

Appendix D

Required revenue

How we calculate revenue

The building block model of the Essential Services Commission of South Australia (ESCOSA) is used to determine the maximum allowable revenue we can recover from customers via their bills for water and sewerage services (defined in the *SA Water Determination 2020 – Framework and Approach*¹). A graphical representation of the building block model is shown in Figure D.1.

The building block model we used to calculate allowable revenue was audited for ESCOSA's 2016 determination. To provide assurance that the model is still compliant, KPMG independently checked the enhancements made since 2016 and the information flows within the model. KPMG identified no material issues and the independent report is provided as Appendix G.

Allowable revenue

Our proposal requires \$3.25 billion of revenue from water customers and \$1.38 billion from sewerage customers over 2020-24 (December 2018 dollars).

The allowable revenue for the 2020-24 regulatory period is less than the 2016-20 regulatory period, on average 2.2 per cent lower for water and 0.5 per cent lower for sewerage services.

Figure D.1: ESCOSA's regulatory building block model

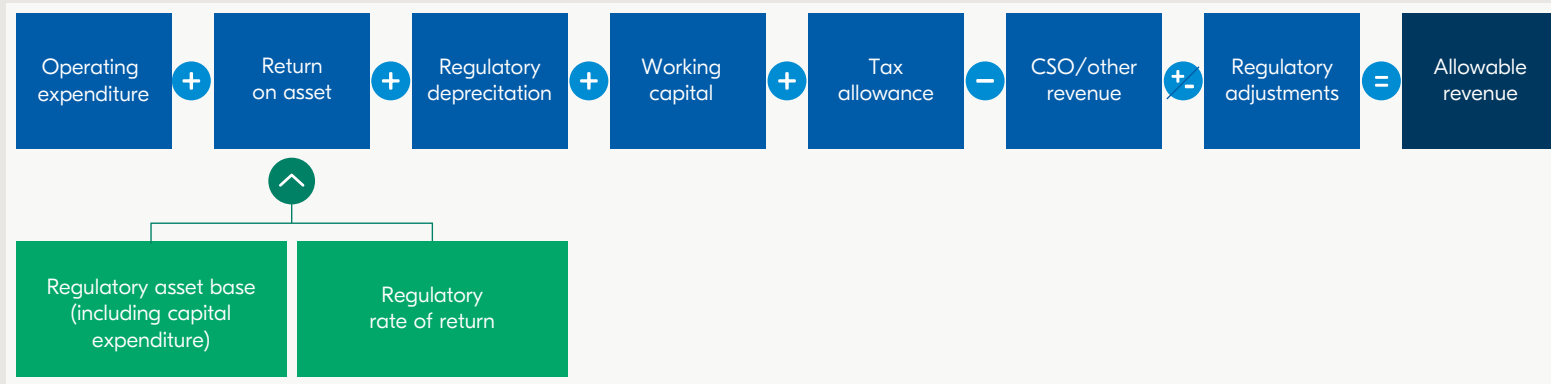


Table D.1: Proposed allowable revenue 2020-24 regulatory period (December 2018 real \$'million)

	Water				Sewerage			
	2020-21	2021-22	2022-23	2023-24	2020-21	2021-22	2022-23	2023-24
Return on asset*	348.1	332.9	319.0	303.8	164.3	154.6	148.4	141.9
Regulatory depreciation**	200.2	208.3	214.1	219.9	110.9	114.4	118.2	122.3
Operating expenditure	320.5	333.5	338.9	340.1	124.3	127.9	131.4	135.6
Tax allowance	19.6	19.1	19.2	19.8	8.0	7.0	6.5	6.4
Working capital**	1.4	1.3	1.3	1.2	0.5	0.5	0.5	0.5
Community service obligations	(74.9)	(74.2)	(73.4)	(72.6)	(51.7)	(51.4)	(51.0)	(50.8)
Other revenue	-	-	-	-	(9.0)	(8.5)	(8.7)	(9.9)
Regulatory adjustments	(4.5)	(4.5)	(4.5)	(4.5)	-	-	-	-
Allowable revenue	810.4	816.4	814.6	807.7	347.3	344.5	345.3	346.0
Smoothed***	807.0	810.6	814.3	818.0	341.1	344.3	347.5	350.8
Smoothed total				3250.0				1383.8

* Calculated on mid-year asset values.

** Discounted to mid-year values.

*** Calculated as a net present value. Smoothed allowable revenue increases slightly each year in line with growth in demand and customer numbers.

¹ ESCOSA, *SA Water Determination 2020 – Framework and Approach Framework*, July 2018

Figure D.2: Comparison of 2020-24 allowable revenue with 2016-20 determination, water

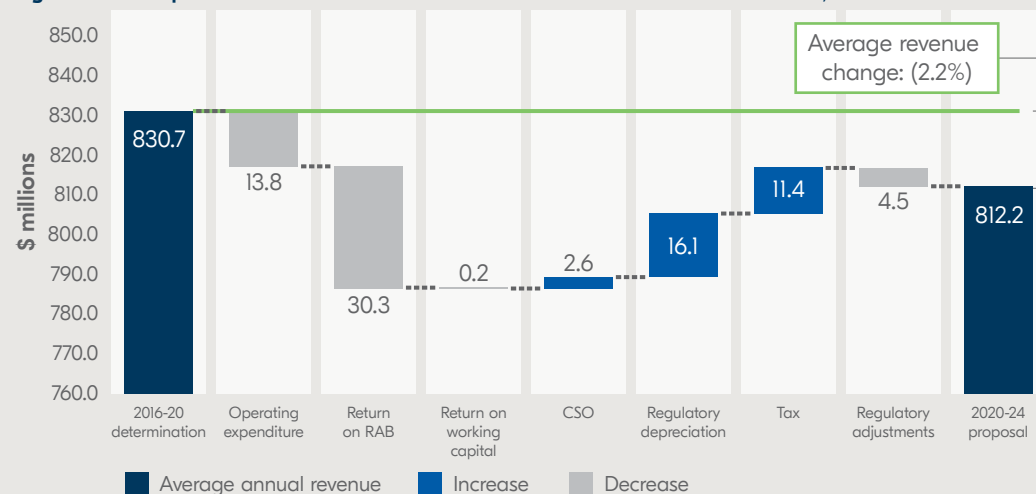
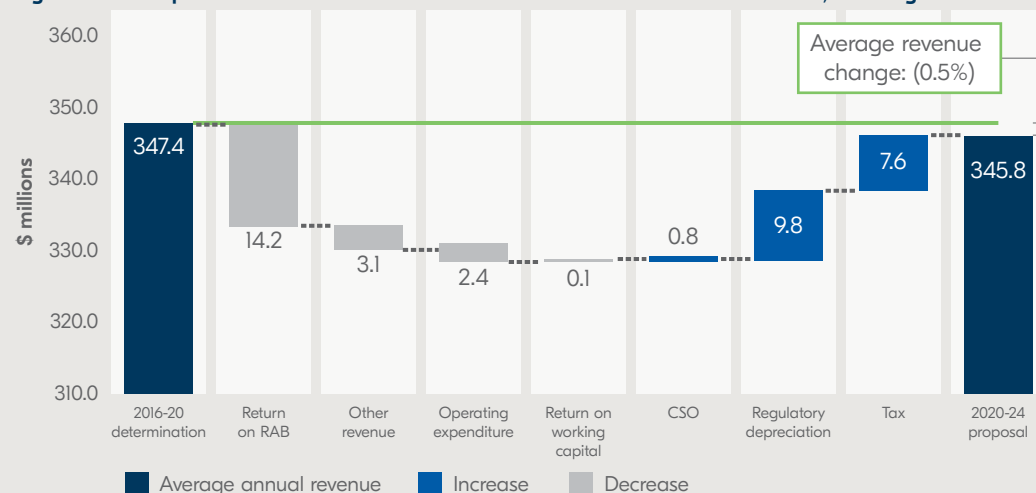


Figure D.3: Comparison of 2020-24 allowable revenue with 2016-20 determination, sewerage



Figures D.2 and D.3 compare each building block for water and sewerage services with the 2016-20 determination (in December 2018 dollars).

The current low interest rate environment is having a significant impact on allowable revenues. Lower interest rates mean the rate of return we are allowed to earn on our regulatory asset base is lower. On average, the return on asset building block is 8.5 per cent (\$30.3 million) per year less for water and 8.5 per cent (\$14.2 million) per year less for sewerage services. Further detail on the regulatory rate of return is provided below in the key inputs section.

The lower regulatory rate of return is being earned across a slightly higher regulatory asset base which reflects additional investment of around \$900 million across the 2016-20 and 2020-24 regulatory periods to deliver outcomes not envisaged at the time of the 2016-20 determination. This additional investment is enabling us to:

- achieve operating efficiencies through strategic investment in renewable energy assets
- deliver a new source of fit for purpose water to the northern regions of Adelaide through further recycling of metropolitan wastewater streams
- secure water supplies in the Eyre Peninsula region through investment in desalination
- increase the resilience of our water main network.

The higher regulatory asset bases are increasing the depreciation building block which will be on average 8.3 per cent (\$16.1 million) per year higher for water and 9.2 per cent (\$9.8 million) per year higher for sewerage.

We outperformed the operating efficiency target over the 2016-20 regulatory period and we are targeting further operating expenditure savings of 12 per cent for the 2020-24 regulatory period. These savings will be achieved through our investment in energy generating assets enabling us to meet our ongoing electricity needs in the most efficient manner. There will also be procurement savings, a reduction in the annual ESCOSA licence fee and a general efficiency target of 0.5 per cent per year (approximately 2 per cent general efficiency by the final year of the 2020-24 regulatory period).

Our drive for operating efficiencies is enabling us to deliver additional services over the 2020-24 regulatory period without the need to significantly increase customer bills.

The combination of efficiencies and our investment in new services sees operating expenditure to be on average 4.0 per cent (\$13.8 million) per year lower for water and 1.8 per cent (\$2.4 million) per year lower for sewerage services.

Other sewerage revenue is projected to increase by \$3.1 million per year which helps offset the capital and operating costs of providing these services. This largely arises through our focus on recycling wastewater which customers have told us they value. The main contributors to the increased recycled water sales compared to the 2016-20 regulatory period are:

- Recycled water sales from the Virginia Pipeline Scheme transferred from a contracted operator to SA Water from 1 January 2018. This scheme has recycling capacity of around 18GL per annum and is near full subscription.
- Start of recycled water sales through the newly constructed Northern Adelaide Irrigation Scheme.

Community Service Obligation (CSO) payments provided by the government for non-commercial activities will decrease on average by 3.4 per cent (\$2.6 million) per year for water and 1.6 per cent (\$0.8 million) per year for sewerage. While the statewide pricing CSO is reducing in real terms, this is partly offset by a new CSO to cover the costs of servicing customers in the remote Leigh Creek region. Table D.2 details the support provided to water and sewerage customers by the Government.

The tax allowance for the 2020-24 regulatory period is, on average, \$11.4 million higher for water and \$7.6 million higher for sewerage services. Due to a low interest rate environment, the cost of debt and the regulatory rate of return have both decreased. The cost of debt (used to calculate tax expense) has decreased by around 30 per cent while the regulatory rate of return (used to calculate part of the tax revenue) has decreased by around 14 per cent. As a result, the taxable income in ESCOSA's building block model has increased by \$64 million per annum on average for water and \$43 million per annum on average for sewerage services. The tax allowance also includes capital contributions from property owners and developers and gifted assets from developers which have increased between the two regulatory periods.

Between 2016 and 2019 we sold temporary water licence allocations not needed to service our customers for a net benefit of \$18 million. ESCOSA's 2020-24 determination will treat this as a regulatory adjustment as the sale of temporary water licences cannot be reasonably quantified before the period. The net benefit until 2019 has been included as a regulatory adjustment in Our Plan.

Table D.2: Customer service obligation payments for water services (December 2018 real \$'000)

	Water				Sewerage			
	2020-21	2021-22	2022-23	2023-24	2020-21	2021-22	2022-23	2023-24
Statewide pricing	65.6	64.6	63.7	62.8	39.1	38.5	37.9	37.4
Exemptions and concessions	8.0	8.2	8.3	8.5	12.0	12.3	12.5	12.8
Administration of pensioner concessions	0.3	0.3	0.3	0.3	0.1	0.1	0.1	0.1
Leigh Creek	1.1	1.1	1.1	1.1	0.5	0.5	0.5	0.5
Total	74.9	74.2	73.4	72.6	51.7	51.4	51.1	50.8

Key inputs

The building blocks have been calculated using the following key inputs.

Demand

Figure D.4 highlights the steady water use efficiencies per capita achieved by our customers since 2006-07 as a response to the millennium drought when temporary measures restricted demand.

While demand per customer has decreased, other factors are causing an upward trend in overall demand. Figure D.5 shows customer connections, population and gross state product have all steadily increased.

Given these changing factors, we revised our water demand model for the 2020-24 regulatory period. The revised water demand model is a monthly per capita bulk water model with separate linear regression for summer and winter months. The length of the data sets has been shortened to 10 years to more accurately reflect recent demand and climate change trends. The underlying variables of soil moisture index and Cooling Degree Day 15 were selected based on statistical analysis. The revised water demand model was independently reviewed by ACIL Allen, see Appendix H, with minor adjustments made to reflect the review's findings.

Figure D.4: Water efficiencies per capita achieved since 2006-07

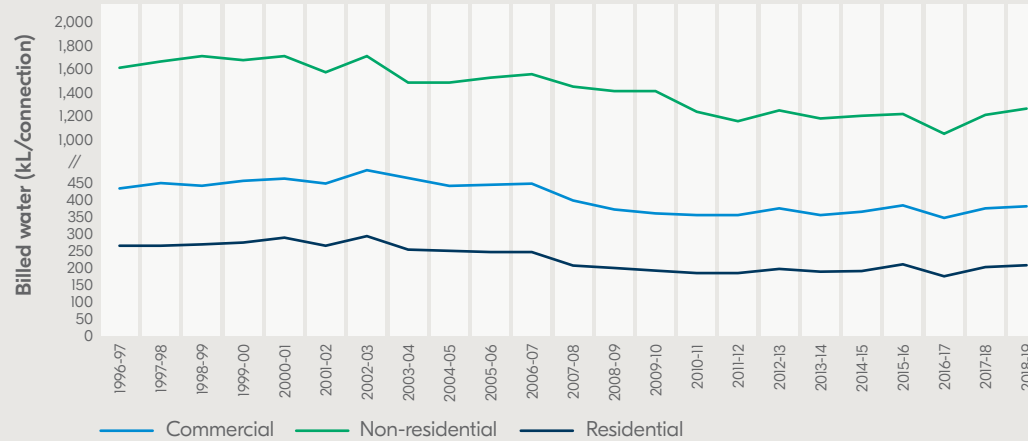
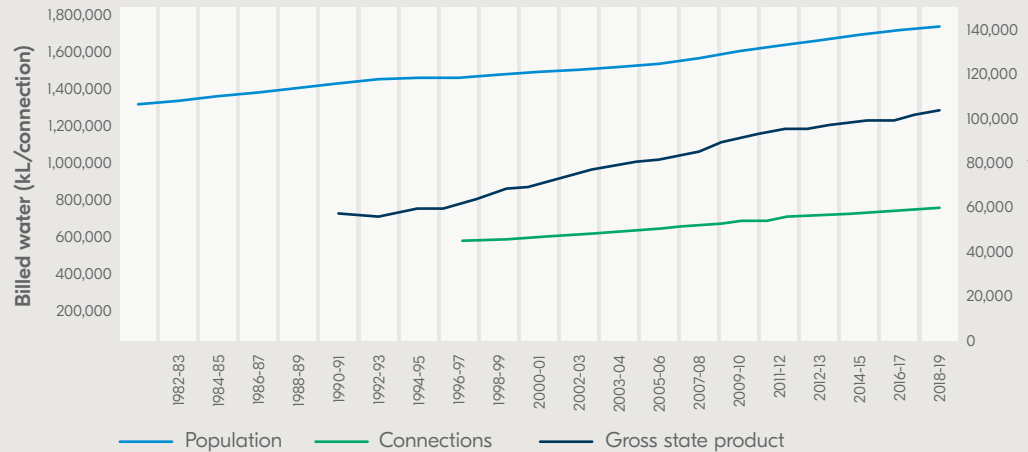


Figure D.5: Factors influencing overall demand



Our Plan uses the 50th percentile from the revised water demand model – a median year as shown in Figure D.6. Actual demand volumes will vary each year between the 5th and 95th percentile depending on climate (approximately 35 gigalitres of variability). ESCOSA allows for this volatility through a demand adjustment mechanism as outlined in section 2.2.3.

Table D.3 details the annual demand numbers used in Our Plan. These forecasts are slightly higher than the demand assumption for the 2016-20 regulatory period. Along with other elements of our proposal, they will help to lower water prices.

Table D.3: Demand forecast for 2020-24 regulatory period

Year	Demand (GL)
2020-21	194.0
2021-22	194.5
2022-23	195.0
2023-24	195.5

Growth

Allowable revenue for the 2020-24 regulatory period assumes customer growth of 1 per cent for residential customers and 0.5 per cent for non-residential customers (for both water and sewerage services). Since 2011, customer growth has consistently been below the 15-year average of 1.2 per cent adopted for the 2016-20 regulatory period (see Figure D.7).

The five-year average growth rate (2012-13 to 2016-17) has been adopted to forecast future growth and for consistency the rates are aligned between water and sewerage services. Separate growth rates for residential and non-residential customers have been used given the different past trends and average revenues of these two groups.

Figure D.6: Water use per customer

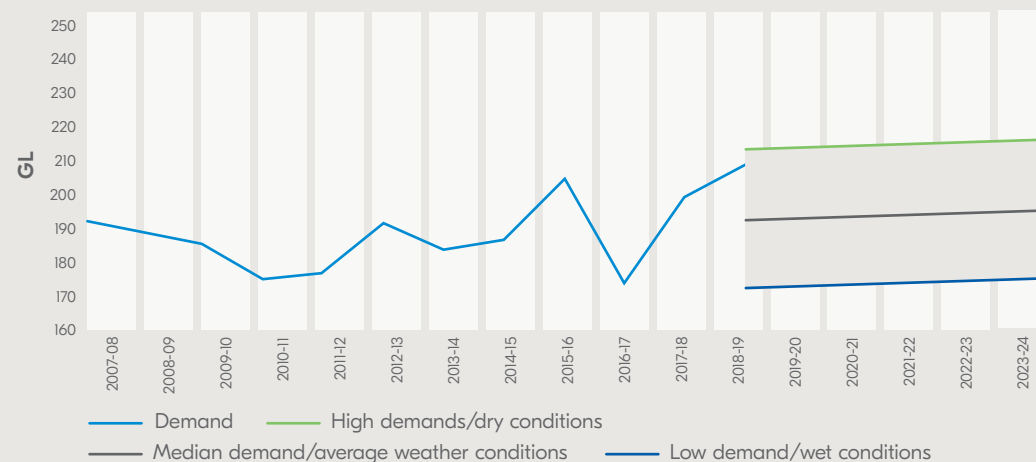
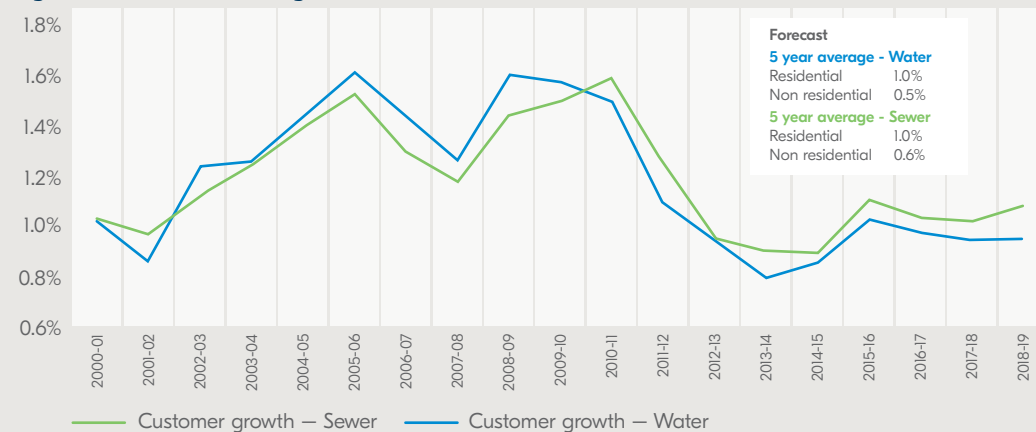


Figure D.7: Actual customer growth



Regulatory asset base

The water regulatory asset base and sewerage regulatory asset base reflect our investment in assets over time to deliver water and sewerage services. The regulatory asset bases are important for calculating the return on assets and depreciation building blocks.

Rolling forward regulatory asset base values

ESCOSA's approved methodology to roll forward our regulatory asset base values has been used. Each year the opening value is adjusted for actual or forecast capital expenditure, asset disposals and depreciation to determine closing values. Tables D.4 and D.5 summarise the regulatory asset base roll forward for water and sewerage assets over the 2016-20 and 2020-24 regulatory periods.

In June 2018, the South Australian Government established an independent inquiry into water pricing. The key term of reference for the inquiry was to review the reasonableness of the water regulatory asset base set in the Treasurer's Second Pricing Order. The Treasurer has not yet announced how recommendations from the inquiry will be implemented, and so the inquiry's recommendations have not been factored into the opening regulatory asset base value in Our Plan.

New regulatory asset class

A new regulatory asset class has been created for our Zero Cost Energy Future assets because the useful lives of these assets do not readily align to existing regulatory asset classes. A useful life of 23 years is proposed for this asset class based on the weighted average of the useful lives of all assets expected to be in this class by 2024 (refer to Table D.6).

Table D.4: Rolling forward the water regulatory asset base value (December 2018 real \$ 'million)

	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Opening value	8,678.3	8,649.7	8,708.9	8,788.4	8,948.9	9,203.1	9,267.9	9,329.0
Capital expenditure	161.3	252.0	276.0	358.1	454.9	273.5	275.6	273.1
Disposals	0.5	0.0	0.4	0.4	0.4	0.4	0.4	0.4
Depreciation (end year value)	189.4	192.8	196.1	197.3	200.2	208.3	214.1	219.9
Closing value	8,649.7	8,708.9	8,788.4	8,948.9	9,203.1	9,267.9	9,329.0	9,381.7

Table D.5: rolling forward the sewerage regulatory asset base value (December 2018 real \$ 'million)

	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Opening value	4,049.0	4,049.8	4,073.2	4,189.6	4,288.6	4,278.5	4,298.0	4,354.1
Capital expenditure	102.8	128.3	224.9	210.6	100.8	134.0	174.4	157.9
Disposals	0.2	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Depreciation (end year value)	101.8	105.0	108.4	111.6	110.9	114.4	118.2	122.3
Closing value	4,049.8	4,073.2	4,189.6	4,288.6	4,278.5	4,298.0	4,354.1	4,389.6

Table D.6: Useful lives energy assets

Asset	Investment weighting (%)	Useful life (years)
Solar panels, civil works and other works	84%	25
Batteries and inverters	14%	10
Software	2%	4
Weighted average useful life		23

Regulatory depreciation

As for the 2016-20 determination, we continue to adopt a weighted average depreciation method for regulatory and tax useful lives. The regulatory useful lives used to calculate the annual depreciation are shown in Table D.7.

Table D.7: Regulatory average useful lives (years)

Asset class	Water		Sewerage	
	Existing assets (1 July 2020)	New assets	Existing assets (1 July 2020)	New assets
Pipes	57.4	103.0	62.9	107.0
Non-pipes	36.2	64.0	28.3	47.0
Adelaide Desalination Plant	48.6	57.0	-	-
Adelaide Desalination Plant — short lived assets	-	7.0	-	-
Zero Cost Energy Future assets	22.4	23.0	22.4	23.0
Corporate	9.6	15.0	9.4	15.0

Table D.8 outlines the depreciation for each asset class used to roll forward the regulatory asset base.

Table D.8: Proposed depreciation, by asset class (December 2018 real \$'million)

	Water				Sewerage			
	2020-21	2021-22	2022-23	2023-24	2020-21	2021-22	2022-23	2023-24
Pipes	80.0	80.8	81.7	82.7	39.8	39.9	40.4	40.8
Non-pipes	63.5	66.8	69.0	71.2	52.0	53.4	55.3	57.4
Adelaide Desalination Plant	30.3	30.3	30.3	30.3	-	-	-	-
Adelaide Desalination Plant — short lived assets	0.3	0.9	1.5	2.1	-	-	-	-
Energy assets	10.3	11.9	11.9	11.9	4.4	5.1	5.1	5.1
Corporate depreciable	15.9	17.7	19.7	21.7	14.7	15.9	17.5	19.1
Total mid-year value	200.2	208.3	214.1	219.9	110.9	114.4	118.2	122.3

* Total mid-year value discounted by half a year's regulatory rate of return.

** Numbers may not add due to rounding.

Regulatory rate of return

The return on the regulatory asset base is one of the key building blocks and is calculated by multiplying the value of our regulatory asset base by the regulatory rate of return (also referred to as the weighted average cost of capital).

This is the measure of the opportunity cost of investment in regulatory assets required to provide regulated services. The regulatory rate of return should ensure an efficient business remains viable over the long-term; it has sufficient revenue to service its debt obligations; and an incentive for ongoing investment by the regulated business. Given this, an appropriate regulatory rate of return is in the long-term interest of our customers.

The regulatory rate of return is expected to facilitate:

- price stability for customers across the regulatory period
- a reasonable return to owner, for the significant investment in regulated assets
- our financial viability and an incentive for long-term investment, a regulatory objective as stated in the *Essential Services Commission Act 2002*, Section 6.

ESCOSA released the cost of funding and using assets guidance paper in November 2018, detailing the proposed methodology to be used in determining the regulatory rate of return for the 2020-24 regulatory period.

Using this methodology and applying market data as at June 2019, we forecast a regulatory rate of return of 2.52 per cent (post-tax real). This regulatory rate of return does not meet financial viability requirements, nor does it meet the other criteria noted above.

We have proposed amendments to the current methodology and based on our proposed method, we forecast a regulatory rate of return of 3.59 per cent (post-tax real and applying market data as at June 2019). This better aligns with interstate water utility peers and provides a return that maintains our financial viability at a minimum acceptable level.

See Appendix E for further details on our proposed methodology.

Regulatory adjustments for the 2016-20 regulatory period

Pass through (2016-20)

The pass through mechanism for the 2016-20 regulatory period allows us to pass on to customers any material costs or benefits of unforeseen events or legislative changes that we could not have reasonably foreseen when preparing our 2016-20 regulatory submission.

The costs or benefits of these events are passed through to customers in the following regulatory period in order to avoid unnecessary price instability.

Pass through events are defined as:

- changes in legislation
- “extraordinary” events that cannot be foreseen or quantified at the time of preparing a regulatory submission.

At the time of writing Our Plan, no pass through events had occurred.

Revenue compliance

ESCOSA’s final determination for the 2016-20 regulatory period set the total allowable revenue at \$2,841.3 million for water and \$1,188.1 million for sewerage (both in present value at 1 July 2016, in December 2014 dollars).

On a combined basis we forecast to be within ESCOSA’s total allowable revenue.

An under-recovery of about \$32 million against the water revenue control is forecast. Customer prices were not corrected for this under-recovery during 2016-20 in order to deliver our promise of price increases capped at inflation over the 2016-20 regulatory period. This has kept water prices low and stable during the 2016-20.

We are forecasting to return \$6 million above the sewerage revenue control. ESCOSA will consider this as part of its revenue calculation for the 2020-24 regulatory period. No adjustment amount has been factored into Our Plan.

Demand adjustment mechanisms

ESCOSA’s 2016-20 determination allows for a regulatory adjustment where demand for water or connection growth for sewerage services varies by more than 1 per cent above or below forecast demand and connections in the 2016-20 determination.

We are not forecasting to trigger ESCOSA’s water or sewerage demand adjustment mechanisms. Water sales are highly dependent on weather so this will be monitored through the upcoming summer period and, if necessary, a corresponding revenue adjustment will be included in ESCOSA’s 2020-24 determination.

River Murray Water Licence Adjustment

In accordance with ESCOSA’s River Murray Water Licence Adjustment mechanism, we have made a regulatory adjustment in Our Plan for sales of temporary allocations made between 1 July 2016 and 30 June 2019. Further detail is provided on page 4 of this Appendix. This regulatory adjustment may require further update in ESCOSA’s determination process as we progress through the 2019-20 summer period.

Changes we propose for 2020-24

There are a number of mechanisms in place to ensure we do not over or under-recover revenue from prices during the regulatory period. Being only the third revenue determination, we are still refining how these work in consultation with ESCOSA. For the 2020-24 regulatory period we propose the following refinements to the revenue adjustment mechanisms.

Revenue control

We propose water and sewerage services revenue controls which enable continued price monitoring and incentivise growth with a view to sharing the benefit of growth with customers over the longer term. We propose per customer revenue controls applied to the fixed revenues we earn (rates revenue/number of customers). If adopted, this form of revenue control may require an adjustment to the Treasurer's Pricing Order.

Demand adjustment

We continue to support use of a demand adjustment mechanism for water sales due to volatility in climatic conditions including temperature, rainfall and soil moisture. Slight amendments to the current demand adjustment mechanism are proposed as follows:

- Demand variances and materiality assessments are calculated with reference to sales revenue rather than total revenue.
- Allowable revenues are adjusted in the 2024-28 regulatory period by applying a 50 per cent sharing ratio to the sales revenue exceeding the one per cent materiality threshold (net of costs). To ensure price stability we support spreading the adjustment over the full regulatory period.

This approach shares forecasting risk evenly with customers, promotes price stability and accounts for the impact of demand changes on our revenue. Further, it meets the requirements of the Third Pricing Order for a revenue adjustment mechanism that is 'relevant and material' and that promotes 'a stable price path for retail services'.

We do not propose the application of a sewerage services demand adjustment mechanism for the 2020-24 regulatory period.

Unforeseen expenditure

The benefits or efficient costs of unforeseeable or uncertain events that occur during the 2020-24 regulatory period will, in many cases, be subject to the pass through mechanism as detailed above.

In addition to the pass through mechanism and in accordance with ESCOSA's Guidance paper 8, we have incorporated an additional mechanism for the 2020-24 regulatory period called 'contingent projects'.

Several projects being considered may or may not be required for customers in the 2020-24 period, and/or their costs and benefits cannot be quantified at this point in time with the confidence required to include them in a regulatory submission and revenue calculation.

To ensure we are clear and upfront, these projects have been flagged with ESCOSA but not included in Our Plan.

We propose that ESCOSA consider these contingent projects as part of their revenue determination and if, during 2020-24 these projects become required to deliver customer services, the known costs will be reviewed by ESCOSA at that time, rather than assessed as part of ex-post capital review during the 2024-28 revenue determination.

This would mean:

- these amounts would not trigger ex-post capital review if the rest of our expenditure is within allowances at the commencement of the 2020-24 next revenue determination
- expenditure is added to the regulatory asset base and recovered from customers in real time, so revenue allowances are adjusted at that time in consultation with ESCOSA
- this is monitored through our annual revenue compliance statements and regulatory accounts reporting.

Community concessions

The government supports community organisations and exempt bodies through exemptions and concessions to water and/or sewerage bills. This is funded by a Community Service Obligation (CSO) payment which, to date, has been included in the building block model. As this CSO supports a discrete group of customers, we propose it not be incorporated within the CSO element of the building block model. This would ensure concession and exemption policy remains a matter for government and that any changes to that policy are fully funded by government.

Implementation of this change means the total allowable revenue for water increases to \$3.28 billion and to \$1.43 billion for sewerage services. The revenue would continue to be collected from a combination of customer prices and CSO exemption and concession revenue so has no material impact on customer prices in this regulatory period.

River Murray Water Licence Adjustment

We support ongoing application of ESCOSA's River Murray Water Licence Adjustment mechanism as it is not possible to reasonably estimate these sales before the regulatory period starts. No changes are proposed.

Pass through mechanism

We support ongoing application of ESCOSA's pass through mechanisms as it is not possible to reasonably estimate these types of events before the regulatory period starts. We are seeking clarification on the thresholds that would trigger this mechanism.