets are delivered, CWW will undertake its major IT project initiative – the replacement of its billing system.	Advanced	Reasonably confident	2.75
	The business has undertaken a Monte Carlo analysis for all major projects. The business can demonstrate that its aggregate capital expenditure forecasts are consistent with a P50 estimate (noting this is likely to be inappropriate where a program is dominated by one or two projects). The estimate must be based on the latest credible information on costs.	The business uses regulatory tools such as the pass through and uncertain and unforeseen events mechanisms where appropriate for projects with uncertain timing or costs. The business has evaluated whether major projects should be funded via capital or operating expenditure for pricing purposes.		The business cannot demonstrate that its aggregate capital expenditure forecasts are consistent with a P50 estimate (noting this is likely not to be appropriate where a business's capital program is dominated by one or two projects).	▪ CWW has used P50 cost estimates for each of its major programs and projects and, on that basis, the aggregate capital expenditure forecast is consistent with P50 estimate. ▪ A number of uncertain projects have been removed for the purposes of pricing. The prudency of undertaking these projects will be further investigated during RP4. ▪ CWW has evaluated whether projects should be delivered as capex or opex solutions. For example, CWW is entering into arrangements with Western Water and Barwon Water for access to their existing/planned infrastructure for a fee (opex) as opposed to CWW constructing (duplicating) standalone serving solutions.	Advanced	Confident	3.25
			In its price submission, the business proposes correction mechanisms to adjust the return on equity where its performance does not meet the outcomes established at the price review.		CWW has not proposed a formal mechanism	Standard	Very confident	2.5

Guiding questions	Expectations of a 'standard' submission	Additional requirements for 'advanced'	Additional requirements for 'leading'	Risk of downgrade to 'basic'	CWW strategic response	Rating	Confidence level	Score
	The business has proposed a GSL scheme that reflects the main service concerns and priorities of customers.	The business has refined its GSL scheme to provide greater service accountability to customers, or to provide increased incentives to deliver services efficiently. The business has proposed a GSL scheme that compares favourably to industry peers in terms of incentives to deliver services efficiently.		The business has not proposed a GSL scheme that reflects the main service concerns and priorities of customers.	▪ CWW has refined its GSL scheme in terms of both the nature of GSL events and increased incentives to deliver services efficiently. ▪ CWW will increase its number of GSL payment triggers by more than 50% from 7 to 11, incorporating events that are key drivers of customer dissatisfaction: – failure to give sufficient notice of a planned interruptions – interruptions occurring during peak periods – sewage spilling within a house. ▪ Based on a review of current GSL schemes, the proposed revitalised CWW scheme compares favourably. For example: – a review of the Customer Code shows no other GSL scheme currently has graduated GSLs (as CWW has proposed for water supply interruptions and sewer spills within a house) – CWW's proposed new payment levels are significantly above current industry averages for all equivalent GSLs events - for example, CWW's proposed $3,000 payment for sewer spills within a house not contained with 1 hour of notification is 3x the value of the five greater metropolitan corporation's equivalent. The proposed new scheme has been tested with customers.	Advanced	Confident	3.25
	The unit rates used to evaluate projects and options reflect recent historical trends, and/or independently verified market forecasts.			The business adopts assumptions that seek to maximise unit rates proposed.	Each project justification includes a list of costs from recently completed projects. These datasets form the basis of CWW's P50 cost estimates.	Advanced	Very confident	3.5
	The business can support its assessment of financial viability by reference to cash flow projections and independent benchmarks (e.g. credit rating metrics).	The water business has had its financial position review by an independent credit ratings agency.		The business cannot support its assessment of financial viability by reference to cash flow projections and independent benchmarks (e.g. credit rating metrics).	CWW's recent credit opinion by Fitch confirms CWW's financially viability.	Advanced	Very confident	3.5
	Through the form of price control and tariffs proposed, the submission appropriately balances revenue and cost risk between the business and its customers, without materially impacting on price stability.			The form of price control and/or tariffs over allocates risk to customers.	CWW proposes to maintain price cap regulation, thereby giving customers a level of certainty and the ability to control their bills during RP4. CWW's proposed tariff structure gives weight to customer preferences for bill control by generally maintaining the variable price for water above LRMC. However, CWW proposes two significant tariff reforms to tariff components that do not currently send efficient price signals, namely: ▪ removing the third residential price step on water usage ▪ significantly decreasing the sewage disposal fee.	Advanced	Very confident	3.5

E.2 Engagement

Average score for this element = 3.09 (rounded down to 3.00)

Guiding questions	Expectations of a 'standard' submission	Additional requirements for 'advanced'	Additional requirements for 'leading'	Risk of downgrade to 'basic'	CWW strategic response	Rating	Confidence level	Score
To what extent has the business justified how the form of engagement suits the content of consultation, the circumstances facing the water business and its customers? To what extent has the business demonstrated that it provided appropriate instruction and information to customers about the purpose, form and content of the customer engagement? To what extent has the business demonstrated that the matters it has engaged on are those that have the most influence on the services provided to customers and prices charged? To what extent has the business explained how it decided when to carry out its engagement? To what extent has the business demonstrated how its engagement with customers has influenced its submission?	The form of customer engagement is justified as being fit-for-purpose given the content and circumstances facing the business and its customers.	The onus is on each water business to make the case as to why they might rate their customer engagement as Advanced or Leading. This justification could be based on: ▪ Unbiased feedback from a representative group of customers about the business's choice of engagement method and the quality of the engagement program it delivered. For example, do customers believe they were given appropriate information and time to learn about the issues, form opinions, and influence the business's proposals? ▪ Participants in the engagement program provide feedback that the business has delivered on the engagement commitments given by the business (e.g. on what matters would participants provide feedback on, and the influence they would have on the decisions of the business). ▪ The level of customer influence on proposals. A strong alignment between a business's proposals and the preferences and interests elicited in its engagement program would correspond to a higher rating.		The form of customer engagement is not justified as being fit-for-purpose given the content and circumstances facing the business and its customers.	▪ CWW's customer engagement program was aimed at "Collaborate" on the IAP2 spectrum. ▪ The program was designed to be meaningful, timely, transparent, accessible and representative. ▪ CWW used a multi-channel and multi-phased engagement process with an independent engagement provider to encourage unbiased views. ▪ HP | Open Mind's *Closing the Loop* report provides a selection of feedback from customers that have participated in the engagement program. ▪ CWW has implemented the majority of findings from its customer engagement program. ▪ Through these channels we heard from more than 2,200 customers from a range of customer segments, including owners, tenants, large businesses, small businesses, industry, developers, and representatives from both culturally and linguistically diverse communities and consumer advocacy groups.	Advanced	Very confident	3.5
	The business demonstrates that the information provided to customers was appropriate given the purpose, form and content of customer engagement.			Information provided to customers was written in technical jargon, and/or was not appropriate for customer use. The business provided selective or incomplete information to customers that biased the responses or did not provide sufficient context for customer input.	Our Customer Committee was used to test language and information prior to publication or launch of surveys. Customer Committee meeting agendas and minutes are evidence of this approach.	Advanced	Confident	3.25
	The business demonstrates that engagement has occurred on matters that customers reveal are the most important to them.			Engagement has not occurred on matters that are important to customers or significant to the outcomes they receive and prices they are charged.	▪ The engagement program started with a co-creation workshop – involving customers and CWW employees to jointly develop the themes that were most important. ▪ The engagement program was iterative – e.g.: – in response to unexpected levels of interest from non-residential participants, we held two additional non-residential customer forums – in response to customer focus in our price structures we held a deliberative forum on this topic.	Advanced	Confident	3.25
	A business demonstrates that engagement was undertaken early, prior to locking in key strategies and priorities.			Engagement was undertaken late, after the business had developed its key strategies and priorities.	CWW's engagement phase took place from October 2016 to June 2017, with a draft outcomes document released for public comment in August 2017.	Advanced	Confident	3.25

Guiding questions	Expectations of a 'standard' submission	Additional requirements for 'advanced'	Additional requirements for 'leading'	Risk of downgrade to 'basic'	CWW strategic response	Rating	Confidence level	Score
	A business demonstrates it used engagement methodologies that elicit views that are representative of the customer base.			The business has failed to demonstrate that its engagement program elicited information that it could use to shape the strategic direction and priorities in its price submission.	CWW used a variety of formats for customer engagement, including attendance at community events, shopping centres, online surveys and comment boards. For all online surveys, CWW drew from a representative sample of customers.	Advanced	Confident	3.25
	A business demonstrates that the business re-tested its position and proposals with customers as it developed its price submission.			The business has not retested its position and proposals with customers as it developed its price submission.	Multi-phased approach to engagement facilitated re-testing of propositions: ▪ qualitative phase to determine views and values, focus groups, interviews, pop-ups ▪ quantitative phase to determine willingness to pay for changed services (SIMALTO and deliberative forum on tariffs) ▪ public outcomes proposal to qualitatively retest propositions made as a result of the prior engagement findings.	Advanced	Confident	3.25
	The price submission describes what was learned from customer engagement, and how this influenced its proposed outcomes, expenditure (composition and level) and prices.			The price submission does not clearly link the outcomes of engagement to the outcomes proposed, and the alignment of outcomes to expenditure and prices.	Section 3, section 4.2 and appendix A of the submission are dedicated to descriptions of the engagement process, what we heard from customers and actions we will be taking in response.	Standard	Very confident	2.5
	In any instances where outcomes proposed are not consistent with customer views, the business provides reasonable justification.			The business has not provided reasonable justification for instances where its proposed outcomes are not consistent with customer views.	Section 4.3 provides a summary of the customer preferences (as revealed through consultation) that we could not accommodate and our rationale for taking a different direction.	Standard	Very confident	2.5

E.3 Management

Average score for this element = 3.17 (rounded down to 3.00)

Guiding questions	Expectations of a 'standard' submission	Additional requirements for 'advanced'	Additional requirements for 'leading'	Risk of downgrade to 'basic'	CWW strategic response	Rating	Confidence level	Score
To what extent has the business demonstrated how its proposed prices reflect only prudent and efficient expenditure? To what extent has the business justified its commitment to cost efficiency or productivity improvements? To what extent have senior management, including the Board, demonstrated ownership and commitment to the proposals in its submission? To what extent has the business justified or provided assurance about the quality of the submission, including the quality of supporting information on forecast costs or projects? To what extent has the business provided evidence that there is senior level, including Board level, ownership and commitment to its submission and its outcomes?	Forecast operating expenditure incorporates a rate of efficiency improvement at least equivalent to the Commission's 1% efficiency hurdle used in 2013 water price review.	The business has proposed a significant improvement in the cost efficiency of the services delivered. Forecast operating expenditure incorporates a rate of efficiency improvement significantly above the Commission's 1% efficiency hurdle used in 2013 water price review. Forecast operating expenditure incorporates a rate of efficiency improvement that is clearly above the industry benchmark. The operating expenditure forecast places the business well ahead of the industry average in terms of cost efficiency.	The business has proposed a very significant improvement in the cost efficiency of the services delivered. Forecast operating expenditure incorporates a rate of efficiency improvement that is very significantly above the Commission's 1% efficiency hurdle used in 2013 water price review). Forecast operating expenditure incorporates a rate of efficiency improvement that places the business as a leader in the industry. The operating expenditure forecast places the business as a leader in the industry in terms of cost efficiency.	The business has not proposed productivity improvements. Forecast operating expenditure incorporates a rate of efficiency improvement that is below the Commission's 1% efficiency hurdle used in 2013 water price review.	CWW is proposing a 2% operating efficiency rate – a level that is 'very significantly' above the 1% 'benchmark' rate. Further, CWW has made significant operating expenditure savings during RP3, down approximately 13% on RP3 benchmark with savings returned to customers via the Government Efficient Program. CWW has proposed to maintain these savings and improve upon them via the 2% efficiency factor during RP4	Advanced	Satisfied	3.0
The business can provide business cases and justification for all major projects and capital programs, including evidence that a range of options have been considered.	The business has proposed a significant improvement in the efficiency of its capital program. Forecast regulatory depreciation aligns with asset utilisation.	The business has proposed a very significant improvement in the efficiency of its capital program. The rate of improvement in capital expenditure efficiency places the business as a leader in the industry.	The business has not provided timely access to robust business cases that validate the basis for all major projects and capital programs. The business has not proposed efficiency improvements in relation to its capital renewals program.	All top 10 major projects and 10 major programs covered by an expenditure justification document. CWW's RP3 capital expenditure program is some 33% lower than the RP3 benchmark - indicative of significant improvement in the efficiency of CWW's capital program. This efficiency will be maintained as the RP4 capital program will stay within the similar level to RP3 actuals. CWW has scaled forecast regulatory depreciation on IT assets to better reflect asset utilisation. CWW has used the depreciation override function to further align benchmark depreciation with asset utilisation. The National Performance Report 2015–16 (Urban Water Utilities) Table 5.2 shows CWW as the national leader for capital expenditure per property in 2014-15 and 2015-16 of utilities in its peer group (100,000+ properties).	Leading	Confident	3.75

Guiding questions	Expectations of a 'standard' submission	Additional requirements for 'advanced'	Additional requirements for 'leading'	Risk of downgrade to 'basic'	CWW strategic response	Rating	Confidence level	Score
	The Board of Directors has attested that it has undertaken appropriate internal procedures to assure themselves of the quality and accuracy of their price submission. The attestation is included with the price submission.			The Board of Directors has not attested that that it has undertaken appropriate internal procedures to assure themselves of the quality and accuracy of their price submission. The attestation is not included with the price submission.	Attestation to be made	At least Standard	Very confident	Not scored. Does not contribute to above 'Standard' rating.
	The price submission addresses all requirements specified in the Commission's Guidance Paper.			The price submission does not address all requirements set out in the Commission's Guidance Paper	Checklist against compliance items included in appendix L.	At least Standard	Very confident	Not scored. Does not contribute to above 'Standard' rating.
	The price submission and its supporting documents contain no material or obvious errors or omissions.			The price submission and its supporting documents contain errors and/or omissions of sufficient concern to the Commission.	External assurance procured to minimise likelihood of data errors in submission.	At least Standard	Very confident	Not scored. Does not contribute to above 'Standard' rating.
	The financial model provided to the Commission is completed with no missing information, and is consistent in every respect with the written price submission.			The financial model is incomplete and/or inconsistent with the price submission.	▪ QA process on development of written submission. ▪ Develop a Excel interface (key tables etc.) that draws key information tables from PS2018.	At least Standard	Very confident	Not scored. Does not contribute to above 'Standard' rating.
	The price submission and supporting information are provided to the Commission by the time requested.			The price submission and supporting information are provided to the Commission after the time requested.	Price submission to be lodged with ESC on 29 September.	At least Standard	Very confident	Not scored. Does not contribute to above 'Standard' rating.
	The price submission is internally consistent, demonstrating alignment between different elements of the price submission (e.g. there is consistency between the outcomes proposed, and demand and expenditure forecasts).			The price submission is contradictory across main elements of the submission (e.g. there is inconsistency between the business's demand forecasts and capital works program for example).	The submission has been drafted to tell a comprehensive story about the relationship between demands, outcomes, expenditures and prices.	At least Standard	Very confident	Not scored. Does not contribute to above 'Standard' rating.

Guiding questions	Expectations of a 'standard' submission	Additional requirements for 'advanced'	Additional requirements for 'leading'	Risk of downgrade to 'basic'	CWW strategic response	Rating	Confidence level	Score
	Forecasts for expenditure (including benchmarks for labour, energy and construction costs) and demand are based on sound methodologies and assumptions.			Forecasts for expenditure (including benchmarks for labour, energy and construction costs) and demand are not based on sound methodologies and assumptions.	All assumptions documented and appropriately referenced.	At least Standard	Very confident	Not scored. Does not contribute to above 'Standard' rating.
	The business can demonstrate that it has actively sought to reprioritise its expenditure plans to mitigate the cost and price impacts of any new obligations (whether imposed by government or technical regulator, or to address a new service priority revealed through engagement).			The business has not provided evidence that it has actively sought to reprioritise its expenditure plans to mitigate the cost and price impacts of any new obligations (whether imposed by government or technical regulator, or to address a new service priority revealed through engagement).	CWW's engagement program revealed that customers wanted to update the service offerings and service levels, but not at additional costs. CWW has therefore sought to absorb/offset the increased costs of new obligations (e.g. the carbon pledge) by finding efficiencies and savings elsewhere. We have been able to develop a submission informed by customers and aligned to customer expectations yet also being able to significantly reduce retail prices.	Advanced	Reasonably confident	2.75
	The business retains meaningful and robust supporting documentation to justify its proposals, with ongoing access available to the Commission.			The business has not provided timely access to meaningful and robust supporting documentation, on request from the Commission.	All forecasts have been well documented and are available.	At least Standard	Very confident	Not scored. Does not contribute to above 'Standard' rating.

E.4 Outcomes

Average score for this element = 2.96 (rounded down to 2.75)

Guiding questions	Expectations of a 'standard' submission	Additional requirements for 'advanced'	Additional requirements for 'leading'	Risk of downgrade to 'basic'	CWW strategic response	Rating	Confidence level	Score
Has the business provided evidence that the outcomes proposed have taken into account the views, concerns and priorities of customers? Has the business provided sufficient explanation of how the outcomes it has proposed align to the forecast expenditure requested? Has the business proposed outputs to support each of its outcomes, which are measurable, robust and deliverable? Has the business provided evidence that the outputs it has proposed are reasonable measures of performance against stated outcomes? Has the business demonstrated a process to measure performance against each outcome and to inform customers?	The outcomes proposed are broadly consistent with existing levels of service provided to customers.	The outcomes proposed reflect a significant improvement in customer value delivered. This might be demonstrated by significant improvements in output targets (or performance measures) for outcomes that matter most to most customers. The business proposes outcomes that are well ahead of the industry average or past performance (measured by reference to output targets).	The outcomes proposed reflect a very significant improvement in customer value delivered The business proposes outcomes that lead the industry.	The business has proposed degradation in customer outcomes, not justified or supported by customer feedback.	We are proposing to reflect levels of service that customers value as revealed through our customer engagement program: ▪ satisfaction – proposed increase in customer satisfaction ▪ bills – very significant reduction in customer prices with weighted average price reduction of 10.6% on 1 July 2018 ▪ bills – maintain lowest owner- occupier household bill of the 5 greater metropolitan businesses (per ESC 2015-16 Annual Performance Report) ▪ retail – significant extension in contact centre hours, new contact channels, online accounts and instant notifications, 10 fold improvement in email response time ▪ network – optimising response time and maximum repeat interruptions to customers cost-informed preferences. ▪ network – maintain lowest "Average customer minutes off supply" of the 5 greater metropolitan businesses (per ESC 2015-16 Annual Performance Report) ▪ network – maintain lowest "Customer interruption frequency — planned and unplanned (interruptions per customer)" of the five greater metropolitan businesses (per ESC, *Water Performance Report, Performance of Victorian urban water and sewerage businesses 2015-16*) ▪ network – maintain lowest "Water quality complaints – all causes (per 100 customers)" of the 5 greater metropolitan businesses (per ESC 2015-16 Annual Performance Report) ▪ network – maintain lowest "Sewer spills to customer property (per 100 customers)" of the 5 greater metropolitan businesses (per ESC 2015-16 Annual Performance Report)	Advanced	Very confident	3.5
	The outcomes proposed have mostly been defined in ways that reflect the customer service experience (e.g. safe, clean water supply).	All outcomes proposed have been defined in ways that reflect the customer service experience.		Most outcomes are defined as outputs (that is, at a granular level consistent with practice in the 2013 water price review).	▪ All consultation documents have been prepared for the customer as the audience: using plain English and schematics rather than technical jargon. ▪ Customer outcomes have been successfully tested with the Customer Committee and online panel to assess ease of understanding. ▪ HP | Open Mind's *Closing the Loop* report shows that customers that have participated in the engagement program have found the experience valuable and believe that their contribution has made a significant difference to CWW's plans,	Advanced	Confident	3.25

Guiding questions	Expectations of a 'standard' submission	Additional requirements for 'advanced'	Additional requirements for 'leading'	Risk of downgrade to 'basic'	CWW strategic response	Rating	Confidence level	Score
	The business has proposed outputs that are appropriate measures of performance for each outcome proposed.			The business has proposed outputs that are not appropriate measures of performance for each outcome proposed.	▪ CWW has proposed outputs (performance measures) that are reflective of the relevant desired outcome – these measures are 'SMART' (i.e. specific, measurable, achievable/assignable, relevant and time-bound). ▪ Proposed performance measures have been tested with the Customer Committee and an online panel to assess customers view as to their appropriateness and ease of understanding.	Advanced	Confident	3.25
	The outcomes proposed generally reflect customer preferences and priorities revealed through engagement.	The outcomes proposed have been prioritised by a water business in terms of importance to customers as revealed through customer engagement. The business's expenditure forecasts reflect the prioritisation of outcomes.		The outcomes proposed do not clearly reflect customer preferences and priorities revealed through engagement.	▪ CWW's proposed outcomes reflect customers' optimal service mix as revealed through SIMALTO analysis. ▪ SIMALTO allowed us to truly test what customers valued most by providing a constrained optimisation and nallowing customers to trade off very different aspects of our service offerings. ▪ CWW's proposed activities and expenditures reflect our commitment to deliver this optimal mix.	Advanced	Confident	3.25
	Where applicable, the business has explained or justified why outcomes proposed are not consistent with customer preferences and priorities.			Where applicable, the business has not explained or justified why outcomes proposed are not consistent with customer preferences and priorities.	Section 4.3 provides a summary of the customer preferences (as revealed through consultation) that we could not accommodate and our rationale for taking a different direction.	Standard	Very confident	2.5
	The level and composition of forecast expenditure is consistent with the outcomes proposed. The expenditure profile has changed where required to reflect customer priorities.			The level and composition of forecast expenditure is inconsistent with the outcomes proposed. The expenditure profile has not changed to reflect customer priorities.	Customers value bill affordability and CWW's proposed package of service outcomes reflects a continued, strong focus on cost control while delivering the outcome commitments identified and validated through customer engagement proposed in PS2018. Through our Stage 2 engagement quantitative surveys, customer told us they wanted us to provide refined services offerings within the current bill level - we have committed to this service mix and lowered our bills.	Standard	Very confident	2.5

Guiding questions	Expectations of a 'standard' submission	Additional requirements for 'advanced'	Additional requirements for 'leading'	Risk of downgrade to 'basic'	CWW strategic response	Rating	Confidence level	Score
	The business has committed to a process for monitoring and reporting to customers on their performance against outcomes.	Engagement with customers has led to the development of a customer performance reporting approach that is targeted to customer needs, including across different regions and customer types. The performance reporting approach is justified as being well ahead of peers in terms of accessibility, transparency and information provided to customers on performance.		The business has not committed to a process for monitoring and reporting to customers on their performance against outcomes.	The reporting of our performance to customers will reflect 'best practice' and address the priorities as identified by our customers through engagement. We note there are many examples, both within Australia and internationally, of what effective reporting looks like – the UK water industry, in particular, has customer reporting models that may be worthy of emulation. The form of our reporting will evolve to reflect changing needs of our customers. CWW has committed to preparing performance stewardship reporting that describe how we are tracking against PS2018: ▪ outcome commitments – i.e. the things that customers told us were most important ▪ performance targets – i.e. the detailed measures we identified with customers ▪ major project delivery ▪ expenditure benchmarks – given customers focus in CWW being as efficient as it possibly can be.	Standard	Very confident	2.5

F Demand forecasting methodologies

The forecasting methodology we apply necessarily differs across various elements of our business. CWW has completed separate forecasts for each of:

- customer numbers
- water consumption per customer and total water demand
- sewage disposal volumes
- recycled water consumption
- trade waste volumes
- miscellaneous fees and charges.

Each forecast has been prepared for a ten year period and is supported by a separate supporting forecast methodology report. A description of each forecast is set out below.

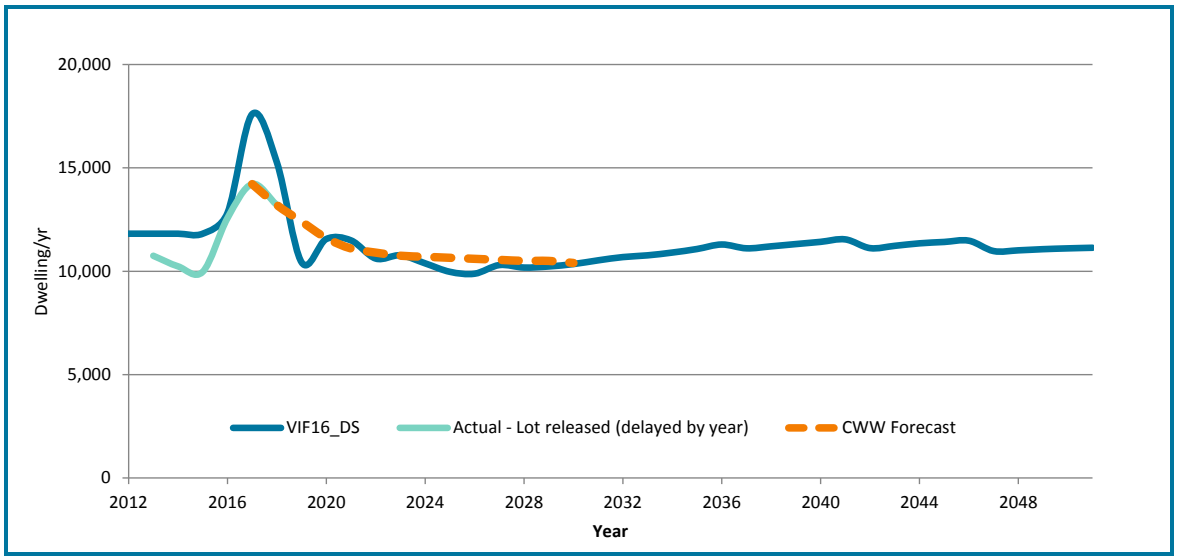
F.1 Customer numbers

CWW's customer growth rate (see Figure 7, p70) is based on *Victoria in Future 2016* (VIF 2016) with some short term adjustments made where CWW has gained specific, more relevant, insights on development in CWW's service area. CWW has observed that VIF has, historically, not been an accurate predictor of growth in its service areas.

Figure 13 highlights the discrepancy in the period 2013 to 2017 between:

- the data underlying the VIF forecasts
- CWW's actual observed growth in dwellings and forecast dwellings.

Figure 13 VIF 2016 lot forecast c.f. CWW historic and CWW forecast residential lot growth.



To better understand the application of VIF 2016 to PS2018, CWW consulted with the Victorian Government's VIF team, to gain access to more granular annual VIF 2016 data (rather than a five-yearly forecast). CWW also engaged specialist demographers '.id' who supplied more locational insights from a variety of external data sources, including council planning applications.

CWW also conducted an engagement program with the development sector to understand the intentions of players in those sectors with respect to land development in CWW's service area and how their stated intentions should be best reflected in CWW's network serving plans. To determine a best estimate of lot growth and the location of that growth during RP4 and RP5, CWW drew on information from:

- VIF 2016 data sets
- .id data sets
- historical lot release data
- insights gained from engagement with the land development sector.

The forecast of customer growth rate adopted by CWW is broadly consistent with VIF 2016 in terms of the overall rate of growth within CWW's service area. The forecast has been used to drive the timing of asset delivery. Notable features of the growth program include investments in sewerage infrastructure early in RP4 to cater for a resurgence of activity in growth areas and the need to address capacity constraints that have emerged following strong growth in infill development.

Further detail of the residential lot forecast is documented in a CWW memorandum.[43]

F.2 Water

In forecasting water demand water demand (Figure 8), CWW continues to assume that demand is driven by both customer numbers and consumption per connection. In particular, we have:

- assumed that permanent water use rules will continue to apply throughout RP4 and RP5
- continued to use the iSDP (Integrated Supply-Demand Planning) model[44] to forecast both residential and non-residential water use.

  The iSDP model is a well-established tool that has consistently been used by CWW and its peer water utilities for the purposes of price submissions. CWW has recently reviewed alternative demand forecasting methodologies and continues to believe iSDP is fit-for-purpose.

[43] *PS2018: Residential lot forecast*. This memorandum will be made available to the ESC on request.

[44] Developed by the Institute for Sustainable Futures at the University of Technology Sydney (UTS), Sydney Water and the CSIRO on behalf of WSAA and the National Water Commission.

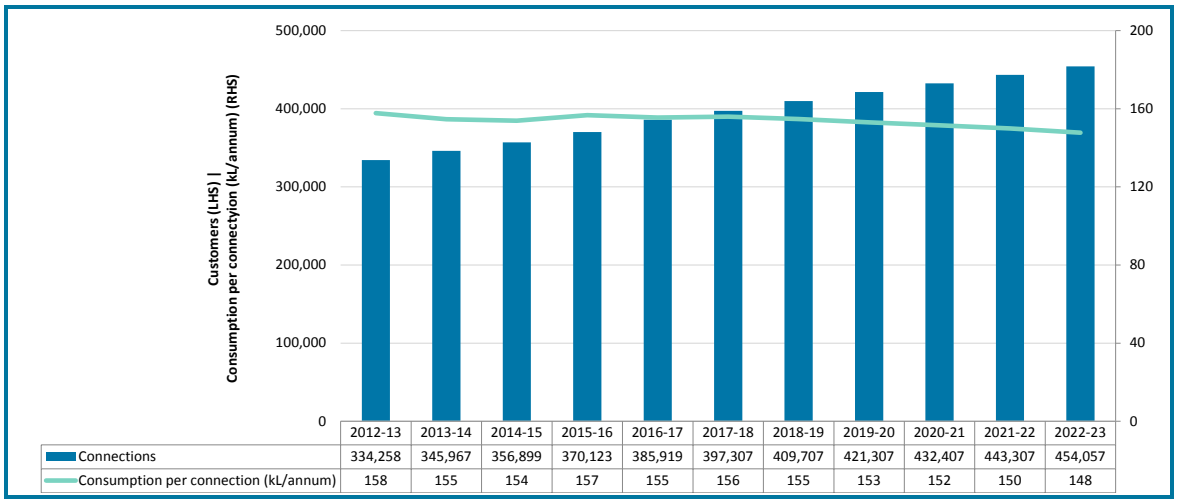
For residential water demand, the iSDP model assesses individual end uses (e.g. toilet, shower) across the forecast customer base, aggregating uses to derive a residential water demand forecast. This forecast is calibrated to observed water usage and climatic conditions in the past three years. The model relies on a variety of external references, including CWW's residential lot forecast, census data, VIF, Bureau of Meteorology data and CWW's own research.[45] A key driver in consumption is the shift towards apartment living, smaller gardens and more water efficient appliances in new housing stock.

A further factor in developing water consumption forecasts is changes in demand driven by price elasticity effects that we account for as follows:

- **Residential water consumption** – CWW is proposing to remove step 3 residential water use and has reused historically applied elasticities to step 3 volumes.[46] Step 1 and step 2 prices are not proposed to change and CWW has therefore not applied elasticity to those two steps.
- **Non-residential water consumption** – CWW is proposing to reduce the residential water use fee and CWW has used elasticities previously applied.[47]

For each of the above tariff classes, CWW first develops a bottom up forecast assuming no price elasticity effects. Forecasts are then adjusted in CWW's financial model to account for assumed price-induced changed in demand (see Figure 14 and Figure 15). Forecasts set out in Appendix G account for these elasticity effects.

Figure 14 Residential water customers and consumption per connection



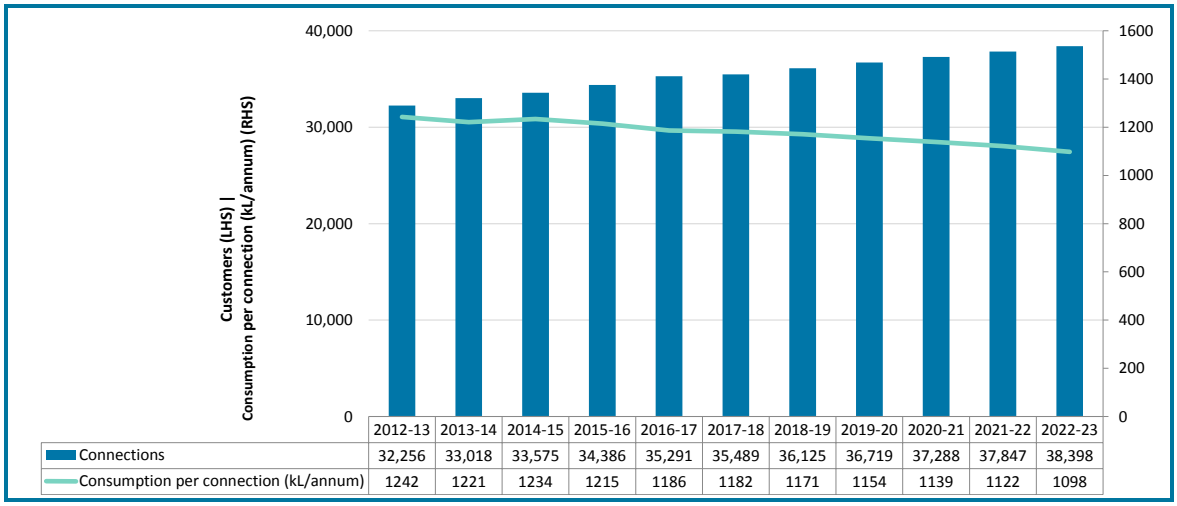
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Connections	334,258	345,967	356,899	370,123	385,919	397,307	409,707	421,307	432,407	443,307	454,057
Consumption per connection (kL/annum)	158	155	154	157	155	156	155	153	152	150	148

45 *PS2018: Water retail and bulk forecast*. This memorandum will be made available to the ESC on request.

46 See footnote 31.

47 See footnote 31. The iSDP models treats larger customers individually (the 255 highest non-residential water consumers) and 'typical' customers on a historical per customer usage basis. Historical unit rates are applied to a forecast of customer connections to derive a forecast for that customer segment. For the largest 255 customers, CWW has applied a 1% annual decline in volume as this segment's share of CWW's water usage continues to contract.

Figure 15 Non-residential water customers and consumption per connection



	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Connections	32,256	33,018	33,575	34,386	35,291	35,489	36,125	36,719	37,288	37,847	38,398
Consumption per connection (kL/annum)	1242	1221	1234	1215	1186	1182	1171	1154	1139	1122	1098

Further detail is documented in a CWW memorandum.[48]

F.3 Bulk water

To derive a bulk water demand forecast, CWW has combined residential and non-residential end use water forecasts from the iSDP Model and multiplied these by an allowance for non-revenue water (9.3%).

Further detail is set out in CWW's *PS2018 Water Retail and Bulk Forecast*.

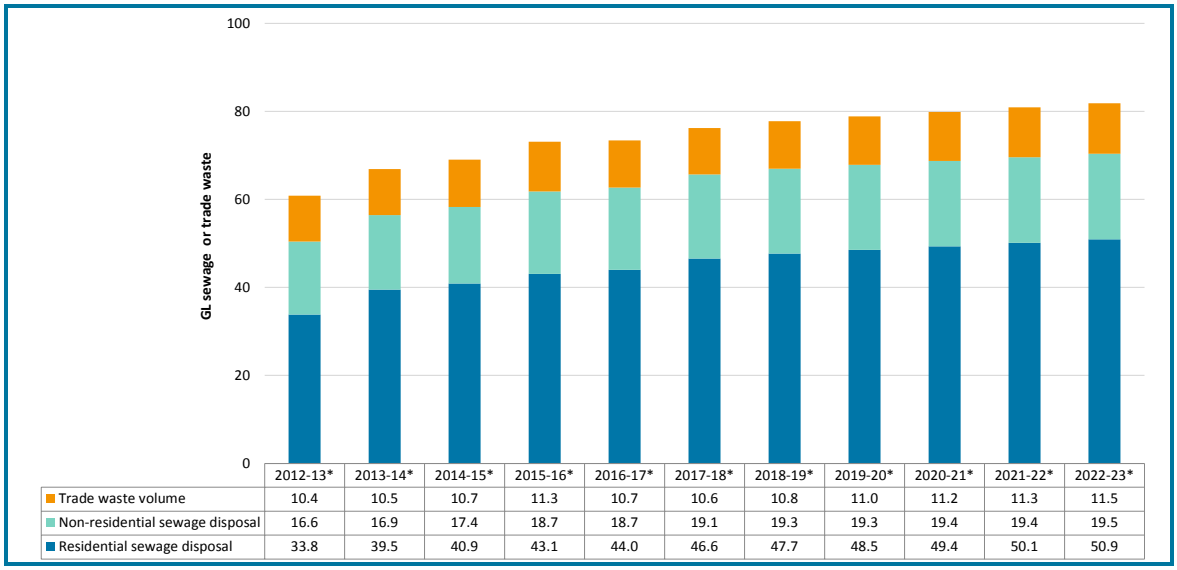
F.4 Sewage disposal volumes

Forecasts for billed sewage disposal volumes are derived from residential and non-residential water forecasts. We continue to apply observed ratios between billed water use volumes and billed sewage disposal volumes.

In the case of non-residential sewage, the current non-residential average discharge factor of 0.445 is assumed to continue to apply. The breakdown of total sewage disposal volumes into trade waste, non-residential sewage disposal and residential sewage disposal is depicted in Figure 16.

[48] *PS2018: Water retail and bulk forecast*. This memorandum will be made available to the ESC on request.

Figure 16 Sewage, trade waste volume forecast



	2012-13*	2013-14*	2014-15*	2015-16*	2016-17*	2017-18*	2018-19*	2019-20*	2020-21*	2021-22*	2022-23*
Trade waste volume	10.4	10.5	10.7	11.3	10.7	10.6	10.8	11.0	11.2	11.3	11.5
Non-residential sewage disposal	16.6	16.9	17.4	18.7	18.7	19.1	19.3	19.3	19.4	19.4	19.5
Residential sewage disposal	33.8	39.5	40.9	43.1	44.0	46.6	47.7	48.5	49.4	50.1	50.9

* GL per annum

Further detail is documented in a CWW memorandum.[49]

F.5 Trade waste

Trade waste volumes and loads

Forecasts for trade waste volumes and loads are developed on the following understanding:

- Best practice is to forecast independently of water usage due to trade waste customers' discharge not necessarily correlating with water usage – sectoral behaviours and top customers can materially change demands.
- Based on insights from customer interviews, trade-waste is likely to be subject to low price elasticity when prices fall as trade waste volumes are driven by external factors more than CWW's prices – e.g. input costs (gas and electricity prices), recent investments in on-site treatment and trends in resource recovery and new technologies. CWW is not proposing reforms to trade waste tariff structures that would materially change trade waste volumes and loads.

[49] *PS2018: Sewage disposal forecast*. This memorandum will be made available to the ESC on request.

The broad approach to deriving trade waste volume forecasts is as follows:

- The trade waste customer base is split into segments according to activity (e.g. meat processing, food and beverages). Demand for each segment is separately forecast based on recent trends and historical growth rates.
- For the 17 largest customers,[50] CWW conducted interviews to gain customer insights on expected future trends – i.e. specific questions relating to forecast business conditions, new activity relative to what has been observed historically.

Trade waste volume forecast is set out in Figure 16 (p158). Further detail is documented in a CWW memorandum.[51]

Trade waste application and agreement fees

Trade waste application and agreement numbers are forecast through separate five year trend analysis for each of CWW's five risk rank classifications.

As trade waste agreements typically run for ten years, a plausible approach would be to use existing agreement numbers as the basis for future agreement numbers. However, rates of business churn suggest average business life is substantially less than ten years, making current trade waste agreement numbers a poor long term predictor of future trade waste agreement numbers.

Further detail regarding this trend approach is documented in CWW memoranda[52] and appendix G.

Trade waste beds

The number of registered trade waste beds is linked to institutions (generally hospitals) that rely on macerators to dispose of uneaten food via the sewerage system. These numbers have been very stable for many years because:

- existing institutions that have macerators tend to retain them
- new institutions that need to dispose of uneaten food usually employ food disposal techniques that do not require the use of a sewer – e.g. composting or food digesters.

Further detail is documented in a CWW memorandum[53] and appendix G.

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50 Customers that individually represent at least 1% of 2014-15 trade waste revenue and collectively represent (approximately) 60% of all trade waste revenue.

51 *PS2018: TW 'Category A' forecast*. This memorandum will be made available to the ESC on request.

52 *PS2018: TW applications forecast* and *PS2018: TW agreements forecast*. These memoranda will be made available to the ESC on request.

53 *PS2018: TW bed charge forecast*. This memorandum will be made available to the ESC on request.

F.6 Recycled water

CWW's recycled water forecast is based on a continuation of:

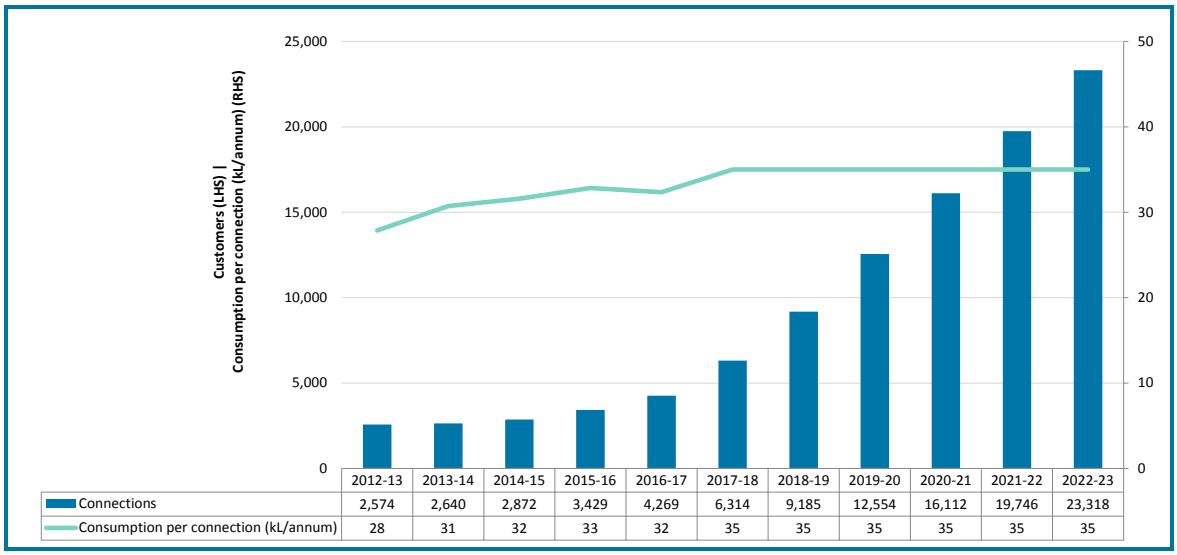
- existing stormwater contracts that are expected to use stormwater at current volumes
- existing recycled water contracts that are forecast to use recycled water at current volumes
- greenfield zone recycled water updates based on:
  - recycled water lot growth
  - end uses per the iSDP model that take recycled water.

Price elasticity effects are not considered to be relevant because:

- CWW is not proposing to change the tariff structure of price for residential recycled water
- the vast majority of CWW's non-residential recycled water is provided under 'take or pay' contracts – i.e. customer pays CWW for the contracted water volume regardless of whether it is used.

Figure 17 shows that recycled water consumption per connection is forecast to stabilise at 35kL per household per annum following the establishment of this new service and the recent addition of laundry as an approved recycled water end-use.

Figure 17 Residential recycled water customers and demand per customer



	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Connections	2,574	2,640	2,872	3,429	4,269	6,314	9,185	12,554	16,112	19,746	23,318
Consumption per connection (kL/annum)	28	31	32	33	32	35	35	35	35	35	35

Recycled water is not subject to restrictions.

Further detail is documented in a CWW memorandum[54] and appendix G.

[54] *PS2018: Recycled water forecast*. This memorandum will be made available to the ESC on request.

F.7 Bulk sewage

Elements relevant to forecasting bulk sewage volumes are:

- an estimate of the proportion of forecast residential water use that is discharged to the sewer
- an estimate of the proportion of forecast non-residential water use that is discharged to the sewer
- trade waste volume forecast
- sewer inflows and infiltration.

The forecast is primarily derived from the water and trade waste forecasts, with an adjustment for estimated inflow and infiltration.

Further detail is set out in a CWW memorandum[55] and appendix G.

F.8 Miscellaneous fees and charges

Miscellaneous fees and charges are diverse in nature. Each of the top 13 miscellaneous fees events have been individually forecast. The remaining miscellaneous fees events are forecast to grow in-line with CWW customer numbers.

Further detail is documented in a CWW memorandum[56] and appendix J.

[55] *PS2018: Bulk Wastewater Forecast*. This memorandum will be made available to the ESC on request.

[56] *PS2018: Non-tariff revenue forecast*. This memorandum will be made available to the ESC on request.

G Forecast demands for RP4 and RP5

	Units per annum	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
Residential water tariff												
Water network fee	assess-ments	397,307	409,707	421,307	432,407	443,307	454,057	464,757	475,407	486,007	496,557	507,057
Water usage fee – price step 1	kL	47,087,750	48,074,747	48,893,818	49,677,094	50,394,410	50,874,258	51,586,906	52,339,522	53,104,786	53,771,107	54,452,839
Water usage fee – price step 2	kL	11,771,937	12,018,687	12,223,454	12,419,273	12,598,602	12,718,565	12,896,727	13,084,880	13,276,196	13,442,777	13,613,210
Water usage fee – (former) price step 3 [a]	kL	3,097,878	3,307,613	3,363,966	3,417,857	3,467,209	3,500,224	3,391,841	3,443,390	3,493,736	3,537,573	3,582,424
Residential sewerage tariff												
Sewerage network fee	assess-ments	396,162	408,562	420,162	431,262	442,162	452,912	463,612	474,262	484,862	495,412	505,912
Sewage disposal fee	kL	46,583,753	47,696,551	48,541,844	49,353,044	50,149,614	50,926,160	51,621,157	52,471,077	53,329,330	54,081,252	54,845,443
Residential recycled water tariff												
Recycled water network fee	assess-ments	6,314	9,185	12,554	16,112	19,746	23,318	26,795	30,172	33,408	36,532	39,573
Recycled water usage fee	kL	154,105	194,355	241,220	289,835	405,930	808,500	952,735	1,093,645	1,231,055	1,356,880	1,478,785
Non-residential water tariff												
Water network fee	assess-ments	35,489	36,125	36,719	37,288	37,847	38,398	38,947	39,493	40,036	40,577	41,116
Water usage fee	kL	41,951,091	42,295,721	42,377,352	42,460,422	42,468,024	42,146,152	41,861,842	41,845,409	41,835,511	41,840,269	41,851,952
Water usage fee – Little River bulk supply	kL	19,992	19,992	19,992	19,992	19,992	19,992	19,992	19,992	19,992	19,992	19,992

	Units per annum	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
Non-residential sewerage tariff												
Sewerage network fee	assess-ments	34,213	34,849	35,443	36,012	36,571	37,122	37,671	38,217	38,760	39,301	39,840
Sewage disposal fee	kL	19,087,747	19,282,346	19,328,601	19,375,851	19,423,869	19,471,926	19,402,669	19,453,550	19,505,374	19,558,131	19,611,812
Non-residential recycled water tariff												
Recycled water usage fee	kL	65,859	83,061	103,090	123,866	221,797	649,291	781,386	909,646	1,033,443	1,144,634	1,250,931
Private fire service connection fee	assess-ments	-	-	3,500	8,000	10,000	10,235	10,469	10,701	10,933	11,163	11,393
Non-residential trade waste tariff												
Risk rank 1 application	applic-ations	8	8	8	9	9	8	8	8	8	8	9
Risk rank 2 application	applic-ations	4	4	5	4	5	5	5	5	5	5	5
Risk rank 3 application	applic-ations	15	15	15	15	15	15	15	15	15	15	15
Risk rank 4 application	applic-ations	47	47	47	47	47	47	47	47	47	47	47
Risk rank 5 application	applic-ations	233	233	233	233	233	233	233	233	233	233	233
Risk rank 6 application	applic-ations	1,032	1,047	1,055	1,063	1,039	1,047	1,050	1,051	1,050	1,048	1,049
Risk rank 1 agreement	agree-ments	22	22	22	21	21	21	21	21	21	21	21
Risk rank 2 agreement	agree-ments	14	14	14	14	14	14	14	14	14	14	14
Risk rank 3 agreement	agree-ments	27	27	27	26	26	26	26	26	26	26	26
Risk rank 4 agreement	agree-ments	186	187	189	189	189	188	188	189	189	189	189

	Units per annum	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
Risk rank 5 agreement	agree-ments	7,218	7,285	7,346	7,400	7,450	7,497	7,540	7,581	7,618	7,654	7,687
Trade waste volume	kL	10,557,000	10,806,000	10,979,000	11,160,000	11,348,000	11,463,000	11,579,000	11,696,000	11,814,000	11,933,000	12,052,000
Biochemical oxygen demand	kg	11,874,000	11,854,000	11,997,000	12,140,000	12,304,000	12,393,000	12,483,000	12,575,000	12,667,000	12,759,000	12,851,000
Total Kjeldahl nitrogen	kg	902,000	877,000	881,000	885,000	889,000	893,000	898,000	903,000	907,000	912,000	917,000
Suspended solids	kg	4,325,000	4,350,000	4,350,000	4,410,000	4,438,000	4,473,000	4,516,000	4,553,000	4,592,000	4,632,000	4,671,000
Inorganic total dissolved solids	kg	24,211,000	24,300,000	24,411,000	24,539,000	24,679,000	24,707,000	24,742,000	24,782,000	24,829,000	24,881,000	24,937,000
Food waste service	register-ed beds	3,085	3,085	3,085	3,085	3,085	3,085	3,085	3,085	3,085	3,085	3,085
Miscellaneous fees												
Development works application > 10 lots	applic-ations	160	150	140	120	115	115	118	121	124	127	130
Development works acceptance > 10 lots	applic-ations	150	140	130	110	105	105	107	109	111	113	115
Potable water meter installation (20mm) – new connection	applic-ations	5,072	4,847	4,649	4,451	4,316	4,400	4,501	4,600	4,701	4,800	4,901
Potable water meter assembly & installation (20mm) – new connection	applic-ations	4,572	4,347	4,149	3,951	3,816	3,900	3,990	4,078	4,168	4,256	4,345
Plumbing application	applic-ations	8,585	8,500	8,450	8,450	8,600	8,600	8,798	8,992	9,190	9,383	9,580
Recycled water connection inspection	applic-ations	2,400	2,424	2,448	2,473	2,497	2,500	2,558	2,614	2,672	2,728	2,785
Sewer details	applic-ations	7,000	7,240	7,300	7,350	7,400	7,400	7,570	7,737	7,907	8,073	8,243
Build over easement application	applic-ations	1,545	1,591	1,607	1,623	1,640	1,680	1,719	1,757	1,796	1,834	1,873

	Units per annum	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
Property service short side installations (20mm)	applic-ations	167	200	200	200	200	200	205	210	215	220	225
Property service long side installations (20mm)	applic-ations	167	200	200	200	200	200	205	210	215	220	225
Information statement – self-service	applic-ations	46,640	48,045	49,359	50,617	51,852	53,070	54,291	55,485	56,706	57,897	59,113
Information statement – standard	applic-ations	1,803	1,857	1,908	1,957	2,004	2,051	2,098	2,144	2,191	2,237	2,284
Information statement – express	applic-ations	2,593	2,671	2,744	2,814	2,883	2,951	3,019	3,085	3,153	3,219	3,287
Bulk charges												
Water usage	ML	114,563	116,057	117,330	118,456	119,143	120,182	121,277	122,447	123,650	124,704	125,782
Wastewater volume	ML	95,163	96,479	97,582	98,646	99,718	100,766	101,869	103,025	104,199	105,226	106,273
Major trade waste load – biochemical oxygen demand	tonnes	11,862	11,842	11,985	12,128	12,291	12,380	12,470	12,562	12,653	12,745	12,838
Major trade waste load – total Kjeldahl nitrogen	tonnes	901	876	880	884	888	892	897	902	906	911	916
Major trade waste load – suspended solids	tonnes	4,321	4,345	4,346	4,406	4,434	4,468	4,512	4,549	4,588	4,628	4,667
Major trade waste load – inorganic total dissolved solids	tonnes	24,197	24,286	24,397	24,525	24,664	24,692	24,727	24,767	24,813	24,865	24,920

[a] Step 3 volumes combined with step 2 volumes for the purpose of pricing in appendix I.

H Fees for private fire service connections

CWW provides private fire service connections (PFSCs) to its mains to deliver fire-fighting water to some customer sites – e.g. to hose reels, sprinkler systems, private fire hydrants. The PFSC is typically separate to the standard water service connection for which customers incur an annual water network fee.

From 1 July 2014, under the new *Water Regulations 2014*, CWW is responsible for maintaining:

- PFSC branches up to the upstream flange at the isolation valve location point
- any meters installed on the PFSC.

Prior to July 2014, the flange had been customers' responsibility.

We do not currently charge customers for the cost of providing PFSCs. CWW stopped charging annual PFSC fees from 1 July 2005 because it could not identify a relevant cost base for the then $27 per annum fee charged to approximately 7,500 customers.[57] SEW and YVW have continued to charge fire service fees.

The introduction of the new regulation has required CWW to reassess its management of PFSCs, including charging arrangements.

H.1 Private fire service connections impose significant cost on CWW

CWW incurs costs in three areas as a result of PFSCs. These are:

- Provision of capacity – In order to maintain pressure, CWW installs mains of a minimum 100mm diameter where a PFSC will be present. In the absence of a PFSC these mains could be sized as low as 40mm, subject to other system demands.
- Maintaining connections – CWW is newly responsible for PFSCs up to and including the upstream flange on the isolation valve. As such, a work program is required to locate all PFSCs, assess their condition and conduct necessary maintenance.
- Non-revenue water – Unidentified and unmetered PFSCs are known to contribute to CWW's non-revenue water balance.

H.2 Private fire service connections have value to customers

Where CWW is providing a PFSC, customers are able to minimise their private costs for fire-fighting infrastructure – e.g. smaller (or avoided) header tanks, booster pumps. This provides a private benefit.

CWW's customer engagement program included a qualitative assessment of the value customers place on PFSC. While it is fair to say there was reticence on the part of some customers to CWW imposing a new charge, other customers were surprised they were not currently charged for this service.

[57] Before to 1 July 2005, CWW, along with the other metropolitan Melbourne water retailers, charged fixed annual fire service fees, in quarterly instalments, to the owners of PFSCs.

H.3 An appropriate charge must be determined

Each retailer's pricing determination enables it to raise service fees against PFSC. However, whereas the 2013 determinations for SEW and YVW identify specific fire service fees, CWW's 2013 determination does not. It would be opportune to include a PFSC fee in CWW's determination for RP4.

This charge is about cost reflectivity not signalling. CWW's network provides a service and it is fair that customers who use the service contribute to its cost. The proposed fee of $100 for each PFSC has been set with reference to our costs and the fees that are charged by our peers – noting that our proposed fee is below that of equivalent charges imposed by our peers.

H.4 Charging will not commence until 2019-20

CWW has not maintained PFSC billing data since the fee was discontinued in 2005. In order to establish a robust set of records of properties that have chargeable PFSCs, we will need to complete a specifically targeted work program. We plan to complete the necessary work program in time to re-institute the PFSC fee from 1 July 2019.

I Proposed tariff schedule

	Units	Charging basis	Price* 2017-18	Price* 2018-19	P0* Year 1	PPM1* Year 2	PPM2* Year 3	PPM3* Year 4	PPM4* Year 5
Residential water tariff									
Water network fee	$/annum	quarterly in advance	$231.20	$226.88	-1.9%	0%	0%	0%	0%
Water usage fee – price step 1	$/kL	quarterly or monthly in arrears	$2.4440	$2.4440	0.0%	0%	0%	0%	0%
Water usage fee – price step 2	$/kL	quarterly or monthly in arrears	$2.8766	$2.8766	0.0%	0%	0%	0%	0%
Water usage fee – price step 3	$/kL	quarterly or monthly in arrears	$4.2744	$2.8766	-32.7%	0%	0%	0%	0%
Residential sewerage tariff									
Sewerage network fee	$/annum	quarterly in advance	$256.56	$251.76	-1.9%	0%	0%	0%	0%
Sewage disposal fee	$/kL	quarterly or monthly in arrears	$1.8805	$0.8500	-54.8%	0%	0%	0%	0%
Residential recycled water tariff									
Recycled water network fee	$/annum	quarterly in advance	$30.54	$29.97	-1.9%	0%	0%	0%	0%
Recycled water usage fee	$/kL	quarterly or monthly in arrears	$2.4440	$2.4440	0.0%	0%	0%	0%	0%
Non-residential water tariff									
Water network fee	$/annum	quarterly in advance	$336.76	$330.46	-1.9%	0%	0%	0%	0%
Water usage fee	$/kL	quarterly or monthly in arrears	$2.7186	$2.5486	-6.3%	0%	0%	0%	0%
Non-residential sewerage tariff									
Sewerage network fee	$/annum	quarterly in advance	$453.08	$444.61	-1.9%	0%	0%	0%	0%
Sewage disposal fee	$/kL	quarterly or monthly in arrears	$1.8294	$1.6750	-8.4%	0%	0%	0%	0%
Non-residential recycled water tariff									
Recycled water usage fee	$/kL	quarterly or monthly in arrears	$2.3849	$2.1663	-9.2%	0%	0%	0%	0%
Private fire service connection fee	$/annum	quarterly in advance	-	$100.00	NA	0%	0%	0%	0%

	Units	Charging basis	Price* 2017-18	Price* 2018-19	P0* Year 1	PPM1* Year 2	PPM2* Year 3	PPM3* Year 4	PPM4* Year 5
Non-residential trade waste tariff									
Risk rank 1 application	$/application	per application	$2,119.93	$2,119.93	0.0%	0%	0%	0%	0%
Risk rank 2 application	$/application	per application	$2,119.93	$2,119.93	0.0%	0%	0%	0%	0%
Risk rank 3 application	$/application	per application	$2,119.93	$2,119.93	0.0%	0%	0%	0%	0%
Risk rank 4 application	$/application	per application	$583.40	$583.40	0.0%	0%	0%	0%	0%
Risk rank 5 application	$/application	per application	$303.82	$303.82	0.0%	0%	0%	0%	0%
Risk rank 6 application	$/application	per application	$76.70	$76.70	0.0%	0%	0%	0%	0%
Risk rank 1 agreement	$/annum	quarterly or monthly in arrears	$18,445.64	$18,445.64	0.0%	0%	0%	0%	0%
Risk rank 2 agreement	$/annum	quarterly or monthly in arrears	$15,300.07	$15,300.07	0.0%	0%	0%	0%	0%
Risk rank 3 agreement	$/annum	quarterly or monthly in arrears	$7,681.39	$7,681.39	0.0%	0%	0%	0%	0%
Risk rank 4 agreement	$/annum	quarterly or monthly in arrears	$1,677.65	$1,677.65	0.0%	0%	0%	0%	0%
Risk rank 5 agreement	$/annum	quarterly or monthly in arrears	$318.54	$318.54	0.0%	0%	0%	0%	0%
Trade waste volume	kL	quarterly or monthly in arrears	$0.9776	$0.8000	-18.2%	0%	0%	0%	0%
Biochemical oxygen demand	$/kg	quarterly or monthly in arrears	$0.9954	$0.9768	-1.9%	0%	0%	0%	0%
Total Kjeldahl nitrogen	$/kg	quarterly or monthly in arrears	$1.9155	$1.8797	-1.9%	0%	0%	0%	0%
Suspended solids	$/kg	quarterly or monthly in arrears	$0.5393	$0.5292	-1.9%	0%	0%	0%	0%
Inorganic total dissolved solids	$/kg	quarterly or monthly in arrears	$0.0195	$0.0191	-1.9%	0%	0%	0%	0%
Food waste service	$/annum	quarterly or monthly in arrears	$52.56	$51.58	-1.9%	0%	0%	0%	0%

	Units	Charging basis	Price* 2017-18	Price* 2018-19	P0* Year 1	PPM1* Year 2	PPM2* Year 3	PPM3* Year 4	PPM4* Year 5
Miscellaneous fees									
Development works application > 10 lots	$/application	per application	$2,312.40	$2,312.40	0.0%	0%	0%	0%	0%
Development works acceptance > 10 lots	$/application	per application	$4,409.05	$4,409.05	0.0%	0%	0%	0%	0%
Potable water meter installation (20mm) – new connection	$/application	per application	$74.21	$74.21	0.0%	0%	0%	0%	0%
Potable water meter assembly & installation (20mm) – new connection	$/application	per application	$268.06	$268.06	0.0%	0%	0%	0%	0%
Plumbing application	$/application	per application	$83.55	$83.55	0.0%	0%	0%	0%	0%
Recycled water connection inspection	$/application	per application	$231.90	$231.90	0.0%	0%	0%	0%	0%
Sewer details	$/application	per application	$64.38	$64.38	0.0%	0%	0%	0%	0%
Build over easement application	$/application	per application	$264.35	$264.35	0.0%	0%	0%	0%	0%
Property service short side installations (20mm)	$/application	per application	$1,728.27	$1,728.27	0.0%	0%	0%	0%	0%
Property service long side installations (20mm)	$/application	per application	$2,101.27	$2,101.27	0.0%	0%	0%	0%	0%
Information statement – self-service	$/application	per application	$17.38	$17.38	0.0%	0%	0%	0%	0%
Information statement – standard	$/application	per application	$27.33	$27.33	0.0%	0%	0%	0%	0%
Information statement – express	$/application	per application	$50.38	$50.38	0.0%	0%	0%	0%	0%
Standard new customer contributions									
Water (all zones)	$/lot	per lot in application	$691.29	$691.29	0.0%	0%	0%	0%	0%
Sewerage (all zones)	$ lot	per lot in application	$691.29	$691.29	0.0%	0%	0%	0%	0%
Recycled water (West Werribee and Greek Hill zones)	$ lot	per lot in application	$2,379.00	$2,500.00	5.1%	0%	0%	0%	0%

* This appendix is set out in 2017-18 prices. Actual (nominal) prices will be subject to inflation and other approved pass through mechanisms – e.g. cost of debt and wholesale costs.

J Description of regulated miscellaneous fees

Fee name	Description
Development works application > 10 lots	A development works application applies when an extension of CWW's reticulated water, recycled water or sewerage mains is required to service a property. Application and acceptance fees cover the costs of CWW employees to process development works application. Application fees cover costs associated with processing an application and generating development deed/conditions of offer.
Development works acceptance > 10 lots	A development works application applies when an extension of CWW's reticulated water, recycled water or sewerage mains is required to service a property. Application and acceptance fees cover the costs of CWW employees to process development works application. Acceptance fees apply when the applicant accepts the development deed/conditions and cover employee costs associated with the subsequent developments works.
Potable water meter installation (20mm) – connection	Under the Water Act 1989, CWW must permit a property to be connected to the water supply or sewerage systems once an owner or occupier requests connection by notice. However, the owner (or their authorised agent) must agree to meet the cost of making that connection. Connection costs for water supply differ by connection (meter) size. The meter size can range from 20mm to 250mm. The 20mm connection cost relates to connection of a 20mm water meter.
Potable water meter assembly & installation (20mm) – connection	In the case of a dry tapping installation (tapping installed by developer at time of water main installation), CWW will provide both the associated pipework and the meter assembly, including property hose tap and dual check valve. The 20mm connection cost relates to connection of a 20mm water meter.
Plumbing application	Before undertaking any plumbing works, a property owner (or their authorised agent) must obtain CWW's consent to connect. Building plans must be submitted with the application (e.g. new building or extension) if requested by CWW. An application fee is required for all plumbing applications made to CWW. The fee covers employee costs for assessing and processing the plumbing application.
Recycled water connection inspection	CWW requires that the internal plumbing of all residential recycled water properties is inspected by its nominated contractor. This inspection ensures that, at time of development, there is no cross connection between potable water pipes and recycled water pipes
Sewer details	Developers, consultants and property owners often request a plot showing the location of CWW's assets relative to a particular parcel of land. This is known as an 'asset plot' and can be provided for sewer and water. Asset information referred to as 'sewer details' provides size, depth and offset details (where available) for sewerage assets.

Fee name	Description
Build over easement application	Under the Water Act 1989, a person must seek CWW's consent before causing or permitting any of the following: any structure to be built or any filling to be placed on land over which CWW has an easement or an easement exists for water supply, sewerage or drainage purposes any structure to be built or any filling to be placed within one metre laterally of any of CWW's works, including structures above or below ground any soil, rock or other matter that supports, protects or covers any of CWW's works to be removed. A fee is charged for the administrative time spent in assessing whether an approval will be granted, and under what conditions.
Property service short side installations (20mm)	Providing the connection is not inclusive of a PFSC, CWW's nominated meter services contractor is responsible for the installation of the main to meter pipework up to and including five metres from the water main to the property boundary (short side). This also includes all excavation and reinstatement. This is to standardise the installation of all related works for water service connections.
Property service long side installations (20mm)	Providing the connection is not inclusive of a PFSC, CWW's nominated meter services contractor is responsible for the installation of the main to meter pipework exceeding five metres and up to 15 metres from the water main to the property boundary (long side). This also includes all excavation and reinstatement. This is to standardise the installation of all related works for water service connections.
Information statement – self-service, standard or express	Under s32 (2)(b) of the Sale of Land Act 1962, vendors of property in CWW's service area are required to provide potential purchasers with an information statement from CWW prior to contract signing. All property-based fees billed by CWW are included on the information statement. The statement details any encumbrance affecting the land (excluding those shown on land titles), works required to be carried out, matters outstanding and any relevant price or fee. This information is provided in the form of a rates and encumbrance certificate.

K Trade waste tariff reforms under investigation

CWW is considering two changes to trade waste prices during the next regulatory period:

- review and amendment of the 'inorganic total dissolved solids' (ITDS) load fee with a potential move to a 'sodium' load fee or removal of any salinity-related load fee
- review and amendment of the 'biochemical oxygen demand' load fee with a potential move to a 'chemical oxygen demand' load fee

However, CWW does not yet have sufficient information to propose amended tariffs or fee levels in PS2018. A joint program of investigations among metropolitan Melbourne water corporations is proposed for the first two to three years of RP4. A proposal to amend CWW's relevant trade waste fee structure will be put forward at the time of MW's 2021 price review.

The current status and proposal for each issue is set out below.

K.1 Amending or removing the 'ITDS' parameter

The salinity of treated effluent produced at WTP limits its utility as recycled water and the EPA has placed a license limit on ITDS entering WTP. CWW and MW both participate in the Melbourne integrated sewage quality management system (ISQMS) which seeks to jointly manage priority pollutants, including salinity.

The metropolitan Melbourne water corporations have a joint multi-year work program that proposes to:

- investigate a business case for salt reduction at WTP
- identify the beneficiaries of salt reduction
- better target management options for those specific components of 'salt' that reduce the utility of recycled water.

Under the ISQMS, all options are being investigated to manage the salinity of wastewater. Key instruments include:

- regulation of acceptance criteria – i.e. how much 'salt' the corporations will accept from trade waste customers.

  The metropolitan Melbourne water corporations have recently proposed a move, prior to the end of RP4, from ITDS to sodium as the preferred measure of salt. Relevant discussions with the ESC (as the regulator of acceptance criteria) will take place in due course.

- price – i.e. how much those trade waste customers pay for salt.

  Both MW and CWW currently have regulated ITDS fees which are raised in respect of CWW's billed 'Category A' trade waste loads. CWW's ITDS fee was approved by the ESC in 2013 and MW's fee was reconfirmed by the ESC in MW's 2016 determination.

The metropolitan Melbourne water corporations intend to consider the future of the charging framework over RP4, which will include consideration of a potential move to charging in respect of 'Category A' customers' sodium discharge or simply removing the fee in respect of customers' ITDS discharge. The joint work program is necessary to develop an efficient price signal for sodium reduction.

CWW proposes to retain its price cap on ITDS for RP4. During the first three years of RP4 the joint work program will run. The industry proposes that an agreed approach to pricing then be adopted through MW's 2021 price submission and be reflected in CWW's retail prices through application of a tariff basket (albeit with an updated parameter 'sodium' instead of 'ITDS') from 2021-22.

Although CWW has consulted its trade waste customers on the proposed change from 'ITDS' to 'sodium' for acceptance criteria, it is yet to do so for pricing. This is because the business case needs to be developed to identify the relevant sodium price point.

K.2 Amending 'biochemical oxygen demand' parameter to 'chemical oxygen demand'

During PS2018 consultation, CWW identified a theme that trade waste customers want more access to real time information and rapid test parameters for billing purposes. Relevant customers expressed good support for the replacement of the current five day turnaround biochemical oxygen demand (BOD) test, with a near instantaneous chemical oxygen demand (COD) test. However, CWW operates under an ISQMS, where common parameters are used for billing by both MW and CWW. CWW proposes to work towards billing on the basis of COD.

As an interim measure, CWW proposes to retain its price cap on BOD for RP4. During the first two to three years of RP4 the ISQMS work program will run. CWW proposes that an industry agreed approach to organics pricing then be proposed through MW's 2021 price submission and reflected in CWW's retail prices through application of a tariff basket (albeit with an updated parameter 'COD' instead of 'BOD') from 2021-22.

L Compliance checklist

Requirement	Reference	Where addressed
A water business must lodge its price submission with the Commission by 29 September 2017	p11, s2.2.2	
Attachment 5 includes a PREMO assessment tool that water businesses must use to inform their PREMO ratings	p12, s2.3	accompanying Excel file
Informed by its assessment for the four elements of PREMO, a business must propose an overall PREMO rating for its price submission	p12, s2.3	section 9.3
… to facilitate a quick and simple stage 1 assessment (and the possibility of fast tracking), a price submission must clearly convey its key messages and data to the Commission	p14, s2.5.1	
The financial model (section 3.17.3) must also be accurately completed for a water business to be eligible for fast tracking	p14, s2.5.1	
Price submissions must clearly and succinctly identify and explain how a business's proposals demonstrate value for money for customers	p17, s3	
Businesses … must be able to provide any supporting information requested by the Commission	p17, s3	
All data inputs should be in real terms (2017-18 dollars—using March Quarter 2017 CPI) unless otherwise stated. Note exceptions: two worksheets require data inputs in nominal dollars / money-of-the-day (MOD). ▪ Finance&Tax_FO ▪ Indicators_FO	p.i, General notes	
The financial model assumes inflation is 2.3 per cent per annum for the fourth (2018-19 to 2022-23) and fifth (2023-24 to 2027-28) regulatory periods	p.vi, s1.1.2	
… businesses must provide any independent ratings assessments conducted by an independent credit ratings agency as part of their price submissions	p46, s1.16	

L.1 Managing risk

A water business's price submission must be informed by a robust risk identification process.	p18, s3.1	section 1.1

Requirement	Reference	Where addressed
In its price submission a water business must: ▪ identify any significant risks that may impact on customer prices or services, and if requested, make available to the Commission scenario analysis for each risk including an assessment of the nature and scale of the risk and its probability of occurring ▪ identify how it has addressed significant risks through its proposals, explain how the business considered the allocation of risk, and demonstrate how its proposals support efficiency ▪ provide evidence that the business has given strategic consideration to the allocation and management of risk in developing its price submission — this may involve providing references and making available to the Commission material on the business's risk identification and management framework or processes, rather than including detail in a price submission	pp19-20, s3.1.1	section 1.2
Upon request, a water business must … make available to the Commission the following information about significant risks the water business proposes to manage that require cost allowances: ▪ the categorisation of the risk (as operational or financial risk, for example) ▪ measurement of the risk including: – the nature and scale of the risk – the probability of the risk event occurring – factors influencing the probability of the risk event occurring – the financial or service impact of the risk if it occurs ▪ options considered for allocating the risk ▪ rationale for the allocation of the risk, given alternative options ▪ an explanation of why the regulatory risk mitigation tools listed in Attachment 4 do not adequately mitigate the risk ▪ the role customers will be expected to play in dealing with these risks and how customers will be engaged in this process	p20, s3.1.1	

L.2 Regulatory period

If a business proposes a [non-five year] term, then the submission must: ▪ provide reasons for the regulatory period, having regard to the benefits and risks identified in section 3.2.1, including demonstrating that the benefits of a longer or shorter period outweigh the risks and costs from a customer's perspective ▪ outline the results of customer engagement on the length of regulatory period, and how feedback has been taken into account.	p22, s3.2.2	section 2

Requirement	Reference	Where addressed
… for proposed regulatory periods longer than five years, a price submission must: ▪ Demonstrate that the expenditure forecasts and asset management plans underpinning the price submission are sufficiently robust, particularly having regard to the capacity of the assets and demand forecasts towards the end of the proposed regulatory period. ▪ Include details of mechanisms that will provide customers and the Commission with confidence that prices reflect value for money and efficient service delivery after year five of the proposed regulatory period. ▪ Describe how the business will keep customers engaged throughout the longer regulatory period, including how it will update customers on performance. ▪ Describe how the business will adapt to changing customer needs during the regulatory period, within the constraints of the determination. For example, the approach to re-aligning capital programs in response to customer preferences. ▪ Outline the business's approach to dealing with uncertainty and risk during the regulatory period, particularly financial viability risk, having regard to the mechanisms for mitigating risk outlined in Attachment 4	p22, s3.2.2	Not relevant

L.3 Customer engagement

A water business must engage with its customers to inform its price submission.	p23, s3.3	section 3, appendix A
A water business must provide customers with appropriate information, given the purpose, form and the content of the customer engagement, and a reasonable and fair opportunity to participate as part of the process	p23, s3.3	section 3.2, appendix A
A price submission must: ▪ describe and justify how and when the business engaged with its customers ▪ describe and justify the matters covered by customer engagement ▪ explain what the business learned from customer engagement, and how it satisfied itself that customers were given a reasonable and fair opportunity to participate and that any views expressed were sufficiently representative of its customers ▪ explain how feedback was taken into account by the business in reaching its proposals ▪ explain how the business will address customer expectations that will not or cannot be met. A business must make available, or provide on request, resources and materials provided to customers during its engagement, and any customer feedback about the engagement program.	p24, s3.3.2	sections 3.2, 4.2 and 4.3

Requirement	Reference	Where addressed
L.4 Outcomes		
A water business must propose a set of outcomes that its customers will receive during the next regulatory period. A business must define measurable outputs and deliverables, and associated targets that will be monitored during the next regulatory period to demonstrate the achievement of each outcome. A water business must report at least annually to its customers on its performance against the specified outputs and deliverables for each outcome.	p25, s3.4	section 4.1, appendix B
Proposed outcomes must demonstrate linkages to customer preferences, as revealed through the business's customer engagement program	p25, s3.4	section 4.2
A price submission must: ▪ present a set of customer outcomes, each with measurable outputs and deliverables and associated targets ▪ explain how the outcomes were informed by the business's customer engagement program ▪ specify the key actions, activities and programs that the business will undertake to meet its targets (and consequently outcomes) ▪ demonstrate the connection between the outputs, key actions, activities and programs proposed and achievement of a specified outcome ▪ present and explain any cost increases or cost savings for operating or capital expenditure that correspond to each outcome (sections 3.7 and 3.8) ▪ explain how the cost increases or cost savings are reflected in prices charged to customers.	p26, s3.4.2	section 4.2, appendix B
L.5 Guaranteed service level		
Each GSL must be objectively defined, easily understandable, and able to be reported	p28, s3.5.1	section 5, Table 6
The GSL scheme must include the payment difficulty information disclosure GSL that has been in place since 2010[58]	p29, s3.5.1	section 5, Table 6
A price submission must specify each GSL and the corresponding payment or rebate amount that will apply where a customer has received a level of service below the guaranteed level.	p29, s3.5.2	section 5, Table 6
A price submission must identify and justify any changes to the GSL scheme compared with those approved for the current regulatory period.	p29, s3.5.2	section 5

[58] Previously known as the hardship related GSL, refer to: ESC 2012, *Hardship Related Guaranteed Service Level Scheme Review – Final Decision*, May. The latest (3 February 2015) check-list for minimum "reasonable endeavours" at the time of this paper can be found at http://www.esc.vic.gov.au/water/codes-guidelines/hardship-related-guaranteed-service-level/.

Requirement	Reference	Where addressed
For any new or amended GSL, a price submission must: ▪ explain the basis for the GSL, including how it has been informed by customer engagement ▪ specify whether benefits to customers will take the form of payments or rebates ▪ explain the reasons for the proposed size of the customer payment or rebate that applies to each GSL.	p29, s3.5.2	section 5

L.6 Revenue requirement

The required revenue for a water business for the next regulatory period must be determined using the building block methodology	p30. s3.6.1	section 6,
The price submission must specify a water business's forecast total revenue required for the next regulatory period. The forecast revenue required must also be provided for each year of the next regulatory period.	p31, s3.6.2	section 6, Table 7
The price submission must also provide an estimate of the required revenue for each year after the next regulatory period to at least 2027-28, providing a brief explanation of the reasons for the trend in the forecast over the ten year period from 1 July 2018.	p31, s3.6.2	section 6, Table 8

L.7 Forecast operating expenditure

A price submission must include a forecast of total prudent and efficient operating expenditure for the next regulatory period, including a forecast for each year of the next regulatory period.	pp31-32, s3.7.2	in CWW's financial model
For total and annual forecast operating expenditure and for each major service category, forecast operating expenditure for each year of the next regulatory period, and beyond to at least 2027-28, must be further broken down where relevant, in the financial model for: ▪ operations and maintenance ▪ bulk charges (further broken down into bulk charges by type and system, for example, transfer charges, Greater Yarra System – Thompson River fixed charges, Victorian Desalination Plant – Water Order variable charges) ▪ treatment ▪ customer service and billing ▪ GSL payments ▪ licence fees (ESC, Department of Health and Human Services, and EPA Victoria) ▪ corporate costs, and ▪ other operating expenditure.	p32, s3.7.2	in CWW's financial model
Forecasts for the environmental contribution must also be provided in the financial model.	p32, s3.7.2	in CWW's financial model, section 7.2
A business must also provide actual operating expenditure for the current regulatory period (using forecasts for 2017-18), categorised in the same way as above, in the financial model.	p32, s3.7.2	in CWW's financial model

Requirement	Reference	Where addressed
Forecast operating expenditure must be presented relative to a reference or baseline operating year (box 3.1), with allowance for customer growth and cost efficiency improvements over the next period. Any significant changes in the forecast years' costs relative to this baseline year must be clearly presented and explained, including how they are reflected in the proposed customer outcomes and how they represent improved customer value (section 3.4).	pp32-33, s3.7.2	section 7.1
In preparing forecast operating expenditure, a price submission must establish a baseline controllable operating expenditure which comprises efficient recurring controllable costs from the last full year of actual data (2016-17) for those activities and services that are expected to be incurred throughout the next regulatory period.	p33, s3.7.2, Box 3.1	section 7.1
A price submission must justify the adjustments proposed to the baseline year in order to establish the baseline controllable operating expenditure, and demonstrate that this represents efficient ongoing operating costs (consistent with any efficiency targets for the current regulatory period).	p33, s3.7.2, Box 3.1	section 7.1, Table 9
Using the 2016-17 baseline controllable operating expenditure, a water business must propose and justify: ▪ its forecast customer growth rate assumptions (for each year)[59] ▪ its annual cost efficiency improvement rate (for each year) ▪ how proposed cost changes deliver improved customer value.	p34, s3.7.2	section 7.1, Table 10, Table 11
A price submission must also: ▪ demonstrate how proposed cost changes relate to the proposed customer outcomes and the associated outputs and deliverables (section 3.4), and in particular: – identify and explain operating expenditure savings or new operating expenditure arising from capital expenditure and projects – explain any trend or major annual variations in forecast operating expenditure (including identifying cost items[60] that are having an upward or downward influence on operating expenditure) compared with historic operating expenditure. ▪ demonstrate that proposed costs associated with new or revised regulatory obligations and policy requirements are prudent and efficient ▪ set out and where relevant, justify the non-controllable cost forecasts including: – bulk water purchases from other water businesses – regulatory licence fees – environmental contribution – any other proposed non-controllable costs.	p34, s3.7.2	Description in section 7.1. numbers in CWW's financial model

[59] Businesses should draw on *Victoria in Future* forecasts, Australian Bureau of Statistics data, and other information as required.

[60] Including, but not limited to, assumptions and trends relating to: wage and salary escalations; total labour costs and employee number assumptions; electricity and energy costs; underlying volume and load assumptions; and IT costs.

Requirement	Reference	Where addressed
L.8 Forecast capital expenditure		
A price submission must include a forecast of total prudent and efficient capital expenditure for the next regulatory period, including forecast capital expenditure for each year of the next regulatory period. Forecast capital expenditure is to be presented by major service category and by the following cost drivers: ▪ forecast capital expenditure to maintain service standards — that is, renewals ▪ forecast capital expenditure to expand or improve services — that is, growth and improvements/compliance (improvements or upgrades to existing services or to comply with existing or changed government or regulator obligations).	p36, s3.8.2	numbers in CWW's financial model
The business's financial model must also specify actual capital expenditure for the current regulatory period (including a forecast for 2017-18), categorised in the same way as above	p37, s3.8.2	numbers in CWW's financial model
A price submission must present the capital expenditure forecasts set out according to these three key types: ▪ Major capital projects ▪ Capital programs ▪ Other capital expenditure	pp37-38, s3.8.2	section 8.2

Requirement	Reference	Where addressed
Consistent with the above capital expenditure breakdowns (by type and major service category) in the price submission or financial model where appropriate, a water business must also: ▪ for each year of the next regulatory period, and beyond to at least 2027-28, provide annual forecasts for capital expenditure separately identifying (where appropriate) and reconciling: – total capital expenditure – contributions (government and customer) – gifted assets – proceeds from asset sales – written down value of assets disposed, and – net capital expenditure. ▪ explain the methodology used to estimate forecast capital expenditure ▪ identify and explain the key assumptions which underpin the capital expenditure forecasts by each major service category, and how any risks or uncertainties have been addressed ▪ justify the timeframe for delivering the proposed new capital expenditure given the business's delivery of major projects in the past ▪ explain the reasons for the trend or any major annual variations in forecast capital expenditure (including identifying cost items that are having an upward or downward influence on capital expenditure), compared with historic capital expenditure ▪ justify the total forecast capital expenditure against the criteria in section 3.8.1, taking into account: – forecast demand – any relevant industry or economy-wide benchmarks of expenditure – the substitution possibilities between forecast operating expenditure and forecast capital expenditure.	p39, s3.8.2	numbers in CWW's financial model section 8.3 justifications provided in appendix D one-page summaries for major capital projects and major capital programs. Detailed business cases for each of these will be provided on request.

L.9 Return on the RAB

The benchmark regulatory rate of return must be calculated in nominal terms, and then converted to real terms	p40, s3.9	in CWW's financial model
The regulatory asset base (**RAB**) calculated for the purposes of determining the required revenue must reflect capital expenditure (less regulatory depreciation, contributions and/or asset disposals) which would be incurred by a prudent service provider acting efficiently to achieve the lowest cost of delivering on service outcomes, taking into account a long-term planning horizon (**prudency criteria**).	pp40-41, s3.9.1	in CWW's financial model

Requirement	Reference	Where addressed
A price submission must propose: ▪ the closing value for the RAB at 30 June 2017 (using actual data) ▪ the opening value of the RAB at 1 July 2018 (calculated according to the criteria above) ▪ the forecast value of the RAB for each year of the next regulatory period, in accordance with the prudency criteria set out above ▪ the forecast value of the RAB for each year after the next regulatory period until at least 2027-28.	p42, s3.9.1	in CWW's financial model and section 9.1
A price submission must also: ▪ provide estimates for regulatory depreciation (section 3.9.2) ▪ provide separate data and justify estimates for: – government contributions — federal, state and local government contributions towards the capital cost of a project – customer contributions — upfront cash payments made by new customers – the value of gifted assets — assets constructed and then handed over to the water business to operate and maintain ▪ include estimates of revenue expected from disposal of assets for each year from 1 July 2018, to be deducted from the roll forward of the RAB.	p42, s3.9.1	in CWW's financial model
… businesses must propose an annual adjustment mechanism to allow prices to adjust due to changes in the cost of debt	p44, s3.9.3	section 14.2
… a water business must self-assess the level of ambition of its price submission as either 'Leading', 'Advanced', 'Standard' or 'Basic'.	p44, s3.9.3	section 9.3
Attachment 5 includes a PREMO assessment tool that water businesses must use to inform their PREMO ratings. … Informed by the assessment for each element of PREMO, a business must propose an overall PREMO rating for its price submission.	p47, s3.9.3	section 9.3
A price submission must provide information that satisfies the procedural requirements set out in the criteria above. The price submission must also: ▪ identify the reasons for the self-ratings for the Risk, Engagement, Management and Outcomes elements of PREMO, with reference to the guiding questions above ▪ identify the reasons for the price submission's overall PREMO rating.	p49, s3.9.4	section 9.3
A water business's proposed revenue requirement must incorporate a value for the return on equity that is no higher than the value specified in table 3.4 for its proposed price submission rating.	p49, s3.9.5	in CWW's financial model

L.10 Tax allowance

The tax allowance included for the purposes of determining the required revenue must reflect an estimate of the corporate income tax to be paid, less the imputation credits that would be received by a hypothetical private investor in the water business. In estimating the value of imputation credits the water business must multiply the annual estimated corporate income tax bill by an imputation factor.	p50, s3.10.1	in CWW's financial model

Requirement	Reference	Where addressed
The financial model provides an adjustment to the nominal tax allowance for inflation, in order to derive the real tax allowance for each regulatory year. This estimate must be used by the water business as the basis for its tax allowance forecasts.	p51, s3.10.2	in CWW's financial model
The price submission must propose a total tax allowance for the next regulatory period. An estimate must also be provided for each year of the next regulatory period.	p51, s3.10.3	in CWW's financial model
The price submission must also: ▪ state the basis on which the tax allowance for the next regulatory period has been calculated ▪ provide an estimate of the income tax for each year after the next regulatory period up until at least 2027-28 ▪ provide the business's latest corporate forecasts for annual tax payments for the next regulatory period, and make available to the Commission the basis for the forecasts.	p51, s3.10.3	in CWW's financial model

L.11 Demand

Demand forecasts proposed by a water business must represent the best available estimates derived from an appropriate forecasting methodology. Assumptions on the key drivers of demand over the next regulatory period must be well explained and reasonable.	p52, s3.11.1	
A price submission must summarise a business's demand forecasts, including expected trends for the next regulatory period, as well as outline the key assumptions adopted to develop those forecasts.	p52, s3.11.2	
A price submission must also include: ▪ a description of the key demand forecasting issues that lists and justifies the most important assumptions adopted in generating the forecasts — demand forecasts should be based on the latest *Victoria in Future* forecasts issued by the Victorian Government ▪ a description of the forecasting methodology used, and the justification for using the methodology ▪ reference to any external reports or information relied upon ▪ a description of how forecasts have accounted for the impact of any proposed changes to tariff structures or form of price control expected in the next regulatory period ▪ details on the levels of restrictions or nature of any permanent water conservation measures reflected in the forecast ▪ written information on where price elasticity was applied, the input assumptions used, and how the assumptions were translated into the business's demand forecasts.	p52, s3.11.2	
A water business must also make available on request by the Commission, evidence that a range of supply and demand scenarios were modelled, including low, normal and high water inflow scenarios, and written justification for the selection of the modelled scenario.	p53, s3.11.2	
If detailed forecasts at this level are unavailable, a business must explain why and provide estimated demand for these services.	p53, s3.11.2	

Requirement	Reference	Where addressed
L.12 Form of price control		
A price submission must clearly state the proposed form of price control to apply to each service over the next regulatory period.	p54, s3.12.2	section 12
If changes to the form of price control are proposed, then a price submission must: ▪ explain how the proposed form of control would operate and services affected ▪ demonstrate the business has consulted with potentially affected customers, and explain how the feedback from customers informed its proposals, and how the change benefits customers ▪ provide data and supporting information that describes how the proposed form of price control is consistent with providing signals about the efficient cost of delivering services and how it is likely to impact on price stability ▪ explain how the business considered risk allocation and management (including demand and financial risk) ▪ explain how a transition to a new form of price control may impact customers and the water business's approach to minimising any adverse impacts.	p54, s3.12.2	not applicable
L.13 Prices and tariff structures		
A price submission must list each of its proposed tariffs to apply in the next regulatory period. This must include each element of a multi-part tariff structure. A price submission must also list a price for each tariff, or specify the pricing principles that it proposes to apply in setting prices.	p55, s3.13	

Requirement	Reference	Where addressed
A price submission must: ▪ Include a tariff schedule listing each tariff and the price (or principles) proposed, including each element of a multi-part tariff structure. ▪ For any changes in tariff structures and principles, or new tariffs: – state how each tariff is to be applied — for example, frequency of charging, customer class, applying prices through connection or meter size – describe the relationship between the proposed price for a service and the associated short run or long run marginal cost – provide data and supporting information that describes how proposed tariffs are consistent with providing signals about the efficient cost of delivering services [61] – justify how the proposed change delivers better signals to customers about the efficient costs of service provision – describe how the business considered risk and its allocation and management – provide a summary of the business's approach to consultation and how the views of customers informed the price submission. ▪ For price changes of more than 10 per cent for any tariff in any year for the next regulatory period: – describe the relationship between the cost of service provision and the proposed price – provide a summary of the business's approach to consultation (including the approach to identifying affected customers) – summarise the customer feedback received on the proposed price increase – describe the transition arrangements considered, and ultimately proposed, for affected customers. ▪ Provide estimated tariffs for each service for each year beyond the next regulatory period up until at least 2027-28, in the financial model.	p58, s3.13.2	

L.14 Adjusting prices

A price submission must specify any proposed price adjustment mechanisms to apply in the next regulatory period.	p59, s3.14	section 14
The proposed price control formulas must continue to include a mechanism to allow for price adjustments to occur on an annual basis, including desalination water orders for those relevant businesses	p60, s3.14	sections 14.1, 14.3

[61] The ESC requires price submissions to propose prices that seek to reduce and minimise cross-subsidies. The extent to which this may be achieved will depend on a range of factors, including how well any adverse customer impacts may be managed. These issues will need to be explored in price submissions.

Requirement	Reference	Where addressed
As part of the transition to a 'trailing average' approach to estimating the cost of debt (as outlined in section 3.9.3), each water business must also propose a price adjustment mechanism (including price control formulas) that allows for prices to adjust on an annual basis to reflect movements in the cost of debt.	p60, s3.14	section 14.2
A price submission must: ▪ specify any proposed price adjustment mechanisms to apply in the next regulatory period, and specify the proposed process and/or formula for adjusting prices ▪ if proposing new or changed price adjustment mechanisms, then the price submission must: – clearly specify and explain how the adjustments would work – demonstrate the business has sought to appropriately balance revenue and cost risk between the business and its customers, without materially impacting on price stability – justify any proposal against relevant matters in clause 11 of the WIRO and consistency with proposed outcomes.	p61, s3.14.2	section 14
For any identified pass through or uncertain and unforeseen events, a price submission must also: ▪ describe each proposed event, and explain why it is uncertain in its timing or impacts on the business or customers ▪ explain why it is appropriate that customers should bear risk associated with the event ▪ explain how the business considered the impacts on its incentives to pursue efficiencies ▪ propose a price adjustment mechanism to implement the pass through.	p61, s3.14.2	section 14.4

L.15 New customer contributions

Water businesses must use approved pricing principles (outlined in box 3.2) to calculate the net incremental cost of connections.	p61, s3.15.1	section 15.2
A price submission must specify the NCC charges proposed to apply, and provide sufficient evidence for the Commission to assess that proposed NCC have been established in accordance with the NCC pricing principles.	p62, s3.15.2	section 15.2

L.16 Financial position

A water business must populate the financial model to enable the Commission to assess the business's financial position in the context of the prices proposed in its price submission.	p63, s3.16	in CWW's financial model
A water business must also provide the Commission with the findings of any independent ratings assessments conducted by an independent credit ratings agency since 1 July 2013.	p63, s3.16	in CWW's financial model

M Attestation statement

As at 19 September 2017, the directors of City West Water Corporation, having made such reasonable inquiries of management as we considered necessary (or having satisfied ourselves that we have no query), attest that, to the best of our knowledge, for the purpose of proposing prices for the Essential Services Commission's 2018 Water Price Review:

- Information and documentation provided in the price submission and relied upon to support City West Water Corporation's price submission is reasonably based, complete and accurate in all material respects;
- Financial and demand forecasts are the business's best estimates, and supporting information is available to justify the assumptions and methodologies used; and
- The price submission satisfies the requirements of the 2018 Water Price Review Guidance paper issued by the Essential Services Commission in all material respects.

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