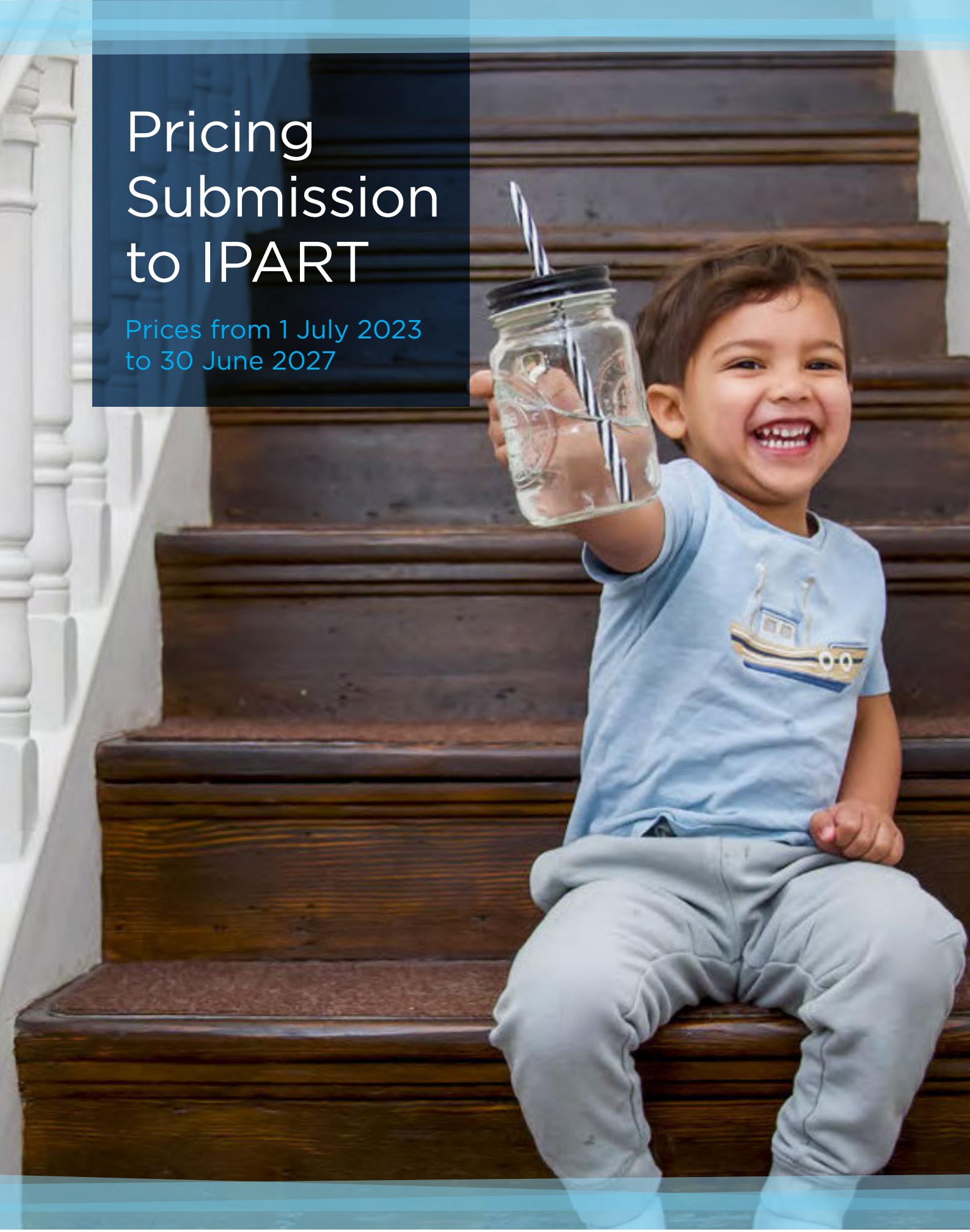
Pricing Submission to IPART

Prices from 1 July 2023 to 30 June 2027



SYDNEY DESALINATION PLANT

16 September 2022

An appropriate citation for this paper is:
SDP Pricing Submission to IPART

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CEO Foreword

I am pleased to present Sydney Desalination Plant's 2023-27 Regulatory Pricing Submission. We enter this new period with a sense of excitement and confidence about the key role SDP can play improving Sydney's water resilience in the face of the climate change. The long-term forecasts by climate scientists remain the same: expect more severe droughts, bushfires and other natural disasters.

The worsening impacts of climate change are placing unprecedented strain on infrastructure globally, including crucial water supply networks. As a result, governments are increasingly looking to desalination plants like SDP and other rainfall-independent supply options to help make water supply for communities as resilient as possible. The global desalination market is forecast to grow 66% in the next five years.[1]

Against this backdrop, the 2023-27 regulatory period marks the start of a significant new phase in SDP's operations. SDP is pleased to play a greater role in strengthening Sydney's water supply resilience as part of the NSW Government's vision set out in the 2022 Greater Sydney Water Strategy (GSWS). This important step allows SDP to provide additional value beyond the traditional drought response role we have reliably fulfilled during the past decade.

To enable us to take on this expanded role, the Minister for Lands, Water, Hospitality and Racing, Kevin Anderson, is considering a draft Network Operator's Licence for SDP, recommended by IPART on 18 August 2022. If approved, the licence would be expected to take effect from 1 July 2023 to require SDP to remain in flexible full-time operation to respond to water production requests from Sydney Water. This will add value for customers by providing more water in the event of severe drought as well as assist in managing water quality risks caused by natural disasters and other system issues.

The new operating environment will introduce new risks and challenges for SDP, many of which arise because the Plant was not designed to provide the dynamic water supply service envisaged under the new operating rules. However, we have gained invaluable experience from being called on to operate more flexibly than anticipated over the 2017-23 regulatory period in response to a series of unexpected events. We successfully rose to the challenge of remaining operational following the end of the last drought to mitigate water quality risks caused by bushfires, flooding, uncertainties caused by the COVID-19 pandemic, and to support broader water network maintenance needs. This experience enhanced our understanding of how the Plant needs to be operated and maintained to provide such a service and has informed our proposals in this submission.

Implementation of the plans set out in our submission would result in stable water bills in 2023-24, including the impact of inflation. Our submission aims to ensure we can prudently and efficiently provide water security and supply services, as well as efficiently manage risks and challenges in doing so, over the 2023-27 regulatory period. We are confident that, if the IPART accepts our key proposals, we will be able to respond safely, reliably, consistently and efficiently to our new Operating Licence requirements.

We look forward to partnering constructively with IPART, the NSW Government and Sydney Water over the 2023-27 regulatory period to maximise the value we provide to customers.

Philip Narezzi
Chief Executive Officer
Sydney Desalination Plant

1 Research and Markets, Global Desalination Market, Size, Forecast 2022-2027, Industry Trends, Growth, Insight, Impact of COVID-19, Opportunity Company, February 2022.

Table of Contents

Executive Summary 6

1. **About this pricing submission** 23

1.1 Our objective for this submission 24
1.2 Our approach to developing this submission 25
1.3 How to navigate this submission 25
1.4 Claims for confidentiality 29

2. About SDP and our regulatory framework 30

2.1 The Plant and Pipeline 31
2.2 Ownership and operation 32
2.3 Our services 35
2.4 Our regulatory obligations 36

3. Our operational experience during the 2017-23 regulatory period 41

3.1 Overview of key events 42
3.2 Restarting the Plant 42
3.3 Sydney Water's Emergency Response Notices 45
3.4 Planning for a potential Plant expansion 48
4. Meeting the future needs of our customers 49
4.1 The Plant's new role under the GSWS 50
4.2 Our stakeholder engagement 57

5. Managing key risks in providing our services 60

5.1 Our approach to analysing and evaluating risks 61
5.2 Our proposed risk management and allocation framework 67

6. Scope and form of regulation 69

6.1 Scope of services subject to regulation 70
6.2. Length of determination period 74
6.3. Mode-based revenue requirements and price caps 76

7. Proposed changes to incentive and risk management mechanisms 81

7.1 Service Level Incentive Scheme 82
7.2. Efficiency Carryover Mechanism 90
7.3. Energy Adjustment Mechanism 91
7.4. Pass-through of energy network costs 101
7.5 Risk management mechanisms for subordinate GGRP energy costs, land tax, council rates and insurance 102
7.6 Re-opener of determination to manage material movement in efficient costs resulting from unforeseen events 109
7.7. Expansion cost recovery principles 114

8. Revenue requirements for our water supply and security services 118

8.1. Plant – Operational Mode – Notional revenue requirements 119
8.2. Pipeline – Notional revenue requirements 121
8.3. Plant and Pipeline – Operational Mode – Notional revenue requirements 122

9. Forecast operating expenditure 123

9.1. Our operating expenditure categories 124

9.2. Operating expenditure outcomes in the 2017-23 regulatory period 125
9.3. Overview of operating expenditure forecasts 126
9.4. Overview of our approach to forecasting operating expenditure 129
9.5. Overview of operating and maintenance (O&M) cost component of forecast opex 130
9.6. Overview of energy cost component of forecast opex 136
9.7. Overview of corporate cost component of forecast operating expenditure 150
9.8 Overview of insurance cost component of forecast operating expenditure 153

10. Forecast capital expenditure 160
10.1 Our capital expenditure categories 162
10.2 Capital expenditure outcomes in the 2017-23 regulatory period 162
10.3. Overview of capital expenditure forecasts for 2023-27 164
10.4. Approach to forecasting capital expenditure 165
10.5. Forecast plant, Pipeline and corporate capital expenditure 168
10.6. Why our forecast capex is efficient 175

11. Proposed allowance for a return on assets, regulatory depreciation, tax obligations and other revenue 176
11.1 Proposed rate of return 177
11.2 Return on working capital 184
11.3 Opening value and roll forward of the Regulatory Asset Base 187
11.4 Plant asset lives, asset categories and regulatory depreciation 189
11.5 Tax costs 191
11.6 Other revenue adjustments 193

12. Proposed prices and customer impacts 196
12.1. Pricing structures 197
12.2 Proposed prices — Operational Mode 201
12.3 Proposed application of prices 202
12.4 Customer impacts of proposed prices 202
12.5 Adjusting our prices over the 2023-27 regulatory period 203

13. Financeability 204
13.1. Role of financeability tests in IPART's regulatory framework 205
13.2 SDP has implemented three modifications to IPART's benchmark test 205
13.3 Benchmark financeability assessment 206
13.4 Maintaining SDP's financeability is critical to promoting the long-term interests of customers 207

Executive Summary

The Sydney Desalination Plant (**Plant**) is Greater Sydney's only major source of non-rain dependent drinking water supply and plays a key role in securing Greater Sydney's water supply. The Plant delivers high quality drinking water from its location at Kurnell via an 18km pipeline to Sydney Water's system at Erskineville (**Pipeline**). This ensures Greater Sydney's drinking water supply is resilient to drought, water quality emergencies or other events which impact on supply from Sydney Water's system. The Plant will also play an important role in meeting future demand from population growth and by increasing the flexibility of Sydney Water's system. [1]

Sydney Desalination Plant Pty Limited (**SDP**) has developed a pricing submission **(this submission)** for the period 1 July 2023 to 30 June 2027 (**2023-27 regulatory period**) for review by the Independent Pricing and Regulatory Tribunal of NSW (**IPART**). This submission sets out the services we will provide over this period and the prices required to recover the costs of efficiently operating and maintaining the Plant and Pipeline to provide these services.

Our submission is based on **SDP's draft Network Operator's Licence**[2] and draft **Retail Supplier's Licence**[3] under the Water Industry Competition Act 2006 **(WICA)** that set out Operating Rules developed in response to the Greater Sydney Water Strategy **(GSWS)**. If approved, these licences would be expected to take effect from 1 July 2023.

The GSWS sets out the NSW Government's strategic vision and priorities for water security in Greater Sydney includes increasing the utilisation of the Plant "to produce an additional 20GL/year immediately which would result in higher storage levels at the start of a drought".[4] This additional water supply is without the need for significant capital investment."[5]

The Operating Rules recognise the enhanced value that the Plant can provide from remaining operational to provide flexibility and optionality for Sydney Water in meeting the objectives in the GSWS by changing "the operation of the Plant from 'drought response' to flexible full-time operation."[6] This has been reflected in:

- The Network Operator's Licence and Retail Supplier's Licence under the Water Industry Competition Act 2006 **(WICA)**
- **Terms of Reference (ToR)** issued by the Minister for Lands, Water, Hospitality and Racing to IPART for price regulation of SDP's monopoly services[7]
- Sydney Water's **Decision Framework** for SDP operation[8] endorsed by the Minister for Lands, Water, Hospitality and Racing
- Discussions between Sydney Water and SDP regarding amendments to the **Water Supply Agreement** (WSA) to align the WSA with SDP's Network Operator's Licence[9] and the Decision Framework.

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2 The draft Network Operator's Licence for SDP, recommended by IPART on 18 August 2022 for approval by the Minister for Lands and Water, Hospitality and Racing. Final approval of this Licence is subject to the Ministers review.

3 The draft Retail Supplier's Licence for SDP, recommended by IPART on 18 August 2022 for approval by the Minister for Lands and Water, Hospitality and Racing. Final approval of this Licence is subject to the Ministers review.

4 NSW Department of Planning, Industry and Environment, Greater Sydney Water Strategy, August 2022, p19

5 Sydney Water, Decision Framework for SDP Operation, June 2022, p17.

6 Sydney Water, Decision Framework for SDP Operation, June 2022, p4.

7 Terms of Reference for Referral of SDP to IPART under Section 52 of the Water Industry Competition Act, 16 June 2022.

8 Sydney Water, Decision Framework for SDP Operation, June 2022.

9 SDP's Network Operator's Licence (No.10_010) granted under the WIC Act on 9 August 2010, as varied on 10 August 2022.

Our vision for the 2023-27 regulatory period is to deliver additional value to Sydney Water and customers from the Plant by changing the way we operate to meet the growing challenges of water security and resilience in the most efficient way possible. We have engaged extensively with Sydney Water to operationalise the level of service envisaged under SDP's Network Operator's Licence to meet both the NSW Government's objectives for Greater Sydney's water supply security and the needs of Sydney Water. In doing so we have sought to balance the needs of Sydney Water and customers with the design and operating capabilities of the Plant and the efficient cost of providing these water supply services – particularly relating to the "minimum baseload volume each year"[10] necessary for the Plant to be able to respond to water supply requests from Sydney Water. We estimate this to be approximately 23GL per year,[11] and expects this minimum production will enable the Plant to meet most, if not all, water supply requests from Sydney Water over the 2023-27 regulatory period in accordance with SDP's Network Operator's Licence. This submission is designed to ensure SDP can meet this defined level of service.

While a critical element of Greater Sydney's overall water supply, SDP is different from many other water utilities that IPART regulates. SDP faces a unique set of risks and challenges in providing our services, especially given the limited experience that Sydney Water, SDP and IPART have with this new operating environment. We are a single asset business and the nature of the services required from the asset is constantly changing. Our expenditure, incentive and risk framework and other proposals in this submission are informed by these unique features of our business.

In developing this submission, we reflected on operational experience in the 2017-23[12] Regulatory Period and the learnings from this, as flexible full-time operation is expected from the Plant in the future. During the 2017-23 Regulatory Period, we responded to rapidly changing events including recovery from major storm damage to the Plant, the onset of severe drought in Greater Sydney as dam levels dropped to below 60% requiring full production, alongside planning for a Plant expansion as dam levels fell below 50%. This was then followed by key events that required operating at reduced volumes with multiple rapid ramp-up and ramp-down events under multiple Emergency Response Notices (**ERNs**).[13]

In developing this submission, we also reflected on the opportunities to ensure the economic regulatory framework applied by IPART remains fit-for-purpose in the new operating environment, we considered the amended Terms of Reference and the implications of these for the setting of regulated prices for SDP's monopoly services.

Over the 2023-27 regulatory period we are proposing arrangements that will promote efficient investment in, and efficient operation and use of, the Plant for the long-term interests of customers. This includes:

- Capital and operating expenditure allowances to enable us to efficiently invest in, operate and maintain the Plant consistent with the needs of Sydney Water and customers, good industry practice and our regulatory and contractual obligations
- Providing for negotiated agreements (within a clear set of IPART approved pricing principles) for operation of the Plant in the rare event that Sydney Water requests operation of the Plant outside of the defined level of service including if Sydney Water requests the Plant to be shut down for an extended period
- Several adjustments to the incentive and risk management mechanisms in the regulatory framework to support efficient operation of the Plant in response to Sydney Water production requests, and prudent risk management in a dynamic policy, regulatory and operating environment. Our proposed adjustments provide SDP with greater accountability for those things in our control and of value to Sydney Water and customers, and less exposure to windfall gains and losses for those events outside our control.

10 The Minister for Lands and Water, Hospitality and Racing, Letter to IPART re Amended Terms of Reference, 16 June 2022.

11 The minimum annual production of 23GL per year from the Plant is in line with the 20GL per year of additional yield from the Plant referred to in the GSWS, where the Plant remains 'always available'.

12 Noting the 2017 Determination remains in place for 2022-23 given the delay in making a new determination.

13 This included the impact of bushfires, flood events and continued above average rainfall on water quality as the quantity of water in Greater Sydney's dams rapidly increased and then remained above 90% of capacity.

Ensuring the Plant can fulfil its new role in water supply and water security for Greater Sydney

The Plant has traditionally been viewed as a drought 'insurance' asset — either shutdown when Greater Sydney's dams were relatively full or operating with the objective to maximise production when dam levels were relatively low.

However, since the rapid recovery of water storages in February 2020, the Plant has remained operational primarily to assist in managing public health risks related to water quality issues in Greater Sydney's dams from bushfires, flooding and above average rainfall as well as to assist in managing other constraints in the Sydney Water network.

The new operating framework developed in response to the GSWS recognise the value of the Plant remaining operational in and outside of droughts to flexibly respond to 'production requests' issued by Sydney Water under its Decision Framework to achieve the objectives of maximising yield, slowing dam depletion and responding to system shocks.

Given that the initial design of the Plant was for drought response, not flexible operation with frequent and sometimes rapid changes in production, there are technical challenges in responding to Sydney Water production requests at short notice relative to longer notice periods.

For this reason:

- The primary service obligation under SDP's Network Operators Licence will be to comply with an **Annual Production Request** (APR) issued by Sydney Water by 1 May each year for the 12 months of the following financial year, with this being reviewed every six months. This production request will be "averaged over the longest period possible to give the greatest operational flexibility to both Sydney Water and SDP".[14] This approach will incentivise Sydney Water and SDP to engage continuously throughout the financial year as new information becomes available on Greater Sydney's water needs.
- The Plant will produce a "minimum baseload volume each year"[15] which we estimate to be approximately 23GL per year[16] to enable the Plant to flexibly respond to this service.

In this submission we have proposed a single mode for regulated pricing purposes over the 2023-27 Regulatory Period — known as **Operational Mode** — in which the Plant remains operational and responds to an APR between 23GL per year to 91.25GL per year[17] in line with the defined level of service. Water produced in response to an APR will include any further production requests for 'monthly phasing' or 'weekly phasing' of the APR[18], as well as other production requests including an emergency response request for a specified agreed volume of water and timeframe to respond (likely at short notice) in accordance with SDP's Network Operator's Licence, the Decision Framework and WSA. We have proposed a single set of Plant and Pipeline charges that would be levied in this 'default' mode.

However, the experience from the 2017-23 regulatory period has highlighted several learnings that should inform the regulatory framework over the 2023-27 regulatory period.

Firstly, it demonstrated the importance of the regulatory framework being sufficiently flexible to accommodate SDP's evolving role in supporting the resilience of Greater Sydney's water supply. While SDP's Network Operator's Licence sets out the regulatory obligations for the Plant, and the Decision Framework sets out Sydney Water's expectations for the Plant, there is a possibility that Sydney Water requests the Plant be operated *outside* of the defined level of service. There are significant challenges in estimating ex ante the costs of providing some of the services that could be requested by Sydney Water over the 2023-27 Regulatory Period. These are expected to be rare events, initiated by Sydney Water, and could include the costs of providing water in line with an alternative level of service or transitioning the

14 Sydney Water, Decision Framework for SDP Operation, June 2022, p11.

15 The Minister for Lands and Water, Hospitality and Racing, Letter to IPART re Amended Terms of Reference, 16 June 2022.

16 This includes the opportunity to respond to short ramp-ups, full production over the financial year and to prepare for and demonstrate the ability to respond to production requests from Sydney Water as part of a capacity test.

17 Sydney Water can request up to a maximum of 91.25GL per year (in line with average Plant capacity of 250ML per day).

18 Water produced in response to an APR will be, where possible, delivered progressively over the year to meet the needs of Sydney Water in accordance with SDP's Network Operator's Licence, the Decision Framework and WSA. The timing of this water delivery over the year or over a shorter period is termed 'phasing'.

Plant into and out of a **Long-Term Shutdown**.[19] For this reason, a key element of this submission is our proposal to establish negotiated agreements with Sydney Water within a framework of 'deferred regulation' for operation of the Plant *outside* of the defined level of service. In proposing this framework, we have drawn on standard pricing principles and IPART's regulatory precedent.[20]

Secondly, it demonstrated the importance of the regulatory framework recognising key linkages between services, risks and costs. These links are those between:

- **Service levels and the costs of supply** and price impacts on customers given higher (or lower) levels of service that involve faster and more reliable production responses, involve higher (or lower) minimum production levels at higher (or lower) risks of dams spilling, at higher (or lower) costs to customers. Ensuring the Plant can flexibly respond to this higher level of service envisaged in SDP's Network Operator's Licence involves additional fixed operating costs (opex) costs and variable opex associated with producing an estimated 23GL per year.
- **Plant production, age of membranes and energy efficiency** as measured by the electrical energy required to produce water on request from Sydney Water.
- **Nature and size of risks allocated to SDP under the regulatory framework and the costs of efficiently managing these risks.** For example, the current abatement mechanism imposes significant financial risks on SDP that are partially managed through insurance, which is being materially impacted by rising premiums in the global insurance market and the cost of managing emerging risks.

19 For example, if Sydney Water requests the Plant to be shut down for an extended period such that SDP would be directed not to produce the minimum baseload volume each year nor be available to respond to production requests as envisaged by SDP's Network Operator's Licence and the Terms of Reference.

20 This includes IPART's 2019 Review of Pricing Arrangements for Recycled Water and Related Services, and IPART's 2019 Murray River to Broken Hill Pipeline Final Report and 2022 Draft Report.

Enhancing the service provided by the Plant without increasing water bills

Our pricing proposal would result in stable water bills in 2023-24, followed by modest increases over the remainder of the regulatory period, whilst enabling us to efficiently operate the Plant and provide the higher level of service valued by Sydney Water and customers.

Relative to the 2017-23 regulatory period, this includes a proposal for:

- A lower post-tax real rate of return of 3.6% consistent with IPART's existing methodology for estimating the Weighted Average Cost of Capital (WACC) allowance.
- Higher Operating and Maintenance (O&M) costs to respond to a higher required level of service through continuous operation at the same time as managing an aging Plant using sustainable, long-term asset maintenance and operating practices
- Higher corporate operating costs to efficiently manage the increased complexity in the scope of SDP's operations since the last Plant restart, operation in response to Emergency Notices and changes to SDP's Network Operator's Licence
- Higher insurance costs to efficiently manage new risks and more complex operation of the Plant under SDP's Network Operator's Licence, as well as higher insurance costs due to rising premiums in the global insurance market
- Stable energy price allowances to enable SDP to recover the efficient energy costs of meeting its regulatory and contractual obligations under the contracts entered into with Infigen Energy (now Iberdrola Australia) to acquire electricity and Renewable Energy Certificates (**RECs**) as part of the approved greenhouse gas reduction plan (**GGRP Contracts)** as per the Terms of Reference[21]. These contracts will protect Sydney Water and customers from volatility in energy prices, including the unprecedented prices currently being experienced across the National Electricity Market (NEM), which are expected to remain high and well above the current benchmark price[22] for at least 2023-24 and 2024-25.

We will continue to pursue efficiencies in our opex program and have incorporated efficiency targets into those controllable cost forecasts for the 2023-27 regulatory period.

In proposing these prices, we have carefully considered how to best address each of the key risks that could impact the costs of providing services over the 2023-27 regulatory period, guided by overarching risk management principles and consistency with our legislative framework. Our view is that it is appropriate for us to retain and manage risks that are within our control. Retaining these risks will drive accountability in the way we provide our services. This is consistent with the focus on accountability in IPART's Draft Water Regulatory Framework. However, other risks are beyond our reasonable control. In some circumstances, sharing these risks with our O&M contractor, insurers or Sydney Water and customers is the most efficient way to manage these risks. As an example, we have proposed a new service level incentive scheme (SLIS) to provide financial incentives to reliably meet or outperform production requests where this is of value to Sydney Water and customers, subject to a cap on rewards and penalties. This cap, supported by an end-of-regulatory period cost true-up for uncontrollable costs, would allow us to efficiently balance risk and put downward pressure on insurance costs that are being impacted by rising premiums in the global insurance market and the cost of managing emerging risks.

We are also forecasting higher capital expenditure (**capex**) over the 2023-27 regulatory period compared to our allowance for the 2017-23 regulatory period. This includes a membrane replacement program that targets sustainable average membrane lives in line with global industry best practice to maintain production reliability and deliver optimal energy efficiency in water supply over the long term. Our capex program will ensure the longevity and efficient performance of the Plant while providing better protection against the risk of asset failure that could affect water supply.

21 Pricing principle 7A, Terms of Reference for Referral of SDP to IPART under Section 52 of the Water Industry Competition Act, 16 June 2022.

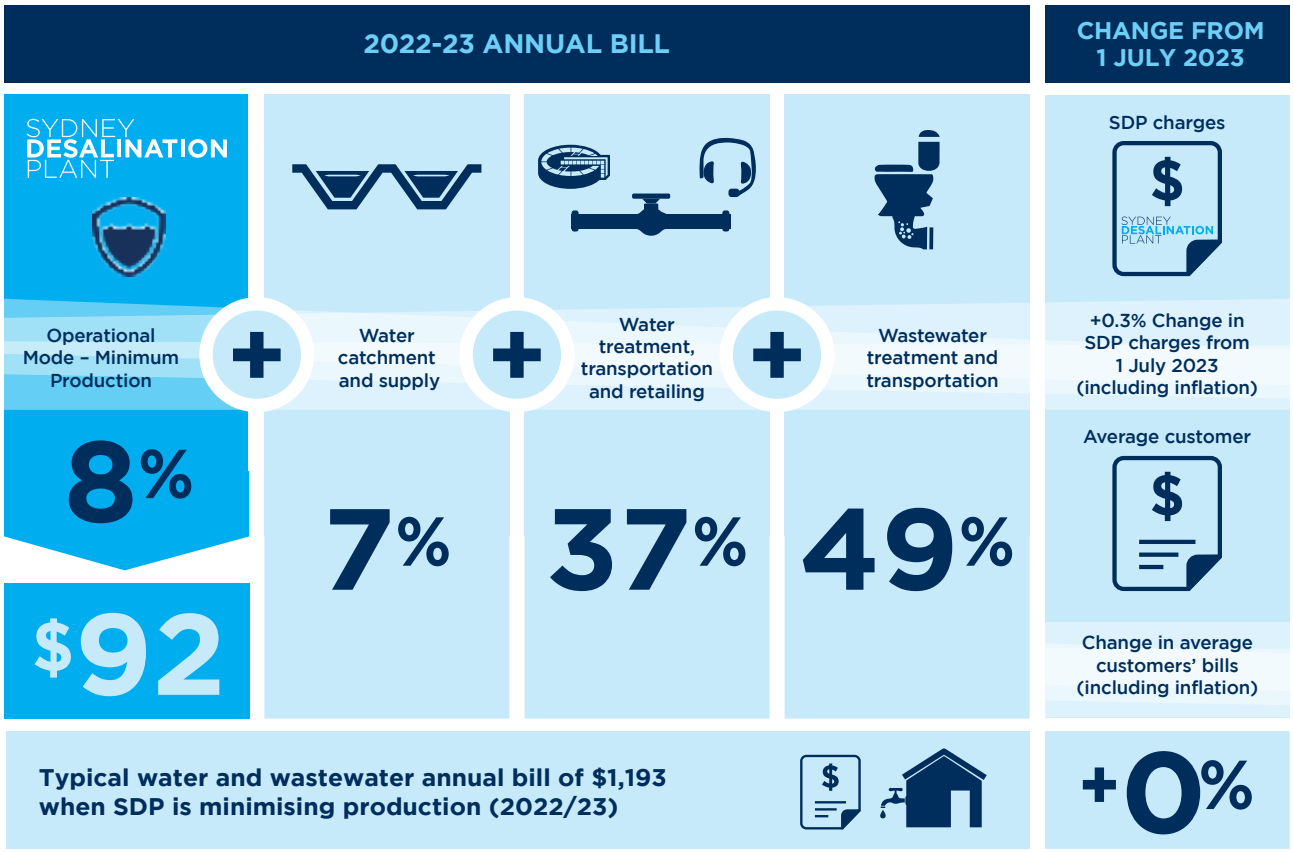
22 The benchmark price IPART assumed in setting prices for 2021-22 which has remained constant in nominal terms for 2022-23 given the delay in making a new Determination.

We are also proposing to align the assumed economic life of the Pipeline with the design life specified by the designers and constructors of the assets. As economic lives cannot be assumed to be longer than the design lives of assets – especially where there is uncertainty about whether there will be enduring demand for services – our proposal represents the maximum assumed economic life of the asset that would be consistent with the Terms of Reference requirement that economic lives should be applied to set SDP's depreciation allowance. However, if evidence becomes available in future periods that expected demand for the services diminishes during the design life of the assets, then IPART should (in future periods) revise its asset life assumptions to align with the expected economic life. This is consistent with IPART's position in its Draft Water Regulatory Framework.[23]

The combined outcome of these 'building block' cost elements is that we can provide stable water bills for Sydney Water and customers in 2023-24, including the impact of inflation (as summarised in **Figure 1.1** below), while also incurring expenditure to efficiently invest in and maintain the Plant to ensure it can supply the high level of services valued by Sydney Water and customers over the long-term. We have presented price impacts based on the annual minimum production (23GL per year) and maximum production (91.25GL per year) that can be requested by Sydney Water in accordance with SDP's Network Operator's Licence.

23 IPART notes that it will consider accelerated depreciation where there is a high risk of asset stranding – that is "when there is no use for an asset while it still works" meaning a firm will "recover the cost of an asset over a shorter time period if they expect they can recover costs before they lose demand". IPART, Draft Water Regulatory Framework: Technical Paper, May 2022, p55.

Figure ES.1: *Indicative impacts of our 2022 submission on customer bills in 2023-24 (including inflation)*



Source: Sydney Desalination Plant

Totals may not add due to rounding

There are modest increases in our proposed revenue requirements over the remainder of the 2023-27 regulatory period (as summarised in **Tables ES.1** to **ES.2**). Compared to the 'notional' revenue requirement in 2022-23 (based on 2021-22 prices being held constant in nominal terms), our proposed revenue requirements are between 2.1% higher (Minimum Production) and 4.8% higher (Maximum Production) in 2026-27, excluding inflation.

Table ES.1: *Proposed notional revenue requirements for the Plant and Pipeline in Operational Mode (Minimum Production – 23GL per year) for the 2023-27 regulatory period ($2022-23, $millions)*

	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Total notional revenue requirement	207.2	202.2	204.9	211.9	211.5	830.5
% change		-2.5%	1.4%	3.4%	-0.2%	2.1%

Source: Sydney Desalination Plant

Table ES.2: *Proposed notional revenue requirements for the Plant and Pipeline in Operational Mode (Maximum Production — 91.25 GL per year) for the 2023-27 regulatory period ($2022-23, $millions)*

	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Total notional revenue requirement	252.9	255.3	258.0	265.5	265.1	1,043.9
% change		*1.0%*	*1.0%*	*2.9%*	*-0.2%*	*4.8%*

Source: Sydney Desalination Plant

At the time of making the 2017 Determination it was assumed that a new Determination would be in place by 30 June 2022. However, the unique circumstances relating to finalisation of the GSWS, amendments to SDP's Network Operator's Licence and the Terms of Reference meant that a standard clause in IPART's 2017 Determination was triggered that kept prices as at 30 June 2022 (i.e. 2021-22 prices) unchanged over 2022-23, without any adjustment for inflation at a time of significant inflationary pressures across the economy.

IPART has indicated that it will examine the impacts of this delay in making a new Determination and determine whether any revenue adjustment should be made in the 2023-27 Determination. The unique circumstances around the extension of the 2017 Determination and delay to the commencement of the new determination was not driven by SDP, and SDP has had to make business decisions based on information provided by IPART ahead of the new Determination commencing. During the period of delay, SDP faced considerable uncertainty regarding how the Plant would operate and whether costs it incurred over this period would ultimately be deemed 'efficient' by IPART if it were to undertake a backward-looking assessment of expenditure and revenue requirements.

In our view, applying a retrospective revenue adjustment would be inconsistent with incentive regulation where the 'rules of the game' are established in advance, IPART's longstanding practice regarding delayed decision-making and ultimately the long-term interests of customers (see section 11.6). This is also consistent with IPART's position in its Draft Water Regulatory Framework that ex-post expenditure reviews should be conducted by exception to minimise stranding risks.[24]

For this reason, SDP's proposed notional revenue requirements and prices do not include an adjustment to account for the impact of 30 June 2022 prices being held constant over 2022-23. However, if IPART decides a revenue adjustment should be applied, Appendix 11-7 outlines how SDP proposes any such revenue adjustment should be calculated and applied over the 2023-27 regulatory period.

24 IPART, Draft Water Regulatory Framework: Technical Paper, May 2022, p43.

Simplifying price structures

We largely support retaining the price structures in the 2017 Determination with:

- Fixed costs — those costs that do not vary with changes to Plant production such as the return on capital, return of capital, tax, fixed Operating & Maintenance (O&M) costs and fixed energy costs — being recovered through recurrent fixed charges ($ per day or $ per year) or one-off fixed charges ($ per event)
- Variable costs — those costs that "vary with output"[25] such as variable energy and variable O&M costs — being recovered through a single variable charge applied to water supplied.

This price structure is simple, transparent and common across a number of utilities that IPART regulates including those with similar cost structures like the WaterNSW's Broken Hill Pipeline,[26] and importantly consistent with the cost reflectivity and financial indifference principles in the Terms of Reference.

However, within this structure we have identified scope to deliver some changes that will make the charges simpler and more transparent — by defining the fixed daily Plant service charges for Operational Mode[27] and incorporating the membrane service charge into these Plant service charges. We have also proposed removing the current 'nil price' in the 2017 Determination for water supplied outside of drought or emergency response period up to 10% above the APR. This is to align with SDP's new Network Operator's Licence (that does not define drought triggers) and to align our incentives with the interests of Sydney Water and customers.

Our proposed prices

Given our revenue requirements and price structures outlined above, our proposed prices in Operational Mode for the 2023-27 regulatory period are listed in **Table ES.3**.

These prices exclude the impacts of:

- Fixed and variable electricity network cost components which we've proposed to retain as cost pass through items as per the 2017 Determination, as while as several uncontrollable energy costs incurred under the GGRP Contracts that we are not able to forecast;
- Cost of debt allowance true-up which we have proposed be passed through annually in SDP's prices as part of a defined mechanistic process, rather than trued-up in the next regulatory period, to minimise cashflow mismatches that could give rise to financeability concerns and to ensure prices remain cost reflective over the 2023-27 regulatory period.

25 Pricing principle 7, Terms of Reference for Referral of SDP to IPART under Section 52 of the Water Industry Competition Act, 16 June 2022.

26 IPART, Review of WaterNSW's prices for the Murray River to Broken Hill Pipeline, Draft Report, June 2022.

27 Rather than presenting them as 'incremental charges' to a shutdown period 'base service charge' as under the 2017 Determination given a shutdown period is not envisaged under SDP's Network Operator's Licence.

Table ES.3: *Proposed prices for the Plant and Pipeline for the 2023-27 regulatory period — Operational Mode ($2023-24)*

	2023-24	2024-25	2025-26	2026-27
Plant service charge ($/day)	418,304	427,331	446,724	445,726
Pipeline service charge ($/day)	99,324	99,426	99,346	99,183
Water usage charge ($/ML)	798.2	799.5	807.1	806.5

Source: Sydney Desalination Plant

Regulatory arrangements which promote the long-term interests of customers

In general, we support many aspects of the existing regulatory framework. We also support many aspects of IPART's proposed Draft Water Regulatory Framework including the focus on the customer need and creating a set of balanced incentive and risk management mechanisms that seek to align SDP's incentives and interests with those of Sydney Water and customers.

The regulatory framework should be able to accommodate changes in policy, customer needs and market conditions as they relate to SDP. It should also provide confidence that prices reflect the efficient cost of providing services over the period and provide SDP with accountability for those things within its control and incentives for SDP to operate and maintain the Plant in a manner that is in the best interest of customers.

To assist IPART, stakeholders, Sydney Water and customers in considering our submission, we have summarised the key changes we are proposing to the regulatory framework over the 2023-27 regulatory period (see **Figure ES.2**). While some of the proposed refinements are bespoke to SDP's unique operating environment, they draw on standard regulatory principles, the evolution in regulatory best practice across Australian and international regulatory jurisdictions and IPART's proposed Draft Water Regulatory Framework. These changes are consistent with the Terms of Reference and will promote efficient investment in, and efficient operation and use of, the Plant and Pipeline assets in line with our Network Operator's Licence and with the long-term interests of customers.

The proposed refinements to the incentive and risk management framework include:

- **Negotiated agreements** — to allow SDP to negotiate agreements covering services, incremental costs (or cost savings) and prices within a clear set of approved pricing principles for water supplied in response to an alternative level of service requested by Sydney Water.
- **Abatement mechanism** — a new 'Service Level Incentive Scheme' (SLIS) that amends the existing abatement mechanism to provide a more targeted, proportionate and symmetric scheme which provides financial incentives to reliably meet or outperform annual production requests where this is of value to Sydney Water and customers and mirrors incentives for service and cost efficiency performance as per IPART's Draft Water Regulatory Framework.
- **Efficiency Carryover Mechanism** — to ensure it provides continuous incentives for efficient operation and maintenance of the Plant in line with good industry practice.
- **Energy Adjustment Mechanism** (EAM) — to refine the core band and sharing ratio to reduce SDP's exposure to windfall gains and losses given the limited control SDP has under the Network Operator's Licence to influence the volume of water we produce and the size of any surplus energy and the gains and losses on the sale of this energy. Based on current market price expectations over the 2023-27 period, we expect this to result in a larger overall 'gain' for Sydney Water and customers (putting downward pressure on prices in the following regulatory period).
- **Arrangements for end-of-period true-ups and in-period re-openers** — to introduce a combination of cost pass throughs, end-of-period true-ups and in-period reopeners to manage the risks associated with uncertain and uncontrollable events.

Figure ES.2: *Overview of proposed changes to the regulatory framework for the 2023-27 regulatory period*

Element of Regulatory Framework	Area of proposed change	How this promotes better customer outcomes
Form of regulation	Scope of regulated services	Tailoring services to meet customers' needs
	Length of determination period	Aligning the determination period to the current circumstances
	Mode based pricing	
Incentive framework	Cost efficiency mechanisms	Effective but proportionate incentives to deliver efficiency savings consistent with SDP's Operating Rules
	Service Level Incentive Mechanism (SLIS)	Effective but proportionate incentives to meet production requests made by Sydney Water
Risk management mechanisms	Managing uncertain and uncontrollable costs	Efficient process for managing uncertain and uncontrollable costs, and ensuring cost-reflective prices
	Energy adjustment mechanism	Proportionate incentives to focus management effort on controllable costs
Approach to establishing efficient expenditure	Operating and maintenance costs	Ensuring the Plant is operated consistent with our customers' needs and Good Industry Practice
	Energy costs	Ensuring prices reflect the efficient costs of meeting our regulatory and contractual obligations
	Corporate expenditure	Overseeing and monitoring the prudent operation and maintenance of the Plant
	Insurance costs	Managing risk efficiently on behalf of customers
	Capital costs incl membranes	Protecting against asset failure and optimising the performance of the Plant
Approach to establishing revenue allowance	Rate of return methodology	
	Inflation	
	Depreciation	Ensuring prices treat today's customers and future customers fairly
	Roll-forward of the RAB	
Tariffs and charges	Price structure	Establishing prices that reflect the efficient cost of providing our services
Financibility	Financeability test	Ensuring SDP has the financial health to meet customers' needs

No changes proposed | Minor changes proposed | Changes proposed

In addition to the proposed refinements to the incentive and risk management framework, key elements of this submission also relate to:

- **Efficient operating and maintenance (O&M) costs** — to allow SDP to recover the efficient cost of operating and maintaining the Plant and other assets in line with good industry practice, as required under our SDP's Network Operator's Licence.
- **Efficient energy costs** — to allow SDP to recover the efficient costs of meeting its regulatory and contractual obligations under its project approval, as per the Terms of Reference.[28] These costs incorporate the price at which SDP acquires electricity and RECs under contracts entered into with Infigen Energy (now Iberdrola Australia) as part of the greenhouse gas reduction plan approved by Government within SDP's project approval (**GGRP Contracts)**. These costs also incorporate energy volumes that reflect ambitious energy efficiency targets factoring in a prudent and efficient average age for Plant membranes over the 2023-27 regulatory period.
- **Efficient corporate costs** — to allow SDP to recover the efficient cost of overseeing and monitoring the prudent operation and maintenance of the Plant.
- **Efficient insurance costs** — to allow SDP to obtain and maintain insurance to efficiently manage risks, as required by our Retail and SDP's Network Operator's Licence.
- **Efficient capital costs** — to allow SDP to replace membranes in line with a benchmark efficient replacement program, perform prudent and efficient periodic maintenance to ensure reliability in performance of assets over their design lives, and undertake other capital projects that ensure the reliable performance of the Plant, providing better protection against the risk of asset failure that could affect water supply.
- **Timing of updates to the cost of debt allowance adjustments** — to allow SDP to minimise cashflow mismatches that could give rise to financeability concerns and to ensure prices remain cost reflective over the 2023-27 regulatory period, we are proposing annual updates to the return on debt allowance be passed through annually in SDP's prices as part of a defined mechanistic process, rather than trued-up in the next regulatory period.
- **Asset lives** — to be consistent with the requirement that economic lives should be applied to set SDP's depreciation allowance, we are proposing a pipeline life of 100 years, periodic maintenance weighted average life of 7.6 years, and membrane weighted average life of 4.5 years for the 2023-27 regulatory period.

Our proposals on these issues are in the long-term interests of customers, as they would:

- provide SDP with an opportunity to recover the efficient costs of providing services and remain financeable
- provide incentives for SDP to efficiently manage risk, and efficiently invest in and operate the Plant; and
- allow SDP to be responsive to the needs of Sydney Water and customers.

We have undertaken analysis which shows that a benchmark efficient business in SDP's circumstances would remain financially sustainable over the 2023-27 regulatory period if the proposals outlined above were accepted by IPART. We support IPART undertaking a financeability assessment when making its Determination to ensure that its decisions remain internally consistent, i.e. that based on the benchmark efficient revenue and cost allowances, a regulated business would be able to sustainably raise BBB rated debt finance over the 2023-27 regulatory period. Ensuring that regulated businesses remain financially sustainable is in the long-term interests of customers.

We welcome IPART's careful consideration of our submission, which outlines a package of measures that will enable SDP to fulfill its water supply and water security services for the long-term benefit of Sydney Water and customers.

28 Pricing principle 7A, Terms of Reference for Referral of SDP to IPART under Section 52 of the Water Industry Competition Act, 16 June 2022.

Table ES.4: *Summary of SDP's proposed positions for the 2023-27 regulatory period*

Section	Issue	Submission
6 Scope and form of regulation		
6.1	Scope of services subject to regulation	1. The 2023 Determination allows SDP to negotiate pricing agreements, consistent with a set of approved pricing principles for water services requested by Sydney Water *outside* of the defined level of service.
6.2	Length of determination period	2. A four-year regulatory period from 1 July 2023 to 30 June 2027.
6.3	Mode-based revenue requirements and price caps	3. To retain 'building block' revenue requirements and price caps that enable SDP to recover the efficient costs of operating in the relevant mode, including: • Maintaining a single regulated Operational Mode, which will be the 'default mode' that applies when the Plant is available to produce water or is requested by Sydney Water to produce water (irrespective of the amount) in accordance with SDP's Network Operator's Licence, the Decision Framework and WSA, and consistent with the defined level of service. • Amending the definition of a shutdown period in the 2017 Determination so that it does not commence on the 11th consecutive day of zero water production.
7 Proposed changes to the incentive and risk management framework		
7.1	Service Level Incentive Scheme	4. A new Service Level Incentive Scheme (SLIS) that replaces the 2017 Determination abatement mechanism to provide a more targeted, proportionate, and symmetric incentive scheme aligned with SDP's new operating environment and the services valued by our customer, and efficient operation and maintenance of the Plant and other assets in line with good industry practice.The details of the proposed SLIS are outlined in section 7.1 and include: • A +/- 10% tolerance limit consistent with SDP's Network Operator's Licence, • An annual cap on SLIS financial rewards/ penalties of 2.5% (in combination with other efficiency mechanisms) of annual fixed plant charges. The 2.5% cap would apply to SLIS financial rewards/penalties 'trued-up' at the end of the regulatory period, for events that impact SDP's ability to comply with the APR that are largely within SDP's reasonable control or are insured. This cap is reflected in SDP's proposed insurance allowance including BI insurance (see Section 9.8). This would include, but not limited to, insurable events that have a BI impact and are covered by insurances such as Professional Indemnity insurance, Industrial Special Risks insurance and others. • The SLIS would not apply financial rewards/penalties (either through deeming of production or an adjustment to APR) for events for which SDP is not insured where SDP's ability to comply with the APR is prevented wholly or predominantly by an event outside its reasonable control (as per SDP's Network Operator's Licence). To provide regulatory certainty this requires IPART establishing on an ex-ante basis what is reasonably commercially insurable and included in the insurance cost component of the opex allowance.

Section	Issue	Submission
7.2	Efficiency Carryover Mechanism	5. To retain an Efficiency Carryover Mechanism that allows SDP to carryover demonstrated efficiency savings, net of efficiency losses, in operating expenditure for four years following the year in which the efficiency saving was achieved but: • remove the current operating mode distinction and instead base efficiency gains on the operating expenditure allowance for the actual levels of supply in the relevant period • apply a combined cap across the SLIS and the ECM, as outlined in our proposal on the SLIS.
7.3	Energy adjustment mechanism (EAM)	6. To retain the EAM, subject to amendments – as set out in **Table 7.3** – so that it applies to any surplus energy under the GGRP contracts, consistent with the revised Terms of Reference, and adjusts the sharing of gains or losses between customers and SDP to 95:5 (outside a 2.5% core band) to reduce SDP's exposure to windfall gains and losses given the limited control SDP has under SDP's Network Operator's Licence to forecast surplus energy and influence the associated gains or losses.
7.3	Energy adjustment mechanism (EAM)	7. In applying the EAM, and reviewing the prudency of SDP's trading policy and trading activity IPART would: • Consider the average spot price for LGCs for the last quarter of each calendar year and the first quarter of the next calendar year given the LRET operates on a calendar year basis and SDP will only know the volume of LGCs that would be surplus to requirements towards the end of a calendar year. • Recognise that forward selling surplus energy is not an appropriate trading strategy given it exposes SDP to the risk of windfall gains and losses, and that under SDP's Network Operator's Licence, SDP will not know when it will be called upon to meet Sydney Water's production requests (timing), how much water SDP will be required to produce under each request, and how much surplus energy SDP will be holding in future periods (volume).
7.4	Energy network cost pass-through	8. To retain the cost pass-through of the network component of energy costs and remove the temporary Fixed Network Charge cap.
7.5	Risk management mechanisms for Uncontrollable Costs	9. To include an end-of-period true-up for material differences between forecast and actual costs relating to ancillary service charges, market fees, network losses, any other new fees introduced by energy market regulators and incurred by SDP under the GGRP contracts, as well as land tax & council rates, chemical costs and insurance incurred over the 2023-27 regulatory period. 10. To include a cost pass through for UFE charges, RERT charges and generator compensation charges incurred by SDP under the GGRP contracts over the 2023-27 regulatory period.

Section	Issue	Submission
7.6	Re-opener of determination to manage material movement in efficient costs resulting from unforeseen events	11. That IPART clarify the types of events that would constitute re-opener events over the 2023-27 regulatory period, including those that possess the following characteristics: • the event is exogenous (i.e., SDP has no ability to control whether the event occurs) • the event has resulted in (or has the potential to result in) a material increase or decrease in SDP's efficient costs, where material is defined as greater than or equal to 1% of regulated revenue; and • alternative risk management measures are not appropriate to mitigate or prevent the impact of the event (i.e., the cost impact of these events cannot be predicted with sufficient certainty for it to be included in expenditure allowances, while insurance and self-insurance is not likely to be commercially available on a cost-effective basis).
7.7	Incorporating the efficient incremental costs of any Plant Expansion	12. To establish a set of guiding principles that would apply to any future Expansion Determination based on the principles set out in **Table 7.7.**
8 Revenue requirements for our water supply and security services		
8.1	Plant — Operational Mode	13. A notional revenue requirement ranging from **$689.38m** to **$902.77m** – as set out in Table 8.1 and Table 8.2 — for the Plant for the 2023-27 regulatory period.
8.2	Pipeline (mode independent)	14. A notional revenue requirement of **$141.15m** — as set out in **Table 8.3** — for the Pipeline for the 2023-27 regulatory period.
8.3	Plant and pipeline — Operational Mode	15. A notional revenue requirement ranging from **$830.53m** to **$1,043.93m** – as set out in **Table 8.4** and **Table 8.5** for the Plant and Pipeline for the 2023-27 regulatory period.
9 Forecast operating expenditure		
9.3.1	Forecast operating expenditure in Operational Mode	16. Forecast Plant operating expenditure ranging between **$236.81m** and **$450.20m** — as set out in **Table 9.4** and **Table 9.5** for the 2023-27 regulatory period.
9.3.2	Forecast Pipeline operating expenditure	17. Forecast Pipeline operating expenditure of **$1.97m** – as set out in **Table 9.6** — for the 2023-27 regulatory period, which is independent of the Plant's production.
9.5	Approach to forecasting O&M costs	18. To set the O&M cost category of the forecast opex allowance on a base-step trend approach, incorporating a continuing efficiency factor of 0.3% pa from 2024-25, reflecting the efficient cost of SDP operating and maintaining the Plant and other assets in line with Good Industry Practice, as required under our SDP's Network Operator's Licence.
9.6	Approach to forecasting energy costs	19. To set the energy cost category of the forecast opex allowance to reflect the cost per unit of energy incurred by SDP under the GGRP Contracts, consistent with the pricing principles in the Terms of Reference. The prices to acquire 100% renewable energy under the GGRP contracts, as well as forecast assumptions for Subordinate GGRP costs, are as set out in **Table 9.8**. 20. Energy volumes that reflect the age of Plant membranes in line with a benchmark efficient membrane replacement program and the required increase in fixed energy use under SDP's new Network Operator's Licence, as set out in **Table 9.10**.

Section	Issue	Submission
9.7	Approach to forecasting corporate costs	21. To set the corporate cost category of the forecast opex allowance on a base-step trend approach, incorporating a continuing efficiency factor of 0.3% pa on controllable costs from 2023-24, reflecting the efficient cost of SDP overseeing and monitoring the prudent operation and maintenance of the Plant.
9.8	Approach to forecasting insurance costs	22. To set the insurance cost category of the forecast opex allowance on a base-step-trend approach, reflecting the efficient cost of SDP obtaining and maintaining insurance to appropriately manage risks under our proposed SLIS as required by SDP's Network Operator's Licence. This includes the risks under the proposed SLIS which: • cap financial rewards/penalties (in combination with other efficiency mechanisms) at 2.5% of annual fixed plant charges including for insured events; • would not apply financial rewards/penalties for events for which SDP is not insured where SDP's ability to comply with the APR is prevented wholly or predominantly by an event outside its reasonable control (as per SDP's Network Operator's Licence).
10 Forecast capital expenditure		
10.1	Actual capital expenditure in the 2017-23 regulatory period	23. Actual capital expenditure over the 2017-23 regulatory period of **$50.97m** — as set out in **Table 10.2** — representing prudent and efficient capital expenditure be incorporated into SDP's opening RAB for the 2023-27 regulatory period.
10.3	Forecast capital expenditure in the 2023-27 regulatory period	24. Forecast prudent and efficient capital expenditure of **$81.00m** for the 2023-27 regulatory period — as set out in **Table 10.3** — including undertaking our membrane replacement program, periodic maintenance on our aging Plant and specific projects that provide better protection against the risk of asset failure that could affect water production. This includes a continuing efficiency factor of 0.3% pa from 2023-24.
11 Proposed allowance for a return on assets, return on working capital, regulatory depreciation, tax obligations and other revenue		
11.1	Proposed rate of return	25. A post-tax real rate of return of 3.60%
11.1	Sampling date for estimating the rate of return	26. Sampling periods for the purposes of estimating the rate or return for each of the years of the 2023-27 regulatory period in line with the sampling periods set out in confidential Appendix 11.1.
11.1	Cost of debt	27. Annual updates to prices to reflect annual changes in the cost of debt allowance.
11.2	Methodology for setting the return on working capital allowance	28. The use of IPART's current methodology for determining the allowed return on working capital, as set out in IPART's 2018 Policy Paper on the working capital allowance.
11.2	Return on working capital	29. The return on working capital allowances presented in **Table 11.5.**
11.3	Opening value of the RAB — Plant	30. The opening Plant RAB value for the 2023-27 regulatory period of **$1,225.7m** presented in **Table 11.6.**
11.3	Opening value of the RAB — Pipeline	31. The opening Pipeline RAB value for the 2023-27 regulatory period of **$791.8m** presented in **Table 11.7**.
11.3	RAB roll forward for the 2023-27 regulatory period — Plant	32. The opening Plant RAB for each year of the 2023-27 regulatory period presented in **Table 11.8.**

Section	Issue	Submission
11.3	RAB roll forward for the 2023-27 regulatory period — Pipeline	33. The opening Pipeline RAB for each year of the 2023-27 regulatory period presented in **Table 11.9**.
11.4	Asset lives	34. The standard asset life for the pipeline should be 100 years, consistent with its design life, 7.6 years for periodic maintenance and 4.5 years for membranes as set out in **Table 11.10**. This would be consistent with the requirement that economic lives should be applied to set SDP's depreciation allowance.
11.5	Tax costs	35. Tax costs allowances of **$35.11m** as set out in **Table 11.13** for the Plant and Pipeline over the 2023-27 regulatory period that reflect an efficient allowance for corporate tax liabilities.
11.6	Other revenue adjustments	36. Adjustment for other revenue items including the pass through of specified gains and losses under the EAM of **$7.45m** — as set out in **Table 11.14** — but no further adjustments associated with the delay in making the 2023 Determination.
12 Proposed prices and customer impacts		
12.1	Plant service charge	37. Single Plant service charge ($ per day) be specified for Operational Mode, reflecting the efficient level of fixed costs when the Plant is available to produce water or is requested by Sydney Water to produce water (irrespective of the amount) in accordance with SDP's Network Operator's Licence.
12.1	Membrane service charge	38. To incorporate the current membrane service charge (reflecting the remaining capitalised costs of the full membrane replacement) and the cost of the ongoing membrane replacement program in the Plant service charges.
12.1	Pricing for the supply of drinking water	39. To retain a single water usage charge ($ per ML) for any water supplied during Operational Mode and remove the current 'nil price' in the 2017 Determination for water supplied up to 10% above the APR or any water supplied as a result of responding to another request by Sydney Water.
12.1	Pipeline service charge	40. To retain a pipeline service charge ($ per day) that is independent of the Plant's annual water production.
12.1	Removal of regulated charges for other periods where an alternative level of service is requested by Sydney Water and provided by SDP	41. To remove some previously regulated charges for services supplied under an alternative level of service requested by Sydney Water which are better established through negotiated agreements (see section 6.1). This includes maintaining the current cost sharing arrangements but allowing for SDP and Sydney Water to agree prices for these services, subject to these agreements complying with IPART approved pricing principles.
12.2	Proposed prices for Plant and Pipeline in Operational Mode	42. To adopt the regulated prices for the Plant and Pipeline in Operational Mode as set out in **Table 12.2**.
13 Financeability		
13.3	Financeability test	43. IPART should accept all of SDP's proposals to ensure prices reflect those that a benchmark business in SDP's circumstances would need to remain financeable consistent with IPART's benchmark efficient credit rating assumption over the regulatory period.

Source: Sydney Desalination Plant.

1. About this pricing submission

Key messages

- This submission sets out SDP's proposed revenue and prices over the 2023-27 regulatory period to enable SDP to deliver its services efficiently in accordance with its Network Operator's Licence, the Decision Framework and WSA. The proposed revenues and prices have been determined in line with the Terms of Reference.
- This submission was developed based on lessons learned from the 2017-23 regulatory period, changes in the policy, regulatory and commercial operating environments and consultation with our stakeholders.
- SDP is different to many other water utilities that IPART regulates and faces a unique set of risks and challenges in providing our services to improve the resilience of the Greater Sydney's water supply. By its nature, our role is to respond to the changing needs of our customer, Sydney Water in response to natural disasters and operational risks. Our expenditure, incentive and risk framework, and other proposals in this submission are informed by these unique features of our business.

IPART sets maximum prices for SDP's water supply services and IPART's 2017 Determination expires on 30 June 2023. SDP has prepared this submission to inform IPART's Determination of SDP's prices from 1 July 2023.

Currently, Sydney Water is our only customer and pays all the efficient costs of providing our services. SDP's costs are passed on to customers through Sydney Water's residential and non-residential water prices, which are subject to a separate IPART review and determination.

1.1 Our objective for this submission

Our objective for this submission is to promote the long-term interests of customers by increasing Greater Sydney's water supply resilience in the face of the unprecedented challenges caused by climate change, including worsening natural disaster events, and to deliver greater value from an important community asset. We support IPART's commitment to helping NSW tackle climate change through its decision-making including by encouraging solutions proposed by regulated entities that mitigate or adapt to climate change for the benefit of the people of NSW and future generations.[29]

We have proposed arrangements which promote efficient investment in, and efficient operation and use of, the Plant for the long-term interests of customers, including by assisting the people of NSW and future generations mitigate and adapt to climate change. This in turn implies:

- Providing desalinated water using the least-cost combination of capital and operating inputs (accounting for whole-of-life considerations), which can be achieved by ensuring we face appropriate incentives to incur efficient costs, and allocate risks to the party that is best able to manage them.
- Ensuring the regulatory framework is sufficiently responsive to changes in the needs of customers, Sydney Water and government which require us to operate in an increasingly flexible manner.

29 IPART, Climate Change Prioritised: Our statement and framework for tackling climate change, 2021. https://www.ipart.nsw.gov.au/sites/default/files/cm9_documents/Climate-Change-28-Oct-2021.PDF

- Ensuring prices are set at a level that recovers the efficient costs of providing our regulated services, including the GGRP costs of powering the Plant with 100% renewable energy which in turn underpins long-term investment in renewable energy generation in NSW (see Section 9.6.2), supporting SDP's sustainability initiatives (see Section 9.7), and including a return commensurate with the level of risk incurred in providing these services (see Section 11.1).

1.2 Our approach to developing this submission

To achieve our objective, we have engaged closely with the NSW Government, Sydney Water and stakeholders to discuss their priorities and preferences for our services over the 2023-27 regulatory period.

In developing this submission, we have followed the approach set out in **Figure 1.1.**

Figure 1.1: *Development of our 2023-27 Pricing Submission*

Source: Sydney Desalination Plant

1.3 How to navigate this submission

This submission forms part of a broader package of information requested under IPART's Guidelines for Water Agency Pricing Submissions,[30] including:

- Pricing Submission and Appendices
- Pricing Submission (Plain English summary)
- A completed annual information return (AIR) and special information return (SIR) for 2020-21 and 2021-22, which IPART has indicated will not be published on its website.
- Declaration of the CEO certifying the accuracy of the information provided.

Table 1.1: Structure of this submission provides an overview of the structure and content of the submission. It also lists the key appendices and supporting information for each section. All amounts in this document are in $2022-23 and do not include GST, unless otherwise specified. We have responded to IPART's request to provide information covering 2027-28 in the AIR.

30 IPART (2020), Guidelines for Water Agency Pricing Submissions, November.

Table 1.1: *Structure of this submission*

Section	Content	Supporting Appendices
1. About this submission	Provides a high level description of this pricing submission	• 1-1: CEO's Declaration • 1-2: Chair's Declaration • 1-3: Claims for confidentiality • 1-4: Terms of Reference for Referral of Sydney Desalination Plant Pty Limited to IPART under Section 52 of the Water Industry Competition Act
2. About SDP	Explains our role and the regulatory framework governing our operations and services	No appendices
3. SDP's evolving role in Sydney's water supply	Discusses our recent performance and operational experience during the 2017-23 regulatory period Discusses the implications of the Greater Sydney Water Strategy	• 3-1: Revenue over the historical period • 3-2: Performance over the 2017 Determination
4. Meeting the future needs of our customers	Describes our stakeholder engagement and how this feedback has been reflected in our future plans	• 4-1: Expert Report: Level of service under new operating rules (Ontoit) • 4-2: Expert Report: RP3 Submission Engagement Report (RPS) • 4-3: Expert Report: Customer research (StollzNow)
5. Managing key risks in providing our services	Describes the risks that SDP faces in providing our services, how these risks can be efficiently and holistically managed within the regulatory framework and appropriately allocated between our business and our customers	No appendices
6. Scope and form of regulation	Sets out our proposals for the scope, duration and form of regulation	• 6-1: IPART correspondence on approach to averaging period for rate of return • 6-2: CONFIDENTIAL: [redacted]
7. Proposed changes to incentive and risk management framework	Sets out our proposed incentive and risk management framework to encourage service and cost improvements and to manage risks and uncertainties	• 7-1: Proposed Service Level Incentive Scheme • 7-2: Regulatory precedent: Service standard incentive schemes • 7-3: Expert Report: Surplus Electricity Sales Analysis (Seed Advisory) 1 September 2022 • 7-4: Proposed process for end-of-period true-up of movements in Uncontrollable Costs • 7-5: Proposed process for re-opener of determination to manage material movement in efficient costs resulting from unforeseen events • 7-6: Regulatory precedent: Re-opening price determinations to account for movements in efficient costs

Section	Content	Supporting Appendices
8. Revenue requirement for our water supply and security services	Presents our proposed notional revenue requirement (and building block costs) for the Plant under different operating modes and for the pipeline	No appendices
9. Forecast operating expenditure	Sets out actual operating expenditure during the 2017-23 regulatory period and how this compares to the regulatory allowance Sets out our forecast of operating expenditure for the 2023-27 regulatory period including: • Operating and Maintenance (O&M) costs • Energy costs — unit costs and volume • Corporate costs • Insurance costs	• 9-1: Our approach to forecasting opex • 9-2: Forecast operating and maintenance expenditure • 9-3: CONFIDENTIAL Expert Report: Efficient variable O&M costs (Emerald Process Engineering) • 9-4: CONFIDENTIAL Expert Report: Efficient fixed O&M costs (KBR) • 9-5: Forecast energy volumes • 9-6: CONFIDENTIAL Expert Report: RO membrane age impacts (Emerald Process Engineering) • 9-7: CONFIDENTIAL [redacted] • 9-8: Expert Report: Efficiency of long-term contracts (Frontier Economics) • 9-9: Expert Report: Analysis of GGRP Contracts (ACIL Allen) • 9-10: CONFIDENTIAL [redacted]) • 9-11: Forecast corporate costs • 9-12 CONFIDENTIAL [redacted] • 9-13: CONFIDENTIAL [redacted] • 9-14: CONFIDENTIAL [redacted] • 9.15 CONFIDENTIAL Forecast insurance costs • 9-16:CONFIDENTIAL [redacted] • 9-17 CONFIDENTIAL [redacted] • 9-18 CONFIDENTIAL [redacted]

Section	Content	Supporting Appendices
10. Forecast capital expenditure	Sets out actual capital expenditure during the 2017-23 regulatory period and how this compares to the regulatory allowance Sets out our forecast of capital expenditure for the 2023-27 regulatory period	• 10-1: SDP Report: Prudency of membrane replacement in 2019 • 10-2: SDP Capital Works Procedure • 10-3: SDP Long term investment plan • 10-4: SDP 5-year capex plan • 10-5: SDP Procurement Policy • 10-6: CONFIDENTIAL: Ongoing RO membrane replacement business case • 10-7: SDP project summary: Ongoing RO membrane replacement • 10-8: SDP project summary: Dual 132kV feeder • 10-9: SDP project summary: Drinking Water Pumping Station – Additional Pump • 10-10: SDP project summary: Drinking Water Pumping Station – Electrical cooling • 10-11: SDP project summary: RO sampling panels • 10-12: SDP project summary: Switchroom fire suppression • 10-13: SDP project summary: Lime system efficiency improvements • 10-14: SDP project summary: Protection of intermediate permeate tanks • 10-15: SDP project summary: Second Drinking Water Tank
11. Proposed allowance for return on assets, regulatory depreciation, tax obligations and other revenue	Sets out the remaining building block components	• 1-1: CONFIDENTIAL Proposed sampling period for rate of return parameters • 11-2: Expert Report: The allowed rate of return for SDP (Frontier Economics) • 11-3: SDP's proposal on Pipeline asset lives • 11-4: Expert Report: Technical memorandum on SDP's pipeline design life (KBR) • 11-5: Expert Report: Economic asset lives and regulatory precedents (Frontier Economics) • 11-6: CONFIDENTIAL Expert Report: Surplus LGC and Electricity Sales Compliance Review 17 August 2022 (Seed Advisory) • 11-7: Process for calculation of any ex post revenue adjustments for 2022-23

Section	Content	Supporting Appendices
12. Proposed prices and customer impacts	Describes the current price structure and explains our proposals for improving the current structure Sets out our proposed prices for the 2023-27 regulatory period and how these apply Explains the impacts of our proposals on SDP's charges and customer bills Explains how prices would be adjusted during the 2023-27 regulatory period	• 12-1: Methodology for adjusting our prices in Operational Mode during the 2023-27 regulatory period
13. Financeability	Explains the impacts of our proposal on SDP's financial performance	• 13-1: CONFIDENTIAL Expert [redacted] • 13-2: Financeability Analysis

1.4 Claims for confidentiality

In some circumstances the benefit of publishing some confidential information may be outweighed by the potential harm. For example, we may provide an estimate of the cost of procuring a service. However, if IPART were to publish this information it could impact our ability to undertake a competitive tender and ultimately increase the costs to consumers. In a very limited number of cases, information has been provided to SDP by a third party on a commercial-in-confidence basis. To overcome this we have redacted some information in this submission as confidential. Details are listed in appendix 1-3

2. About SDP and our regulatory framework

Key messages

- SDP is a privately owned business, jointly owned by the Ontario Teachers' Pension Plan Board and Utilities Trust of Australia.
- Our key assets include the:
  - **Plant** – a large-scale reverse osmosis (RO) desalination plant located in Kurnell, Sydney which is capable of producing around 15% of Sydney's average water needs by treating, filtering and remineralising seawater to produce high-quality drinking water.
  - **Pipeline** – which transports drinking water from the Plant to Sydney Water's network at Erskineville.
- SDP's activities are governed by a comprehensive regulatory framework and the prices we charge for our services are regulated by IPART.
- The objectives of the GSWS will be a key driver of our operating arrangements over the 2023-27 regulatory period, including allowing flexibility for SDP to operate as and when required for whatever reason, irrespective of the level of Sydney's dams.

The purpose of this section is to provide background information about SDP, our assets, services and regulatory environment relevant to our proposed prices and supporting incentive and risk management framework for the 2023-27 regulatory period.

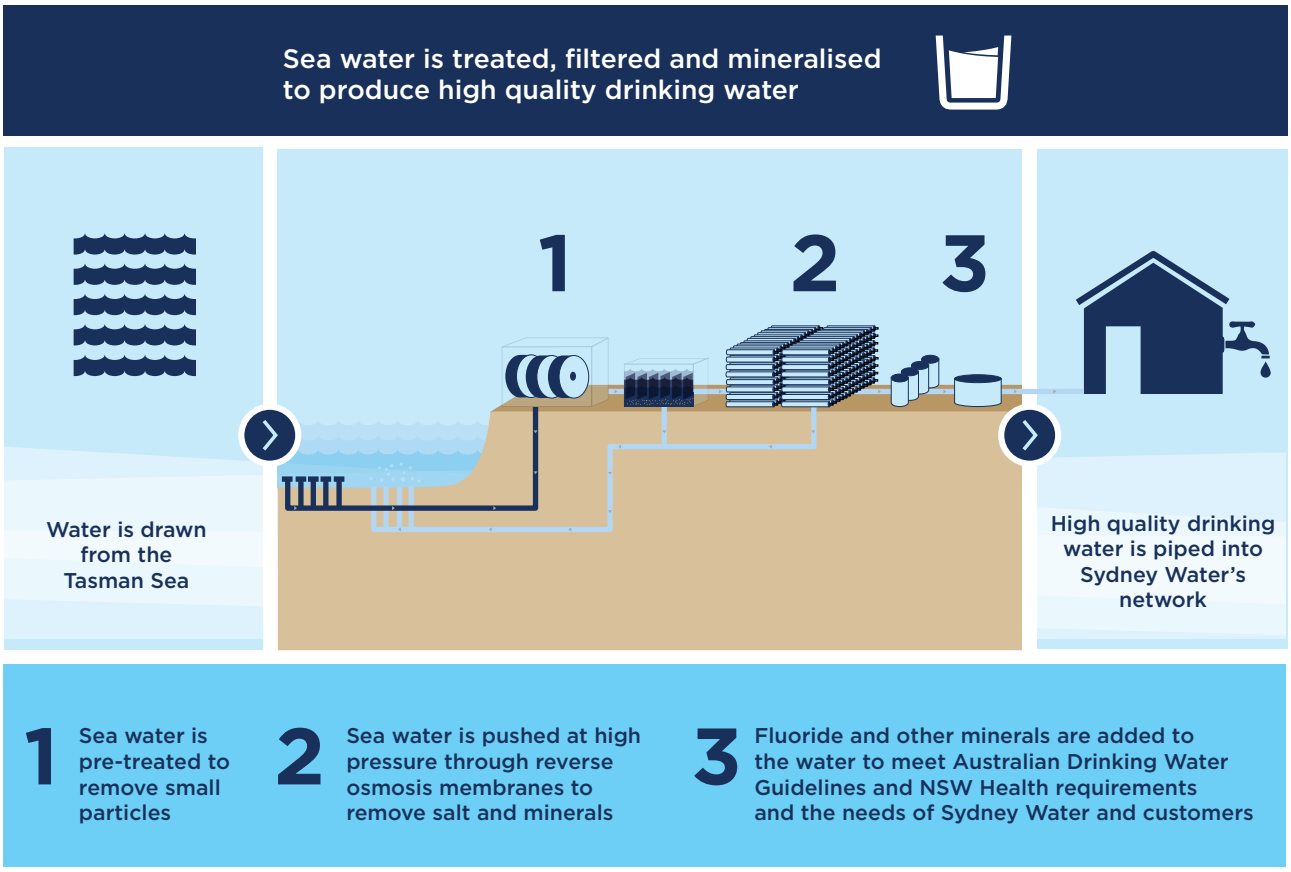
2.1 The Plant and Pipeline

The Plant is a large-scale reverse osmosis (**RO**) facility located in Kurnell, Sydney. The Plant uses RO membrane technology to turn seawater into fresh water. There are several steps to this process, which are summarised in **Figure 2.1** below.

With a design capacity of 91.25GL/year, the Plant can provide approximately 15% of Sydney's average water needs by treating, filtering and remineralising seawater to produce high-quality drinking water.

Water from the Plant is transported via a Pipeline to Sydney Water's system at Erskineville. Sydney Water then distributes the water, alongside water from other supply sources, to homes and businesses across the Greater Sydney region.

Figure 2.1: *SDP produces high quality drinking water from seawater on request from Sydney Water*



Source: Sydney Desalination Plant

2.2 Ownership and operation

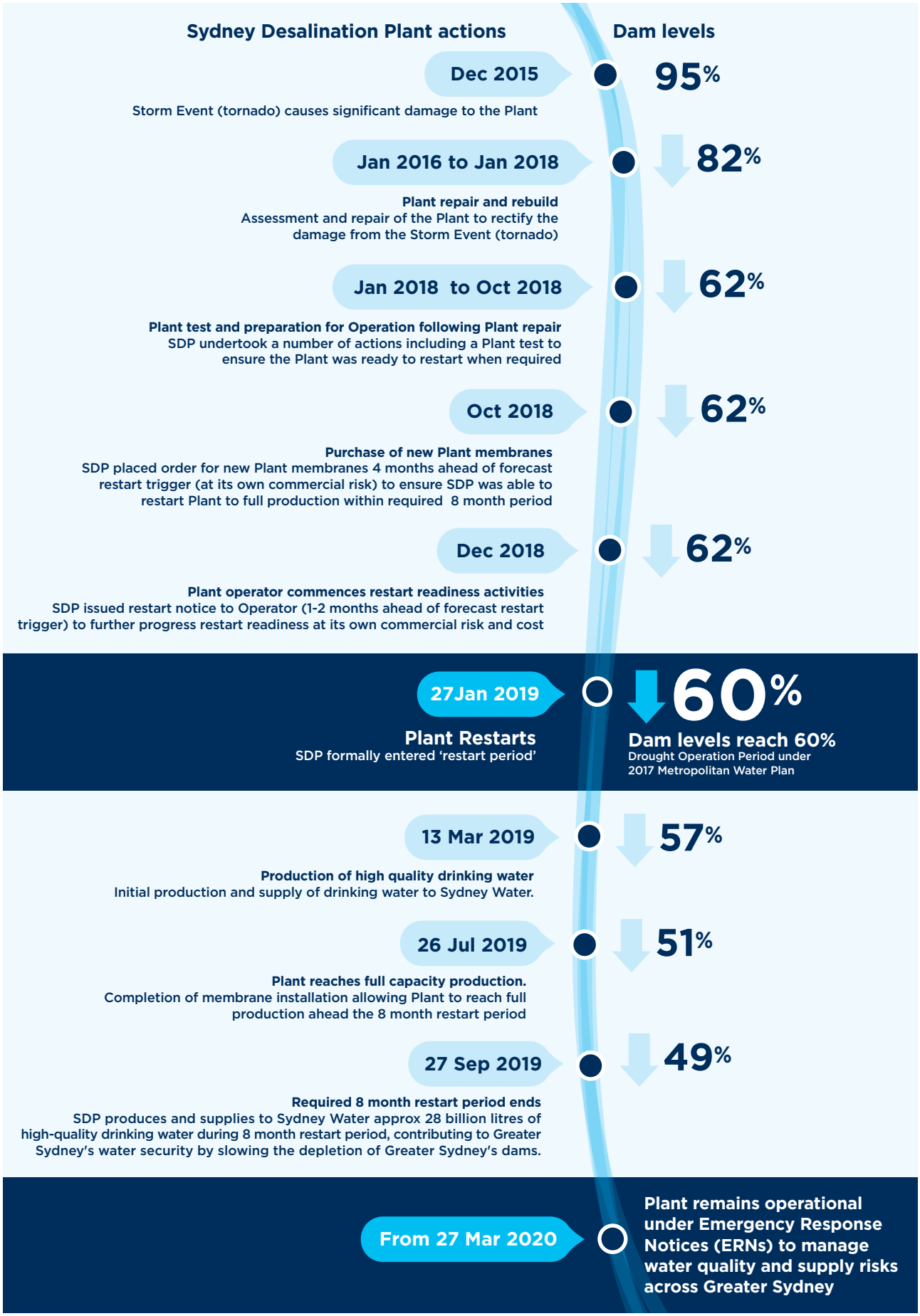
The NSW Government built the Plant (with Sydney Water being the original owner) under a design, build, operate, maintain contract with the Bluewater Joint Venture (John Holland and Veolia Water Australia). Over the same period the treated water pumping station and 17km long pipeline were designed and constructed by the Water Delivery Alliance. The construction took approximately three years from 2007-2010. The Plant and Pipeline construction was triggered by severe drought across the Sydney basin, which saw Sydney's dam levels fall below 34% in 2007 (Refer **Figure 2.2** for a history of the Plant).

In June 2012, the NSW Government leased the Plant for 50 years to SDP. The lease includes the Plant and Pipeline and is supported by a 50-year WSA with Sydney Water enabling SDP to supply drinking water to Sydney Water until 2062, but not beyond that date. SDP is jointly owned by:

- **The Ontario Teachers' Pension Plan Board (Ontario Teachers')**: the manager of Canada's largest single-profession pension plan, with approximately AUD$268 billion in net assets (as at 31 December, 2021). It holds a diverse global portfolio of assets. Ontario Teachers' is an independent organisation headquartered in Toronto. Its Asia-Pacific regional office is in Hong Kong and its Europe, Middle East & Africa regional office is in London, UK. The defined-benefit plan, which is fully funded, invests and administers the pensions of the province of Ontario's 333,000 active and retired teachers.
- **Utilities Trust of Australia (UTA):** an infrastructure fund for institutional investors with a long-term investment horizon and a low-to-moderate appetite for risk. UTA is managed by global infrastructure investment firm, Morrison & Co. UTA has a globally diversified portfolio of quality assets and a track record of delivering strong returns with low volatility over time. UTA was established in 1994 and is one of Australia's first infrastructure investment funds..

SDP's shareholders have significant experience in sourcing, financing, executing and managing complex infrastructure assets around the world. Our vision is that all our stakeholders view the Plant as a reliable and sustainable world-class water asset benefiting the people of Sydney.

Figure 2.2: *History of the Sydney Desalination Plant*



Source: Sydney Desalination Plant

Veolia Water Australia (Veolia) is contracted by SDP for the operation and maintenance of the Plant and Pipeline under a 20-year contract competitively tendered and executed by Sydney Water as an integral part of the Plant design and construct process.

Veolia Water Australia is part of the international Veolia Group with nearly 179,000 employees worldwide across three business activities: water, waste and energy management. Veolia has over 830 employees across Australia and New Zealand and is part of a larger global team made up of some of the most experienced and knowledgeable water experts around the globe. Veolia supports water businesses to increase operational efficiency and improve customer service while delivering value across all stages of the water cycle.

Veolia's role is to:

- Operate and maintain the Plant and Pipeline in accordance with SDP's Network Operator's Licence, the Decision Framework and WSA Good Industry Practice and a detailed Operations Management Plan
- Provide high quality drinking water, and
- Perform services that meet technical requirements specified by SDP.
- Consistent with the planning consent requirements for the Plant, it is powered 100% from renewable energy via the GGRP Contracts. The GGRP Contracts were competitively tendered and executed by Sydney Water Further information on the GGRP Contracts is provided in section 9.6.1 of this submission.

SDP has an efficient structure with a lean, expert management team that oversees the prudent operation and maintenance of the Plant dedicated resources for ongoing finance, asset management, office administration, stakeholder management and regulatory support. Other corporate services are provided under an outsourced model that uses specialist legal, tax, regulatory, operational and other expertise as required.

Figure 2.3: *SDP management team and stakeholders*

Source: Sydney Desalination Plant

2.3 Our services

SDP plays an integral role securing Greater Sydney's water supply. Under its new Network Operator's Licence, SDP will maintain the Plant in a highly available state to provide water supply as and when needed in response to drought, emergency, system shocks and maintenance needs. SDP will also contribute to Sydney's long-term water supply yield in response to population growth and increasing water demand.

Our role in meeting Sydney's water needs is shown in **Figure 2.4.**

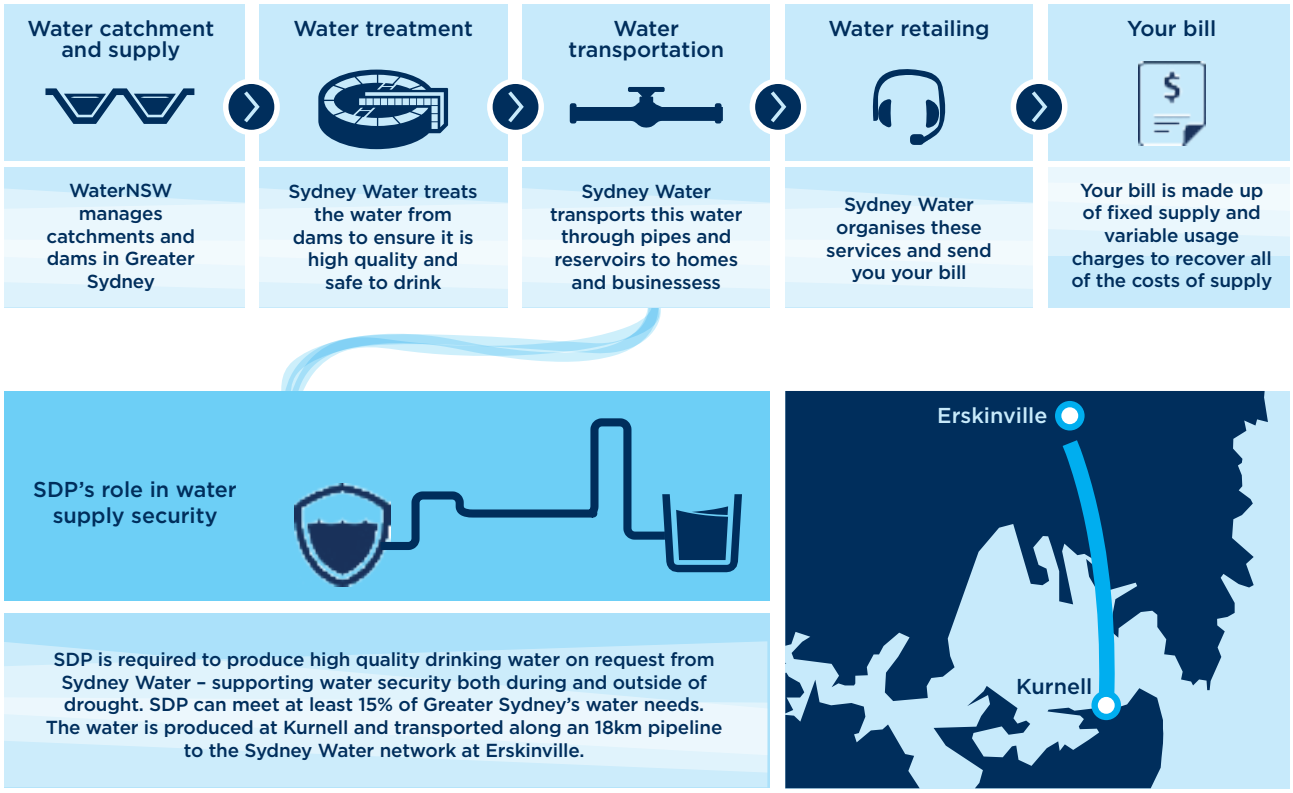
The Plant has historically provided valuable water supply to the community in response to drought, and more recently in response to major water system outages and dam water quality challenges.

Over the 2017-23 regulatory period SDP's role began to change when it started operating in response to events other than drought. SDP has remained operational since 2020 in response to dam water quality challenges caused by bushfires and floods, as well as major system maintenance needs. This experience has highlighted the additional value that SDP can provide into the future and is reflected in SDP's recently revised Network Operator's Licence.

Under SDP's Network Operator's Licence, SDP must comply with Sydney Water's Annual Production Requests within a tolerance limit of +/- 10%, and undertake best endeavours to respond to other Sydney Water production requests, made in accordance with Sydney Water's Decision Framework[31] as endorsed by the Minister for Lands, Water, Hospitality and Racing. This will enable SDP to contribute to increased water supply yield, respond to drought in a more flexible manner by supporting dam storages whilst still minimising the risk of dam spills, responding to water quality emergencies and system shocks as well as providing back-up for, or supplementing system supply due to major system maintenance requirements.

The services SDP delivers will change significantly in the 2023-27 regulatory period under SDP's Network Operator's Licence, which moves away from fixed dam level triggers for the Plant's operation, instead requiring a more flexible ongoing operation at any dam level. These new arrangements are discussed in more detail below and in section 4.

Figure 2.4: *SDP's role in meeting Sydney's water security needs*



Source: Sydney Desalination Plant

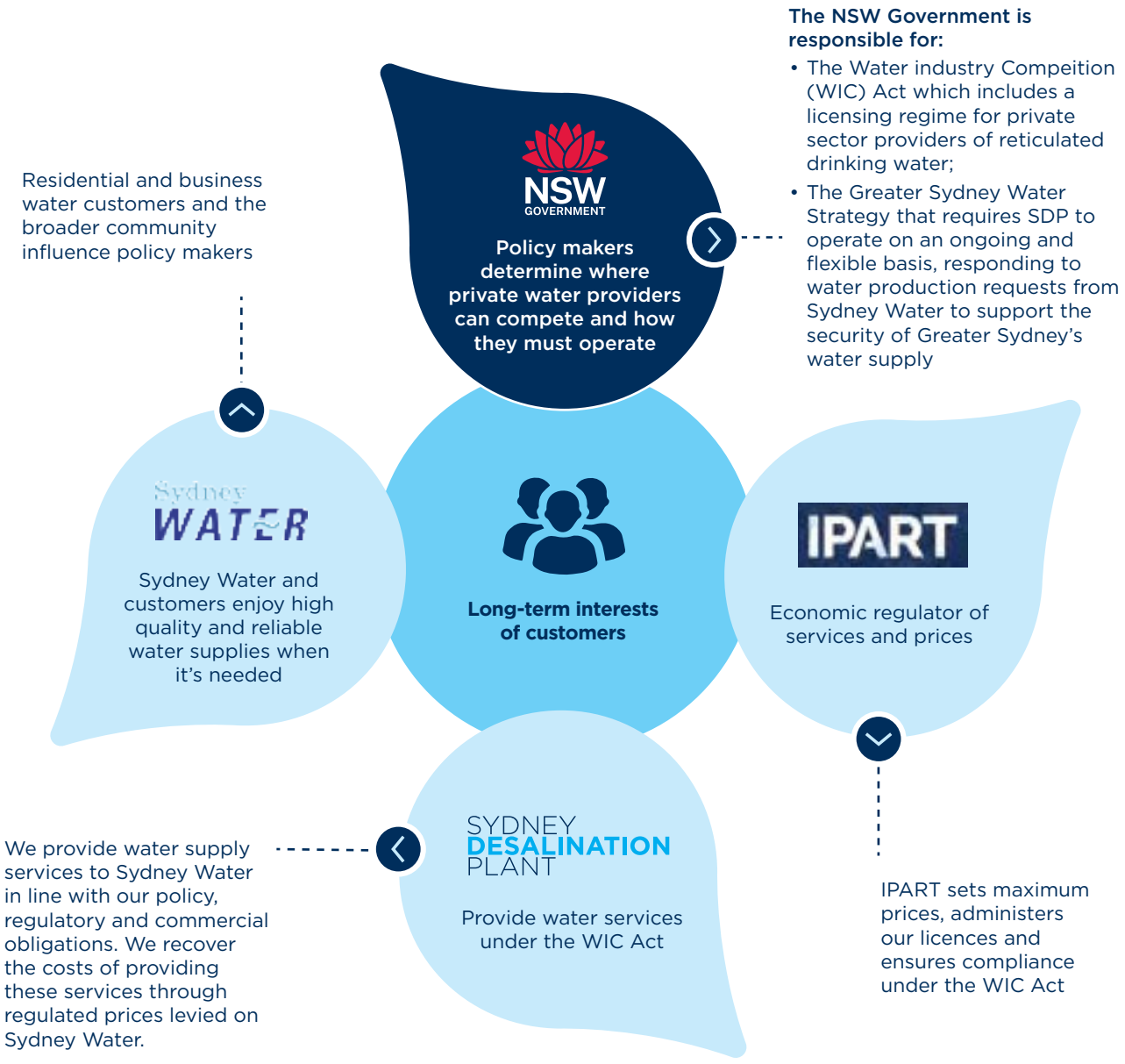
31 Sydney Water, Decision Framework for SDP Operation, June 2022.

2.4 Our regulatory obligations

SDP's activities are governed by a comprehensive regulatory framework (see **Figure 2.5**).

The NSW Government oversees long-term water planning for Greater Sydney to ensure there is sufficient water to meet Sydney's needs, to withstand drought, flood and bushfires and to accommodate population growth (see Box 1).

Figure 2.5: *The framework of independent economic regulation of our services and prices*



Sydney Water, Decision Framework for SDP Operation, June 2022.

Source: Sydney Desalination Plant

Box 1: The need for a resilient water supply system in an environment of uncertainty

- Natural disasters, a growing population and increasing interdependencies between infrastructure systems reinforce the need to improve the resilience of the State's infrastructure to climate change and other system stresses, particularly infrastructure that supports essential community services.
- More severe droughts could bring forward the timing of augmentations required to reliably meet Greater Sydney's water demand, increasing the cost of providing bulk water. At the same time, there is increasing water demand across Greater Sydney, including demand for non-potable water for backyards, open space, sporting fields and other key aspects of our urban form all of which primarily draw from Greater Sydney's dam supplies, placing additional strain on the supply system.
- Climate change has brought with it increasing temperatures which increase the frequency and intensity of extreme weather events such as heatwaves and flooding. This is likely to increase the vulnerability of NSW's infrastructure, including parts of the Sydney Water network, to natural hazard risks. Combined with the age of some assets, damage to one asset may impact on other assets, or increase the need for network 'downtime' during maintenance or upgrades, affecting their capacity to provide services. It is therefore important that governments and communities consider the vulnerability of existing and new infrastructure to these risks.
- Recent events such as bushfires and floods have affected the way our system is being operated and SDP has continued operation of the Plant outside of drought to manage dam water quality challenges as well as support other network maintenance requirements. This experience highlights the additional value that SDP can add through its new role under its SDP's Network Operator's Licence.

The NSW Government's water security planning is a key driver of our operating arrangements, associated expenditure requirements and incentive and risk management mechanisms.

The NSW Government first developed the Metropolitan Water Plan **(MWP)** in 2004 in recognition that drought was taking hold in NSW. It updated this plan in 2006 to identify a role for a desalination plant. The MWP has been periodically updated since 2006. In August 2022, the NSW Government published the GSWS which replaces the MWP. The GSWS charts the long-term vision and direction for delivering sustainable and resilient water services to Greater Sydney, including the Illawarra and the Blue Mountains, for the next 20 years and beyond.

The GSWS provides key priorities, actions and a strategic direction to secure Sydney's water supply for the next 20-40 years. It seeks to address key challenges such as unpredictable climate events which have created uncertainty (e.g. extended droughts and severe floods), and significant forecast population growth.

The GSWS highlights the need for an enduring water supply that will ensure we have enough water even in times of drought and to cater for growth. It outlines:

- an analysis that identifies Sydney's long-term water needs and assesses available capacity
- how the NSW Government intends to optimise and utilise existing water supply options such as desalination
- water efficiency and conservation programs

SDP is regulated under the WICA and holds both a Network Operator's Licence and a Retail Supplier's Licence. Among other things, SDP's Network Operator's Licence requires SDP to operate the Plant and assets in accord with Good Industry Practice and maintain appropriate levels of insurance.

Until recently, SDP's Network Operator's Licence required that during drought we operate and maintain our Plant "with the objective of maximising the production of drinking water for exclusive supply into Sydney Water Corporation's area of operation."[32] This reflected SDP's primary purpose being to provide water supply during drought.

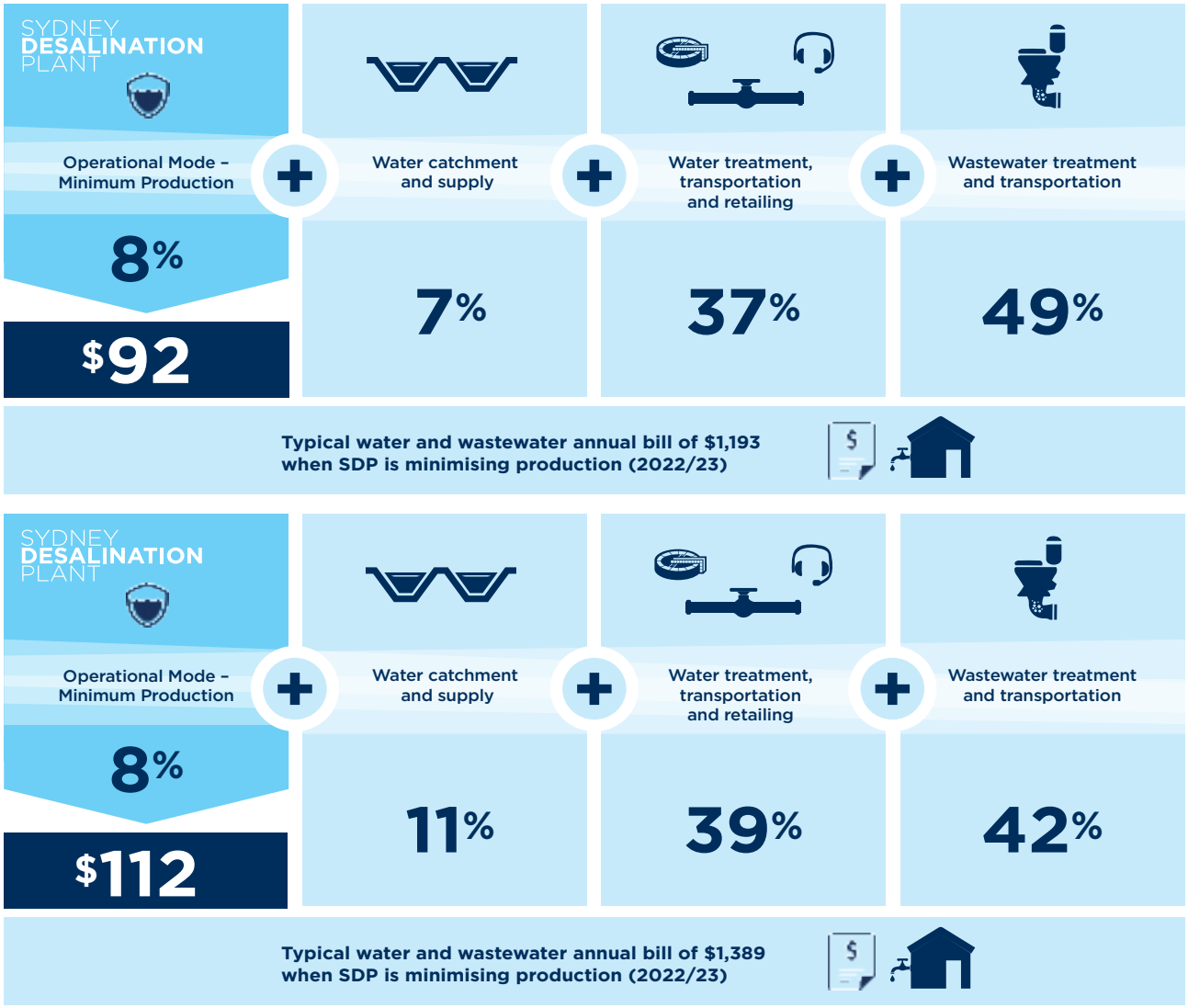
32 New South Wales Government (2017), *Water Industry Competition Act 2006 (NSW) Network Operator's Licence – Sydney Desalination Plant Pty Ltd*.

The changes to SDP's role emerging from the GSWS have led to recent changes to SDP's Network Operator's Licence to include a condition that it must operate and maintain the Plant to meet production requests from Sydney Water. This new operating environment is discussed in Section 0.

Under section 51 of the WICA, the Minister for Finance and Services declared SDP to be a monopoly supplier of water supply services. As such, the prices that SDP is able to charge for its services are regulated by IPART. In this way, the costs we incur in providing water security and supply services are recovered through our regulated prices, which are then passed on to customers by Sydney Water.

Our prices make up 8% of a typical residential customer's water and wastewater bill when in Operational Mode (**Figure 2.6: The contribution of our charges to a typical residential customer's annual water bill**).[33]

Figure 2.6: *The contribution of our charges to a typical residential customer's annual water bill*



Source: Sydney Desalination Plant, based on IPART bill calculator:

Note: Assumes a water and wastewater bill of a typical residential customer (consuming 223kL per year). Totals may not add due to rounding.

IPART's 2017 Determination expires on 30 June 2023 (representing an extension of one year from the regulatory period originally envisaged). IPART is required to set maximum prices for SDP's declared monopoly services to apply from 1 July 2023.

33 Sydney Water incorporates SDP prices — as well as the other costs or providing water services, such as water transportation costs — in the fixed supply and water usage charges it levies on residential and business customers. IPART regulates Sydney Water's prices under the Independent Pricing and Regulatory Tribunal Act 1992 (NSW) (the IPART Act).

This means we must provide a pricing submission to IPART setting out the services we will offer, the costs we expect to incur, and the prices we need to charge to recover our prudent and efficient costs.[34] Our submission also sets out the incentive and risk management framework necessary during the 2023-27 regulatory period to ensure we can effectively deliver the services under SDP's Network Operator's Licence as well as our obligations to Sydney Water under the WSA.

In making determinations IPART is required to have regard to several matters specified under Section 15 of the IPART Act.[35] The regulatory framework applied by IPART to SDP also includes various matters specified in a standing Terms of Reference issued by the Minister. The Terms of Reference were recently adjusted by the Minister for Lands and Water, Hospitality and Racing in respect of price regulation of SDP's monopoly services.[36] The Terms of Reference specify several pricing principles with which each price determination must be consistent — excerpts from the Terms of Reference are provided in Box 2). A full copy of the Terms of Reference and provided in Appendix 1-3.

There are several changes to align the Terms of Reference with the NSW Government vision for delivering sustainable and resilient water services to Greater Sydney including:

- Pricing principle #7A which requires the Determination to consider SDP's ability to recover all costs it incurs in complying with the GGRP and GGRP Contracts other than costs related to surplus energy.
- Pricing principle #8iii which requires the Determination to include a mechanism to allocate the costs or benefits to SDP customers of actual gains and losses beyond a core band that result from the difference between SDP's costs of electricity and RECs under its contracts with Iberdrola Australia and revenues from the sale of surplus electricity and RECs. The mechanism would only operate at times when SDP complied with its requirements to maintain and operate the desalination plant under clause A1 of SDP's Network Operator's Licence.

Among other things, our submission must respond to the Terms of Reference and address the challenges over the 2023-27 regulatory period in a way that best promotes the long-term interests of customers. Later sections of this submission outline our proposals for doing so.

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34 IPART (2020), Guidelines for Water Agency Pricing Submissions, November.

35 Those relevant to SDP's determination include the cost of providing the services required; the protection of customers from abuses of monopoly power; the appropriate rate of return and dividends; the need for greater efficiency in the supply of services; ecologically sustainable development; the impact on borrowing, considerations of demand management and least cost planning; the social impact; and standards of quality, reliability and safety.

36 Terms of Reference for Referral of SDP to IPART under Section 52 of the Water Industry Competition Act, 16 June 2022.

Box 2: Terms of Reference for Referral of SDP to IPART

Prices set by the Independent Pricing and Regulatory Tribunal (IPART) should reflect the water supply services provided by SDP set out below:

a) the supply of non-rainfall dependant drinking water to purchasers (noting the potential range and variation of production required under the Decision Framework) and

b) the making available of the desalination plant to supply non-rainfall dependant drinking water.

Pricing principles specified in the Terms of Reference include:

Maximum prices should be set so that the expected revenue will recover the efficient cost of providing the two types of services over the life of the assets. These costs include operating costs, a return on the assets and return of assets (depreciation).

In calculating the return on invested assets:

- the rate of return (or Weighted Average Cost of Capital) should reflect the commercial risks faced by the asset owner in providing the services.
- IPART should determine an appropriate opening asset value.
  - Return of assets (depreciation) is to reflect the economic lives of the assets.
  - The structure of prices should encourage SDP to be financially indifferent as to whether or not it supplies water. As such, the structure of prices should comprise separate charges for the different water supply services and in particular:
- The charge for water supply services should reflect all efficient costs that vary with output, including variable energy, labour costs, and maintenance costs.
- The charges for the making available of the desalination plant should be a periodic payment and should reflect fixed costs including return on assets, return of assets, and the fixed component of operating costs. SDP is entitled to charge for this service irrespective of levels of water in dam storages servicing Sydney or availability of water from other sources.

IPART should:

- consider SDP's ability to recover all costs it incurs in complying with the GGRP and GGRP Contracts other than costs related to surplus energy.
- include a mechanism to allocate the costs or benefits to SDP customers of actual gains and losses beyond a core band that result from the difference between SDP's costs of electricity and RECs under its contracts with Iberdrola Australia and revenues from the sale of surplus electricity and RECs. The mechanism would only operate at times when SDP complied with its requirements to maintain and operate the desalination plant under clause A1 of SDP's Network Operator's Licence.

Source: Terms of Reference for Referral of SDP to IPART under Section 52 of the Water Industry Competition Act, 16 June 2022.

3. Our operational experience during the 2017-23 regulatory period

Key messages

- The 2017-23 regulatory period presented significant challenges for SDP as we responded to unpredictable and rapidly changing events. Specifically, our operational experience during this period has been defined by two milestone events:
  - **Restarting the Plant:** SDP successfully restarted the Plant in January 2019 when Greater Sydney's dam storages fell below the 60% trigger. From September 2019 to February 2020 SDP maximised water production in response to the drought conditions. SDP significantly outperformed expectations during the restart both in the speed of its first transfer of drinking water and the volume it supplied during the restart period.
  - **Emergency Response:** Since March 2020, the Plant has remained operational as SDP responded to 15 Emergency Response Notices (**ERNs**) issued by Sydney Water following bushfires and subsequent rain events that severely affected the quality of Sydney's raw water supply from Sydney's dams. In responding to these ERNs, SDP has remained focus on maximising the benefit to water customers by meeting Sydney Water's requests in a timely and efficient manner.
- In addition to these milestone events, in response to a request from the NSW Government, SDP developed plans for an expansion of the Plant to double its capacity from 250ML per day to 500ML per day. While expansion plans are on-hold following the rapid recovery of water storages, SDP is now well-placed to deliver timely and efficient expansion should the need arise in future.
- In light of the operational experience gained during the 2017-23 regulatory period, SDP now has a better understanding of the Plant's operational capabilities and the potential for service improvements and efficiencies. We have factored these learnings into our expenditure and service plans for the 2023-27 regulatory period. In addition, we have identified aspects of the regulatory framework that should change to provide more flexibility and improved incentives.

3.1 Overview of key events

At the time of the 2017 Determination, the Plant was in Long Term Shutdown and it was uncertain whether the Plant would operate during the 2017-23 regulatory period. In contrast to this uncertain future, the Plant's actual operational experience was punctuated by two milestone events:

- **Restarting the Plant.** The Plant restarted in January 2019 as Greater Sydney's water storage levels fell below the 60% trigger;
- **Emergency Response.** Sydney Water issued the first of 15 Emergency Response Notices (ERNs) in March 2020, which has meant that the Plant has remained operational since that date.

Figure 3.1 provides a high level summary of the developments that led to these milestone events, commencing with the significant damage to the Plant as a result of a tornado in December 2015.

3.2 Restarting the Plant

On 27 January 2019 Greater Sydney's storage levels fell below 60% trigger, which meant that the Plant entered a restart phase. Restarting the Plant required a major program of works to recommission the Plant from shutdown to full production within an 8-month period. By 27 September 2019 the restart period ended, and the Plant was consistently supplying more than 250ML/ day of high-quality drinking water into the Sydney Water system. SDP was able to maximise the supply of drinking water during the 8-month restart period, producing almost three times the benchmark set by IPART.

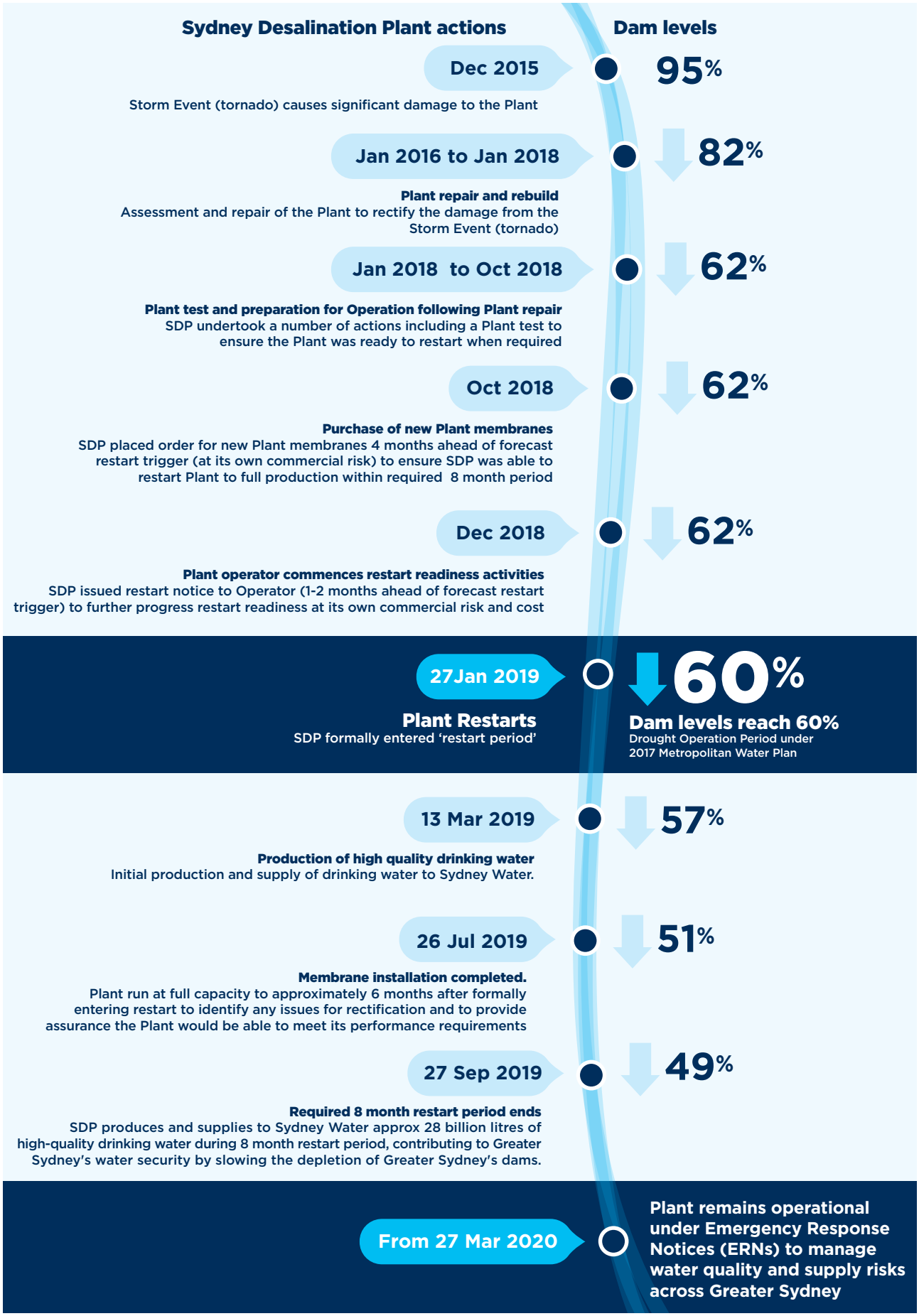
The Restart process and SDP's ability to produce water within the 8-month restart period was materially assisted by the testing and commissioning of the Plant following the Plant's re-instatement and testing after the Storm Event. This process resulted in a significant number of assets being inspected, repaired or replaced, with key staff already mobilised and available to assist with a Plant restart. The restart process was also assisted by calculated risks taken by SDP, including purchasing RO membranes ahead of the restart trigger and maintaining resourcing arrangements from the re-instatement leading up to a restart trigger. We have reviewed these experiences and summarised the lessons they provide in considering how the Plant should be operated and regulated during the 2023-27 regulatory period. .

We have reviewed these experiences and summarised the lessons they provide in considering how the Plant should be operated and regulated during the 2023-27 regulatory period.

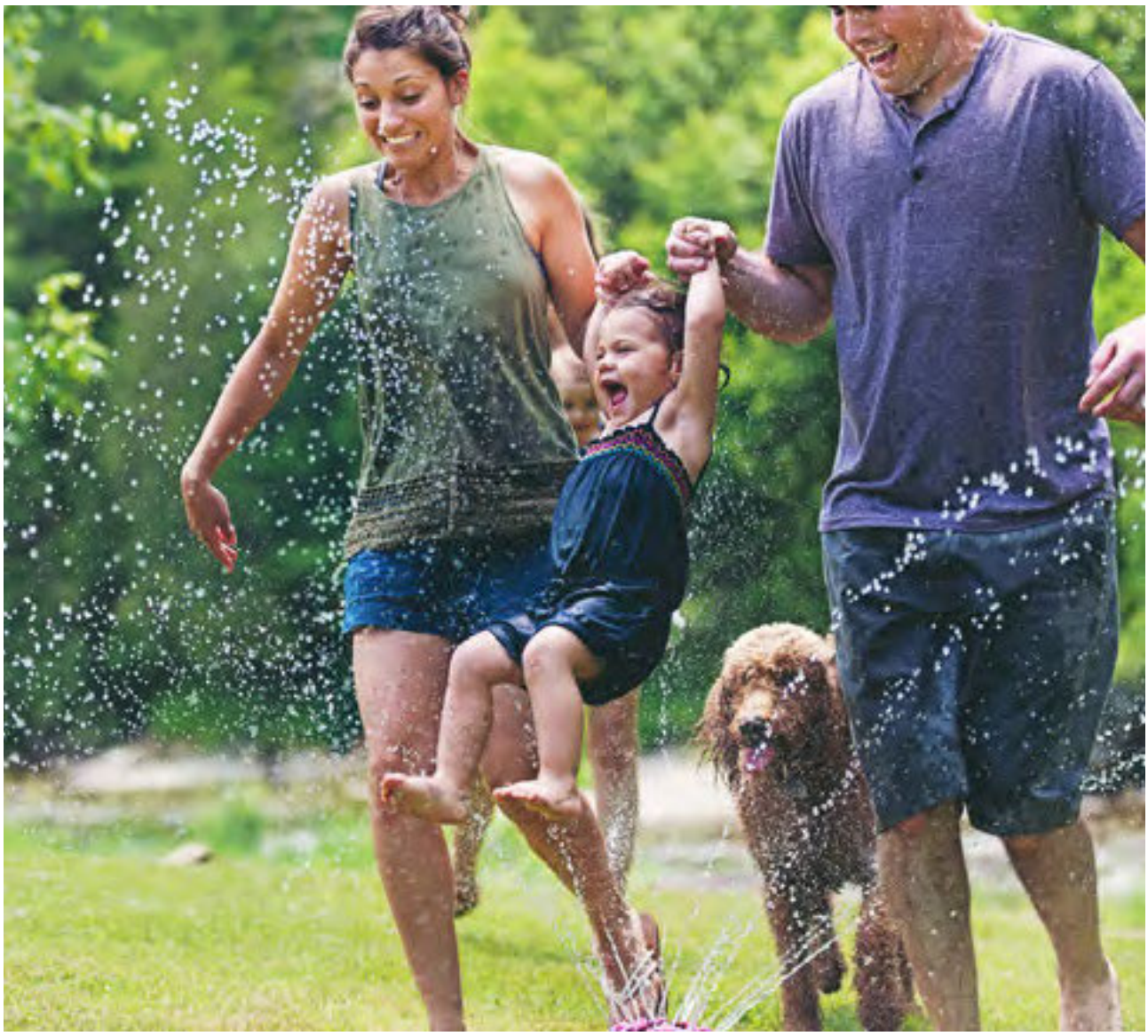
Table 3.1: *Key lessons from the 2019 Plant restart we have incorporated into this submission*

Lesson	Details	Link to this Submission
There are significant costs and operational challenges in restarting the Plant from Long-Term Shutdown.	We were only able to meet the 8-month timeframe in the 2019 restart given the work done as part of the re-instatement of the Plant following the Storm Event and decisions made by SDP ahead of the restart trigger. An 8-month timeframe to restart from Long-Term Shutdown would become more challenging as the Plant ages.	In the unlikely event that the Plant is subject to a shutdown request, we have proposed that any costs incurred in responding to this request be recovered through a process of negotiated agreements with Sydney Water. This allows us to tailor processes and methods to the likely length of the shutdown and operating context upon restart (see section 6.1).
It is difficult to maintain operating expertise or retain staff when the Plant remained in Long-Term Shutdown.	The experience and expertise necessary to run the complex treatment process and maintain our assets is not readily available in the job market and for the most part must be gained on the job. We now have a steady and well experienced team capable of operating the Plant and responding to varying production requests.	We have proposed that our operational resources are retained regardless of the production capacity of the Plant, to ensure we are able to respond to varying production requests. We have also proposed a moderate increase in FTEs to provide a higher focus on safety and compliance and to manage increased operational and maintenance tasks, including allowance for fatigue management (see section 9.5)
There are signficiant costs and operational challenges in restarting the Plant from Long-Term Shutdown.	We were only able to meet the 8-month timeframe in the 2019 restart given the work done as part of the re-instatement of the Plant following the Storm Event and decisions made by SDP ahead of the restart trigger. An 8-month timeframe to restart from Long-Term Shutdown would become more challenging as the Plant ages.	In the unlikely event that the Plant is subject to a shutdown request, we have proposed that any costs incurred in responding to this request be recovered through a process of negotiated agreements with Sydney Water. This allows us to tailor processes and methods to the likely length of the shutdown and operating context upon restart (see section 6.1)

Figure 3.1: *An overview of the Plant's recent operational history*



Source: Sydney Desalination Plant



3.3 Sydney Water's Emergency Response Notices

Following substantial rainfall in early 2020, Sydney dam levels recovered sufficiently to meet the 70% shutdown trigger within the 14-month minimum run time of the Plant (expiring 27 March 2020). On 27 March 2020, however, Sydney Water issued an ERN requesting SDP remain operational until September 2020. The ERN was issued to mitigate water supply and public health risks resulting from the substantial rainfall event in February 2020 and the resultant runoff into Sydney's dams. The Plant has remained operational since 27 March 2020 responding to 15 separate ERNs up to August 2022.

The 2017 Determination did not anticipate that the Plant would need to respond to a large number of ERNs, typically with very limited notice (generally one to five days) and a lengthy duration (generally six months). Specifically, operating in this way involves additional costs beyond those recovered through the regulated charges levied in operational periods.[37] To ensure SDP had an opportunity to 'recover reasonable costs' and remain financially indifferent, Sydney Water and SDP negotiated a separate agreement that addressed the most material of these additional costs. SDP had to seek assurance from IPART that it would accept these negotiated agreements, even though they were not contemplated by the 2017 Determination.

Figure 3.2 below provides details of the 15 ERNs and key learnings are summarised in **Table 3.2**.

37 For example, there is surplus energy when in partial production. If the Plant had been shut down gains and losses associated with surplus energy would be managed through the Energy Adjustment Mechanism. However, the 2017 Determination does not apply the Energy Adjustment Mechanism for periods of partial supply, as IPART noted this would not be consistent with the Terms of Reference which state that the EAM applies when the Plant is in a shutdown or grace period. Absent a negotiated agreement, SDP would not have had the opportunity to share any gains and losses on surplus energy with customers.

Figure 3.2: *Timeline and scope of Emergency Response Notices*

Emergency Response Notice from Sydney Water	Date	Water production request (daily average)	Key driver
1	Mar 20	50 ML/day	To assist Sydney Water manage water quality challenges resulting from substantial rainfall event in February 2020
2	Sep 20	50 ML/day	To assist Sydney Water manage water quality challenges resulting from substantial rainfall event in February 2020
3	Mar 21	100-250 ML/day	To assist Sydney Water manage water quality challenges resulting from substantial rainfall event in March 2021
4	Mar 21	50 ML/day	To assist Sydney Water manage water quality challenges resulting from substantial rainfall event in March 2021
5	May 21	50 ML/day	To assist Sydney Water manage network maintenance
6	Nov 21	50 ML/day	To assist Sydney Water manage network maintenance
7	Mar 22	75-250 ML/day	To assist Sydney Water manage water quality challenges resulting from substantial rainfall event in March 2022
8	Mar 22	50 ML/day	To assist Sydney Water manage water quality challenges resulting from substantial rainfall event in March 2022
9	Apr 22	100 ML/day	To assist Sydney Water manage loss of power at a treatment plant
10	Apr 22	50 ML/day	To assist Sydney Water manage network maintenance
11	May 22	60-125 ML/day	To assist Sydney Water manage network performance
12	May 22	50 ML/day	To assist Sydney Water manage network maintenance
13	Jun 22	125 ML/day	To assist Sydney Water manage water quality challenges resulting from substantial rainfall event in June 2022
14	Jul 22	150 - 250 ML / day	To assist Sydney Water manage water quality challenges resulting from substantial rainfall event in June 2022
15	Aug 22	250 ML/day	To assist Sydney Water manage water quality challenges resulting from substantial rainfall event in June 2022

Table 3.2 details the key lessons from operating in response to these ERNs for our expenditure and service plans and the regulatory framework for the 2023-27 regulatory period.

Table 3.2: *Key lessons from operating in Emergency Response*

Lesson	Details	Link to this Submission
• Being available to respond and produce water provides significant benefits to manage emergencies or supply interruptions other than drought.	• Sydney Water requested SDP to continue operating through 15 separate ERNs to assist it in managing water quality issues following the bushfires, floods and the onset of the Covid-19 pandemic. • SDP supply has been critical to Sydney Water in managing these challenges efficiently.	• This value has been acknowledged and reflected in SDP's Network Operator's Licence. • We are proposing an expenditure allowance which reflects the efficient cost of maintaining the Plant in a state where it can readily respond to an emergency response request by Sydney Water (see section 9.5)
• Recent experience has illustrated the need to respond quickly to changes in production requests. While operational challenges and costs arise from these requests, the Plant can provide significant value to Sydney Water and water customers if output can be varied at short notice.	• We have identified improvements to our processes that aim to overcome challenges we met during ERN periods where we have been asked to vary our production at short notice.	• We have proposed prudent and efficient expenditure to invest in, and maintain assets to allow timely increase in production (see section 9.3.1)
• A more agile and responsive regulatory framework is required which better aligns SDP's interests with those of Sydney Water and customers	• The 2017 Determination did not allow sharing of gains and losses on surplus energy in operation mode. As an interim measure, Sydney Water agreed to reimburse SDP as if the EAM had applied.	• The amended Terms of Reference provides for the EAM to apply to all surplus energy. We have proposed amending the sharing ratio under the EAM between SDP and customers to reflect SDP's limited control over any gains or losses from the sale of surplus energy (see section 7.3)
• Flexibility in production scheduling would provide scope for SDP to operate more efficiently, noting that Sydney Water values plant availability and flexibility in ramping up production when required.	• The 2017 Determination set specific requirements for daily water production during an ERN, with no flexibility for SDP to average its production over the duration of an ERN.	• SDP's new Network Operator's Licence moves away from fixed dam levels triggering SDP operation, instead allowing flexibility for SDP to operate as and when required at any dam level. • Our proposed SLIS would provide more appropriate incentives for SDP to meet more appropriate performance standards (see section 7.1).

3.4 Planning for a potential Plant expansion

In August 2019 Greater Sydney's storage levels fell to the lowest level in 12 years. As a result, the NSW Government formally requested SDP to commence planning for an expansion of the Plant to double the capacity of the Plant from 250ML per day to 500ML per day. SDP prepared and submitted preliminary plans to the NSW Government, which were approved and we then commenced detailed planning. SDP commenced a competitive tender process for the design and construction and operations and maintenance of the expanded Plant. The expansion plans were put on hold in May 2020, following significant rainfall and while the Greater Sydney Water Strategy was being developed.

As part of the expansion planning, the NSW Government, IPART and SDP engaged on the appropriate means to adjust our prices (through an amendment to the 2017 Determination), or set new prices (through a new stand-alone expansion Determination), to provide an opportunity to recover the efficient costs of expanding capacity of the Plant. In our view, this engagement process highlighted the need for better clarity about the process, timetable and key decision-making principles for adjusting or setting these prices — particularly as the 2017 Determination did not include a mechanism to manage this event.

It also highlighted that any timetable for adjusting or setting these prices needs to be compatible with the NSW Government's required process and timing for expansion of the Plant and SDP's required financing and procurement obligations. Clarity around the timetable, process and principles can also enhance regulatory certainty and process, which is important given the other significant demands on parties during an expansion process.

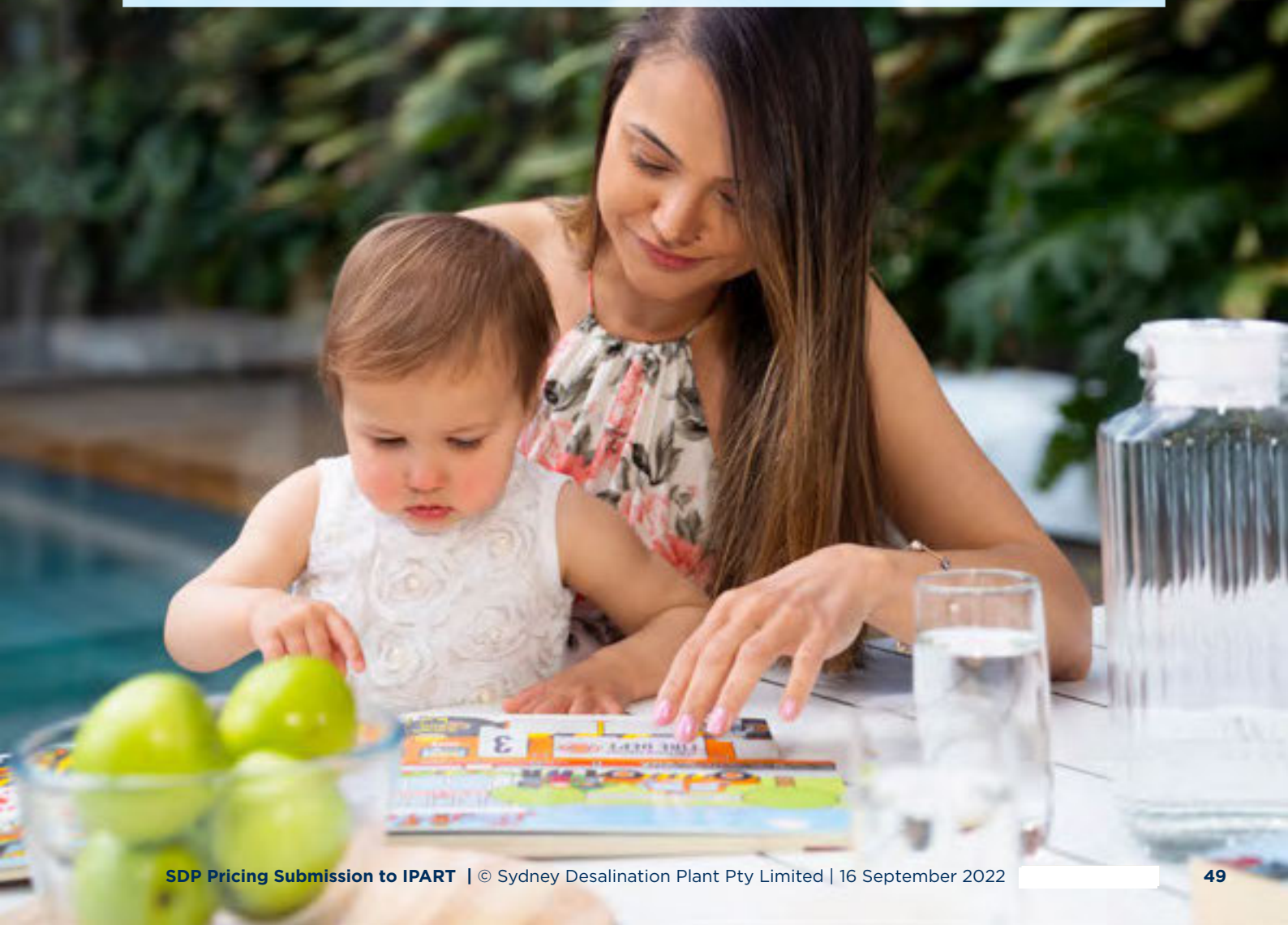
SDP has proposed a set of principles to guide any future expansion Determination to ensure it reflects learnings from the recent experience, is consistent with 'good regulatory practice' principles and has a clear timetable compatible with other elements of the expansion planning process. Our proposed principles are discussed in section 7.3.

4. Meeting the future needs of our customers

Key messages

- Our Network Operator's Licence has been amended to reflect the **GSWS**, which sets out the NSW Government's strategic vision and priorities for water security in Greater Sydney. These new arrangements recognise the enhanced value the Plant can provide by changing its operational role from periodic 'drought response' to flexible full-time operation.[38]
- These changes have significant implications for us, our stakeholders and for our customers over the 2023-27 regulatory period. We have engaged closely with the NSW Government, Sydney Water and other stakeholders to discuss these changes and understand their priorities and preferences for our services for the 2023-27 regulatory period.
- SDP's engagement included a series of workshops with Sydney Water to examine a range of issues, such as the design of the Service Level Incentive Scheme. We also commissioned StollzNow Research to host eight focus groups in the Sydney metropolitan area to obtain input from water customers.
- Our submission — including proposed service levels, efficient costs, prices and the incentive and risk framework — are informed by our new operating environment; the views of our stakeholders and customers; and the unique features of our business.

38 Sydney Water, Decision Framework for SDP Operation, June 2022, p4.



This section explains our understanding of the operating environment over the 2023-27 regulatory period, including our stakeholders' and customers' needs and summarises how this has been reflected in our submission.

4.1 The Plant's new role under the GSWS

The GSWS identifies that without action, Sydney is facing a gap between potable water demand and sustainable supply (supply 'yield') of between 40GL per year to 70GL per year in the short term under a moderate growth scenario, creating an increasing risk of supply shortages in the context of increasing climate variability.[39] It recommends that, in addition to water conservation and utilising the Plant, investment is required in additional water supply in the next 5-10 years.[40]

As part of a range of short-term responses, the GSWS proposes:

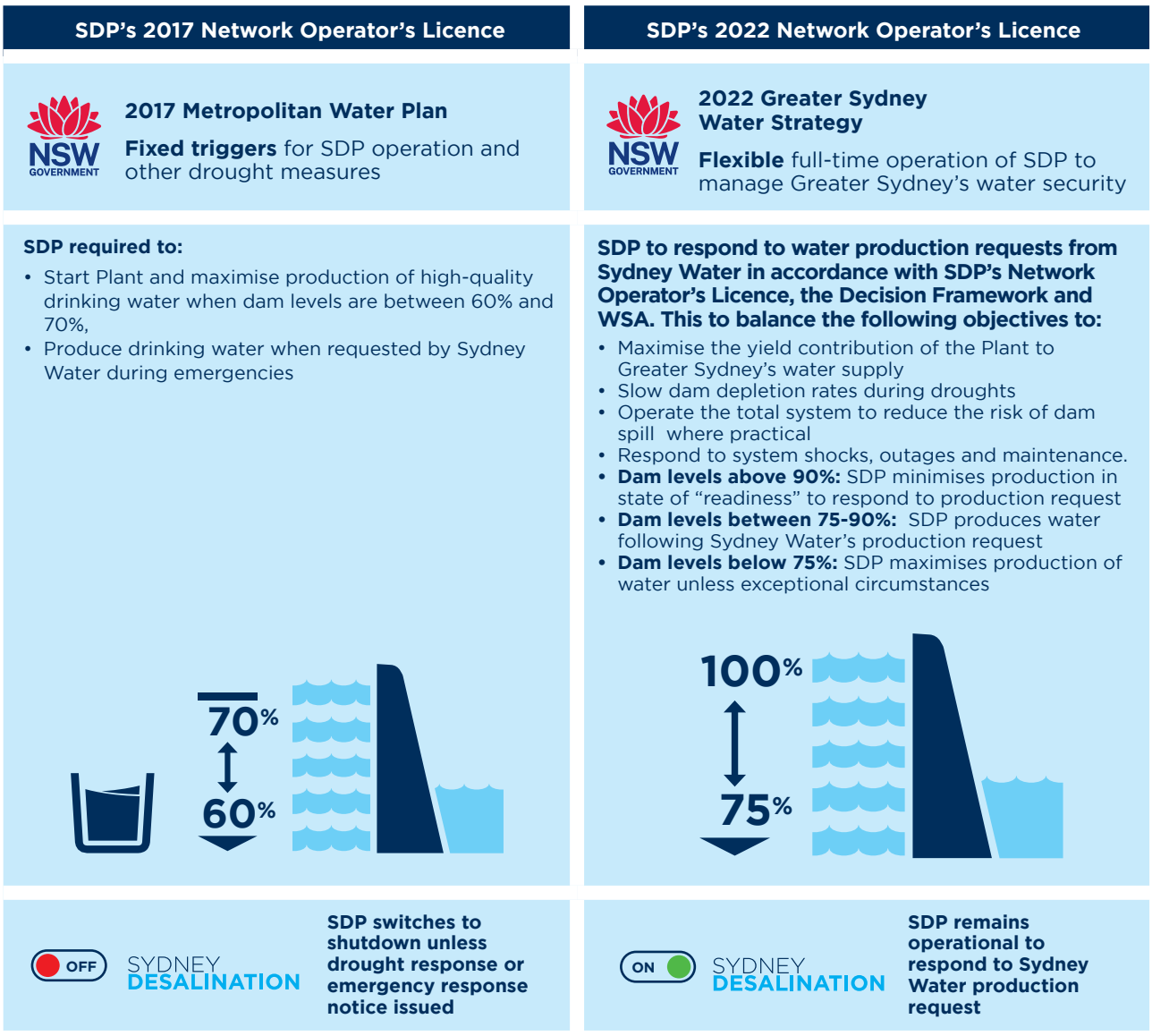
> *changing the approach to operation of the Sydney Desalination Plant, so we can produce an additional 20GL per year immediately which would result in higher storage levels at the start of a drought and slow the rate of dam depletion during a drought.*[41]

The Operating Rules recognise the enhanced value the Plant can provide from remaining operational to provide flexibility or optionality for Sydney Water in meeting the objectives in the GSWS by changing the operation of the Plant from 'drought response' to flexible full-time operation.

One of the key directions identified in the GSWS is to increase the utilisation of the Plant by changing its operation from "drought response to flexible full-time operation"[42] to provide flexibility or optionality for Sydney Water in meeting the objectives in the GSWS (as summarised in **Figure 4.1**). In line with this, SDP's new Network Operator's Licence moves away from fixed dam level triggers for Plant operation, requiring the Plant to remain operational and responsive to water production requests from Sydney Water (as summarised in **Figure 4.1: The Plant's new role supporting Greater Sydney's water security**).

39 NSW Department of Planning, Industry and Environment, Greater Sydney Water Strategy, August 2022, p7.
40 NSW Department of Planning, Industry and Environment, Greater Sydney Water Strategy, August 2022, p7.
41 NSW Department of Planning, Industry and Environment, Greater Sydney Water Strategy, August 2022, p13.
42 Sydney Water, Decision Framework for SDP Operation, June 2022, p4.

Figure 4.1: *The Plant's new role supporting Greater Sydney's water security*



Source: Sydney Desalination Plant

The Minister for Lands and Water, Hospitality and Racing is considering IPART's recommended amendments to SDP's Network Operator's Licence, and has approved Sydney Water's 'Decision Framework' for SDP production requests, and amendments to the Terms of Reference to ensure there is alignment between the policy intent of the GSWS, the expectations of Sydney Water, SDP and IPART in their respective roles;

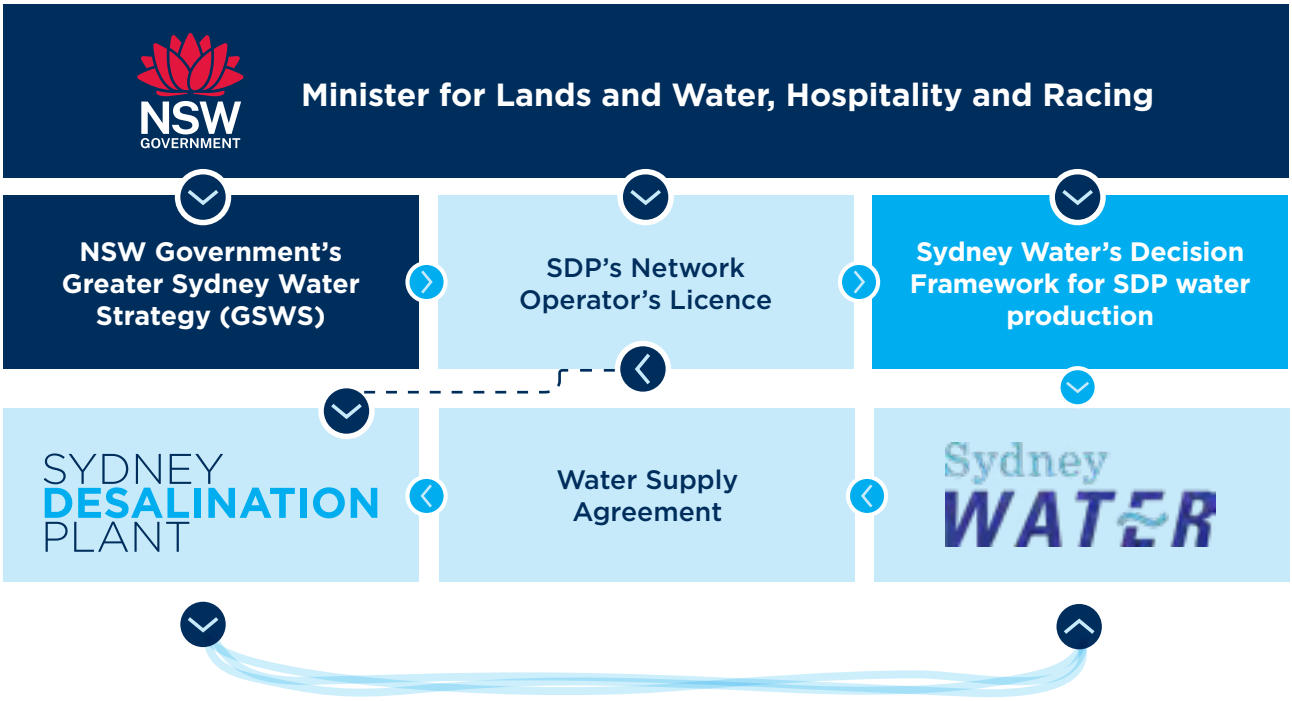
- Sydney Water utilises the endorsed Decision Framework to make water supply requests to SDP in response to changing conditions through the WSA for a defined volume of water for a defined period. The primary focus is on issuing an **Annual Production Request** (APR)[43] for supply for each financial year from 1 July (with requests notified to SDP by 1 May);
- The WSA between SDP and Sydney Water provides further guidance on the detailed operating protocols between the two parties and other risk and dispute resolution mechanisms;[44]
- SDP responds to 'production requests' in accordance with SDP's Network Operator's Licence, the Decision Framework and WSA. The defined levels of service are designed to balance the NSW Government's evolving expectations for Greater Sydney's water supply security, the design and operating parameters of the Plant and the cost of providing these services.

43 SDP Network Operator's Licence, Schedule A, Clause 1.2.

44 SDP and Sydney Water are currently negotiating amendments to the WSA to reflect the Operating Rules (New) and full-time flexible operation

The new operating environment is summarised in **Figure 4.2: SDP's operating environment under its Network Operator's Licence** and discussed further below.

Figure 4.2: *SDP's operating environment under its Network Operator's Licence*



Source: Sydney Desalination Plant

4.1.1. SDP's Network Operator's Licence

The Minister for Lands and Water, Hospitality and Racing has approved amendments to SDP's Network Operator's Licence and the Terms of Reference to ensure there is alignment between the policy intent of the GSWS, as well as Sydney Water and IPART's expectations of SDP in responding to production requests. This is to provide transparency and certainty to enable:

- SDP to respond to production requests from Sydney Water in a way that is consistent with its obligations under SDP's Network Operator's Licence;
- IPART to set prices that reflect the efficient costs of providing the water supply and security services, and in monitoring performance and compliance.
- IPART to oversee SDP's performance as part of monitoring compliance with the SDP's Network Operator's Licence.

Under SDP's Network Operator's Licence SDP must respond to two types of production requests:

- An **Annual Production Request** (APR)[45] for supply for each financial year from 1 July (notification by 1 May), under which Sydney Water can request up to a maximum of 91.25GL per year (in line with average Plant capacity of 250ML per day). SDP must comply with this request, issued in accordance with SDP's Network Operator's Licence, the Decision Framework and WSA, inclusive of a +/-10% 'tolerance' band. Sydney Water can issue a change to the APR that is aligned to the Decision Framework and WSA each year. Requests for monthly and weekly phasing may also be made to manage how and when water is delivered to meet the APR.

45 SDP Network Operator's Licence, Schedule A, Clause 1.2.

- **Any other request** made by Sydney Water in accordance with SDP's Network Operator's Licence, the Decision Framework and WSA.[46] SDP must use its best endeavours to comply with this request, which could include:
  - An emergency response request to produce a specified agreed volume of water in an agreed timeframe (likely at short notice) in accordance with SDP's Network Operator's Licence, the Decision Framework and WSA;
  - A demonstration of capacity (or ramp-up 'tests') requested by Sydney Water, such that the total requested volumes under the APR and any other request do not exceed 91.25GL per year or 250ML per day.

4.1.2. Sydney Water's water production requests to SDP under the Decision Framework

The Decision Framework adopts a principle-based approach aimed at enhancing Greater Sydney's water security resilience through "flexible full-time operation"[47] of the Plant with production to be adaptive to changing circumstances and needs across Sydney Water's network.

Sydney Water, supported by DPE, developed this Decision Framework, to:

> *provide a clear and transparent framework for Sydney Water to make production requests to Sydney Desalination Plant Pty Limited (SDP) that will satisfy the objectives of the GSWS, reflect the new operating rules, and deliver value for customers.*[48]

That is, Sydney Water has responsibility for balancing the objectives under the GSWS and "operationalising the SDP new operating rule in the GSWS"[49] by determining and issuing production requests to SDP.

Under the Decision Framework, the primary focus of water production requests are:

- **Sustaining water security, when storage levels are less than 75%:** When total storage is at 75% and below, Sydney Water is expected to issue an APR set to 91.25GL per year to slow the depletion of dam storage levels, with limited exceptions to reduce production to manage critical unplanned maintenance or outages at SDP and within Sydney Water's network. SDP is expected to meet, and where possible to beat, this request by maximising water production over the financial year.
- **Maintaining flexible operations when storage levels are between 75% and 90%:** When total storage is between 75% and 90%, modelling suggests production of 125 ML per day from the Plant is optimal. This could involve an APR between 40GL – 60GL per year and SDP is expected to reliably meet these requests and avoid significant over- or under-production over the financial year. However, between these storage levels, there is flexibility to vary (increase or decrease) monthly or 7-day production phasing from the Plant due to considerations such as:
  - an increase in drought risk based on the three month weather outlook published by the Bureau of Meteorology (**BOM)**, or Drought Indicator from the Greater Sydney Drought Response Plan;
  - an increase in dam spill risk from the latest three month BOM weather outlook (e.g., La Nina) or 7-day rainfall forecast (e.g., an East Coast Low);
  - significant changes to the planned maintenance schedule from SDP and Sydney Water;
  - response to emergencies; and
  - the availability of other alternative non rainfall dependent sources.[50]
- **Minimising spills when storage levels are greater than 90%:** When total storage is above 90% the Plant will be in the state of readiness to quickly respond to production requests such as assisting to manage short-term emergencies such as raw water quality risks. The minimum 'baseline' APR of 23 GL per year is required over the financial year to maintain a state of readiness to respond to emergency requests (including any demonstration of capacity or ramp-up 'tests'), in line with the defined level of service.

46 SDP Network Operator's Licence, Schedule A, Clause 1.3.
47 Sydney Water, Decision Framework for SDP Operation, June 2022, p4.
48 Sydney Water, Decision Framework for SDP Operation, June 2022, p4.
49 Sydney Water, Decision Framework for SDP Operation, June 2022, p7.
50 Sydney Water, Decision Framework for SDP Operation, June 2022, p14.

4.1.3. SDP responds to production requests from Sydney Water in line with defined level of service

In addition to SDP meeting obligations under its Network Operator's Licence and WSA, we have defined a level of service to be provided in response to the range of production requests issued by Sydney Water in accordance with SDP's Network Operator's Licence, the Decision Framework and WSA. This is because the level of service is a key element in establishing the efficient cost of providing services and the prices required to recover these costs. These levels of service can include a range of performance attributes such as:

- the timeframe (including the notice period) for SDP 'ramp up' to respond to Sydney Water's production requests.
- the reliability of daily production relative to requested average production levels implied by the APR over the financial year.
- All else being equal, the higher the level of service (for example defined in the context of reaching and maintaining the average requested production level more quickly) the higher the costs of providing this service and prices required to recover these costs.

SDP engaged extensively with Sydney Water to develop levels of service that meet both the NSW Government's objectives for Greater Sydney's water supply security and the more specific needs of our customer. During our consultation, Sydney Water expressed a need to:

- request the Plant to quickly increase production to 'available capacity' (250ML per day less any reduction in capacity due to maintenance or capital works as notified to Sydney Water prior to a request), as soon as possible within the capabilities of the Plant and as agreed with Sydney Water).
- request planned periods of specific volumes of production (capped to available capacity).
- to make an annual order, and, if possible, to vary that order (up or down) due to changes in dam storages or weather outlook (capped to available capacity).

The level of service needed to balance our stakeholders' needs with the design and operating capabilities of the Plant (including learnings from the operating experience of other desalination plants[51]) and the cost of providing these water supply services over the 2023-27 regulatory period. For instance, the Plant was designed to provide a maximum of 250ML per day *on average over a 365-day period* to respond to drought, with a relatively long notice or Restart period (e.g., 8-months from a Long-term Shutdown to full production). However, rapidly 'ramping up' from low daily production levels – which could occur if the APR is set at the minimum or 'baseload' APR of 23GL per year – towards higher production levels can take time and is subject to many uncertainties some of which are outside of SDP's control even when operating and maintaining the Plant in line with Good Industry Practice.

As part of evaluating varying levels of service that could reasonably be expected from the Plant we commissioned technical advice from Ontoit, engineering experts in desalination and asset management, to recommend an 'operating envelope' of reasonable service levels that reflect the technical capabilities of the Plant and the potential risks that might impact performance from foreseen and unforeseen events. Key parameters of this advice were that the Plant continues to be operated in line with Good Industry Practice, including consideration of its original design parameters and recent performance. This report is provided in Appendix 4-1 and case studies regarding uncertainties in Plant performance over short timeframes are provided in Appendix 7-1 on the proposed SLIS.

Key points to note include:

- Shorter notice periods and response timeframes involve greater performance uncertainty than longer notice periods and response timeframes (e.g., 6-12 months) where day-to-day production is less important than average volumes over a longer term. This is acknowledged in the Decision Framework which notes that APRs will be "averaged over the longest period possible to give the greatest operational flexibility to both Sydney Water and SDP"[52] and provides incentives for Sydney Water to maximise the notice period where possible.

51 Very few desalination plants in Australia or overseas operate in this sort of dynamic production environment, with those that do operating on a 'best endeavours' basis.

52 Sydney Water, Decision Framework for SDP Operation, June 2022, p11.

- For the Plant to be able to respond to production requests in line with the expected level of service it should remain operational in a state of readiness producing a minimum baseload volume, estimated to be 23GL per year[53] Higher (or lower) level of service that involve faster and more reliable production responses, involve higher (or lower) minimum production levels at higher (or lower) risks of dams spilling, at higher (or lower) costs to customers. That is, there is a direct trade-off between service levels and the costs of supply and price impacts on customers.
- The level of service is summarised in **Figure 4.3: Defined level of service for the 2023-27 regulatory period** below.

Figure 4.3: *Defined level of service for the 2023-27 regulatory period*

Sydney Water production requests	Notice period to respond to production request	Volume of water requested	Duration of water supply
Annual Production Request (APR) • Monthly phasing of production • Weekly phasing of production	Notification by 1 May each year	From 23 GL to 91.25 GL/pa	12 months, supply from 1 July to 30 June
Other Production requests including: • Emergency response request Any demonstration of capacity	Notification and response by agreement — timing and volume	Up to 250 ML/day, additional to the APR Note: the total requested volumes under the APR and any other request do not exceed 91.25 GL p.a. or 250ML/day.	For emergency — as agreed likely to be short-term

Source: Sydney Desalination Plant

53 This includes the opportunity to respond to short ramp-ups, full production over the financial year and to prepare for and demonstrate the ability to respond to production requests from Sydney Water as part of a capacity test.

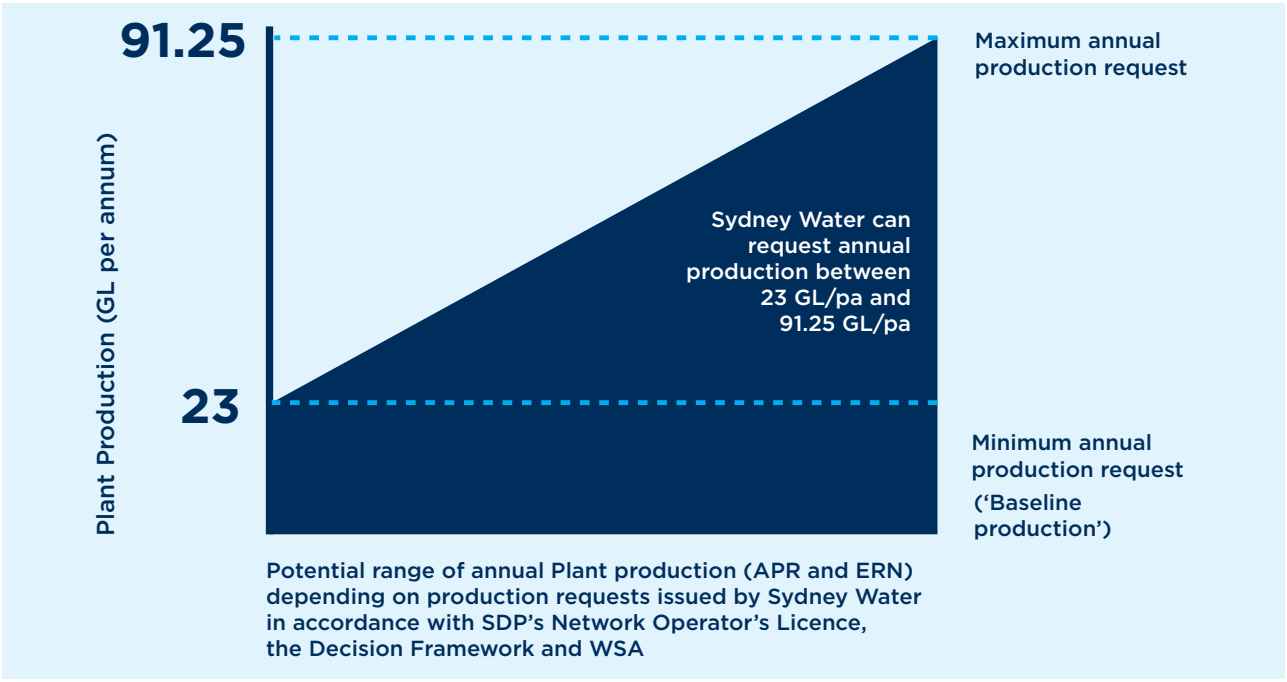
4.1.4. Implications of SDP's Operating Rules and the defined level of service

A key implication of the Operating Rules and defined level of service is that the Plant will remain operational with Sydney Water to request a:

- Minimum APR of 23GL per year (scheduled at SDP discretion through consultation with Sydney Water including 'ramp-up' tests) and;
- Maximum APR of 91.25GL per year in line with the design parameters of the Plant (equivalent to average production level of 250ML per day). SDP is expected to meet, and where possible to beat, this request by maximising water production over the financial year.

Annual production from the Plant could range anywhere between this minimum and maximum (see **Figure 4.4: Minimum and maximum annual production of the Plant in Operational Mode**), depending on production requests from Sydney Water or reductions in capacity due to communicated maintenance or events beyond SDP's control.

Figure 4.4: *Minimum and maximum annual production of the Plant in Operational Mode*



Source: Sydney Desalination Plant

The Operating Rules and defined level of service also have implications for our forecast expenditure and proposed incentive and risk management arrangements for the 2023-27 regulatory period, including:

- **EAM** – under the Terms of Reference the EAM will no longer apply during shutdown or restart periods only but will apply at all times when there is surplus energy (see section 7)
- **Service Level Incentive Scheme** – our defined level of service also inform our proposed 'Service Level Incentive Scheme' (SLIS) that amends the existing abatement mechanism to provide a more targeted, proportionate and symmetric scheme to provide financial incentives to reliably meet or outperform APRs where this is of value to customers, and mirror incentives for service and cost efficiency underperformance and outperformance as per IPART's Draft Water Regulatory Framework (see section 7)
- **Operating expenditure** – we need to change the way we currently operate the Plant to keep it highly available, and this will increase the amount we need to spend on operating, maintenance and corporate costs to ensure we meet the defined level of service (see section 9)
- **Capital expenditure** – as the Plant is expected to operate continuously, we are proposing capital expenditure for an ongoing membrane replacement program and periodic maintenance consistent with global best industry practice to provide reliability in

performance of assets over their design lives, to ensure we can continue to produce high quality drinking water and minimise our energy costs (see section 10).

4.2 Our stakeholder engagement

4.2.1. Our stakeholder engagement process

IPART has recently clarified that its overarching objective in water pricing reviews is to promote the long-term interests of customers, with an increasing focus on utilities applying a customer focus.

Our vision for the 2023-27 regulatory period is to deliver additional customer value from the Plant by changing the way we operate to meet the growing challenges of water security and resilience in the most efficient way possible. We have engaged extensively with Sydney Water to operationalise the level of service envisaged under our new Network Operator's Licence to meet both the NSW Government's objectives for Greater Sydney's water supply security and the needs of Sydney Water. This included providing information and support to the NSW government and Sydney Water so that they could develop the new Network Operator's Licence and Decision Framework for utilisation of the Plant.

In response to our new Network Operator's Licence, we have sought to deliver our stakeholders' needs taking into consideration the design and operating capabilities of the Plant, and the efficient cost of providing these water supply services. This approach is reflected in the positions within this submission.

In developing this submission, we organised several workshops with Sydney Water to provide as much information as possible and engage on the key issues for the 2023-27 regulatory period. Although many elements of the new operating environment remained uncertain until very recently, we took the approach of early engagement to enable more informed discussions through the Determination process, which we believe will ultimately lead to better customer outcomes. A summary of the key issues discussed during three workshops with Sydney Water is listed below. Further details are contained within Appendix 4-2.

4.2.2. Workshop 1

June Workshop ①

Workshop 1 focused on providing Sydney Water with further in-depth understanding of how SDP works through a behind the scenes site tour, our history, and how our operations must change to deliver ongoing high availability and meet the intent of the Greater Sydney Water Strategy. The discussion covered:

- A detailed behind the scenes site tour.
- A breakdown of our operating costs (dominated by energy, chemical costs, and O&M) and capex costs (including for membrane replacement).
- A summary of the implications of SDP's initial design and construction as a drought response asset on its capacity for flexible and rapid production response.
- Key implications of the shift in our operating environment including the change from SDP operating principally as a drought response asset towards one that can flexibly deliver value in a variety of ways by responding to a range of water supply system challenges.
- The value of negotiated agreements to manage unforeseen circumstances, for example, where SDP is requested to shut down for an extended period of time.

4.2.3. Workshop 2

July Workshop ②

Workshop 2 focused on providing Sydney Water with further detail and an opportunity to provide perspectives on key issues for the RP3 proposal on the subject of energy, which is a material driver of variable water production costs. The discussion covered:

- A recap on the GGRP Contracts, through which SDP must purchase renewable energy to meet its legal and regulatory requirements under its project approval. SDP had already engaged with Sydney Water on the GGRP contracts in late 2021 to confirm Sydney Water's continued support for SDP's allowed energy cost allowances reflecting the GGRP contract prices. This was non-contentious.
- SDP's projected energy volume requirements per megalitre of water, and how this is closely linked to SDP's proposed staggered membrane replacement strategy that targets an average membrane age of 4.5 years.
- Our proposal for energy price risk sharing arrangements that requires amendments to the Energy Adjustment Mechanism (EAM). Adjusting the EAM parameters to reflect SDP's very limited ability to manage energy price risk under its new Network Operator's Licence where Sydney Water determines when and to what extent we operate.

4.2.4. Workshop 3

August Workshop ③

Workshop 3 focused on three material issues on which we strongly valued input and perspectives from Sydney Water. The first was our projected increase in operation and maintenance costs to deliver services under our new Network Operator's Licence. The second was our proposal to introduce a new Service Level Incentive Scheme (SLIS) that is aligned to our new role under our new Network Operator's Licence. The third was our proposal to reduce insurance policy coverage and premiums to align with our proposed SLIS. This discussion covered:

- The need for additional routine asset maintenance and labour costs to maintain safe and reliable service provision under our new Network Operator's Licence and taking into account aging assets.
- Increased chemical costs driven by global supply chain pressures and aging membranes.
- The rationale for changes to service level incentives and advantages of our proposed SLIS, including better alignment with IPART's regulatory principles

4.2.5. SDP's broader customer research

In the early stages of developing this submission, we engaged StollzNow Research to undertake some broader customer research on our behalf. This research provided valuable insights into customers preferences. Ultimately, we can best understand customers' needs and preferences, as well as how we can support meeting these through the lens of Sydney Water's customer engagement. We also consider that we can deliver better for customers by continuing to engage constructively with the NSW Government and Sydney Water. We will be evolving our approach for our next pricing submission so that it is fit for purpose under IPART's forthcoming regulatory framework review Final Report. The direct customer research that we conducted provided useful feedback for consideration as we evolve our approach.

StollzNow Research hosted eight focus groups in the Sydney metropolitan area (with 32 participants in total) in December 2020. The aim was to explore customer views about water supply in Sydney and how customers use water. Key views expressed included:

- Customers appreciated living in a city with clean, reliable water. Customers understood the variability of water supply from the dams and had experienced water restrictions. Many customers take pride in conserving water.
- Customers want additional renewable energy generation and want the Plant to use green energy.
- Some participants expressed concern about future water supply, including that future water supply could be under threat due to population growth, unpredictable rainfall for Sydney, and lack of infrastructure.
- Current water bills are viewed as being reasonable (particularly compared to other utility bills), are consistent, rarely fluctuate and provide a valuable service.
- Knowledge of SDP varied, but the majority supported SDP and noted its role in drought proofing Sydney, supporting dam-based water supply and providing water options for future generations.

Further details of the StollzNow research are contained within Appendix 4-3.

5. Managing key risks in providing our services

Key messages

- SDP faces a unique set of risks and challenges in providing our services over the 2023-27 regulatory period. We are a single asset business and the nature of the services required from the asset is constantly changing.
- We have developed a framework for how we propose to manage and allocate risks across the regulatory framework, consistent with 'best practice' principles that focus on the efficient allocation of risks to minimise the total costs to water customers. This framework has informed several aspects of our submission, including the proposed scope and form of regulation, incentive and risk management mechanisms, as well as our proposed expenditure.
- In the 2023-27 regulatory period we are proposing an allocation of key risks between SDP Sydney Water and customers that will drive improved performance and better outcomes for customers. This includes greater accountability for those things in our control, and less exposure to windfall gains and losses. Our proposed changes will provide long-term benefits to water customers by enabling us to focus our efforts on those areas where we can deliver value.

In providing regulated services, SDP is exposed to a range of risks that may influence the costs of providing services, or the revenues we receive from providing services. These events may be:

- likely, such as annual movements in network charges, land tax and insurances, but their cost outcomes are uncertain
- uncertain, such as major weather events, a power outage or a significant asset failure that affects the performance and costs of operating and maintaining the Plant
- unforeseen, such as new regulatory and taxation requirements that could affect the costs of providing our services, or a global threat or event such as a pandemic.

We may have limited or no ability to materially influence the likelihood or consequence of these events and, as a result, the costs we incur and/or revenues we receive in providing services may differ from those allowed for in IPART's determination.

We have analysed how to best address each of the key risks that could impact the costs of providing services over the 2023-27 regulatory period, guided by overarching risk management principles, our corporate risk management framework, our risk appetite, and consistency with our legislative framework.

Our view is that it is appropriate for us to retain and manage risks that are within our control. Retaining these risks will drive accountability in the way we operate our assets and provide our services. However, other risks are beyond our reasonable control. In some circumstances, sharing these risks with our O&M contractor, insurers, or our customers is the most efficient way to manage these risks. Over time, we would expect this allocation of risk to deliver customer benefits through improvements in service performance and cost reductions. Ultimately, we think this proposed package is in the long-term interests of customers.

This section outlines our approach to analysing risks, and how we propose to efficiently manage and allocate these risks within the regulatory framework. The assessment in this section has informed several elements of our pricing submission, including:

- a framework for negotiated agreements for water supply services outside of drought (section 6);
- proposed changes to the abatement mechanism (section 7);
- proposed changes to existing mechanisms, or the introduction of new mechanisms, to manage the risk of costs outside our reasonable control (section 7); and
- expenditure allowances, including insurance, operating and capital expenditure (sections 9 to 11).

5.1 Our approach to analysing and evaluating risks

Our approach to analysing risks over the 2023-27 regulatory period draws on SDP's broader corporate risk management framework. It involves the following steps:

- Identifying and describing risks.
- Identifying the source of each risk, including whether it is systematic (non-diversifiable) or business-specific (diversifiable) in nature.
- Determining how the regulatory framework would most efficiently address each risk.
- Reviewing relevant regulatory precedents for comparison.
- Confirming there is no double-counting.

Each of these steps is discussed below.

5.1.1. Identifying and describing risks

In this first step, we identified the key risks that could impact costs and/or revenues in providing services over the 2023-27 regulatory period. They include risks that result from our policy, regulatory and operating environment.

To inform this step, we reviewed the risks recorded in our corporate risk register. Our risk register identifies key risks and their potential impact on our strategic objectives, business operations and customers, as well as the controls we have in place to manage these risks.

5.1.2. Analysing the source and nature of risks

In this second step, we categorised risks into either systematic or business-specific risks. We performed risk analysis on them to determine their severity and likelihood. We also undertook risk evaluation, informed by our risk appetite and corporate risk register approach, to consider whether we should accept, treat, transfer or share each risk (or some combination of these). Specifically:

- Accepting a risk means we consider the level of risk to be acceptable (within our risk tolerance), or that the costs of taking further action would exceed the benefits.
- Treating the risk means that further action is required to reduce the likelihood and/or consequence to a level acceptable to SDP and/or customers.
- Transferring a risk means that it would be most efficient for another party to manage or bear the risk (e.g. through insurance). Importantly, from a corporate risk perspective, SDP retains responsibility for these risks.
- Sharing risk is not a concept used within our corporate risk register but is relevant in the context of our regulatory framework within which risks are shared between SDP and our customers or insurers.

5.1.3. Determining where each risk is best addressed within the regulatory framework

The next step involves determining where each risk is best addressed within the regulatory framework. We considered four main options for managing, compensating or allocating risks:

- **Rate of return:** for all systematic risks (for example, changes in macroeconomic conditions), we propose compensation through the rate of return. This is consistent with IPART's intent for determining a rate of return on our regulated asset base, based on the weighted average cost of capital. Rate of return is discussed in section 12.
- **Cost allowances (excluding insurance):** where we are accepting or treating a risk, in most cases we propose a cost allowance to efficiently manage (or continue to manage) the risk, including complying with our licence conditions and meeting our operating rules. For example, this includes cost allowances to ensure we have appropriately trained staff to safely operate the Plant and to ensure we maintain our assets appropriately in line with good industry practice. Our proposed operating and capital cost allowances are outlined in sections 9 to 11.
- **Cost allowance (including insurance):** where we are transferring or sharing risk, and an insurer is best placed to manage this (including where insurance is currently available in the market on reasonable commercial terms), we propose a cost allowance that reflects an efficient level of insurance coverage, and the costs of procuring this insurance efficiently in the market. This includes insurance to manage a range of risks including insurable force majeure events, where these may impact our ability to produce water when required, as proposed under our SLIS (see section 7). Our proposed cost allowance for insurance is provided in section 9.7.
- **Cost pass through, end-of-period true-ups and re-openers:** in some circumstances we have limited or no ability to influence the likelihood or consequence of an event that impacts our costs or revenues over the regulatory period. This includes risks where insurance is not currently available on reasonable commercial terms and has not formed part of our proposed insurance allowance (e.g., unforeseen regulatory or taxation changes). In addition, there may be unforeseen movements in ancillary services and market charges under the GGRP Contracts driven by regulatory or market factors, or the costs of insurance driven by unforeseen and uncontrollable global factors including climate-related events, catastrophes and third-party litigation. We propose that these risks be most efficiently addressed through a combination of cost pass throughs and end-of-period true-ups for specified costs and decision reopeners for other uncertain and uncontrollable costs. This will provide confidence that prices reflect the efficient cost of supply throughout the 2023-27 regulatory period, which in turn provides efficient pricing signals to Sydney Water when considering how to use the Plant in managing Greater Sydney's water supply security. Details on these mechanisms are provided in sections 7.4 to 7.6.

We have sought to ensure the proposed mechanisms:

- retain incentives for SDP to efficiently manage its costs and risks;
- result in SDP's prices reflecting efficient costs over the 2023-27 Determination Period, including updating these prices where material changes in efficient costs occur during the period to encourage both efficient investment and usage decisions;
- utilise end-of-period true-ups and reopeners to account for movements in efficient costs driven by market forces or decisions (say by regulators or authorities) outside of SDP's control or that are unforeseen.

In our view, self-insurance is not a viable option for SDP. In this context, self-insurance refers to setting aside funds as compensation for potential losses in the future. SDP does not have the capacity to pool risks across many business units, geographies and business activities to manage its risks like a larger corporate that would typically self-insure. SDP's risk is highly concentrated in one asset, one customer, one geography and one activity. It is unable to manage or diversify risk across a broader network, different services or customer groups.

In undertaking this assessment, we considered:

- general principles of risk allocation (see Box 3);
- regulatory precedents, including IPART's water, transport and energy determinations, IPART's Draft Water Regulatory Framework, and decisions by other regulators across Australia and overseas; and
- consistency with the legislative framework (e.g., the IPART Act, Terms of Reference and WICA), including ensuring that risk management mechanisms are consistent with IPART's own powers.

Box 3: Key risk management principles

In determining the most appropriate approach to address each risk, we have drawn on standard regulatory principles including:

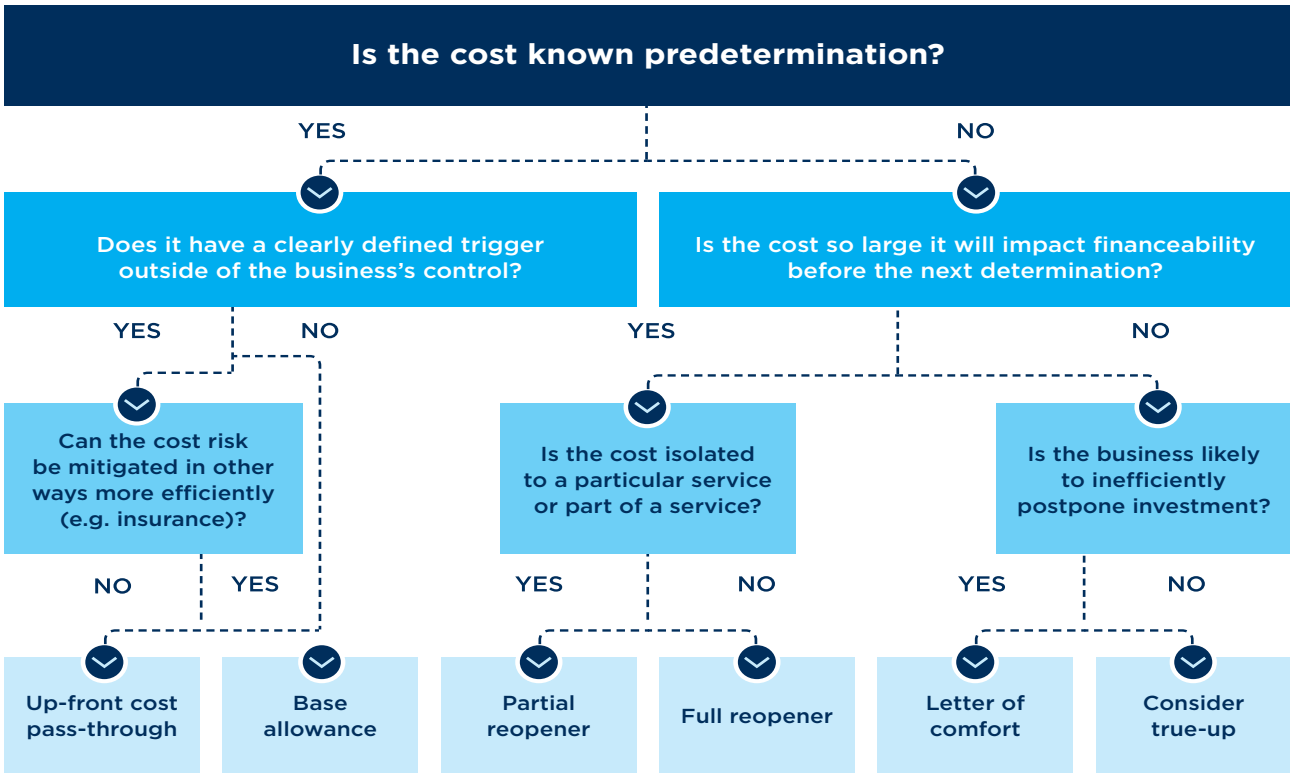
- **Allocating risks to the party best-placed to manage them, to incentivise efficient behaviour.** If it is within our reasonable control to manage the likelihood and/or consequence of an event occurring allocating the risk to SDP provides us with an incentive to efficiently manage the risk (providing we receive an allowance to recover the efficient costs of managing or bearing the risk). However, if a risk is not within our reasonable control, allocating the risk to us can mean that customers may end up paying more than they should (to compensate us for bearing or trying to manage the risk) or service outcomes are compromised over time (if our management attention is unduly focused on risks we cannot control).
- **Ensuring reasonable levels of regulatory certainty and minimising unnecessary administrative costs.** This is important for providing confidence to water businesses to invest in, and maintain, their assets, pursue efficiency gains, and innovate over time in the long-term interests of customers. Long-term planning requires reasonable certainty about the 'rules of the game'.
- **Ensuring prices include compensation for risks borne by the utility only once, and that prices do not include compensation for risks shared with customers.** For example, prices should include compensation where utilities bear systematic risks or business specific risks (say the costs of purchasing an efficient level of insurance to manage the risk of events resulting in an interruption to business activities) but should not include compensation for risks shared with or borne by customers (say risks associated with movements in electricity network prices that are passed through to customers).

5.1.4. Relevant regulatory precedents

We agree with IPART's Draft Water Regulatory Framework that no matter how well a business forecasts efficient costs the operating environment can change throughout the determination period and there are a range of tools businesses can use to manage revenue uncertainty within a regulatory period – including cost pass throughs, in-period re-openers, and true-ups – and that the appropriate tool will depend on the nature of the cost and revenue uncertainty.[54] Some costs can be driven by an event which has predictable costs but is uncertain. Some costs are unforeseen and can arise unexpectedly during the determination period.

As a result, IPART proposed that changes in costs can be managed through a variety of means, including cost pass-throughs, ex post true-ups, letters of comfort and partial or full replacement of a pricing determination.[55] Our proposed risk management framework is consistent with IPART's proposed use of these tools.

Figure 5.1: *IPART's proposed framework to manage revenue risks*



Source: IPART, Draft Water Regulatory Framework, Technical Paper, May 2022, p51

IPART has also recently recognised that an end-of-period true-up for the benchmark energy cost component of WaterNSW's Broken Hill Pipeline charges has merit given:

- the uncertainty in forecast energy costs;
- movements in these costs are driven by market forces or decisions made by regulators or authorities outside of WaterNSW's control; and
- the proposed true-up meets IPART's cost-pass through principles[56]

In our view, our approach to managing and allocating risk within the regulatory package is in line with IPART's Draft Water Regulatory Framework and WaterNSW's Broken Hill Pipeline wdraft decision. In many cases we considered a range of alternative ways to manage key risks across the regulatory framework and their potential impact on our business and customers.

54 IPART, Draft Water Regulatory Framework, Technical Paper, May 2022, p52.
55 IPART, Draft Water Regulatory Framework, Technical Paper, May 2022, p51.
56 IPART, Review of WaterNSW's prices for the Murray River to Broken Hill Pipeline: Draft Technical Report, p.33.

For those risks we consider best shared with customers, we concluded that the alternatives were not in customers' best interests. For example, setting an energy cost allowance, insurance cost or land tax allowance that includes an uncertainty premium to account for the volatility in energy costs or insurance premiums, or providing us with additional compensation (outside the rate of return) for bearing the risk of annual movements in uncontrollable costs was, in our view, less efficient than proposing a revenue risk sharing mechanism such as cost pass throughs and end-of-period true-ups for specific cost movements over the 2023-27 regulatory period. These mechanisms are designed to ensure that only efficient costs are reflected in prices because either the value passed through is either transparently determined by another regulator or similar (e.g., the AER or AEMO) or via government taxation (e.g., land tax or council rates) or reviewed by IPART prior to revenues and prices being adjusted (to determine the difference between forecast and the updated benchmark or actual costs relating to insurance and chemical costs).

Our approach is also aligned with arrangements in many other regulatory frameworks including the National Electricity Rules and National Gas Rules applied by the AER (see Box 4)

Box 4: Efficient risk management and allocation: National Electricity Rules (NER)

For systemic risks, service providers are compensated through the allowed rate of return. Service providers also face business-specific, or residual, risks. Service providers are compensated for the prudent and efficient management of these risks through the forecast opex and capex we include in our revenue determination for strategies such as:

- prevention (avoiding the risk).
- mitigation (reducing the probability and impact of the risk).
- insurance (transferring the risk to another party).
- self-insurance (putting aside funds to manage the likely costs associated with a risk event).

An efficient business will manage its risk by employing the most cost-effective combination of these strategies. To maintain appropriate incentives under our determinations, we only accept nominated pass through events where we are satisfied that event avoidance, mitigation, commercial insurance and self-insurance under approved forecasts of prudent and efficient opex and capex are either unavailable or inappropriate.[57]

This protects the incentive regime under the NER by limiting erosion of a service provider's incentives to use market-based mechanisms to mitigate the cost impacts that would arise. This promotes the efficient investment in, and efficient operation and use of, network services for the long-term interests of consumers with respect to price.[58]

57 Australian Energy Regulator 2020, Draft Decision Powercor Distribution Determination 2021 to 2026, Attachment 15: Pass through events, September, p. 15-11.

58 Australian Energy Regulator 2020, Draft Decision Powercor Distribution Determination 2021 to 2026, Attachment 15: Pass through events, September, p. 15-18.

5.1.5. Confirming there is no double-counting

In this last step, we checked that for those risks — systematic or business specific risks — best managed and borne by SDP over the 2023-27 regulatory period, that prices included efficient compensation and that there was no double-counting. This included checking that prices did not include compensation for risks that are shared with, or borne by, customers.

5.2 Our proposed risk management and allocation framework

Based on the steps above, summarises the resulting risk management and allocation framework. It groups the identified action for each risk (accept, treat, share or transfer), whether it is systematic or business-specific and how we propose to be compensated for managing or bearing the risk, or the mechanism for transferring it. We also summarise whether the risk affects our costs and/or revenues and whether it is allocated to SDP or our customers.

Figure 5.2: *Proposed risk management and allocation framework*

Action	Category	Compensation for risk/risk transfer mechanism	Risk examples	Cost or revenue risk?	Risk allocation	SLIS applies in Operational Mode?
Treat or accept risk	Systematic risk	**Rate of return/ WACC**	Macroeconomic factors: interest rates, inflation etc	Cost	Business	**No**
	Business-specific risk	**Include in RAB** (prudent & efficient capex)	Plant deteriorates, does not meet operating rules	Both	Business	**Yes**, but subject to: • Overall cap on incentives • Uninsured events outside SDP control being excluded (i.e. where "compliance is prevented wholly or predominantly by an event outside the reasonable control of the Licensee" as per SDP's Network Operator's Licence)
		Cost allowance (operating costs to meet good industry practice)	Staff safety issue, licence breach, membrane non-performance, [redacted]	Both	Business	
Share or transfer risk	Business-specific risk	**Cost allowance** (efficient insurance)	Natural disaster, major asset failure, [redacted]	Both	Business (insurers)	
		Risk sharing arrangements (efficient but uncontrollable & unpredictable costs best shared with customers through changes to prices over time)	Uncontrollable movements in energy costs, land tax & council rates, chemical costs and insurance premiums	Cost	Shared	
		Cost-reflective modes and price structures	Variable demand/ production	Both	Customers	
		Negotiated agreements	Variable demand, production and availability	Both	Shared	**No** — tailored incentives agreed

Source: Sydney Desalination Plant

To provide some examples:

- Changes in macroeconomic conditions are systematic risks allocated to SDP and we propose to be compensated through IPART's allowed rate of return for SDP.
- Where conditions change such that our capital or operational costs are different to the forecasts costs that form the basis of our prices and revenues, we seek to reprioritise our spending as circumstances change and continue to strive for efficiencies. This is particularly relevant in current market conditions where, for example, supply side issues related to the Covid-19 pandemic and the war in Ukraine are significantly increasing the price of chemicals, replacement parts and consumables above the change in CPI. These risks are primarily borne by SDP and compensated through a cost allowance or through capital expenditure included in our regulatory asset base.
- A natural disaster impacting our assets and services can impact both our costs (if the Plant is damaged) and revenue (if our production is reduced and/or fees abated). This risk is most efficiently transferred to, or shared with, insurers.
- At times the movement in efficient costs or revenues is beyond our ability to control (for instance, cost movements driven by decisions made by regulators or market authorities), or our ability to efficiently transfer to insurers. It is more efficient that this risk is shared with customers through revenue risk sharing mechanisms such as cost pass through, end-of-period true-ups, and decision re-openers.

As noted at the beginning of this section, the regulatory framework should allow SDP to recover the efficient cost of managing its risks, including compensation for bearing any unmanageable risks. We think it is important to be transparent about how risks are managed and allocated within the regulatory package. This helps to ensure that risks are allocated and managed efficiently in the long-term interests of customers. Our aim is that the framework above will help to achieve this.

6. Scope and form of regulation

Key messages

- We have proposed a four-year regulatory period from 1 July 2023 to 30 June 2027 (2023-27 regulatory period) to align with the original five-year regulatory period had there not been a one-year delay. This ensures alignment with SDP's financing activities that were undertaken consistent with IPART's 2018 rate of return methodology and IPART's intention to commence the five-year transition to the trailing average cost of debt from 1 July 2022. A four-year regulatory period that finishes on 30 June 2027 will:
  - minimise the potential for windfall gains and losses related to the costs of SDP amending its financing activities
  - reduce the risk of forecasting error for key cost items given the uncertainty relating to how the Plant will perform under the Operating Rules
  - enable an earlier transition to key elements of IPART's proposed Draft Water Regulatory Framework which it intends to apply to other utilities from 1 July 2025.
- We have proposed a single mode for regulated pricing purposes over the 2023-27 regulatory period — known as **Operational Mode** — in which the Plant remains operational and produces approximately between 23 GL to 91.25 GL per year in line with the defined level of service. This includes water produced in response to an APR, including 'monthly phasing' or 'weekly phasing' of production, as well other production requests including emergency response request. .
- We have proposed negotiated agreements within a framework of 'deferred regulation' for operation of the Plant outside of the agreed level of service. There are significant challenges in estimating ex ante the costs of providing some of the services that could be requested by Sydney Water over the 2023-27 regulatory period. These are expected to be rare or unforeseen events, initiated by our customer, and could involve additional costs (or savings) in meeting an alternative level of service or transitioning the Plant into and out of a **Shutdown**.[59] In proposing this framework we have drawn on standard pricing principles, IPART's regulatory precedent and consulted with Sydney Water.

59 For example, if Sydney Water requests the Plant to be shut down for an extended period such that SDP would be directed not to produce the minimum baseload volume each year nor be available to respond to production requests as envisaged in SDP's Network Operator's Licence and the Terms of Reference.

The first step in determining prices for SDP's services is to decide on the form of and broad approach to regulation. This includes matters such as:

- the scope of the services subject to regulation
- the length of the determination period
- the price control mechanism that determines how prices move over time.

6.1 Scope of services subject to regulation

6.1.1. Background

A foundational issue is defining the scope of services to be subject to regulation by IPART under the 2023 Determination. Under the existing arrangements, IPART is required to determine prices for two services:

- the supply of non-rainfall dependent drinking water to purchasers, and
- the making available of the Plant to supply non-rainfall dependent drinking water.

To date, IPART has regulated the prices that SDP can charge for supply of these monopoly services to all customers in all conditions such as during drought conditions and outside of drought conditions. In its 2017 Determination, IPART:

- set regulated prices for SDP for the supply of water and the making available of the desalination plant for the supply of water as part of SDP's drought response role
- relaxed the nil price outside of drought for water supplied in an emergency response role
- did not permit SDP to enter negotiated agreements with Sydney Water (or third-party customers) for water supply outside of drought (i.e., SDP was to levy regulated prices only).

IPART considered that emergency response refers to supply to:

- mitigate the effects of a public health incident
- ensure security of supply or network stability during periods of outages, unavailability or maintenance on any water industry infrastructure in Sydney Water's area of operations.

At the time of the 2017 Determination, SDP proposed that it should be allowed to supply customers outside of drought conditions under negotiated pricing agreements.

IPART agreed in principle with SDP's proposal to allow negotiated pricing agreements for situations outside of drought and outside of emergency response, but ultimately rejected the proposal as it considered this would breach the financial indifference principle in its Terms of Reference. IPART also noted that it considered SDP may have monopoly power in both drought and in emergency response periods.

Hence, the 2017 Determination set regulated charges for all 'operating modes' in supplying all customers. This seems to reflect an expectation that:

- the Plant would primarily either be in Long-term Shutdown Mode (Water Security Mode) or full production or transitioning between the two modes. IPART's 2017 Determination stated that it had "designed a regulatory framework and assessed SDP's efficient costs through the lens of SDP's primary role of drought response."[60]
- regulated charges for all modes were cost reflective, such that the regulated charges levied in any operational period would be sufficient to cover the additional costs of operating in that period (i.e., above costs incurred in Long-term Shutdown Mode to ensure SDP remained financially indifferent.

To ensure SDP could recover the reasonable costs of providing the emergency services requested by Sydney Water under the WSA, SDP had to seek assurance from IPART to treat any resulting breach of the 2017 Determination as a 'technical non-compliance' on which it would not take any further enforcement action, given this was in the best interests of customers. This put all involved parties, including SDP, Sydney Water and IPART, under considerable time pressure to agree and confirm the arrangements for meeting the ERN before

60 IPART, Sydney Desalination Plant Pty Ltd: Review of prices from 1 July 2017 to 30 June 2022 - Final Report, 2017, p3.

the scheduled 27 March 2020 shutdown date. It has also continued to increase administrative burden in this respect as the Plant continued to operate under a series of ERNs through the 2017-23 regulatory period.

6.1.2. Assessment

6.1.2.1. Ensuring the 2023 Determination is adaptive to SDP's evolving role in meeting the NSW Government and Sydney Water's expectations for Greater Sydney's water supply security.

At the time of the 2017 Determination, drought response was considered SDP's primary role and an emergency response function was a relatively abstract and untested concept. Since then it has become clear that SDP can play an important role in responding to a range of water supply risks. The recent experiences of supplying water under ERNs to address water quality issues arising from the NSW bushfires and in response to flood are examples where SDP has been asked by Sydney Water to supply water to ensure the safe and reliable supply of water to Sydney's customers outside of its 'primary drought role' envisaged by IPART in the 2017 Determination framework.

As noted in 4, SDP has engaged extensively with Sydney Water to develop a level of service that meets both the NSW Government's objectives for Greater Sydney's water supply security and the more specific needs of Sydney Water.

The level of service we have detailed balances our stakeholders' needs with the design and operating capabilities of the Plant and the cost of providing these water supply services. SDP expects that this defined level of service will cover most water production requests from Sydney Water. This means that the prices in the 2023 Determination should enable SDP to recover the efficient cost of supplying services to Sydney Water over the 2023-27 regulatory period in most circumstances.

However recent experience has also shown that SDP's operating environment and Sydney Water's expectations can change such that meeting certain water production requests (or short shutdown requests) can involve SDP incurring costs that may differ from those estimates of efficient costs underpinning prices in the Determination.[61]

While the proposed prices reflect the efficient costs of meeting the defined level of service which should cover the vast majority of water production requests from Sydney Water, it is difficult and impractical to attempt to estimate costs associated with meeting all possible levels of service in a way that is consistent with the Terms of Reference. For example, it is difficult to estimate the additional costs of SDP 'ramping up' more quickly (or more often) to meet a Sydney Water production request that is outside the defined level of service (i.e., above the costs assumed in Operational Mode) or any cost savings resulting from Sydney Water requesting the Plant be moved into Shutdown.

In our view, the 2023 Determination should be sufficiently flexible and resilient to accommodate changes in our customer's needs, government policy, regulation and market conditions, and enable SDP to recover its efficient costs of supplying services to customers.

A key element of this submission is our proposal to establish a framework for negotiated agreements between SDP and Sydney Water for operation of the Plant outside of the defined level of service set out in Section 0. This involves a well specified negotiation framework that facilitates SDP and Sydney Water agreeing an alternative level of service and associated operational and commercial arrangements in a timely fashion and providing IPART with oversight through a framework of 'deferred regulation'.

We propose that the 2023 Determination establish a clear framework in which those monopoly services are:

- Consistent with the defined level of service, and where efficient costs can be accurately established ex ante (subject to the proposed risk management mechanisms in Section 7), the 2023 Determination would specify the prices for the monopoly services and how these prices are adjusted over the regulatory period (referred to as 2023 Determination regulated services);
- Outside of the defined level of service and where prices cannot be accurately established in the 2023 Determination, these services are instead subject to price negotiation between SDP and Sydney

61 For example, there is surplus energy when the Plant is in partial production. If the Plant had been shut down, gains and losses associated with surplus energy would be managed through the Energy Adjustment Mechanism. However, the 2017 Determination does not apply the Energy Adjustment Mechanism for periods of partial supply, as IPART noted this would not be consistent with the Terms of Reference which state that the EAM applies when the Plant is in a shutdown or grace period. Absent a negotiated agreement, SDP would not have had the opportunity to share any gains and losses on surplus energy with customers.

Water under a framework of deferred regulation overseen by IPART (referred to as deferred regulated services). This negotiation framework for 'deferred regulation' services is summarised in **Box 5**.

Box 5: Proposed negotiation framework for deferred regulation services

In SDP's view, the key steps for the deferred regulation framework for negotiated services are as follows. The IPART Final Report would approve the pricing principles for negotiated agreements to ensure that negotiated agreements do not involve the exercise of market power to the detriment of customers, or 'double-recovery' of costs recovered under regulated charges in the 2023 Determination. The principles would be that:

- The water supply services to be provided should be clearly specified and be aligned with the long-term interests of customers
- Charges for the agreed services should reflect prudent and efficient costs of providing those services
- There should be appropriate incentive mechanisms aligned with regulatory best practice, to ensure that services are provided at or above the required levels
- SDP and Sydney Water negotiate and agree service levels and prices for services, subject to meeting the pricing principles approved by IPART in its Final Report to apply to such negotiated agreements.
- SDP provides the agreed service levels and levies on Sydney Water the agreed negotiated charges at the time of providing services, specifying the increment/decrement to regulated charges.
- SDP ring-fences the costs and revenues of the negotiated agreements, and Sydney Water ring-fences the costs to enable IPART to determine whether they can be passed through into customer bills levied on Sydney Water's customers.

As part of Sydney Water's next price determination, IPART could review the negotiated agreement to determine if it was prudent and efficient and, if so, could consider this in setting Sydney Water's charges for the next period (in an NPV neutral way after accounting for interactions with other elements of Sydney Water's opex and/or capex). Any prices agreed between SDP and Sydney Water following a request from Sydney Water to provide specific services would not result in an adjustment to SDP's revenues and prices in subsequent periods.

If SDP and Sydney Water could not agree on prices, either party could request that IPART determines prices during the SDP regulatory period for the specific services to be provided (akin to IPART's "scheme-specific" reviews that it has flagged for other water services). This provides a 'back-stop' or protection against any potential use of monopoly power, depending on the circumstances.

6.1.2.2. Negotiated outcomes under a framework of 'deferred regulation' can deliver 'win-win' outcomes and provide confidence to customers that prices reflect the efficient costs of providing services

In our view, potential value can be unlocked by allowing negotiated agreements for an alternative level of service that is tailored to meet the needs of Sydney Water. It:

- Provides additional flexibility for SDP to supply water under an alternative level of service on Sydney Water's request when this is in the long-term interests of customers;
- Does not require any party to ex-ante specify all the possible supply arrangements that SDP could be asked to meet;
- Provides for IPART to oversee prices, albeit under a 'deferred' regulatory approach (through reviewing the efficiency and prudency of any negotiated agreements as part of Sydney Water's determination);

- Ensures prices for the supply of water under an alternative level of service will reflect the efficient cost of providing that service;
- Ensures SDP is not in technical breach of the Determination when responding to a customer request for supply.

Conversely, failing to address this issue will lead to outcomes that are not in the long-term interests of customers, for example, potentially requiring Sydney Water to pursue alternative (and more expensive) means of addressing the water quality issues.

IPART has allowed negotiated agreements for a range of other water services.

In its 2019 Review of Pricing Arrangements for Recycled Water and Related Services, IPART deferred determining maximum prices for all recycled water, sewer mining and stormwater harvesting services for Sydney Water, Hunter Water, the Central Coast Council, and Essential Water. IPART noted it would only determine maximum prices for customers receiving these services when there is a need to do so. IPART noted that this approach "appropriately balances the objectives of simplifying the framework and reducing administrative costs under a less intrusive approach, while retaining sufficient protection for customers." In particular, it stated as follows:[62]

> *Protection is afforded to customers of mandatory recycled water services **via a set of pricing principles that the public water utilities must abide by, and the threat of regulatory intervention by IPART** under a scheme-specific review. For customers voluntarily receiving recycled water, we would step in only when warranted to set prices under scheme specific reviews, if requested to do so. This form of price regulation also applies to sewer mining and stormwater harvesting customers. **Parties to these services are usually commercial entities with an ability to negotiate with public water utilities**, and in many instances they have effective choice…*

In its 2019 Determination for the Murray River to Broken Hill Pipeline, IPART decided to defer determining prices for shutdown, standby and restart services. In reaching this decision, IPART noted that these costs are driven by Essential Water, which should make water source decisions to achieve its water supply requirements at an efficient total cost. That is, Essential Water should choose to incur these costs if it lowered its overall total cost of supply. In addition, IPART noted that the efficiency of proposed shutdown and restart charges could not be confirmed with sufficient precision. It concluded as follows:[63]

> *Taking these issues into account, we have made a decision to defer determining prices for shutdown, standby and restart services in the 2019 Determination. We will consider this issue for the next determination, when we may have more information on the likely costs of these services. **WaterNSW could still levy these charges on Essential Water, as negotiated on a commercial basis between the two parties. End use customers in Broken Hill would be indifferent to any such commercial arrangement, as it would not affect, or be reflected in, the prices they pay.***

IPART maintained this position in its recent 2022 Draft Determination for the Murray River to Broken Hill Pipeline noting:

> *Our draft decision is to continue to defer shutdown, standby and restart prices to be negotiated between WaterNSW and Essential Water on a commercial basis. WaterNSW can request the Pipeline operator to cease the operation of the Pipeline at Essential Water's request. Conditions for these requests are negotiated between Essential Water and WaterNSW. We consider that an unregulated commercial arrangement is the best method for WaterNSW to levy these charges on Essential Water.[64]*

This regulatory precedent implies that negotiated agreements covering supply from one monopoly service provider to another may be appropriate when:

- Services would be requested by the customer who would choose whether to agree to the offered prices
- There is uncertainty regarding what these 'services' comprise and the administrative costs of accurately establishing the efficient costs ex-ante may be high
- The negotiated arrangement reduces administrative costs

62 IPART, *Review of pricing arrangements for recycled water and related services – Final Report*, July 2019, p.11

63 IPART, *Murray River to Broken Hill Pipeline – Final Report*, May 2019, p.92.

64 IPART, IPART, Review of WaterNSW's prices for the Murray River to Broken Hill Pipeline *– Draft Technical Report*, June 2022, p.73.

- IPART would be able to review any costs or cost savings if the monopoly customer sought to pass through these costs into end-use prices.

Our proposed negotiation framework is consistent with this precedent. Any price negotiated between SDP and Sydney Water will only be passed through to end-use customers if IPART determines that the costs Sydney Water incurred represent a prudent and efficient means of managing Greater Sydney's water supply (and are not effectively covered through Sydney Water's existing regulated cost allowance) as part of Sydney Water's next price review.

6.1.2.3. The proposed arrangements do not breach the financial indifference principle

In the 2017 Determination, IPART stated that allowing negotiated agreements would breach the indifference principle in the Terms of Reference. IPART noted that if "SDP were to have the option to enter into unregulated pricing agreements, it would only be expected to do so at its benefit." Implying that 'its hands were tied' IPART indicated it could not allow negotiated agreements under the current Terms of Reference.

SDP does not agree with this assessment. In our view, allowing negotiated agreements would not breach the indifference principle in the Terms of Reference given:

- The pricing principles to guide negotiated agreements could be consistent with the indifference principle — for example, one principle could be that SDP would only seek to recover any additional costs incurred in providing these additional services beyond those costs already recovered through regulated charges that would continue to be levied. Any increment/decrement to the fixed or variable charges should recover changes to the efficient fixed or variable costs in providing this alternative level of service.
- SDP's decision to respond to ERNs was in the long-term interests of customers. Sydney Water noted that the ERN arrangements were the lowest cost option to mitigate the water quality issues arising from the bushfires and water quality issues by having the Plant available to ramp up production quickly, and that the day-to-day volume produced was not important even though the mechanism available was inflexible as the daily production volume was capped.
- The funding arrangements agreed to under the ERNs were efficient, prudent and ensured SDP was financially indifferent to producing water or not producing water.
- IPART will have an opportunity to review the prudence and efficiency of any negotiated agreement that Sydney Water proposes to pass onto customers as part of Sydney Water's next regulatory price review. This effectively places a check on SDP and Sydney Water's ability to negotiate agreements that do not reflect the efficient costs of services and/or are not in the long-term interests of customers.

6.1.3. Proposal

We propose:

1. The 2023 Determination allows SDP to negotiate pricing agreements, consistent with a set of approved pricing principles, for water services requested by Sydney Water outside of the defined level of service.

6.2. Length of determination period

6.2.1. Background

The length of the determination period is an important element of the regulatory framework. For the 2017 determination period IPART adopted a five-year term, from 1 July 2017 to 30 June 2022.

IPART expected to commence its review of prices in September 2021 with new prices due to commence on 1 July 2022. However, given the delay in finalising the GSWS and SDP's new Network Operator's Licence, in August 2021 (about one month before SDP was due to lodge its Pricing Proposal for 2022-27) the NSW Minister for Water, Property and Housing requested IPART defer its next review of SDP's prices until changes to SDP's operating licence were made with a new determination to be finalised by 30 June 2023 — effectively requiring a one-year extension of the 2017 Determination until 30 June 2023.

Although there will be a delay in commencement of the new determination, at SDP's request, IPART has confirmed to SDP that the transition period to the trailing average current cost of debt would occur over five years commencing 1 July 2022 and ending 30 June 2027. (See Appendix 6.1) This was the expectation set through the 2018 WACC methodology, and the clarifications provided by IPART, upon which SDP had based its long-term financing and risk management approach. Moreover, this is what would have occurred were it not for the delay in making a new determination.

6.2.2. Assessment

Incentive-based regulation seeks to balance providing higher powered incentives to achieve efficient costs against the risks of an unforeseen divergence between costs and prices. A longer determination period generally provides greater regulatory certainty (to the business and customers) and stronger incentives to achieve efficiencies. When combined with appropriate risk management measures to account for unforeseen or uncertain events outside the control of the business that may materially impact costs or revenues, a longer determination period is favoured by SDP.

In our view, under normal circumstances, a five-year determination period provides an appropriate balance between maximising regulatory certainty and incentives for efficiency gains, and minimising risk for all parties. This aligns with IPART's view expressed in our 2017 Determination that:

> *"[A] 5-year determination period provides the most appropriate balance between certainty and flexibility for SDP"*[65]

However, the unique circumstances around the extension of the 2017 Determination and delay to the commencement of the 2023 Determination meant that SDP has had to make business decisions based on information provided by IPART ahead of the 2023 Determination commencing. This includes SDP's financing activities that were undertaken on the expectation that the forthcoming regulatory period would conclude in June 2027. These expectations were informed by IPART's published 2018 WACC methodology and IPART's communicated intention to commence the five-year transition to the trailing average cost of debt from 1 July 2022. Under IPART's 2018 WACC methodology, SDP's current cost of debt allowance would be subject to a transition (lasting one regulatory period) from the prevailing 'on the day' cost of debt to a five-year trailing average cost of debt, since SDP is typically subject to five-year regulatory periods. This led to SDP reasonably concluding that the forthcoming regulatory period would end in June 2027.

If IPART decides that the regulatory period should conclude in June 2028, SDP would need to make refinancing decisions after June 2027 that could result in SDP incurring significant windfall refinancing costs that would not be compensated under IPART's regulatory framework. This issue is explained in further detail in confidential Appendix 6-2.

SDP submits that there are no clear customer benefits associated with such an outcome, which could be avoided by IPART committing to a regulatory period that ends on 30 June 2027.

A four-year regulatory period that finishes on 30 June 2027 will also reduce the risk of forecasting error for key cost items given the uncertainty relating to how the Plant will perform under the new Network Operator's Licence. It will also provide an earlier opportunity for IPART to introduce its 'new' Regulatory Framework including incentives for high-quality pricing proposals. We note IPART intends to provide access to this new framework for other utilities from 1 July 2025.[66] This means SDP would primarily be regulated under the 'old' framework for up to three years longer than other utilities if IPART defaulted to a five-year regulatory period for SDP.

While in future SDP supports longer regulatory periods, in this unique context, we have proposed a four-year regulatory period from 1 July 2023 to 30 June 2027 (2023-27 regulatory period) for the reasons outlined above.

6.2.3. Proposal

We propose:

2. A four-year regulatory period from 1 July 2023 to 30 June 2027.

65 IPART 2017, *Sydney Desalination Plant Pty Ltd Review of prices from 1 July 2017 to 30 June 2022*, Final Report, p. 17.
66 IPART, Draft Water Regulatory Framework, May 2022, p27.

6.3. Mode-based revenue requirements and price caps

6.3.1. Background

In common with most economic regulators of water and energy businesses in Australia, IPART typically adopts the CPI-X building block approach to establishing revenue requirements and prices for regulated services. This involves separately estimating the underlying components (or 'building blocks') of allowed revenue having regard to projections of efficient capital and operating costs of providing regulated services.

The building block components are:

- **Operating expenditure**, which represents an estimate of the efficient level of SDP's forecast operating, maintenance and administration costs.
- A **return on the assets** SDP uses to provide its services. This amount represents an assessment of the opportunity cost of the capital invested in SDP and ensures that it can continue to make efficient capital investments in the future. To calculate this amount, IPART decides on the efficient and prudent levels of SDP's past and forecast capital expenditure, the value of SDP's regulatory asset base (RAB), and the appropriate rate of return.
- A **return of capital (regulatory depreciation)**. This allowance recognises that through the provision of services to customers, SDP's capital infrastructure will deteriorate over time, and therefore regulatory depreciation allows the cost of the RAB to be recovered throughout its expected life. To calculate this allowance, IPART decides on the appropriate asset lives and depreciation method.
- An **allowance for meeting tax obligations**. In the 2017 Determination, IPART used a real post-tax rate of return to calculate the allowances for return on assets and calculated the allowance for tax as a separate cost block.
- An **allowance for working capital**, which represents the holding cost of net current assets.

In its 2017 Determination, IPART determined separate revenue requirements using the building block approach for the Plant and the Pipeline. This is because of differences in how the costs and associated revenue requirements of each asset were affected by the mode of operation.

For the Plant, applying the building block approach is complicated by the fact that SDP's costs vary depending on its operating mode. For example, there are higher operating costs — including the costs of purchasing and transporting energy, treating desalinated water — when SDP is supplying drinking water to Sydney Water. There are also costs incurred in transitioning between these modes, for example the costs of transitioning the Plant to shutdown and then restarting the Plant.

As recognised by IPART in its 2012 Determination:

> *SDP is different to other regulated businesses due to its different operational modes. SDP operating costs (and maintenance expenses) are different for each operational mode. For example, this will mean that a full production building block model will have greater operating costs than a building block model for a long-term shutdown. While the operating costs for all water utilities vary with how intensively they are using their assets, no other utility that we regulate has such distinct operational modes. The differences in operating costs in different modes are significant. As such, we decided to modify our building block approach for SDP in this review.*

In its 2017 Determination, IPART simplified SDP's operating modes for pricing purposes into three categories or 'periods':

- Water Security (Shutdown) Mode
- Plant Operational Mode
- Restart Mode.[67]

The Terms of Reference state that IPART should set maximum prices so that expected revenue generated will recover the efficient costs of supplying drinking water and making the Plant available to supply drinking water over the life of the assets. In its 2017 Determination, IPART determined a set of charges that could be levied within each of these three modes based on the 'building block' costs or revenue requirements

67 With the relevant period being 'triggered' by conditions specified in SDP's Network Operator's Licence.

incurred in the relevant operating mode.[68] IPART also determined the cost of transitioning between these modes (i.e., the costs associated with transitioning to restart and transitioning to shutdown).[69]

For the Pipeline, IPART determined that pipeline costs do not vary by mode of operation. As such, IPART determined a single building block cost for the pipeline that applies across all operating modes.

6.3.2. Assessment

We support incentive-based price regulation using IPART's building block approach to determine revenue requirements and price caps across fixed and variable costs. In our view, SDP's circumstances suggest that a price cap approach is preferable to a revenue cap. This is because under a revenue cap, SDP would recover revenue based on projected water production at the start of a regulatory period, rather than actual water produced in response to a Sydney Water production request. In our view, price caps are appropriately flexible to accommodate variable costs that change based on water production within a regulatory year.

The operating modes for pricing purposes should:

- Align with policy and market changes and the potential future needs of customers and stakeholders for our services
- Be clearly defined and understood
- Capture the material differences in operating characteristics and cost structures (e. g. avoiding the false precision of numerous Operating Modes with minor differences in cost levels or cost structures)
- Be consistent with other elements of the regulatory framework (e.g., EAM).

68 Note many of the same charges were levied in each of the modes, that is, they were levied regardless of whether SDP was in a plant operation, shutdown or grace period.

69 The transition to restart charge could be levied when SDP was in a grace period. The transition to shutdown charge could be levied while SDP was in a shutdown period.

- Translate into a set of cost reflective charges that are consistent with IPART pricing principles and the Terms of Reference pricing principles.

In our view, these principles will be met by:

- Retaining a price cap approach that enables SDP to recover the efficient costs of operation at different levels of production, and encourages SDP to maximise production (subject to the 10% tolerance band) when water supply is highly valued.
- Setting a single mode for regulated pricing purposes over the 2023-27 regulatory period — known as Operational Mode — in which the Plant remains operational and produces between, approximately, 23GL and 91.25GL per year in line with the defined level of service. This includes water produced in response to an APR, including 'monthly phasing' or 'weekly phasing' of production, as well other production requests including an emergency response request for a specified agreed volume of water in an agreed timeframe (likely at short notice) in accordance with SDP's Network Operator's Licence, the Decision Framework and WSA. A single set of Plant and Pipeline charges would be levied in this 'default' mode.
- Simplifying the incentive and risk management mechanisms such that they apply in this single Operational Mode including:
  - A Service Level Incentive Scheme (SLIS) targeted at responding to APRs in Operational Mode (see 7.1)
  - An Efficiency Carryover Mechanism (**ECM**) (see section 7.2)
  - An Energy Adjustment Mechanism (**EAM**) whenever there are gains or losses incurred as a result of the difference between the cost of electricity and RECs under SDP's contracts with Infigen Energy (now Iberdrola Australia) and the market price for electricity and RECs arising from the sale of SDP's surplus electricity and RECs. (see section 7.3)
  - Energy network pass through, in-period re-openers and end-of-period true-ups

We also propose that IPART amend the definition in the 2017 Determination of a shutdown period which begins from the 11th consecutive day of no production. This could unduly penalise SDP as we may be requested by Sydney Water not to produce for a defined period (say due to an outage in the Sydney Water network) or we could be affected by an unplanned outage or other event outside our control. We consider that we are best placed, through engaging with Sydney Water and responding to the incentives in the proposed SLIS, to choose the length of any downtime for maintenance or significant capital works if this can be managed within our water supply obligations.[70]

A summary of the proposed Operational Mode and the operating characteristics is provided in **Figure 6.1**. Further detail on how the proposed mode-based prices apply is set out in 12.3.

70 (i.e. replacement of assets as the reach design life, or prudent and efficient improvements to the plant in order to meet the defined level of service but which may require durations greater than 11 days to complete safely)

Figure 6.1: *Proposed pricing arrangements over the 2023-27 regulatory period*

Source: Sydney Desalination Plant

Table 6.1 compares our proposed operating modes for the 2023 Determination with those included by IPART in the 2017 Determination.

Table 6.1: *Comparison of proposed operating modes for the 2023-27 regulatory period and the operating modes approved in IPART's 2017 Determination*

Operating state	2017 Determination	Proposed pricing arrangements for 2023 Determination
Operation outside drought (e.g., emergency response) consistent with defined level of service	Plant Operation Mode	Prices for Operational Mode set in 2023 Determination. As per 2017 Determination
Operation during drought consistent with defined level of service	Plant Operation Mode	Prices for Operational Mode set in 2023 Determination. As per 2017 Determination
Operation **not** consistent with defined level of service	Plant Operation Mode (albeit IPART noting technical non-compliance)	Prices to be negotiated between SDP and Sydney Water with IPART approved pricing principles
Transition to restart period from Long-term Shutdown	Restart mode	Prices to be negotiated between SDP and Sydney Water with IPART approved pricing principles
Transition to Long-term Shutdown	No regulated mode. Transition to shutdown charges levied on shutdown trigger	Prices to be negotiated between SDP and Sydney Water with IPART approved pricing principles
Long-term shutdown	Water Security Mode (no production for more than 10 days)	Prices to be negotiated between SDP and Sydney Water with IPART approved pricing principles

Additional information on the proposed structure of water usage charges is provided in section 12.

6.3.3. Proposal

We propose:

3. To retain 'building block' revenue requirements and price caps that enable SDP to recover the efficient costs of operation, including:
   - Maintaining a single regulated Operational Mode, which will be the 'default mode' that applies when the Plant is available to produce water or is requested by Sydney Water to produce water (irrespective of the amount) in accordance with SDP's Network Operator's Licence, the Decision Framework and WSA, and consistent with the defined level of service.
   - Amending the definition of a shutdown period in the 2017 Determination so that it does not commence on the 11th consecutive day of zero water production.

7. Proposed changes to incentive and risk management mechanisms

Key messages

- We support many aspects of the existing incentive and risk management mechanisms where they provide a flexible and resilient regulatory framework capable of accommodating changes in policy, regulatory and market conditions. In some instances, we are proposing changes to the existing incentive and risk management mechanisms to better align SDP's interests with the long-term interests of customers.
- Our proposals include a 'Service Level Incentive Scheme' (SLIS) that amends the existing abatement mechanism to provide a more targeted, proportionate and symmetric incentive scheme. The SLIS is focused on incentivising our response to Sydney Water's production requests, and promoting efficient operation and maintenance of the Plant in line with Good Industry Practice.
- We propose retaining the Energy Adjustment Mechanism with some amendments to reduce SDP's exposure to windfall gains and losses. The existing mechanism imposes significant risks that are not within SDP's control.
- To ensure prices reflect the efficient cost of providing services, we are proposing our prices be adjusted through the 2023-27 regulatory period to enable:
  - The continued pass through of electricity network charges
  - An end-of-period true-up for material movements in ancillary service charges, market fees, network losses, any other new fees introduced by energy market regulators, land tax and council rates, chemical costs, and insurance
  - A cost pass through for UFE , RERT and generator compensation charges
  - A mid-period decision re-opener for events that are exogenous to SDP, have resulted in (or have the potential to result in) a material change in SDP's efficient costs, and which cannot be mitigated or prevented by alternative risk management measures, including regulatory changes, taxation changes, natural disasters and other events.

As explained in section 1.1, our overarching objective is to promote efficient investment in, and efficient operation and use of, the Plant for the long-term interests of customers. To this end, the 2017 Determination included a number of risk management and incentive mechanisms including:

- Abatement mechanism
- Efficiency carryover mechanism
- Energy adjustment mechanism
- Cost pass-through of electricity network charges.

We have identified some aspects of the current framework that could be improved in relation to these mechanisms:

- **Incentives**. Ensuring that the framework provides targeted, proportionate and symmetric incentives to deliver cost savings and service improvements over time, whichever operating mode applies.
- **Efficient risk management**. Establishing arrangements that appropriately share the risk of movements in costs of providing our services with customers.

7.1 Service Level Incentive Scheme

7.1.1. Background

Economic regulators, including IPART, have increasingly used service level incentive schemes (SLISs) alongside cost efficiency incentive schemes to provide balanced incentives "to pursue ongoing improvements in performance and reduced costs."[71] In particular, IPART has flagged that in future it will adopt incentive mechanisms — known as Outcome Delivery Incentive (ODI) mechanisms — which tie financial rewards and penalties to the delivery of key customer outcomes that promote customer value. It therefore expects regulated businesses to propose relevant customer outcomes, and specific measures for each outcome that will promote customer value.[72]

The SLIS in the 2017 Determination related to SDP's performance in fulfilling what was then seen as its primary or core function — that of a drought response asset. Known as the abatement mechanism, its stated objective was "to provide a financial incentive to SDP to maximise its production and supply of water during drought."[73] This reflected the obligation under SDP's network operating licence at the time that "the desalination plant must maximise water production when dam storage levels in Sydney are below a prescribed threshold." The scheme was designed when SDP had been non-operational for an extended period and IPART had concerns regarding SDP's financial incentives to maintain the assets, restart the Plant, and achieve and sustain full production in response to a drought. Fundamental to the scheme was the Plant's design context and primary duty as a long-term drought asset and thus performance was measured at minimum over a rolling 365 day period, with incentives netted off over the entire period of drought. Through this mechanism financial penalties were imposed through ongoing positive or negative adjustments to SDP's fixed Plant service charges ('abatable charges') relative to average Plant production being in surplus or deficit against a target of full production when required.[74]

As outlined in the section above, SDP's role under our Network Operator's Licence will broaden considerably. Rather than only operating at full capacity during defined periods of drought, SDP will change to flexible full-time operation to enable it to respond to production requests from Sydney Water. In doing so, however, SDP's Network Operator's Licence makes clear that the dominant imperative (and absolute standard of compliance) is for SDP to respond to APRs (or requests over 365 days) — which can range from SDP's proposed minimum of 23GL per year to a maximum 91.25GL per year) — relative to other types of

71 IPART, Draft Water Regulatory Framework: Technical Paper, May 2022, p32.

72 IPART, Draft Water Regulatory Framework: Technical Paper, May 2022, p36.

73 IPART Final Report, Sydney Desalination Plant Pty Ltd, Review of prices from 1 July 2017 to 30 June 2022, Final Report, June 2017, p. 33.

74 The financial penalties result from an adjustment in the fixed Plant service charges ('abatable charges') by the 12-month rolling-average abatement factor when the Plant is in operation or restart mode. While financial rewards in the form of upward adjustments to the fixed Plant service charges were also available in the short term, any net 'over-recoveries' were required to be returned to Sydney Water at the end of the period.

production request such as monthly sequencing and emergency response (where SDP is required to use its best endeavours). This recognises that these requests are important but there is a need for flexibility to respond to shorter term requests or requests with shorter notice periods.

These significant changes to SDP's operating environment and the services it will be asked to deliver mean there is a need to develop a SLIS which, while drawing appropriately on the 2017 abatement mechanism, is fit-for-purpose in this new operating environment.

7.1.2. Assessment

It is first important to recognise that SDP's broader regulatory and commercial environment already provides strong incentives to effectively fulfil our roles. In particular, SDP's Network Operator's Licence:

- requires SDP to maintain and operate our Water Industry Infrastructure in accord with Good Industry Practice, having regard to the Capacity of the Water Infrastructure, its duty, age and technological status
- requires SDP to comply with any APR (subject to a 10% tolerance band) made by the Sydney Water through the WSA, provided that the request is consistent with the Decision Framework
- requires SDP to use its best endeavours to comply with any request, other than an APR, made by Sydney Water, provided that the request is consistent with the Decision Framework and that compliance does not prevent SDP complying with an APR
- states that SDP is not required to meet these requests to the extent that it is "prevented wholly or predominantly by an event outside the reasonable control of the "Licensee.[75]

Under the WICA, SDP is required to report any licence non-compliances and IPART has the ability to audit SDP's compliance with all licence requirements and assess the validity of, or deal with, any instances of non-compliance directly. Compliance action can include monetary penalties and suspension or cancellation of the licence (with the approval of the Minister). In addition, the corporate reputational damage to SDP of failing to respond to Sydney Water's production requests would be significant. In fact, despite the absence of strong incentives or obligation to respond to emergency requests during the 2017-2023 Regulatory period, and under an environment that made it commercially unfavourable to produce water, SDP made best endeavours and responded successfully to all emergency requests in support of Sydney Water not only to avoid reputational damage, but also as SDP is committed to fulfilling its role for greater Sydney (see section 3.1).

Nevertheless, SDP supports incentive regulation and agrees that in principle a SLIS should apply over the 2023-27 regulatory period. This support is conditional on the SLIS being designed well so that it does provide balanced incentives "to pursue ongoing improvements in performance and reduced costs."[76] A poorly designed SLIS could in fact increase costs. The following sections:

- Identify the objectives and principles which should underpin the design and application of any SLIS to apply to SDP
- Consider the scope of a SLIS to apply to SDP to ensure it is fit-for-purpose in this new operating environment; and
- Outline detailed design elements of a SLIS which would best meet these objectives and principles.

Objectives and principles for a SLIS

The objective of the SLIS is to provide a targeted, proportionate and symmetric set of incentives for SDP to meet or exceed controllable performance standards where these are valued by Sydney Water (and its customers) in responding to production requests, and efficiently operate and maintain the Plant in line with Good Industry Practice.

To achieve this objective, SDP considers it critical that any SLIS should align with well-accepted regulatory and commercial principles as this will drive behaviour that is in the long-term interests of customers and avoid creating "an incentive to prioritise short term thinking over improved service performance and long-

75 Clause 1.4, SDP's Network Operator's Licence..

76 IPART, Draft Water Regulatory Framework: Technical Paper, May 2022, p32.

term innovation."[77] These proposed principles and their key implications for the design and application of the SLIS are set out in more detail in Appendix 7-1.

Table 7.1: *Key principles for the design of SLIS*

Principle
Effectiveness
Proportionate and timely
Reflect controllable performance
Symmetric
Minimise adverse incentives
Simplicity and clarity
Congruence and consistency

In addition to these well-accepted principles, it is essential to take into account some unique features of the Plant and its operating environment. These include:

- The Plant was designed to fulfil a drought response function periodically (i.e. to operate for relatively long periods during a drought when required at a relatively steady state, with considerable time (i.e. eight months) to reliably restart the Plant, rather than to be ready to respond to uncertain production requests at short notice).
- There is very limited experience in operating, overseeing and regulating the Plant in this more flexible operating environment, and thus little knowledge as to how the Plant will physically be able to perform in accommodating potentially rapidly changing production requests for varying volumes of water. Operating experience over the last regulatory period (see section 3.1) does however highlight that unanticipated events can occur which can impact on water production at the Plant, particularly over shorter timeframes, even when it is being maintained and operated in line with Good Industry Practice.
- Sydney Water has also had limited experience in implementing operating protocols with SDP and efficiently utilising the Plant as a fully integrated part of the greater Sydney water supply network. We do not want to introduce unintended erosion of flexibility for Sydney Water or undue administrative burden by implementing an inefficient incentive regime.
- SDP's Network Operator's Licence limits SDP's ability to make optimal decisions in maintaining and renewing the Plant relative to the previous Network Operator's Licence. The new Operating Rules provide Sydney Water with greater scope to determine water production phasing and thus limit SDP's ability to independently manage maintenance and asset renewal scheduling.
- SDP is a single asset business and is not able to diversify performance risk across a portfolio of assets like other water businesses.

These factors underline the importance of ensuring any SLIS to apply to SDP in the 2023-27 regulatory period is designed carefully to reflect these realities. In common with service level incentive schemes more broadly, the aim should be to encourage sustainable improvements to service rather than focusing on short-term or one-off infrequent events. SDP's performance over the 2017-2023 Regulatory period has seen it meet or exceed all its requirements, and as such there is no 'pressing problem to be solved' by implementing an excessively inflexible regime with disproportionate financial incentives. A key implication is that SDP's performance should be measured and assessed over suitably long timeframes of operation and against events within its reasonable control.

77 IPART, Draft Water Regulatory Framework: Technical Paper, May 2022, p32.

It also means there is a strong case for the financial incentives under any SLIS to apply to SDP in the 2023-27 regulatory period to be relatively conservative and avoid the potential for windfall penalties or rewards until there is sufficient operational experience with this new operating environment. In addition, because the Plant will now remain continuously operational, significant penalties are not required to ensure that it can operate if called upon (whereas previously the Plant would have been in long-term shutdown with risks that it could fail to meet restart and full production objectives). A key element of a Minimum Production period — equivalent to an APR of 23GL per year reflecting the expected minimum baseload volumes — is maintaining a state of readiness (including any demonstration of capacity or ramp-up 'tests'), in line with the defined level of service (see section 4.1.2).

Scope of proposed SLIS

A threshold issue to consider is the appropriate scope of the SLIS.

As a general principle, and as suggested by IPART,[78] there is a strong argument that a SLIS should focus on the key services of value to customers. It should also focus on those aspects of performance which are within the reasonable control of the business and the limitation of its assets.

Based on these considerations, we propose that the SLIS should apply to SDP's performance in responding to APRs **above the minimum production level estimated to be 23GL per year.**

7.1.3. Detailed design of the proposed SLIS elements

Within the scope outlined above, we have carefully considered how to adapt the 2017 abatement mechanism to design a SLIS which provides targeted, proportionate and symmetric incentives for SDP to meet or exceed controllable performance standards in responding to Sydney Water's APRs and efficiently operate and maintain the Plant in line with Good Industry Practice.

In doing so we have:

- Drawn on the existing abatement scheme but modified it to ensure it is fit-for-purpose in SDP's new operating environment
- Had regard to key regulatory principles as outlined above
- Taken into account IPART's position on incentive schemes as outlined in its recent Water Regulatory Framework review, including capping the size of the revenue adjustment to account for risks and adjusting revenues at the end of the period to account for volatility
- Consulted extensively with our customer, Sydney Water
- Sought to ensure consistency with key elements of the broader regulatory (e.g. SDP's Network Operator's Licence) and commercial frameworks (e.g. WSA)
- Reviewed service level and incentive schemes applying in other jurisdictions and sectors (see Appendix 7-2).
- Considered SDP's Network Operator's Licence requirements and proposed a SLIS which balances the preference for a simple and easy to administer scheme with the need to account for complexities of the new operational services we provide as an integrated part of Sydney's water supply.

More detail on how these considerations have informed the proposed SLIS is provided in Appendix 7-1.

The key elements of the proposed SLIS and their rationale are summarised in **Table 7.2**.

78 IPART, Draft Water Regulatory Framework: Technical Paper, May 2022, p37.

Table 7.2: *Proposed design of a Service Level Incentive Scheme (SLIS)*

Element	Details	Rationale
Scope of application	• SLIS which applies to APRs above the minimum production level (estimated to be 23G per year) but not to other production requests (e.g. emergency response)	• Ensures SLIS focuses on services of highest value to customers by providing financial incentives for significant over- or under- production in circumstances where water supply is valued by Sydney Water consistent with the requirements in SDP's revised Network Operator's Licence • Mitigates risk of unreasonable penalties being applied in short-term emergency response requests • Ensures that SDP is not incentivised to produce higher volumes of water at times when this would be of little value because water supply is plentiful
The basis for measuring performance (calculation of performance factor)	• Performance would be assessed by calculating a performance factor (PF) that compares annual production each financial year to the relevant APR and threshold • The APR would be subject to a tolerance limit of plus or minus 10% to ensure it only captures significant over or under production. • Calculation of annual production would allow flexibility for non APR requests or impacts outside SDP's control through variation of the APR or deemed production	• Provides an appropriate basis for measuring SDP's overall performance across APR periods aligned to the design of the Plant and current operating experience • Provides for a reasonable trade-off between a volume target and the flexibility desired under the GSWS, operating licence and by Sydney Water • Incorporates an appropriate 'tolerance limit' for performance as specified in SDP's Network Operator's' Licence and ensures incentives apply only to significant under or over- performance
Charging base to apply performance factor to	• Apply performance factor to fixed Plant service charges on annual basis, with true-up of rewards/ penalties at next regulatory period	• Represents appropriate quantum of financial penalties/rewards to provide effective but proportionate incentives for performance in SDP's new operating environment

Element	Details	Rationale
Timeframe for measurement and application	• Performance would be assessed over each financial year (365 day period) over the course of the regulatory period	• Represents suitably long timeframe for measuring SDP's performance and reflects the fact that in new operating regime the Plant will always be operating (under previous operating rules SDP predominantly only operated in response to drought) • Aligns with the duration of an APR. • Provides ongoing incentives for performance across the entire regulatory period, while providing incentive signals reasonably proximate to the performance
Provision for financial rewards	• Introduce provisions for appropriately targeted financial rewards for performance above specified service levels	• Consistent with key principle of symmetry in service level incentive schemes
Accounting for events beyond SDP's control	• The SLIS would not apply financial rewards/penalties (either through deeming of production or an adjustment to APR) for events for which SDP is not insured or where SDP's ability to comply with the APR is prevented wholly or predominantly by an event outside its reasonable control [78] (this concept reflects clause 1.4 of SDP's revised Network Operator's Licence). • These exclusions are reflected in SDP's proposed insurance allowance including BI insurance (see Section 9.8). To provide regulatory certainty this requires IPART establishing on an ex-ante basis what is reasonably commercially insurable and included in the insurance cost component of the opex allowance.	• This proposal relates to the principles that incentives be consistent with legislative requirements and good industry practice, and that SDP not be penalised for events beyond its reasonable control. • Under the current abatement mechanism, SDP would be penalised for certain events even where it was operating in line with good industry practice or in response to events beyond its control. Our proposed SLIS would provide regulatory certainty to SDP for risks that arise from events outside our control.

Element	Details	Rationale
• Caps on penalties/ rewards	• Propose a combined cap on incentives across the SLIS and the Efficiency Carryover Mechanism (ECM) of 2.5% of fixed Plant service charges to apply to both financial penalties and rewards • The 2.5% cap would apply to SLIS financial rewards/penalties 'trued-up' at the end of the regulatory period for events that impact SDP's ability to comply with the APR that are largely within SDP's reasonable control or are in2sured. This cap is reflected in SDP's proposed insurance allowance including BI insurance (see Section 9.8). This would include, but not limited to, insurable events (see Figure 7.1 in Appendix 7-1) that have a BI impact.	• The proposed cap relates to the principles that incentives be consistent with legislative requirements and good industry practice, that SDP not be penalised for events beyond its reasonable control., and that any financial rewards/penalties be proportionate. • The cap will also put significant downward pressure on SDP's insurance costs (by reducing BI insurance limits) that are being impacted by rising premiums in the global insurance market and the cost of managing emerging risks, thereby reducing SDP's charges needed to recover these costs • This cap represents between 1.5% and 1.9% of total revenues (between full operation and baseline production respectively). This is higher than the 1% threshold endorsed by IPART[79] recognising the importance of these services • Applying the cap jointly to both the SLIS and ECM provides mirrored incentives for service and cost efficiency performance as per IPART's Draft Water Regulatory Framework

It is important to note that our proposed SLIS retains many features of the existing abatement mechanism. This includes excluding fixed pipeline charges from abatement. For the latter, we consider the incentives in place are sufficient for the existing charges and we would require additional insurance coverage if the pipeline charge were to be included and abated.[80]

However, we have proposed some amendments to ensure the new SLIS better aligns with the key regulatory principles outlined above. In particular, simply mirroring the 2017 abatement mechanism may:

- Impact SDP's financial viability and our ability to invest in the Plant consistent with Good Industry Practice. Our assessment of other performance standard incentive schemes (see Appendix 7.2) indicates that the abatement mechanism was unusually punitive, with no cap on financial penalties and no commensurate rewards to SDP for outperformance.
- not provide appropriate incentives aligned to APR timeframes consistent with the Decision Framework as the 2017 abatement mechanism was intrinsically tied to assessing performance over drought periods which could be significantly shorter or longer.
- lead to perverse outcomes including for SDP to be overly conservative with operational and expenditure decisions.
- deny the flexibility desired by Sydney Water and outlined in the GSWS, as the 2017 abatement mechanism is predicated on SDP having full control of Plant operation, including the scheduling of water production and that the sole objective is to maximise water production.

All these outcomes would not be in the long-term interests of customers.

79 IPART, May 2022, Delivering customer value, Draft Water Regulatory Framework: Technical Paper, p. 38.

80 The cap applies in a force majeure scenario and so that means that BI insurance limits are based on the cap rather than the full plant fee, so Sydney Water will be charged the plant fee less the cap in such an event.

We therefore consider that some refinements to the abatement mechanism is required to ensure SDP is provided with targeted and proportionate financial incentives to fulfil its evolving role. We also propose the name of the abatement mechanism be changed to the 'Service Level Incentive Mechanism' (**SLIS**) to better reflect SDP's new operating environment and refinements to IPART's broader regulatory framework for the water sector stemming from its recent review.

7.1.4. Proposal

4. We propose a new Service Level Incentive Scheme (SLIS) that replaces the 2017 Determination abatement mechanism to provide a more targeted, proportionate and symmetric incentive scheme which reflects SDP's new operating environment and the services valued by our customer, and efficient operation and maintenance of the Plant and other assets in line with Good Industry Practice.

- The SLIS would apply to APRs above the minimum production level (estimated to be 23G per year) but not to other production requests (e.g. emergency response)
- A +/- 10% tolerance limit for both financial penalties and rewards consistent with SDP's Network Operator's Licence.
- An annual cap on SLIS financial rewards/ penalties of 2.5% (in combination with other efficiency mechanisms) of annual fixed plant charges. The 2.5% cap would apply to SLIS financial rewards/ penalties 'trued-up' at the end of the regulatory period, for events that impact SDP's ability to comply with the APR that are largely within SDP's reasonable control or are insured. This cap is reflected in SDP's proposed insurance allowance including BI insurance (see Section 9.8). This would include, but not limited to, insurable events that have a BI impact and are covered by insurances [redacted]
- The SLIS would not apply financial rewards/penalties (either through deeming of production or an adjustment to APR) for events for which SDP is not insured where SDP's ability to comply with the APR is prevented wholly or predominantly by an event outside its reasonable control (as per SDP's Network Operator's Licence). To provide regulatory certainty this requires IPART establishing on an ex-ante basis what is reasonably commercially insurable and included in the insurance cost component of the opex allowance.

7.2. Efficiency Carryover Mechanism

7.2.1. Background

The Terms of Reference provide that "SDP should be allowed to carryover demonstrated efficiency savings, net of efficiency losses, in operating expenditure in providing the water supply services for a period of four years following the year in which the efficiency saving was achieved." IPART is required to publish a Methodology Paper setting out its approach to implementing this principle and may update the Methodology Paper from time to time.

In 2019, IPART published an updated Methodology Paper setting out its approach to implementing the ECM to maximum prices applying to SDP from 1 July 2017. The stated purpose of the ECM is, "to allow SDP to retain permanent efficiency savings for a period of time before these savings are passed on to customers through lower prices."[81]

The ECM applies only to permanent net reductions in operating costs. In addition, it also distinguishes between 'general efficiency savings' and 'mode-specific efficiency savings'.

- General efficiency savings are those which occur every year regardless of what mode the Plant is in. The ECM allows these general efficiency savings to carryover for five years. Following this five consecutive year period, customers benefit each year in perpetuity from lower prices as a result of the permanent efficiency saving.
- Mode-specific efficiency savings are those which occur only when SDP is in that specific mode. The ECM allows mode specific savings to be retained by SDP for up to five years, while SDP is in that mode, during a five consecutive year period.

IPART included an efficiency carryover of $51,100 per year for the first three years of the 2017 Determination period based on applying the 2012 Methodology Paper, reflecting a reduction in insurance costs borne by SDP. This carryover represented a 'general efficiency saving'.

7.2.2. Assessment

SDP supports the principle of incentive regulation and concurs that the ECM should allow SDP to retain permanent efficiency savings for a fixed period, regardless of when they are realised, before these savings are passed on to customers through lower prices. This ensures there are equal financial incentives for SDP to pursue efficiency gains throughout the determination period.

However, the distinction between general and mode-specific efficiency savings no longer reflects how SDP is required to operate. The GSWS and SDP's Network Operator's Licence envisage SDP remaining constantly operational and always responding to an ARP. Thus the distinction between modes should be removed from the ECM. Efficiency gains realised under the ECM should be based on the operating expenditure allowance for the actual level of production in each year and carried forward for four years in addition to the year the efficiency gain is achieved.

We also note that the mode-based approach to the ECM provided relatively weak incentives as there were few opportunities for SDP to retain efficiency savings for five years. This is because the ECM allowed mode-specific savings to be held for up to five years only while SDP was in that specific mode over a five consecutive year period beginning in the year the saving was first achieved.

Our proposed change would align the ECM with SDP's Network Operator's Licence, simplify the ECM and strengthen the incentive for SDP to make efficiency savings throughout the determination period, thus benefiting customers through lower prices over the medium to longer term.

We also consider our proposed incremental, yet important, change to the current ECM plus our proposed SLIS and the cap applied across both schemes (as outlined in 7.1) are steps towards IPART's proposed package of incentive schemes outlined in its Draft Report on its Water Regulatory Framework, while

81 IPART, Sydney Desalination Plant Pty Ltd Energy Adjustment and Efficiency Carryover Mechanisms, Methodology Paper, June 2017, p 2.

allowing IPART and other stakeholders (including SDP) further time to understand and confirm the detail of its proposed schemes.[82]

7.2.3. Proposal

We propose:

5. To retain an Efficiency Carryover Mechanism that allows SDP to carryover demonstrated efficiency savings, net of efficiency losses, in operating expenditure for four years following the year in which the efficiency saving was achieved, but
   - remove the current operating mode distinction and instead base efficiency gains on the operating expenditure allowance for the actual levels of supply in the relevant period
   - apply a combined cap across the SLIS and the ECM, as outlined in our proposal on the SLIS.

7.3. Energy Adjustment Mechanism

7.3.1. Background

Desalination is an energy intensive process. The cost of energy is a significant proportion of SDP's operating expenditure when in operation mode.[83] However, when in Water Security Mode, or in some form of high availability or low flow production, SDP's energy requirements are modest, meaning the cost of energy is a small proportion of SDP's operating expenditure.

The SDP Project Approval under former s75J of the *Environmental Planning and Assessment Act 1979* required the development of a greenhouse gas reduction plan (GGRP), to be approved by the Director-General, prior to the commencement of operation of the Plant. The GGRP details a strategic plan for the management, minimisation and offset of greenhouse gas generation associated with electricity supply for the Plant.

As part of the approved GGRP, SDP has a legal obligation to purchase electricity and LGCs at defined prices under the GGRP Contracts.[84] The contracts provide a long-term hedge against volatility in the price of electricity and 100% renewable energy and provide a stable and predictable set of energy costs that are necessary to underpin investment in the Plant. Further information on SDP's long-term contracts for the procurement of energy are provided in section 9.6.

Unlike many other regulated water businesses, SDP does not control when, for how long, and at what capacity it operates. This control rests with Sydney Water and is governed by the principals of the GSWS, SDP Network Operator's Licence, the Decision Framework and the WSA. The principles of the GSWS which the Plant is expected to operate under through the Network Operator's Licence, Decision Framework and WSA include:

- that the Plant provides a minimum baseload volume each year to enable it to meet the level of service requirements, including enabling it to respond to production requests; and
- that the volume of water produced by the Plant can be varied as needed (in line with the Decision Framework and WSA) to support the resilience of the system, including being increased to slow down dam depletion during droughts and keep dam levels higher when needed, and being decreased when dam levels are high in order to minimise the risk of spills and maintain cost effectiveness.

These principles will require SDP to remain continuously available to operate in response to production requests from Sydney Water.

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82 IPART's Draft Water Regulatory Framework Technical Paper, released in May 2022, proposes an operating expenditure Efficiency Benefits Sharing Scheme (EBSS) for opex, a Capital Efficiency Sharing Scheme (CESS) for capex, and an Outcome Delivery Incentive (ODI) Scheme for service outcomes, all subject to a global cap.

83 In addition, the original planning conditions for the plant required SDP to develop a Greenhouse Gas Reduction Plan for managing greenhouse gas generation associated with electricity supply to the plant, including powering the plant with 100% renewable energy.

84 RECs were the primary commodity trading in the RET prior to 1 January 2011. From 1 January 2011, RECs were split into the Large-scale Renewable Energy Target (LRET) that is met by trading LGCs, and the Small-scale Renewable Energy Scheme (SRES) that is met by trading Small-scale Technology Certificates (STCs).

When the Plant is not in full production, SDP can sell 'surplus' energy (that is, the difference between the minimum energy volumes SDP is required to purchase under the GGRP contracts and the Plant's energy requirements) back to the market. In doing so, SDP is exposed to differences between the GGRP contract prices and prevailing market prices.[85] These risks are outside SDP's control since it:

- does not control when it operates, how much water it is required to produce, and for how long, making it impossible to accurately identify the size and timing of parcels of surplus energy in the future (this lack of visibility of the size and timing of surplus energy has been a feature of the period under which SDP has been subject to emergency response requests from Sydney Water since March 2020);
- has no control over the price of energy under the GGRP Contracts (see section 9.6 for more detail on SDP's energy costs); and
- has very limited control over the price it receives for surplus energy in the market (see Appendix 7.4 for a report from Seed Advisory and Energetics on the potential risks and opportunities from seeking to forward sell surplus energy).

Recognising the role of SDP's long-term contracts in managing the energy volume uncertainty and price risks, the Terms of Reference require IPART to include a mechanism that shares any gains and losses on surplus energy between SDP and customers. The mechanism is required to:

- allocate to customers the costs or benefits of actual gains or losses beyond a core band that results from the difference between SDP's costs of electricity and RECs (now called LGCs) under the GGRP contracts and revenues from the sale of surplus electricity and RECs; and
- operate at times when SDP complies with its requirements to maintain and operate the Plant under clause A1 of it network operator licence.

To comply with this Terms of Reference requirement, IPART developed and has applied the EAM. In the 2017 Determination, IPART's specification of the mechanism:

85 Notably, when the market price is below its contract price, SDP incurs a loss on the resale of surplus energy. On the other hand, if the market price exceeds the contract price, SDP makes a gain on the resale of surplus energy.

- passes through 80% of losses (gains) above a threshold of 5% of the minimum contract cost that are incurred (received) when the Plant is in Water Security or Restart mode, applied on an annual basis (for clarity, the previous Terms of Reference provided that the EAM would only apply during Water Security or Restart Mode, however this requirement has been removed under the new Terms of Reference);
- requires SDP to act prudently to minimise its exposure to losses on the resale of surplus electricity and RECs (in its 2017 Determination, IPART signalled that it will undertake a prudence review of SDP's trading policy and trading activity at the next price review and may decide to exclude trades from the EAM if there is evidence of imprudence in the management of SDP's surplus energy); and
- does not apply if the Infigen contracts are assigned by SDP to a third party or terminated.

In the 2017 Determination, IPART increased SDP's share of gains and losses that occur outside the core band from 10% to 20%. In making this change, IPART noted that it would "provide SDP a stronger incentive to prudently manage its surplus energy (particularly its surplus electricity contracts)."[86] In addition, it added that "by increasing SDP's share of gains or losses outside the core band from 10% to 20%, we are removing the potential disincentive to forward sell surplus energy."[87]

Over the 2016-17 to 2020-21 period, application of the core band and the sharing ratio outside the core band means that SDP will bear approximately 38% of total gains or losses on surplus energy.[88]

7.3.2. Assessment

The EAM plays an important role in the regulatory framework. It should be designed to:

- incentivise SDP to manage gains and losses from surplus energy where they are controllable, including minimising the exposure of customers to losses from surplus energy in areas that are within SDP's ability to control;
- minimise exposure to windfall gains and losses for those events outside our control to minimise adverse cash flow and financeability issues; and
- ensure prices are consistent with the Terms of Reference including ensuring prices reflect the efficient costs of providing services over the regulatory period, and that prices encourage SDP to be financially indifferent as to whether it supplies water.

7.3.2.1. Under the current EAM settings, the risk borne by SDP is disproportionate to its control over gains and losses

However, the current specification of the EAM is not consistent with these principles. In particular, under the current EAM, SDP bears a level of risk that is disproportionate to the control it has over gains and losses. To explain this, it is instructive to consider that the size of gains and losses will depend on three key factors: the volume of surplus energy, the price that SDP pays to purchase electricity and LGCs, and the price that SDP receives from selling surplus electricity and LGCs.

However:

- **SDP has no control over surplus energy volumes:** Under the Network Operator's Licence, SDP is expected to remain continuously available to operate in response to Sydney Water's production requests. However, SDP has little ability to foresee how the Plant will be used in the future. That is, SDP does not control when it will be asked to operate, how much water it will be required to produce, and for how long. This has been the experience to date while SDP has been subject to frequent (fifteen in total since March 2020) Emergency Response Notices form Sydney Water. In each case, SDP has been given limited warning of the ERN and has had to respond quickly, in some case ramping up production to the maximum capacity of the Plant within 24-48 hours of a notice. This makes it impossible to predict how much surplus energy there will be in future periods without creating conflicting incentives for SDP. For instance, SDP may face a financial conflict when responding to Sydney Water's production

86 IPART, *Sydney Desalination Plant Pty Ltd Energy Adjustment and Efficiency Carryover Mechanisms: Methodology Paper*, June 2017, p.39.

87 IPART, *Sydney Desalination Plant Pty Ltd Energy Adjustment and Efficiency Carryover Mechanisms: Methodology Paper*, June 2017, p.40.

88 SDP made total gains of $10.15m (nominal) from the sale of surplus energy over the 2016-17 to 2020-21 period. The application of the EAM means that SDP will retain $3.85m (nominal) of the total gains (approximately 38%). The difference of $6.3m (nominal) will be returned to customers. See section 11.6 for further information on how these values were calculated.

requests if SDP is faced with a decision between incurring potentially higher energy costs, or incurring financial penalties under the SLIS from not meeting APRs. This would compromise the Plant's available capacity and constrain SDP's ability to respond to Sydney Water's future production requests to a production level that is aligned to the remaining energy available under the GGRP Contracts.

- **SDP has no control over GGRP contract prices:** SDP has no control over the price of energy under the GGRP Contracts (see section 9.6 for more detail on SDP's energy costs)
- **SDP has very limited control over the price it receives for surplus energy:** SDP has two main trading strategies to manage its surplus energy. It can sell its surplus energy as accrued at prevailing market prices, or it can forward sell expected surplus energy at relevant futures prices. Under the first strategy, SDP is exposed to movements in prevailing market prices, which it cannot control and which could be above or below the GGRP contract prices. Under the second strategy, SDP is exposed to movements in forward premiums[89], which are highly volatile and not capable of being forecast with any reasonable degree of certainty (see the following section). SDP also has no control or knowledge of the volume of surplus energy that may be available (if any). These factors mean that SDP has very little control over the value of gains and losses on surplus energy

7.3.2.2. Forward selling is not an appropriate trading strategy

In its 2017 Determination, IPART suggested that SDP could actively manage gains and losses on surplus energy by forward selling surplus energy on futures markets. IPART's energy market consultants, Marsden Jacob Associates, stated that SDP could be expected to achieve a forward premium of approximately 5%.

However, the Marsden Jacob Associates' analysis:

- ignores the fact that the forward premium is extremely volatile over time and cannot be expected to return an average positive premium;
- ignores that surplus energy volumes can vary substantially over time, and any forward premium would be heavily dependent on the expected timing of surplus energy volumes;
- excludes the transaction costs involved in forward selling energy.
- The inaccuracy of Marsden Jacob Associates' forward premium assertion is borne out by the fact that, based on SDP's actual production and surplus volumes over the 2017-22 period, forward selling energy would have resulted in a negative forward premium relative to selling surplus energy on the spot electricity market.

SDP does not consider that forward selling surplus energy is an appropriate trading strategy and does not consider that forward selling surplus energy will change the (limited) control it has over the size of gains and losses.

Forward selling creates conflicting incentives for SDP impacting the operational availability of the Plant and reducing Sydney Water's ability to issue production requests. Consider, for instance, a situation where SDP has forward sold electricity for a future period based on a forecast of required water supply for that period. Now assume that Sydney Water issues a production request to SDP for a volume of water that is higher than the level assumed by SDP.

In this case, SDP could meet the production request by 'buying back' the required electricity from the market. However, given the high level of volatility in the energy market, this option may result in SDP buying back electricity at much higher market prices, imposing a significant additional cost on the business. It would also result in SDP incurring additional transaction fees. Alternatively, SDP could elect to not increase water production beyond the forecast level. This would mitigate any additional energy costs from the production request (since SDP would not buy back additional electricity from the market, nor incur the associated transaction fees) but potentially impose abatement costs on SDP.

As with many regulated businesses, it is in SDP's interest to select a course of action that will minimise its costs. However, as demonstrated above, requiring SDP to forward sell electricity creates a financial conflict between incurring potentially higher energy costs, or incurring abatement costs. Faced with this decision, the cost minimising response may be to not meet the production request. This action would be inconsistent with the principles in the GSWS, and SDP's critical role in securing Greater Sydney's water supply.

In short, SDP submits that requiring SDP to forward sell surplus electricity:

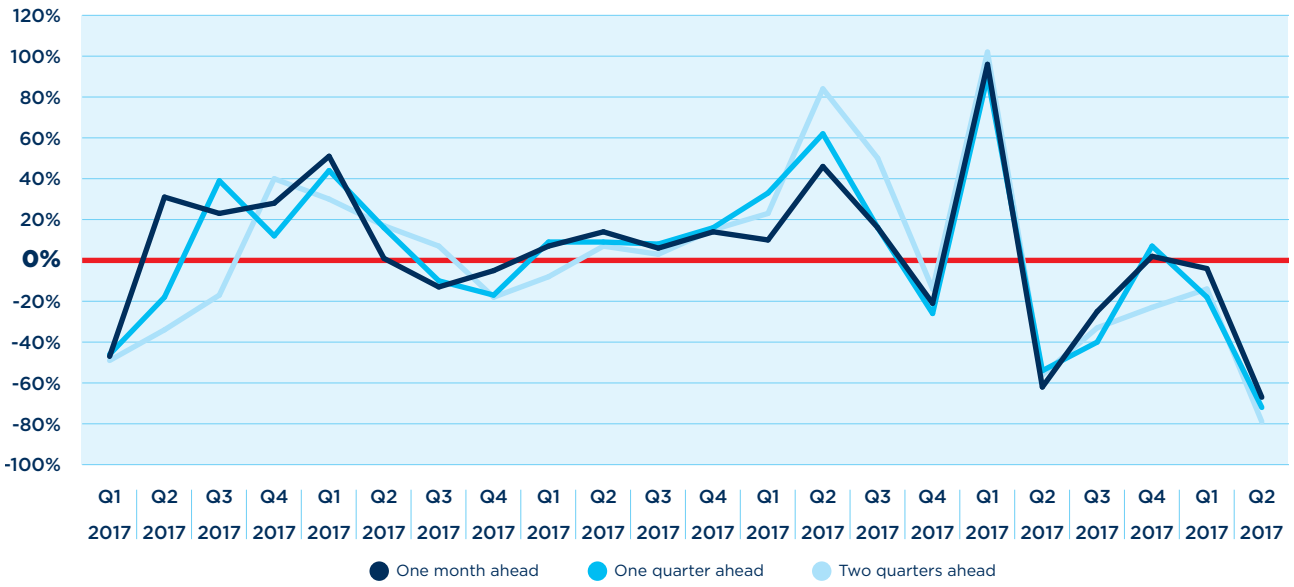
89 Forward premiums refer to the difference between the average forward price and the average spot price for the same period.

- may create a financial conflict when responding to SWC's production requests if SDP is faced with a decision between incurring potentially higher energy costs, or incurring abatement costs; which
- may create a physical conflict by impacting the operational availability of the Plant and reducing SDP's capacity to meet SWC's production requests; and
- being faced with these conflicts is inconsistent with the principles in the GSWS, and SDP's critical role in securing Greater Sydney's water supply under its Network Operator's Licence.

In addition to this, SDP submits that it is unreasonable to expect that a strategy of forward selling will result in a net benefit for SDP (and consumers), and to suggest otherwise is divorced from the practicalities and realities of energy trading. SDP engaged Seed Advisory to prepare a report examining the extent to which SDP can benefit from forward selling surplus energy in RP2 (see Appendix 7-3). This report explains that forward trading electricity is highly risky for SDP because it requires SDP to speculate on energy prices and surplus volumes. This report also demonstrates and states that forward trading is a higher risk proposition for SDP and customers relative to selling surplus energy at the spot price because it introduces volume uncertainty i.e., the risk the volume will have to be bought back from the market to manage a production request.

To forward trade, SDP would need to forecast futures and spot prices and speculate on whether forward selling energy at one time would be better than an alternative time (e.g., two quarters ahead, one quarter ahead, or settle at the spot price). As can be seen from **Figure 7.1**, forward premiums are highly volatile. While there are times when forward selling surplus energy would have benefited SDP (and customers), there are equally times when forward selling would have resulted in losses (vis-à-vis its current trading strategy). Given the significant volatility in forward premiums, it is impossible for SDP to know in advance whether it would be better or worse off by forward selling surplus electricity. It would not be consistent with SDP's role under its Network Operator's Licence to speculate on energy markets. Our view is that the proposed improvements in risk allocation will provide long-term benefits to customers, as SDP's management effort will be able to focus exclusively on those risks and service performance issues relating to its primary role and within its control.

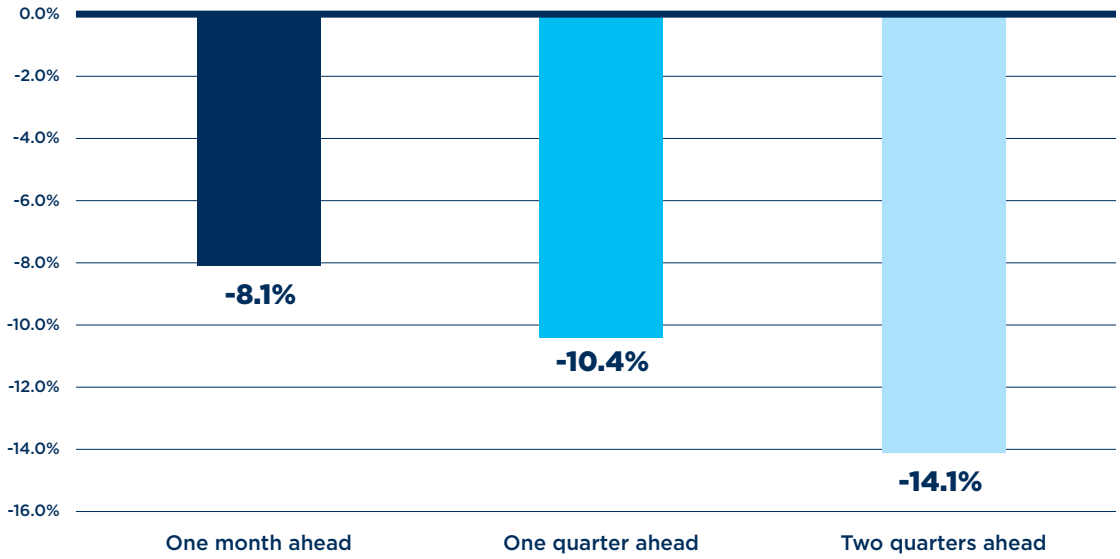
Figure 7.1: *NSW quarterly average forward premium for electricity, Q1 2017 to Q2 2022*



Source: Seed Advisory.

To illustrate this further, **Figure 7.2** below sets out the average forward premium for the period Q1 2017 to Q2 2022 by different trading strategies. This shows that under each trading strategy, the average forward premium would have been negative (I.e., the spot price was higher than the relevant forward price). Note that both **Figure 7.1** and **Figure 7.2** do not include transaction costs associated with forward selling surplus electricity, so actually realised margins will be lower than what is presented on these charts.

Figure 7.2: *Total period average forward premium for electricity, Q1 2017 to Q2 2022*



Source: Seed Advisory

Note that both **Figure 7.1** and **Figure 7.2** do not include transaction costs associated with forward selling surplus electricity, so actually realised margins will be lower than what is presented on these charts.

At the same time, forward trading would require SDP to forecast its actual energy volume requirements and thus what is surplus to requirements, basically speculating on the Plant operational requirements and forward selling Plant capacity and availability. Since the 2019 restart, SDP has remained operational to provide emergency response production at unpredictable times, for unknown volumes. In this context, it has been impossible to predict how much production Sydney Water would request of SDP and, therefore, it has been impossible to predict what volume of energy would be surplus to requirements and amenable to forward sale.

The introduction of the new Network Operator's Licence is a very significant change since the time of the 2017 Determination and means SDP will have much less advance notice of whether it will have surplus electricity, and if so the quantity of surplus electricity. Under its new Network Operator's Licence, SDP will not know when it will be called upon to meet Sydney Water's production requests (timing), how much water SDP will be required to produce under each request, and how much surplus energy SDP will be holding in future periods (volume). Therefore, under SDP's Network Operator's Licence, it will be impossible for SDP to predict when and how much energy would likely be surplus to requirements. At the same time, energy markets remain highly volatile, making speculation about market prices very risky.

Finally, speculative forward trading is outside SDP's financial risk profile as a water company. If SDP is required to forward sell surplus energy, it will be operating as both a water company and an energy trader. The additional risks faced by SDP when engaging in energy trading would require further compensation than is currently provided via the WACC allowance. In other words, there would be additional risks faced by SDP that SDP would not be compensated for fully by the regulatory allowance. In our view, requiring SDP to forward trade electricity would increase SDP's overall risk profile. The regulatory allowance would need to be amended to compensate SDP for the elevated level of risk that SDP is required to bear, which will in turn increase SDP's costs and prices for customers.

In summary, SDP has little to no control over the volume of surplus energy, the price that SDP pays to purchase electricity and LGCs, and the price that SDP receives from selling surplus electricity and LGCs. As such, it has little to no control over the size of gains and losses on surplus energy. The value of the core band and sharing ratio in the EAM do not change the very limited control that SDP has on the size of gains and losses on surplus energy. That is, a high core band and sharing ratio does very little to change SDP's incentive or ability to manage the size of gains and losses on surplus energy, and hence will not change SDP's surplus trading strategy.

7.3.2.3. SDP is proposing a change to the core band and sharing ratio

For these reasons, SDP considers that the core band and sharing ratio should be amended for the 2023-27 regulatory period to reduce SDP's exposure to windfall gains and losses from the sale of surplus energy. SDP submits that the change in SDP's Network Operator's Licence is sufficient grounds to justify departing from

IPART's 2017 Determination on the EAM sharing parameters. In our view, passing through a greater proportion of gains and losses to customers is consistent with the very limited control that SDP has on the size of those gains and losses. Further, SDP submits that this change will not diminish its incentive or ability to manage the size of gains and losses, but it would result in a more efficient allocation of opportunity and risks.

SDP proposes that IPART amend the EAM for the 2023-27 regulatory period to reflect the following:

- extend the operation of the EAM so that it applies to gains and losses on the sale of surplus energy and RECs under any operating mode (consistent with the new Terms of Reference)
- adopt a sharing ratio of 95/5 on all gains and losses on the sale of surplus energy and RECs outside a 2.5% core band (i.e., 95% of any gain or loss on surplus energy outside the 2.5% core band is passed through to customers).

Table 7.3: *Comparison of 2017 Determination and SDP's proposal*

EAM parameter	2017 Determination	SDP's proposal for the 2023-27 regulatory period
Mode of application	Water Security Mode and Restart Mode	Operational Mode (and in the rare event Sydney Water requests the Plant to be shutdown)
Core band	5%	2.5%
Sharing ratio outside of core band (customers v SDP)	80:20	95:5

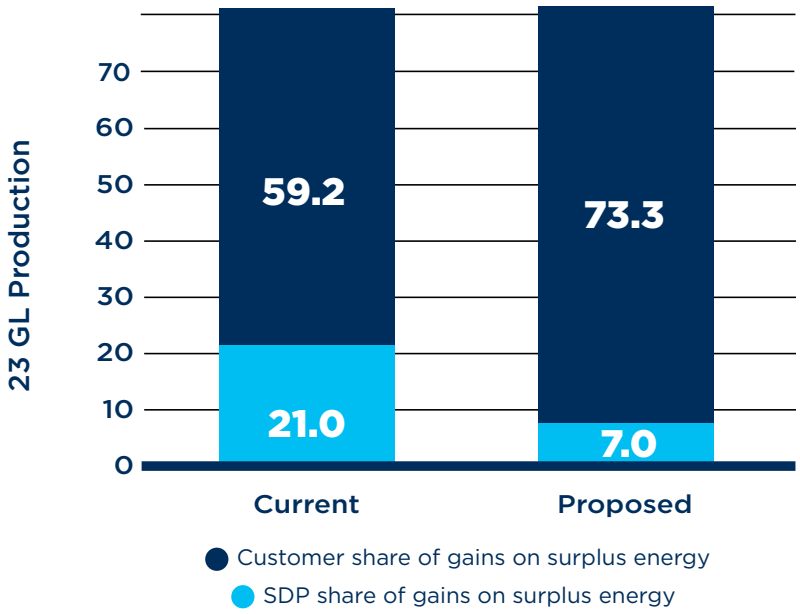
Source: Sydney Desalination Plant

Publicly available information covering the majority of the 2023-27 regulatory period indicates that the combined energy benchmark price involving market prices for electricity and LGCs are likely to exceed the combined energy and LGC prices in the GGRP contracts. This includes ASX electricity base swap contracts

and LGC forward prices published by Mercari from 2022-23 to 2025-26. For simplicity we have assumed prices for both energy and LGCs stays flat in real terms in 2026-27.

Based on this information, we estimate SDP will make a total gain on the sale of surplus electricity and LGCs during over this period. Adopting SDP's proposal will mean that a larger proportion of this gain will be returned to customers (see **Figure 7.3** below). Note that this analysis assumes that SDP will produce 23GL of water per annum.

Figure 7.3: *Expected sharing of surplus energy gains under current and proposed EAM parameters for the period 2022/23 to 2026/27*



Note: This illustrative analysis utilises a 40-day average (up to 30 June) of ASX energy base swap contracts and LGC forward prices published by Mercari from 2022-23 to 2025-26, and then holds prices constant in real terms for 2026-27. These nominal prices are converted to $2022-23 using an inflation assumption of 2.5%. The analysis assumes that SDP will produce 23GL of water per annum.

Source: Sydney Desalination Plant

7.3.2.4. Consideration of demand management opportunities

During the 2017 Determination process, IPART asked SDP to consider potential demand management activities (like load shedding) that could be undertaken to manage its energy consumption when the Plant is operating. Successful demand management activities may reduce SDP's energy consumption during operation (vis-à-vis not undertaking the activities), the benefits of which would be passed to customers through the EAM. SDP has explored potential demand management activities with its welectricity retailer, Iberdrola Australia, including the prospect of using load shedding under pre-agreed rules.

In SDP's view:

- At low levels of water production, say during a minimum production period (equivalent to an APR of 23GL per year) there is likely limited value to load shedding. Load shedding at this level would result in a cessation of water production, which could put at risk SDP's ability to respond in a timely manner to water production requests in accordance with SDP's Network Operator's Licence.
- At higher levels of water production, during a flexible production period (equivalent to an APR of 91.25GL per year), load shedding would be at odds with the incentives of the SLIS to maximise production (up to 10% tolerance band around the APR) and could result in significant cost to the community at a time when water production is critical to managing water security in Sydney. In addition, there are unnecessary operational costs involved in responding to and recovering from load shedding requests which could offset any potential gains from the sale of additional surplus energy. The Plant is not designed for short ramp down and ramp up periods. Introducing these unnecessary shocks would increase the risk of asset failures or asset damage, which in turn

would increase the risk of plant outages, deteriorate the long-term resilience of the Plant and could expose SDP to financial penalties from under-production of water relative to APRs..

- The financial incentives from load shedding are difficult to capture. The Plant takes approximately 20 minutes or more to increase or decrease its production. In contrast, market prices in the NEM are set on a five minute basis. It is not physically possible for the Plant to adjust production in a way that would allow it to take advantage of fluctuations in market prices since, by the time the Plant has either ramped production up or down, the market price would have changed (potentially in a manner that would impose greater costs on SDP).

On this basis, SDP considers that the operational and financial challenges associated with demand management activities risk distracting management from the core task of responding to water production requests in accordance with SDP's Network Operator's Licence.

7.3.2.5. IPART's approach to assessing the prudence of LGC trading requires amendment

In the 2017 Determination, IPART noted that in each review year it would assess the prudence of SDP's energy trading policy and activity. Any evidence of imprudence may result in IPART excluding a trade, part of a trade, or multiples trades from the EAM. In undertaking this prudence test, IPART will, among other things, calculate a 'hypothetical gain or loss' to quantify the difference between a passive strategy (i.e., the hypothetical gain or loss) and SDP's actual strategy (i.e., the actual gain or loss) if this differs from the passive strategy. The hypothetical gain or loss for LGCs is calculated by assuming each LGC is sold for the average spot price for the quarter in which it was accrued.

SDP considers that the calculation of the hypothetical gain or loss for LGCs is not appropriate. SDP only sells LGCs in the market after determining its surplus energy volumes. This is assessed on a calendar year basis, reflecting the fact the LRET operates on a calendar year basis and that the surrender of LGCs to the Clean Energy Regulator is made in mid-February following the assessment year. Given the uncertainty over production requests from Sydney Water, the volume of surplus LGCs for a given calendar year is not known with any significant degree of certainty until the end of that year. Therefore, it is prudent to sell LGCs towards the end of a calendar year or into the first quarter of the following calendar year, when there is sufficient clarity on the volume of LGCs that would be surplus to requirements. This avoids SDP potentially selling LGCs in the first part of the year and then having to buy them back later in the year if production unexpectedly ramped up. The buying back of previously sold LGCs may lead to windfall gains and losses. In view of this, SDP submits that in calculating the hypothetical gain or loss for LGCs, it would be more appropriate for IPART to consider the average spot price for the last quarter of each calendar year.

SDP engaged Seed Advisory to undertake an independent review of its surplus LGC and electricity trading approach for the period 1 July 2016 to 30 June 2021. This report, which is attached in confidential Appendix 11-6, identified that SDP's overall trading activities were prudent and reasonable and have achieved value for money.

7.3.3. Proposal

We propose:

6. To retain the EAM, subject to amendments — as set out in **Table 7.3** — so that it applies to any surplus energy under the GGRP Contracts, consistent with the revised Terms of Reference and adjusts the sharing of gains or losses between customers and SDP to 95:5 (outside a 2.5% core band) to reduce SDP's exposure to windfall gains and losses given the limited control SDP has under SDP's Network Operator's Licence to forecast surplus energy and influence the associated gains or losses.
7. In applying the EAM, and reviewing the prudency of SDP's trading policy and trading activity IPART would:
   - Consider the average spot price for LGCs for the last quarter of each calendar year and the first quarter of the next calendar year, given the LRET operates on a calendar year basis and SDP will only know the volume of LGCs that would be surplus to requirements towards the end of a calendar year.
   - Recognise that forward selling surplus energy is not an appropriate trading strategy given it exposes SDP to the risk of windfall gains and losses, and that under SDP's Network Operator's Licence, SDP will not know when it will be called upon to meet Sydney Water's production requests (timing), how much water SDP will be required to produce under each request, and how much surplus energy SDP will be holding in future periods (volume).

7.4. Pass-through of energy network costs

7.4.1. Background

In the 2017 Determination, SDP's energy network costs are passed through via two price adjustments:

- a **variable network charge** (VNC) pass-through, based on regulated network prices and benchmark energy volumes; and
- a **fixed network charge** (FNC) pass-through, based on regulated network prices and actual maximum demand (i.e., maximum demand recorded over the 12 months leading up to each billing month).

The regulated network prices levied by Ausgrid are determined by the Australian Energy Regulatory (AER). The current price determination covers the period to 30 June 2024. Actual network prices during this period (i.e., up to 30 June 2024) are uncertain. This is because actual network prices may differ from the projected prices in the AER's determination for Ausgrid to account for any under or over recovery of revenue by Ausgrid in previous years, and as a result of decisions by Ausgrid regarding the reallocation of revenues across tariffs and tariff components. Network prices following this period (i.e., after 30 June 2024) are subject to a higher degree of uncertainty as they will only be determined by the AER in around April 2024.

In the 2017 Determination, IPART placed a temporary cap on the fixed network charge. The temporary cap was established to address Sydney Water's concern that maximum demand (and hence the network charges) would be unusually high due to the December 2015 storm related re-instatement works. The concern was that a temporary increase in demand through the re-instatement works would increase the charge for a 12-month period. This is because the annual capacity charges (used in the FNC) are based on maximum demand in the previous 12 months.[90]

Given uncertainty about when the re-instatement works would be undertaken, IPART applied the FNC cap from 1 July 2017 until SDP is first called into operation mode. This was to ensure SDP's FNC is capped at a level consistent with shutdown until it is next called into operation. The temporary cap was set at 1,090kVA, applying to each of SDP's two network connections.

7.4.2. Assessment

SDP supports retaining the cost-pass through of the network component of energy costs using a price adjustment specified in the Determination.

Network charges are levied by Ausgrid. SDP has no ability to control the value and imposition of network charges as these are subject to independent regulation by the AER and passed through to customers. There is uncertainty on the value of network charges over the determination period. The AER's current determination for Ausgrid runs until 30 June 2024. Within this period, the AER has made annual pricing decisions on what price changes Ausgrid applies across its different tariffs within an overall revenue cap and tariff structure statement. It is uncertain how network charges will change in future AER pricing proposals as well as future 5-year revenue determinations for Ausgrid. Retaining the pass-through mechanism will maintain regulatory consistency and cost reflectivity of SDP's prices with regard to benchmark efficient electricity network costs.

SDP submits that the temporary cap on the FNC no longer applies. The cap was intended to apply until SDP was called into operation mode. SDP was required to restart in 2019. Since the restart, the temporary cap on the FNC has had no effect because SDP has remained operational and has operated at full capacity, i.e. at a maximum energy load.

7.4.3. Proposal

We propose:

8. To retain the cost pass-through of the network component of energy costs and remove the temporary Fixed Network Charge cap.

90 IPART, 2017, *Sydney Desalination Plant Pty Ltd Review of prices from 1 July 2017 to 30 June 2022*, Final Report, p. 114.

7.5 Risk management mechanisms for subordinate GGRP energy costs, land tax, council rates and insurance

7.5.1. Background

The cost of providing our services is also influenced by several other costs that are driven by market forces or decisions which are outside of SDP's control. These costs can be material, difficult to forecast, and cannot be effectively managed by SDP. The relevant costs, defined as Uncontrollable Costs, are:

- Subordinate GGRP costs, including but not limited to ancillary service charges, AEMO market fees, network losses, unaccounted for energy (UFE), Reliability and Emergency Reserve Trader (RERT) charges and generator compensation fees and charges91
- Land tax and council rates
- Chemical costs; and
- Insurance premiums.

7.5.1.1. Subordinate GGRP energy costs

The GGRP contracts require SDP to pay to Iberdrola Australia an agreed price for certain amounts to cover the cost of electricity and RECs supplied to SDP. Currently this makes up most of the costs incurred under the GGRP Contracts and in our forecast of energy costs over the 2023-27 regulatory period (see section 9.6). The GGRP Contracts also require SDP to pay Iberdrola Australia amounts to cover several other 'subordinate energy costs', the majority of which are costs levied on Iberdrola Australia (and other market participants) by regulators and/or market authorities and 'passed through' to SDP (and other energy customers) in retail prices. In short, these costs are relevant for establishing a benchmark electricity price[92] and include:

- **Ancillary service charges** — Ancillary service charges are designed to recover the cost of ancillary services purchased by the Australian Energy Market Operator (AEMO) to manage the power system safely, securely, and reliably in line with its obligations under the National Electricity Rules.[93] Ancillary services maintain key technical characteristics of the power system, including standards for frequency, voltage, network loading, and system restart processes.[94] AEMO recovers the costs of ancillary services from market participants. SDP has limited ability to control the amount of these charges it is required to pay as these are passed through to customers by electricity retailers.
- **Market fees** — Market fees cover AEMO's operating and capital expenses. These include labour-related expenses and IT, forecasting and operating system maintenance, and investments required to plan and operate Australia's energy system and markets.[95] AEMO sets market fees to recover these costs from market participants, who in turn pass them on to retail customers. SDP has no ability to forecast nor influence the size of these costs determined by AEMO. SDP is required to pay these charges under the GGRP contracts.

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91 Compensation and contract payments recovered from Market Customers (mainly electricity retailers) related to AEMO administering pricing, spot market suspension and market interventions under the National Electricity Rules.

92 In their 2017 advice to IPART, MJA noted that the definition of the benchmark price was "price that would be paid for energy used in an operating mode that would cover all electricity purchase costs" (excluding network). This includes costs "retailers are "liable according to defined market rules to pay". MJA, Reviewing energy costs for SDP: Report prepared for IPART, Feb 2017, p3. Similarly in setting the Victorian Default Offer, the ESC considers a range of costs incurred by retailers such as RERT. ESC, Victorian Default Offer 2022-23, Final Decision, May 2022, p30.

93 AEMO procures ancillary services through two mechanisms. Market ancillary services are acquired through the spot market, and prices are determined using AEMO's dispatch algorithm. Non-market ancillary services are procured through agreements negotiated with service providers, typically on an annual basis.

94 Ancillary service costs depend on the service prices offered by the market participants who provide them, and the quantity required at any given time. The volume and type of ancillary services required in the future are uncertain and depend on a myriad of market variables. They can vary substantially from period to period. As such, the future cost of purchasing ancillary services is uncertain and will vary over time. In addition, the charges are expressed in $ per MWh, so changes in forecast electricity consumption will have an impact on the charges.

95 AEMO's costs are affected by a range of factors that vary over time, including the number and complexity of new rules and market changes, introduction of new compliance functions, technological changes in system planning, cyber security protections, connections analysis and commissioning, and the extent of market and operations consultation. In addition, the charges are expressed in $ per MWh, so changes in forecast electricity consumption will have an impact on the charges.

- **Network losses** — Network losses are the loss of energy as electricity flows through the transmission and distribution networks.[96] Loss factors are calculated and fixed annually by AEMO, and market participants pass them on to retail customers. SDP has no ability to forecast nor influence the size of loss factors determined by AEMO. SDP is required to pay these charges under the GGRP contracts.
- **UFE** — Since May 2022, Iberdrola Australia like other market participants is billed to recover the cost of UFE, and in turn passes these costs on to retail customers in a similar way to network losses.[97] SDP has no ability to forecast nor influence the costs of UFE determined by AEMO. SDP is required to pay these charges under the GGRP contracts.
- **Other costs imposed by regulators and/or decision-makers on market participants** — This includes charges imposed by AEMO on market participants as a result of compensation claims for directed generators under clause 3.15.7B of the NER[98], and as well as AEMO's use of its Reliability and Emergency Reserve Trader (RERT) function.[99] These charges are imposed by AEMO on the occurrence of uncertain and uncontrollable events in the NEM. SDP has no ability to forecast nor influence the size or occurrence of these events, or the associated charges and is required to pay these charges under the GGRP contracts. It also includes new energy services charges that may be introduced and levied on market participants.

The recovery of electricity and REC costs is covered in section 9.6. This section considers the recovery of the other subordinate energy costs listed above which SDP incurs in complying with GGRP contracts. In aggregate these uncontrollable and uncertain costs incurred under the GGRP Contracts are material.

7.5.1.2. Land tax and council rates

Land tax is calculated by Revenue NSW using land valuations and the land tax threshold. On 31 December each year it uses an average of land values over three years to determine how much tax NSW landholders must pay. The Valuer General gives Revenue NSW land values each year. The Valuer General also calculates the land tax threshold each year which is based on the annual movement in the average land values of residential, commercial, business and industrial zoned land in NSW.

Council rates are calculated by multiplying the underlying unimproved land valuation by a 'rate in the dollar' amount. The NSW Valuer General provides a land valuation to Sutherland Shire Council, typically every three years. The rate in the dollar for each rating category is set by Council each year in its annual Operational Plan. While the maximum increase in the council's income is capped by IPART's rate peg, this applies to general income in total and not to individual rates. Councils have discretion to determine how to allocate the rate peg increase between different ratepayer categories.

Over the 2017-23 regulatory period, SDP's land tax and council rates have varied substantially from year to year (**Figure 7.4: Land tax and council rates during 2017-2023 regulatory period ($nominal, $millions,)**).

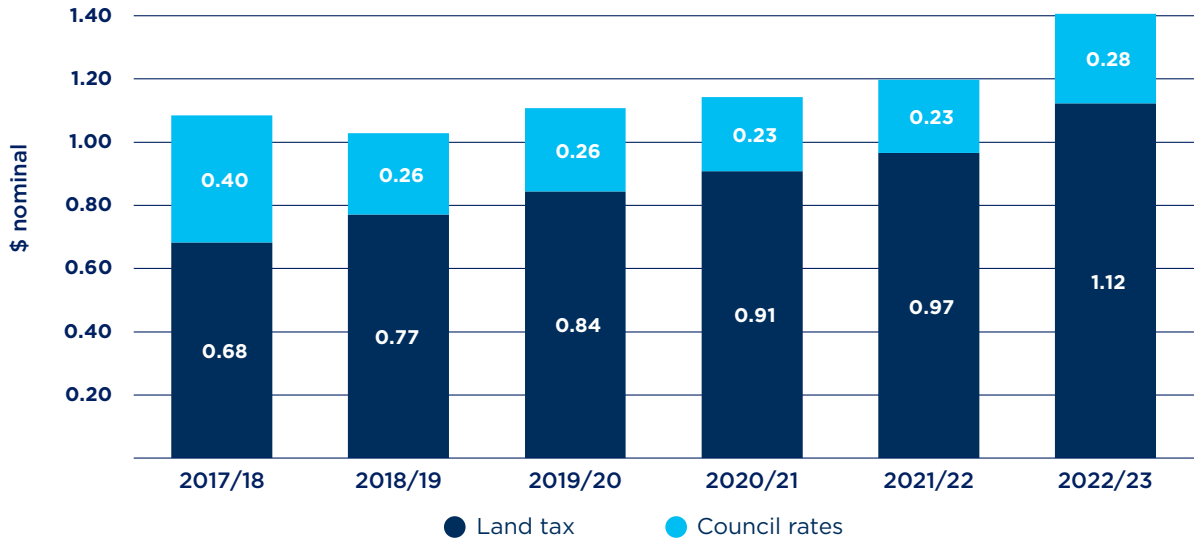
96 The impact of network losses on spot prices is mathematically represented as transmission and distribution loss factors. The nodal spot price at a particular location within a region is calculated by multiplying the spot price at the regional reference node for that region by the appropriate loss factor.

97 UFE refers to residual losses of electricity in the system. Examples of activities which can contribute to UFE include lighting for traffic signals, streets or parks. In December 2019, the AEMC approved a rule change request to transition to a global settlement framework. This framework commenced on 1 May 2022 and requires all retailers to share the cost of UFE. The UFE billed to a retailer reflects an allocation (by AEMO) of total UFE within a distribution network based on their customers 'accounted for' energy. Prior to this, UFE was billed to the incumbent retailer, known as the local area retailer, within an area.

98 This could include directions compensation, suspension pricing compensation and administered pricing compensation. https://www.aemo.com.au/-/media/files/electricity/nem/data/mms/2022/june-2022-nem-events-compensation-update11-july-2022.pdf?la=en

99 The RERT function allows AEMO to contract to secure additional reserves to maintain power system reliability

Figure 7 4: *Land tax and council rates during 2017-2023 regulatory period ($nominal, $millions,)*



Source: Sydney Desalination Plant

Land tax has increased from $0.68m in 2017-18 to $1.12m in 2021-22 due to an increase in the underlying land valuation. SDP's land valuation has increased from $46.8m in 2018 to $60.6m in 2021. Council rates have been impacted by the change in SDP's land valuation as well as annual changes in the 'rate in the dollar' used to calculate rates in each year.

SDP has limited ability to forecast land tax and council rates, and no ability to influence the size of the costs over the 2023-27 regulatory period.

7.5.1.3. Chemical costs

Chemical dosing is required various points throughout the Plant treatment process areas in order to meet the required water quality at each treatment process area, to maintain public health and/or to protect plant or distribution system assets. Chemical prices have been rising much faster than the change in CPI over the 2017-23 regulatory period to date, particularly in recent months in response to supply constraints related to the COVID-19 pandemic and exacerbated by the geo-political instability in Europe.

Veolia is a global leader in water treatment, and Australia's largest water company, with significant buying power and contractual agreements to maximise efficiencies. However, SDP (and Veolia) are price takers in Australian and global markets and there is little to no opportunity to influence or hedge these cost movements that result from the inherent volatility in chemical prices, and the chemical supply chain.

7.5.1.4. Insurance

Insurance premiums are developed using a two-step approach:

- deciding on the efficient level of coverage that reflects SDP's risk appetite, operating and regulatory environment (including WICA licence requirements and IPART's abatement framework)
- obtaining premiums from the market via SDP's insurance broker (Aon) that reflect the prevailing insurance market conditions and SDP's specific circumstances.

SDP is a 'price taker' and cannot obtain firm quotes until one month prior to renewing its policies each year. There is little to no opportunity to hedge these cost movements. Although it is in SDP's control to seek different quotes through alternative brokers, the underlying insurers and their approach to providing capacity does not change and cannot be influenced by SDP.

7.5.1.5. These costs have varied from SDP's allowance over the 2017-23 period

The costs set out above are uncertain, difficult to forecast and cannot be influenced by SDP. The actual costs that SDP incurred for each item have varied materially from the allowance provided by IPART in its 2017 Determination.

No allowance was mode, nor risk management mechanism provided, in the 2017 Determination for costs associated with UFE, RERT or generator compensation charges. Since May 2022, SDP has faced costs (and received credits) of between approximately $0.05million and $0.3 million per month. Based on this limited data, the impacts on SDP could be between $0.6 million and $3.6 million per annum. This is a significant impact on SDP, but small when spread across all Greater Sydney water customers. At the time of submission, no generator compensation chares had been incurred during the 2017-23 regulatory period. These charges are currently being considered by AEMO for 2022-23 reflected recent unprecedented market conditions.

Table 7.4: *Difference between actual and allowed costs for chemical costs, land tax &council rates, and insurance over the 2017-23 regulatory period ($m, nominal)*

Cost	2017-23 IPART Allowed (annual average)	2017-23 Actuals (annual average)	Difference (%)
Chemical costs	3.83	3.19	-16.6%
Land tax	0.62	0.88	41.3%
Council rates	0.51	0.28	-45.8%
Insurance	2.82	3.39	20.4%

Note: Chemical costs reflect actual production over the 2017-18 to 2021-22 period and estimated minimum production in 22-23.

Source: Sydney Desalination Plant

7.5.2. Assessment

In its Draft Framework Report, IPART has proposed a framework for managing uncertain and unforeseen costs within a pricing period. This framework incorporates the use of cost pass-throughs, ex post true-ups, letters of comfort, and partial or full replacements of a pricing determination.[100]

In the Draft Framework Report, IPART has stated that a cost pass through is appropriate when there is a known, material cost that the business cannot control. IPART also noted that true-ups are appropriate to address costs that are unknown pre-determination, and are not so large that they will impact financeability throughout the regulatory period and lead the business to inefficiently postpone investment.[101] IPART stated that true-ups should be used to address a situation where costs arise during the regulatory period and:[102]

- the costs do not have an immediate impact on the business' financeability, but they cannot be borne by the business longer-term (and presumably should be reflected in prices to ensure they reflect the efficient cost of supply);
- the costs are assessable (to ensure that costs remain efficient); and
- it is appropriate to pass additional costs to customers but, at the same time, waiting to recover the costs does not materially impact the cost reflectivity of prices.

SDP is proposing to apply a:

- **cost pass through** for some Uncontrollable Costs – including UFE charges, RERT charges and generator compensation charges – that SDP is not able to forecast (and for which it has not included a forecast of costs in regulated revenues). These items would be in addition to the existing network electricity pass through (see Appendix 7-4 for detail on how we propose to amend the mechanism in the 2017 Determination to mechanically adjust prices during the regulatory period); and
- **an end-of-period true-up** for all other Uncontrollable Costs, for which SDP has proposed an allowance but the cost items are subject to significant uncertainty. SDP proposes that a materiality threshold of 1% of annual regulated revenue apply to this end-of-period true-up.

100 IPART, *Draft water regulatory framework: Technical paper,* May 2022, p.51.
101 IPART, *Draft water regulatory framework: Technical paper,* May 2022, p.51.
102 IPART, *Draft water regulatory framework: Technical paper,* May 2022, p.54.

A summary of our proposal is set out in **Table 7.5: Proposed risk management mechanisms for subordinate GGRP energy costs, land tax and council rates, chemical costs and insurance**.

Table 7.5: *Proposed risk management mechanisms for subordinate GGRP energy costs, land tax and council rates, chemical costs and insurance*

Cost pass through	End-of-period true-up (subject to materiality threshold)
UFE charges	Ancillary service charges
RERT charges	Market fees
Generator compensation charges	Network losses
	Other unknown subordinate GGRP energy costs
	Land tax
	Council rates
	Chemical costs
	Insurance

In our view, this approach would be consistent with IPART's Draft Framework Report and an efficient means of managing this cost risk. In the sections below we will demonstrate how the identified costs meet the criteria set out in the Draft Framework Report.

7.5.2.1. The costs are uncertain

The costs set out above are uncertain, difficult to forecast and cannot be influenced by SDP. In particular:

- **Subordinate GGRP energy costs:** Ancillary service charges, market fees, networks losses, RERT and UFE charges are determined independently by AEMO. SDP has no control over how these charges are set and recovered from market participants. SDP has no ability to forecast nor influence the size or occurrence of these events, or the associated charges.
- There are several factors that may change over the 2023-27 regulatory period that add considerable uncertainty to the value of the subordinate GGRP energy costs, including:
  - **New transformation programs —** This includes the Energy Consumer Data Right (CDR) program. The cost of this program is not currently included within AEMOs market fee structure.
  - **The potential for a step change in ancillary services quantity or price —** A shift to markets with more renewable and less firm dispatchable generation can increase demand for ancillary services and also decrease the number of generators able to supply ancillary services (resulting in higher prices). This can result in substantial volatility in participants' payments to AEMO for ancillary services costs. These same changes are part of the reason the Australian Energy Market Commission (AEMC) has released a determination to introduce two new market ancillary services in the NEM.
  - **Uncertain costs relating to UFE.** UFE can be a surplus or a deficit and similar to network losses is determined by a complex settlement framework. For this reason it is impossible to sensibly forecast movements in these settlements and the resulting costs recovered from market participants in the form of UFE charges.
  - **Uncertain usage of the Reliability and Emergency Reserve Trader (RERT) function —** The RERT function allows AEMO to contract to secure additional reserves to maintain power system reliability. Until recently it had been used very intermittently, so customers have faced little costs due to the RERT. Since 2017-18, the RERT function has been triggered more often. The costs are recovered from market customers (typically retailers) as ancillary services charges. RERT was triggered in NSW in 2019-20. The full value of these costs was not reflected in SDP's revenue allowance and was therefore not recovered. It is impossible to sensibly forecast when the RERT function will be triggered in future years and the costs associated with these events.

- **Network composition and electricity flows —** The determination of network tariffs and loss factors will be influenced by network composition and electricity flows. Network tariffs and loss factors may vary year-to-year due to changes in these factors.
- **Potential capacity charges —** There has been preliminary discussion of the NEM transitioning to a capacity market. Should this occur, there will be substantial costs associated with establishing and operating the market. If these costs are recovered from market participants, it may lead to the introduction of new and potentially large service charges for SDP.

- **Land tax and council rates —** There is considerable uncertainty over the land valuation used to calculate land tax and council rates for the 2023-27 regulatory period. [redacted]
- **Insurance —** Changes in insurance market conditions are outside of SDP's ability to control. Insurance premiums are difficult to forecast over the regulatory period in a market where SDP is a 'price taker' and cannot obtain firm quotes until one month prior to renewing its policies.
- **Chemical costs —** SDP is a price taker in a global market for chemicals. Changes in the global chemical market and resulting prices are outside of SDP's ability to control.

These factors add considerable uncertainty to the value of these costs over the 2023-27 regulatory period.

7.5.2.2. The costs are material

A summary of the key characteristics of these costs is provided in **Table 7.6**. As can be seen, aggregate costs are material. While SDP may be able to manage fluctuations in these costs in the short term, it is unlikely that significant variations can be borne by the business in the longer term. Significant variations between forecast costs assumed in setting prices and the efficient cost of supply over the 2023-27 regulatory period may also lead to inefficient price signals being sent to Sydney Water and customers regarding the cost of operating and maintaining the Plant.

With respect to UFE, SDP notes that these charges have only recently been introduced and there is insufficient data available to-date on the expected value of these charges to be able to develop robust and reasonable forecasts (a point that has been acknowledged by AEMO). Similarly, for RERT and generator compensation charges, these are imposed by AEMO on the occurrence of uncertain and uncontrollable events in the NEM. Past charges do not provide a good reflection of future potential charges, and SDP does not have the ability to forecast or influence the size or occurrence of these events, or the associated charges, in the future.

Table 7.6: *Key characteristics of uncertain and Uncontrollable Costs*

Cost	Materiality	Degree of uncertainty
Ancillary services, market fees, network losses	Approximately $0.55m per year[(a)]	High
UFE, RERT and generator compensation	Unclear but potentially large	High
Unforeseen or new subordinate GGRP costs	Unclear	High
Land tax and council rates	Approximately $1m per year	High
Insurance	Approximately up to $6.6m per year	High
Chemical costs	Approximately $8.8m per year (b)	High

Note: (a) Based on an average over the last 10 years assuming full operation mode. ; (b) Based on actual chemical costs in 2019-20 when Plant produced 71.1GL.

Source: Sydney Desalination Plant

7.5.2.3. Costs are assessable

Each of the subordinate GGRP energy costs are determined by AEMO. Land tax is calculated by Revenue NSW, and council rates are determined by Sutherland Shire Council, based on a land valuation provided by the NSW Valuer General. Insurance premiums are determined by the market and levied by SDP's insurance broker.

SDP has included a forecast ancillary service charges, market fees, network losses, land tax, council rates and insurance for the 2023-27 regulatory period. Our approach to forecasting each cost item is provided in Appendix 7-4. At the end of this period, SDP can report to IPART the actual value of each cost item it incurred over the 2023-27 regulatory period. All other subordinate GGRP energy costs that could be incurred by SDP over the 2023-27 regulatory period have not been forecast given their inherent uncertainty. At the end of this period, SDP can report to IPART the actual value of each cost item it incurred over the 2023-27 regulatory period.

7.5.2.4. It is appropriate to adjust prices in period to ensure efficient signals for investment in and use of water supply

SDP considers that it is appropriate to include a cost pass through or end-of-period true-up (as proposed above) for these costs since significant increases in uncompensated costs would displace efficient costs elsewhere in our operations and pose a risk to prudent and efficient service delivery. The use of these risk management mechanisms would be in the long-term interests of customers since it would ensure that SDP's prices reflect the prudent and efficient cost of these services. If a cost is not within SDP's control, then requiring SDP to bear the risk of changes in that cost can mean that customers end up paying more than they should or that service outcomes could be compromised by imposing a windfall gain (or loss) on SDP. At the same time, SDP accepts that waiting to recover the costs will not materially impact the cost reflectivity of prices since SDP has included a forecast of each cost item to determine water usage charges for the 2023-27 regulatory period.

7.5.2.5. SDP has proposed an approach for undertaking an end-of-period true-up

SDP has designed a process to allow both SDP and IPART to apply an end-of-period true-up for ancillary service charges, market fees, network losses, land tax and council rates, and insurance. This process and the principles on which it has been developed are set out in Appendix 7-4.

7.5.3. Proposal

We propose the following mechanisms to manage the risk of movements in Uncontrollable Costs:

9. To include an end-of-period true-up for material differences between forecast and actual costs relating to ancillary service charges, market fees, network losses, any other new fees introduced by energy market regulators and incurred by SDP under the GGRP contracts, as well as land tax & council rates, chemical costs and insurance incurred over the 2023-27 regulatory period.
10. To include a cost pass through for UFE charges, RERT charges and generator compensation charges incurred by SDP under the GGRP contracts over the 2023-27 regulatory period.

7.6 Re-opener of determination to manage material movement in efficient costs resulting from unforeseen events

7.6.1. Background

The regulatory framework should ensure that cost and revenue risks are managed prudently and appropriately allocated between SDP and customers.

In our view, it is appropriate for SDP to retain many of these risks as they are within our control. Retaining these risks will drive accountability in the way we operate our assets and provide our services. However, other risks are beyond our reasonable control, including our ability to share these risks efficiently with other parties (such as our O&M contractors and/or insurers). In these limited circumstances, sharing these risks with customers is the most efficient way of managing these risks. Over time, we would expect this allocation of risk to deliver customer benefits as SDP delivers service and cost performance improvements.

Under incentive regulation, the regulatory framework should manage the risks associated with external events that occur within a regulatory period that are outside the control of the business but have a material impact on costs and hence the financial position of the firm. While specific mechanisms have been proposed to manage movements in certain externally determined costs incurred by SDP (e.g. energy network costs, subordinate GGRP energy costs, land tax and council fees, and insurance), there are a range of other exogenous and uncontrollable events that may arise during the 2023-27 regulatory period that may have a material impact on the financeability of the business. Examples include major changes to regulatory obligations or natural disasters. These risks are unable to be adequately managed through internal risk management, insurance. The 2017 Determination provides no explicit compensation for SDP bearing these risks.

This remains a gap in the regulatory framework applied to SDP. Continuing to allocate these risks to SDP is not in the long-term interests of customers. It may not allow SDP to recover the efficient costs of supplying water, which could lead to inefficient price signals being sent to Sydney Water and customers. It could also threaten SDP's financial viability, result in inefficient postponement of investment and potentially cause price shocks at the next regulatory period.

7.6.2. Assessment

7.6.2.1. Characteristics of re-opener events

In its Draft Framework Report, IPART clarified that re-openers were appropriate to address costs that are unknown prior to determination, and have the potential to be so large that they may impact financeability.[103]

SDP recognises that proposing to re-open a determination has always been an option for businesses, but acknowledges that this process is rarely used. In view of this, SDP is seeking to provide greater clarity on the circumstances in which it will apply to IPART for a re-opener, and the process involved. In our view, greater clarity on when it is appropriate to apply for a re-opener will allow SDP to better manage the risk of uncertain and uncontrollable events, leading to more efficient prices for customers.

SDP is seeking that IPART treat events which possess the following characteristics as re-opener events:

103 IPART, *Draft water regulatory framework: Technical paper,* May 2022, p.51.

- the event is exogenous (i.e., SDP has no ability to control over whether the event occurs);
- the event has a defined trigger that results in (or has the potential to result in) a material increase or decrease in SDP's efficient costs, where material is defined as greater than or equal to 1% of annual regulated revenue; and
- alternative risk management measures are not appropriate to mitigate or prevent the impact of the event (i.e., the cost impact of these events cannot be predicted with sufficient certainty for it to be included in expenditure allowances, while cost-effective insurance is not likely to be commercially available).

Should any event occur during the 2023-27 regulatory period that meets these criteria, SDP would apply to IPART for a partial replacement of its determination. In this application, SDP would identify the efficient costs that it has (or will) incur as a result of the event in the remainder of the 2023-27 regulatory period. IPART would review SDP's application and approve the movement in efficient costs, the change in the Notional Revenue Requirement (NRR) and the period over which the amount would be recovered in prices, and approve updated (or new) charges. IPART would then update the 2023 Determination, or issue a new Determination to account for the material increase or decrease in the efficient cost of service provision. The exception to this process is changes in energy network costs, subordinate GGRP energy costs, land tax and council fees, and insurance, which (as set out above) are captured by separate mechanisms.

7.6.2.2. SDP does not consider that the impact on financeability is a necessary criteria

In its Draft Framework Report, IPART stated that it would be appropriate to re-open a decision to account for a cost that was unknown pre-determination which was so large as to impact financeability before the next price determination.

SDP does not consider that financeability is a necessary condition for a re-opener to be appropriate. A fundamental principle of best practice economic regulation is to ensure that prices are cost reflective. This will, in turn, provide appropriate incentives for efficient and prudent use of, and investment in, the Plant. If an event occurs which substantially changes SDP's costs, and the impact of this event is not covered by other risk management mechanisms (e.g., cost pass through or end-of-period true-ups), then IPART should consider re-opening the determination to ensure that prices during the regulatory period remain cost reflective. This principle applies irrespective of whether the cost impact threatens the financeability of the business or not.

SDP considers that the application of a materiality threshold is a preferable way of balancing the need to ensure cost reflective prices and the added administrative burden for SDP, IPART and other stakeholders of undertaking a mid-period re-opener. This has been the standard process adopted by other regulators including by IPART in its other regulatory functions (such as IPART's earlier regulation of network and retail energy prices), and the AER in applying a cost pass through mechanism to electricity transmission and distribution networks.

7.6.2.3. Pre-defining potential re-opener events

In addition, SDP is also seeking that IPART acknowledge the types of events that are likely to satisfy the above criteria and therefore give rise to a re-opener. SDP notes that these events are examples only — it is not an exhaustive list, and events may occur that fall outside of the examples below but which still meet the criteria to be classified as a re-opener event. These events are set out below:

- a regulatory change event (a change that is made to a regulatory obligation that is imposed on SDP);
- a service standard event (a change to the service standards SDP is required to meet);
- a tax change event (changes to relevant taxes that have a material impact on SDP's costs);
- an insurance coverage event (the risk of incurring costs that are beyond the insurance policy limit or cap or indemnity period when a claim is made, and/or adverse changes in the insurance market to cover the situation where there are gaps in the availability of insurance, meaning that insurance is limited or not available on commercial terms and self-insurance is not appropriate);
- an insurer's credit risk event (where costs are incurred as a result of an insurer becoming insolvent);
- a natural disaster event (including but not limited to storm, bushfire, flood or earthquake); and
- a terrorism event (a terrorism event may impose costs that materially exceed the limits or the cover provided by prudent insurance policies).

SDP submits that re-opening SDP's determination to manage risks associated with these events is consistent with the long-term interests of customers, as it:

- allows SDP to recover the efficient costs of supplying water and thus provides investment certainty and ensures financeability, which is consistent with the long-term and sustainable supply of services (as well as being consistent with the Terms of Reference);
- ensures prices continue to reflect the efficient cost of providing services, and thus send efficient signals to water customers;
- appropriately allocates risk to those parties best able to manage the risk;
- maintains appropriate incentives to efficiently manage cost risk (and does not put undue risk on SDP for risks it cannot reasonably manage); and
- allows a transition to longer-determination periods, which in turn can provide greater investment certainty and price stability, enhanced incentives for efficiency gains and lower regulatory costs.

7.6.2.4. SDP has proposed an approach for undertaking a mid-period reopener

We have proposed a process for undertaking a mid-period re-opener that we consider to be consistent with the Terms of Reference, IPART's broader legislative obligations and the long-term interests of customers. We consider that clarity on when a re-opener will be used, and the process involved, will allow SDP to better manage the risk of uncertain and uncontrollable events, provide more certainty for stakeholders, and encourage cost reflective prices that send efficient signals to Sydney Water and customers relating to the cost of providing SDP's services.

This process and the principles on which it has been developed are set out in Appendix 7-5.

7.6.3. Proposal

We propose:

11. That IPART clarify the types of events that would constitute re-opener events over the 2023-27 regulatory period, including those that possess the following characteristics:
    - the event is exogenous (i.e., SDP has no control over whether the event occurs);
    - the event has resulted in (or has the potential to result in) a material increase or decrease in SDP's efficient costs, where material is defined as greater than or equal to 1% of annual regulated revenue; and
    - alternative risk management measures are not appropriate to mitigate or prevent the impact of the event (i.e., the cost impact of these events cannot be predicted with sufficient certainty for it to be included in expenditure allowances, while insurance is not likely to be commercially available on a cost-effective basis).

A summary of how the proposed re-opener mechanism would apply is provided in **Figure 7.5.**

Figure 7.5: *Process for undertaking a re-opener of the Determination following a material change in efficient costs over the 2023-27 regulatory period*

Re-opener event occurs

Examples of re-opener events

- **Regulatory change event** for changes to regulatory obligations
- **Service standard event** for changes in standards of service
- **Tax change event** for changes in relevant taxes and charges
- **Insurance coverage event** which addresses costs incurred beyond an insurance cap and beyond reasonably available insurance cover
- **Insurer's credit risk event** if an insurer becomes insolvent
- **Natural disaster event** such as cyclone, flood or earthquake
- **Terrorism event** such an event involving force or violence

Event results in material increase or decrease in costs of providing SDP's water supply or water security services

SYDNEY DESALINATION PLANT

SDP applies to IPART to pass though the efficient costs

IPART

IPART reviews SDP application and determines the effecient costs

SYDNEY DESALINATION PLANT

IPART updates SDP prices where there has been a material increase or decrease in the efficient cost of service provision

Source: Sydney Desalination Plant

7.7. Expansion cost recovery principles

7.7.1. Background

In August 2019, in accordance with its Drought Response Strategy under the MWP, the NSW Government directed SDP to prepare preliminary plans explaining how it could expand the Plant's capacity. The Expansion Objectives to be addressed by the preliminary plans included that the expansion of the Plant should be undertaken as quickly as practicable and in a prudent and efficient manner to deliver at least an additional 250ML of drinking water per day.[104]

The NSW Government also issued IPART with a Terms of Reference relating to determining pricing for SDP's 'Expansion Services'. This Expansion Determination was intended to be a key part of the expansion planning process providing SDP with the assurance that it has the opportunity to recover the efficient costs of expanding the Plant.

The expansion planning process was put on hold in May 2020, following significant rainfall and while the Greater Sydney Water Strategy was being developed. This involved withdrawing the Terms of Reference for IPART to conduct a price determination of the expansion.[105]

However, there are valuable lessons to be learned from this expansion planning process. In particular, it highlighted the importance of clarifying the detail and timing of the Expansion Determination process, to ensure there is sufficient regulatory certainty and that the timing of the Expansion Determination is consistent with other steps in the expansion planning process.

Given the potential for an expansion of the Plant to be re-initiated during the 2023-27 regulatory period or subsequent regulatory periods, there is merit in establishing Expansion Determination principles as part of the 2023 Determination to promote regulatory certainty and ensure that any Expansion Determination helps achieve the Government's objectives of expansion in a timely manner.

7.7.2. Assessment

It would be in the best interests of customers that any Expansion Determination runs as smoothly as possible and is consistent with the timing needs of other elements of the expansion planning process established by the Government. SDP will respond to any expansion request. However, before agreement, SDP must ensure that it can recover the reasonable costs of an expansion and that it can be delivered under reasonable commercial terms such that the arrangements result in an acceptable risk profile for SDP.

To guide any Expansion Determination process, SDP is seeking for IPART to establish a set of agreed principles as part of the 2023 Determination. The principles, which could be included in IPART's Final Report, would ensure that both IPART and SDP are able to better align and coordinate the wider expansion planning processes with the Expansion Determination process should it occur over the 2023-27 regulatory period.

The principles could also be reflected in the Government's Expansion Terms of Reference to IPART for its Expansion Determination. The proposed principles and our reason for proposing each principle are provided in **Table 7.7: Expansion principles and rationale**.

104 The NSW Government's Terms of Reference to IPART for a price determination for SDP's expansion services. These Expansion Terms of Reference, are available at IPART's website: https://www.ipart.nsw.gov.au/sites/default/files/documents/terms-of-reference-expansion-of-the-sydney-desalination-plant-19-december-2019.pdf

105 The NSW Government's Terms of Reference to IPART for a price determination for SDP's expansion services. The withdrawal of the Terms of Reference are available at IPART's website: https://www.ipart.nsw.gov.au/sites/default/files/documents/withdrawal-of-the-terms-of-reference-expansion-of-the-sydney-desalination-plant-22-may-2020.pdf

Table 7.7: *Expansion principles and rationale*

Principle	Rationale
Review scope	
1. The Expansion Determination should be focused on the efficient incremental costs associated with the Expansion (i.e. augmentation of capacity, not operation of existing capacity) and how these costs should be recovered in SDP's prices, including: • Expansion Plan Development expenditure • Design & Construct (D&C) expenditure (i.e. construction of additional capacity); and • Client expenditure such as SDP's expansion-related project management and delivery costs.	The Expansion Determination should be focused on the efficient incremental costs associated with the Expansion and how these should be recovered in SDP's prices. SDP supports this approach as it provides regulatory certainty and ensures the focus of resources in the tight timeframes on the incremental costs of the Expansion.
Review process: Timetable for making a Determination	
2. Timeframe for making the Determination to align with other elements of the expansion planning timetable, and to be consistent with the expansion planning objectives.	The Expansion Determination timetable needs to reflect the timing imperatives and the specific requirements established by the NSW Government with respect to the Expansion aligned with the Security of Water Deed (SOWD) or equivalent instrument used by Government to govern the Expansion process.
3. D&C costs provided to IPART after finalisation of the competitively tendered contract negotiations, such that SDP would not be expected to share cost information with IPART prior to concluding negotiations with the preferred tenderer.	There is a need to support the integrity of the commercial procurement processes being undertaken to procure the Expansion by not disclosing key information publicly prior to finalising the procurement process.
Review process: Assessing efficient costs and revenue requirements	
4. IPART's approach to assessing prudent and efficient costs should note that: • The prudency, or need, for the investment in the Expansion itself and the key specifications of the Expansion determined by the NSW Government should not be subject to review by IPART given the decision to expand the Plant ultimately rests with the NSW Government. • If the tender process for the D&C contract is robust and approved by Government as being consistent with the Government's expansion objectives consistent with the process in the commercial agreement between SDP and the NSW Government or equivalent instrument, the resulting cost should be taken as efficient.	The prudency or the need for the Expansion is determined through the Government's strategic water plans (e.g. the Greater Sydney Water Strategy). Regulatory precedent supports the acceptance of competitive tender outcomes as efficient costs.

Principle	Rationale
5. Asset lives should reflect their economic lives.	As per the existing Terms of Reference, asset lives should reflect their economic lives.
6. Agreed efficient costs are not subject to ex post review. However, if there have been efficient variations to the ex-ante allowance determined by IPART, these would be expected to be subject to ex post review.	The agreed expansion costs within the Expansion Determination would not require ex post review. However, it is recognised that any overspends, or underspends of the allowance would be appropriately subject to ex post review. In the case of an underspend, only costs that are actually incurred are recoverable through the RAB.
Prices and application of the Determination	
7. The principal charge should be a daily fixed charge set by IPART that represents the efficient incremental cost of the Expansion.	A fixed charge best reflects the nature of the costs associated with the Expansion.
8. Recovery of efficient capital costs as incurred, such that cost recovery commences from when the NSW Government issues SDP with formal notification to commence expansion. This is in line with the conventional approach of IPART and other economic regulators of allowing return on and of capital as it is incurred.	The conventional approach of IPART and other economic regulators such as the AER is to incorporate efficient capital expenditure into the RAB (to earn a return on and of such expenditure via regulated prices) as this capital expenditure is incurred or forecast to be incurred. This is important to ensure regulated businesses recover their efficient costs, that they are financeable and that customers face minimal price volatility. This would allow SDP to levy 'Expansion charges' for the Expansion services on Sydney Water from when it receives formal notification from the NSW Government to commence expansion. This is important to avoid any financeability or cash-flow concerns for SDP, and it would ameliorate the impact on prices to end-use customers compared with accruing the costs and commencing charging on completion of the Expansion services. This is recognised by IPART in the 2020 Sydney Water price determination, which includes a 'contingent cost' pass through to recover Sydney Water's costs of expanding its network to accommodate additional flows from an expanded SDP. Under the determination, Sydney Water can recover these costs through an uplift to its service charges to customers as soon as practical (i.e., in the year after) "construction has commenced on the expansion of the SDP plant."

Principle	Rationale
9. There should be water usage charges for any water produced during the Expansion Determination period, to reflect SDP's efficient variable costs of the Expanded Plant (i.e., the costs that vary with water output).	Usage charges may be required if there is a prospect that the Expanded Plant produces water before a new integrated Determination comes into effect.
10. An integrated Determination covering the Existing Plant and the Expanded Plant (including assets that contribute to both plants, such as the seawater intake and drinking water pump stations) should be made in due course.	To minimise the risk and complexity of ongoing parallel Determinations.
11. Risk allocation to be based on the party that is best placed to manage the risk and the specific requirements established by the NSW Government with respect to the Expansion aligned with the commercial agreement between SDP and NSW Government or equivalent instrument used by Government to govern the Expansion process. Principle is that the risk associated with the design and construction of the Expanded Plant should be allocated to the party best placed to control the risk, and hence manage the risk at an efficient cost.	Risk associated with the design and construction of the Expanded Plant should be allocated to the party best placed to control the risk, and hence manage the risk at an efficient cost.
12. Prudent SLIS exclusions and principles for expansion related activities: • The existing Plant should not be penalised due to any prudent and efficient reduction in supply from Expansion-related activities. • Any SLIS applying to the Expanded Plant should: • Not apply during the proving period. • Be outlined and confirmed upfront, to allow SDP to consider this in its planning and procurement processes.	SDP has proposed a SLIS that would replace the abatement mechanism in the 2017 Determination (as set out in section 7.1). SDP should not be penalised for any reduction in supply when responding to an APR from the existing Plant due to prudent and efficient Expansion-related activities. The Expanded Plant should not be subject to any service performance scheme during the proving period and before it is commissioned. IPART should advise SDP of the SLIS regime to apply to the Expanded Plant early in the expansion planning process, to allow SDP to factor this into its planning and procurement processes (e.g., the D&C contract).

7.7.3. Proposal

We propose:

12. To establish a set of guiding principles that would apply to any future Expansion Determination based on the principles set out in **Table 7.7: Expansion principles and rationale**.

8. Revenue requirements for our water supply and security services

Key messages

- We have proposed revenue requirements ranging from $830.53m to $1,043.93m for our single Operational Mode over the 2023-27 regulatory period covering:
  - Operational Mode — Minimum Production; and
  - Operational Mode — Maximum Production
- Compared to the approved notional revenue for 2022-23, our proposed revenue requirements for the Plant and Pipeline are between:
  - 2.5% lower (Minimum Production – 23GL per year) and 1.0% higher (Maximum Production — 91.25GL per year) in 2023-24, excluding inflation.
  - 2.1% higher (Minimum Production – 23GL per year) and 4.8% higher (Maximum Production — 91.25GL per year) in 2026-27, excluding inflation.
- These amounts reflect the efficient costs of providing services and in accordance with SDP's Network Operator's Licence, the Decision Framework and WSA, including meeting our legal and regulatory obligations.
- In developing our proposed revenues, we have addressed all relevant Terms of Reference requirements utilising the building blocks approach established by IPART.

The notional revenue requirements (or building block costs) represent the amount of revenue we need over the 2023-27 regulatory period to allow us to provide our water supply and water security services. This includes the costs of efficiently and prudently investing, operating and maintaining our assets and providing a reasonable return on investment to debt and equity holders.

This section sets out our proposed revenue requirements for Operational Mode. We have presented two proposed revenue requirements for Operation Mode:

- Operational Mode — Minimum Production, and
- Operational Mode — Maximum Production

These two proposed revenue requirements reflect that we may incur different costs in this mode depending on production requests from Sydney Water. However, the range of revenue requirements in providing the defined level of service in any year in Operation Mode will range between these minimum and maximum amounts. In addition to the Plant, we also have revenue requirements in relation to our Pipeline. The Pipeline costs (and prices) do not vary by the amount of production in Operational Mode.

SDP does not expect unregulated costs or revenues. However SDP intends to ring-fence unregulated costs and revenues over the 2023-27 regulatory period should any arise

Chapters 9 to 12 provide further detail on the key building block inputs for forecast operating expenditure, return on capital, return of capital (depreciation), forecast tax costs and other revenue adjustments.

8.1. Plant – Operational Mode – Notional revenue requirements

8.1.1. Background

We have assessed the notional revenue requirements for the Plant in Operational Mode over the 2023-27 regulatory period to allow us to provide water supply and water security services in accordance with SDP's Network Operator's Licence, and our other legislative and regulatory requirements.

8.1.2. Assessment

The proposed revenue requirements for the Plant in Operational Mode — Minimum Production and Operational Mode – Maximum Production over the 2023-27 regulatory period range from **$689.38m** to **$902.77m** as presented in **Table 8.1** and **Table 8.2** respectively (exclusive of electricity network charges).

Compared to the approved notional revenue for 2022-23, our proposed revenue requirements are between:

- 0.7% lower (Minimum Production — 23GL per year) and 3.0% higher (Maximum Production — 91.25GL per year) in 2023-24, excluding inflation.
- 5.0% higher (Minimum Production — 23GL per year) and 7.6% higher (Maximum Production — 91.25GL per year) in 2026-27, excluding inflation.

The principal drivers for the changes in our revenue requirements for Operational Mode are:

- Reduction in the rate of return, putting downward pressure on revenue requirements;
- Increase in operating expenditure (including additional costs associated with operating and maintaining, insuring and overseeing the Plant under the Network Operator's Licence) and regulatory depreciation, putting upward pressure on revenue requirements;

8.1.3. Proposal

We propose:

13. A notional revenue requirement ranging from **$689.38m** to **$902.77m** for the Plant — as set out in **Table 8.1** and **Table 8.2**

Table 8.1: *Plant — Operational Mode (Minimum Production — 23GL per year), notional revenue requirement ($2022-23, $millions)*

	2022-23	2023-24	2024-25	2025-26	2026-27	2023-27 Total
Return on capital (funding costs)	56.16	43.77	42.53	41.07	39.40	166.76
Return of capital (depreciation)	51.15	56.83	59.94	62.96	65.62	245.34
Forecast operating expenditure	42.84	57.40	57.88	62.07	59.47	236.81
Tax costs (net of imputation)	11.44	9.17	9.59	10.82	12.02	41.60
Working capital	0.04	1.48	1.54	1.62	1.66	6.30
Other revenue adjustments	6.28	(1.86)	(1.86)	(1.86)	(1.86)	(7.45)
Total notional revenue requirement	167.91	166.79	169.62	176.67	176.30	689.38
% change		-0.7%	1.7%	4.2%	-0.2%	5.0%

Source: Sydney Desalination Plant

Notes: 2022-23 Plant costs and notional revenue requirement are based on IPART's allowance in 2021-22 held constant in nominal dollars

Table 8.2: *Plant — Operation Mode (Maximum Production — 91.25GL per year), notional revenue requirement ($2022-23, $millions)*

	2022-23	2023-24	2024-25	2025-26	2026-27	2023-27 Total
Return on capital (funding costs)	56.16	43.77	42.53	41.07	39.40	166.76
Return of capital (depreciation)	51.15	56.83	59.94	62.96	65.62	245.34
Forecast operating expenditure	88.53	110.58	110.96	115.65	113.01	450.20
Tax costs (net of imputation)	11.44	9.17	9.59	10.82	12.02	41.60
Working capital	0.04	1.48	1.54	1.62	1.66	6.30
Other revenue adjustments[106]	6.28	(1.86)	(1.86)	(1.86)	(1.86)	(7.45)
Total notional revenue requirement	213.59	219.97	222.70	230.26	229.84	902.77
% change		3.0%	1.2%	3.4%	-0.2%	7.6%

Source: Sydney Desalination Plant

Notes: 2022-23 Plant costs and notional revenue requirement are based on IPART's allowance in 2021-22 held constant in nominal dollars.

106 Includes other items including energy adjustment mechanism allowances

8.2. Pipeline – Notional revenue requirements

8.2.1. Background

We have assessed the notional revenue requirements for the **Pipeline** over the 2023-27 regulatory period to allow us to provide water supply and water security services. This includes the costs of efficiently investing, operating and maintaining our assets and earning a reasonable return on our investment.

8.2.2. Assessment

The proposed revenue requirements for the Pipeline over the 2023-27 regulatory period is $141.15m as presented in Table 8.3 and are unaffected by the Plant's production.

Compared to the approved notional revenue for 2022-23, the proposed revenue requirements is:

- 10.1% lower in 2023-24, excluding inflation.
- 10.5% lower in 2026-27, excluding inflation.

The principal drivers for the changes in our revenue requirements for water security mode are:

- Reduction in the rate of return, putting downward pressure on revenue requirements
- Decrease in asset lives to align with the economic life of the assets, increasing regulatory depreciation putting upward pressure on revenue requirements
- Increased operation and maintenance scope reflecting the importance of this asset in delivering water to customers.

8.2.3. Proposal

We propose:

14. A notional revenue requirement of **$141.15m** — as set out in **Table 8.3** — for the Pipeline for the 2023-27 regulatory period.

Table 8.3: *Pipeline, notional revenue requirement by building block ($2022-23, $millions)*

	2022-23	2023-24	2024-25	2025-26	2026-27	2023-27 Total
Return on capital (funding costs)	33.92	28.01	27.72	27.44	27.14	110.31
Return of capital (depreciation)	6.36	8.55	8.55	8.56	8.56	34.22
Forecast operating expenditure	0.35	0.52	0.49	0.48	0.48	1.97
Tax costs (net of imputation)	(1.37)	(2.00)	(1.74)	(1.49)	(1.25)	(6.49)
Working capital	0.07	0.29	0.28	0.29	0.29	1.15
Other revenue adjustments	-	-	-	-	-	-
Total notional revenue requirement	39.33	35.36	35.30	35.27	35.22	141.15
% change		-10.1%	-0.2%	-0.1%	-0.2%	-10.5%

Source: Sydney Desalination Plant

Notes: 2022-23 Plant costs and notional revenue requirement are based on IPART's allowance in 2021-22 held constant in nominal dollars.

8.3. Plant and Pipeline – Operational Mode – Notional revenue requirements

8.3.1. Proposal

We propose:

15. A notional revenue requirement ranging from **$830.53m** to **$1,043.93m** as set out in **Table 8.4** and **Table 8.5** for the Plant and Pipeline for the 2023-27 regulatory period in **Operational Mode.**

Table 8.4: *Plant and Pipeline – Operational Mode (Minimum Production – 23GL per year), notional revenue requirement ($2022-23, $millions)*

	2022-23	2023-24	2024-25	2025-26	2026-27	2023-27 Total
Return on capital (funding costs)	90.08	71.78	70.25	68.50	66.54	277.07
Return of capital (depreciation)	57.51	65.38	68.49	71.52	74.18	279.57
Forecast operating expenditure	43.19	57.91	58.36	62.55	59.95	238.77
Tax costs (net of imputation)	10.06	7.17	7.85	9.33	10.77	35.11
Working capital	0.12	1.77	1.83	1.91	1.94	7.45
Other revenue adjustments	6.28	(1.86)	(1.86)	(1.86)	(1.86)	(7.45)
Total notional revenue requirement	207.24	202.15	204.92	211.95	211.52	830.53
% change		-2.5%	1.4%	3.4%	-0.2%	2.1%

Source: Sydney Desalination Plant

Notes: 2022-23 Plant and Pipeline costs and notional revenue requirement are based on IPART's allowance in 2021-22 held constant in nominal dollars.

Table 8.5: *Plant and Pipeline – Operational Mode (Maximum Production – 91.25GL per year), notional revenue requirement ($2022-23, $millions)*

	2022-23	2023-24	2024-25	2025-26	2026-27	2023-27 Total
Return on capital (funding costs)	90.08	71.78	70.25	68.50	66.54	277.07
Return of capital (depreciation)	57.51	65.38	68.49	71.52	74.18	279.57
Forecast operating expenditure	88.87	111.10	111.45	116.14	113.49	452.17
Tax costs (net of imputation)	10.06	7.17	7.85	9.33	10.77	35.11
Working capital	0.12	1.77	1.83	1.91	1.94	7.45
Other revenue adjustments	6.28	(1.86)	(1.86)	(1.86)	(1.86)	(7.45)
Total notional revenue requirement	252.92	255.34	258.00	265.53	265.06	1,043.93
% change		1.0%	1.0%	2.9%	-0.2%	4.8%

Source: Sydney Desalination Plant

Notes: 2022-23 Plant and Pipeline costs and notional revenue requirement are based on IPART's allowance in 2021-22 held constant in nominal dollars.

9. Forecast operating expenditure

Key messages

- We expect that our actual opex over the 2017-23 regulatory period will be around 1.8% higher than IPART's allowance. Key drivers for this increase include routine asset maintenance costs, insurance costs and corporate costs exceeding IPART's allowance.
- Our forecast opex over the 2023-27 regulatory period is around 14.9% higher in Operational Mode (Maximum Production) and 18.8% higher for the Pipeline compared to our Base Year expenditure:
- The key drivers of the increase in our forecast opex in Operational Mode include:
  - Higher treatment and energy costs associated with an increase in the average age of RO membranes in line with our membrane replacement program
  - Higher O&M costs including asset maintenance appropriate for our Plant's age, additional staff for its safe operation and and additional procedures to operate the Plant in a flexible manner in line with our revised Network Operator's Licence conditions.
  - Increasing insurance costs of securing appropriate insurance coverage in an insurance market characterised by increasing global insurance risks and rising insurance premiums
  - Increasing corporate operating costs associated with increased complexity in overseeing and monitoring the prudent operation of the Plant under the Network Operator's Licence and the costs of managing emerging risks
- The key drivers of the increase in our forecast opex for our Pipeline include higher labour and routine asset maintenance consistent with the age and condition of the Pipeline, as well as costs for SDP to manage developer and Dial Before You Dig enquiries that may affect the operation, performance and integrity of the Pipeline.
- Our proposed increases in opex are needed to ensure we can respond in a timely and flexible way to meet our customers' needs so that we can maintain and appropriately insure our assets in accordance with Good Industry Practice, as required by our Network Operator's Licence.
- We will continue to pursue efficiencies in our opex program and have incorporated efficiency targets into our forecasts for the 2023-27 regulatory period. We will also maintain existing knowledge and expertise so previously achieved efficiencies are maintained.

Forecast opex is one of the building block costs used to calculate the notional revenue requirement (see section 8).

We must propose the total prudent and efficient opex required to provide our services in each year over the 2023-27 regulatory period. We have proposed the total opex necessary to comply with all relevant regulatory obligations and requirements including our Network Operator's Licence and to ensure the safety, reliability and responsiveness of our services over the 2023-27 regulatory period.

Our forecast opex in Operational Mode depends on how much water we produce in response to production requests from Sydney Water (refer to section 4.1.4 for details). In this section we have shown forecast opex based on the minimum and maximum annual production.

SDP does not expect to provide unregulated services over the 2023-27 regulatory period. Should any arise, SDP intends to ring-fence the costs of providing unregulated services, and the allocation of corporate overheads between regulated and unregulated services.

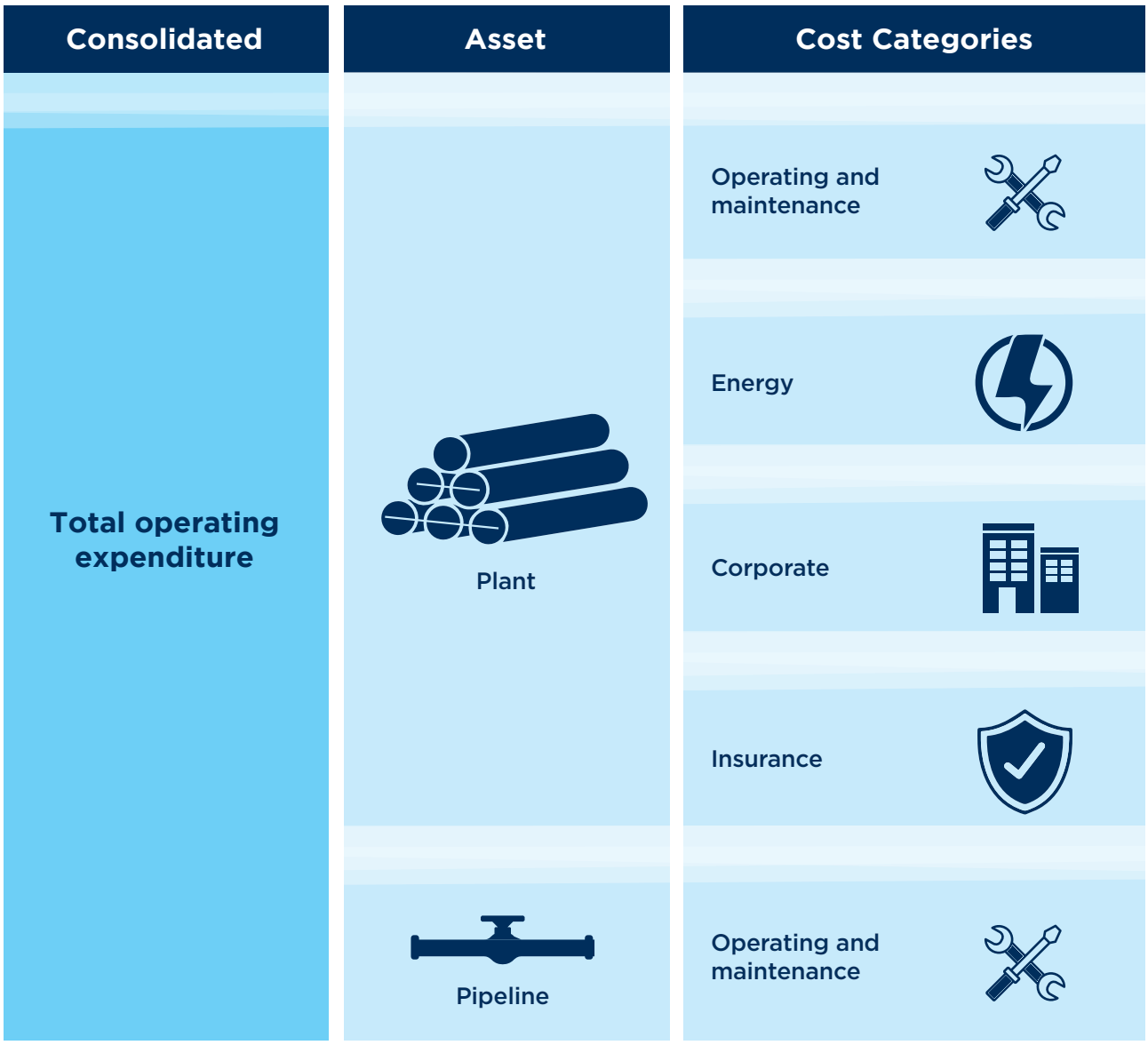
9.1. Our operating expenditure categories

Our forecast opex comprises four categories:

- **Operation and maintenance (O&M) costs**, which is the cost of operating and maintaining our physical Plant assets (e.g. pre-treatment, RO and remineralisation stages, cleaning and maintaining RO membranes, maintaining assets). These costs relate to payments made to Veolia under a long-term contract for the operation and maintenance of the Plant and related infrastructure.
- **Energy costs**, which include the cost of SDP meeting its regulatory and contractual obligations with the NSW Government to procure electricity and renewable electricity through the GGRP Contracts. Energy costs are incurred for the Plant only and are predominantly influenced by the variable cost of water production.
- **Corporate costs**, which includes costs of overseeing and monitoring the prudent operation and maintenance of the Plant, including contract administration, customer and stakeholder interaction, [redacted], and financial management.
- **Insurance costs,** which include costs of obtaining and maintaining appropriate insurance to efficiently manage risks as required by our Network Operator's Licence.

Figure 9.1 shows the categories of our opex for the Plant and Pipeline. Both O&M costs and energy costs vary depending on the level of production from the Plant. Corporate costs, insurance and pipeline costs do not vary by the level of production.

Figure 9.1: *Our operating expenditure categories*



Source: Sydney Desalination Plant

9.2. Operating expenditure outcomes in the 2017-23 regulatory period

Our actual opex over the 2017-23 regulatory period reflects our experience in different operating modes each year of this period which is summarised below:

- 2017-18 — Water Security Mode
- 2018-19 — Water Security Mode (255 days), Operating (Drought) Mode (110 days)
- 2019-20 — Operating (Drought) Mode and ERN
- 2020-21 — ERN
- 2021-22 — ERN
- 2022-23 — ERN (forecast)

Our actual opex each year of the 2017-23 regulatory period is provided in **Our actual opex each year of the 2017-23 regulatory period is provided in Table 9.1. It is compared to IPART's allowance calculated on a pro-rata basis, based on the volume of water we produced.**. It is compared to IPART's allowance calculated on a pro-rata basis, based on the volume of water we produced.

On a pro-rata basis, IPART's opex allowance over the 2017-23 regulatory period was $$253.9m ($ nominal). We expect an overspend relative to IPART's opex allowance of $4.6m (or 1.8%) based on the assumption that we continue in Operational Mode (minimum production) to respond to ERNs over 2022-23.

Table 9.1: *Comparison of actual and allowed Plant and Pipeline opex in the 2017-23 regulatory period ($nominal, $millions)*

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	Total
Actual/Forecast	18.07	27.88	69.98	42.55	45.73	54.34	258.54
IPART Determination Allowance	18.70	28.09	74.99	40.32	44.67	47.14	253.92
Variance $	(0.63)	(0.22)	(5.02)	2.23	1.06	7.20	4.63
Variance %	-3.4%	-0.8%	-6.7%	5.5%	2.4%	15.3%	1.8%

Note: IPART Determination Allowance 2017-18 to 2021-22 calculated on a pro-rata basis using the volume of water produced and escalated to $nominal using June on June CPI. 2022-23 notional allowance calculated by escalating 2021-22 allowance by forecast 2022-23 CPI.

Source: Sydney Desalination Plant

The principal drivers of the variances over the 2017-23 regulatory period include:

- Changing needs with the plant being continuously required to operate under ERNs since 2020, including higher operations and maintenance costs to maintain safety, reliability and longevity of assets.
- Lower electricity costs under the GGRP Contracts (particularly in 2017-18 and 2018-19), including energy efficiency from operating on a brand new set of membranes in 2019-20.
- Higher insurance costs from rising premiums, which were driven by uncontrollable market pressures (particularly from 2019-20 onward).
- Higher corporate costs, including professional fees driven by additional technical support to improve Plant and Pipeline asset management in a changing operating environment, legal support to appropriately manage contract risks, additional regulatory costs to prepare submissions in both 2021 and 2022 and accounting support to address changes in accounting standards.
- Higher real costs due to COVID impacts, supply chain interruptions and volatile global conditions.
- The fact that our allowance was held constant in nominal terms in 2022-23, but our expenditure increased driven by factors including inflation.

9.3. Overview of operating expenditure forecasts

Our forecast opex for the Plant and Pipeline over the 2023-27 regulatory period is summarised in **Table 9.2** and **Table 9.3**. These forecasts incorporate a continuing efficiency factor of 0.3% per year on our controllable O&M and corporate costs as discussed in detail in Appendix 9. The rationale for a continuing efficiency factor of 0.3% per year. is discussed in detail in Appendix 9.

Table 9.2: *Summary of Proposed Operating Expenditure — Operational Mode (Minimum Production — 23GL per year) ($2022-23, $millions)*

	2023-24	2024-25	2025-26	2026-27	Total
Plant	57.40	57.88	62.07	59.47	236.81
Pipeline (independent of mode)	0.52	0.49	0.48	0.48	1.97

Note: SDP proposed 0.3% per year continuing efficiency factor applied to O&M from FY25 and corporate costs from FY24.

Source: Sydney Desalination Plant

Table 9.3: *Summary of Proposed Operating Expenditure — Operational Mode (Maximum Production — 91.25GL per year) ($2022-23, $millions)*

	2023-24	2024-25	2025-26	2026-27	Total
Plant	110.58	110.96	115.65	113.01	450.20
Pipeline (independent of mode)	0.52	0.49	0.48	0.48	1.97

Note: SDP proposed 0.3% per year continuing efficiency factor applied to O&M from FY25 and corporate costs from FY24.

Source: Sydney Desalination Plant

The following sections provide further details of the underlying opex categories that make up these totals in Plant Operational mode and for our Pipeline.

Our forecast opex in these sections is compared to an efficient 'Base Year' expenditure. We have used the most recent set of information over which we have confidence in the accuracy and efficiency of these costs. For O&M and Insurance this is 2022-23. All other opex categories use 2021-22 as an efficient 'Base year'.[107] Further information on how we calculate the Base Year is set out in Appendix 9.

9.3.1. Plant Operating Expenditure — Operational Mode

Our forecast opex for the Plant in Operational Mode ranging from minimum to maximum production are presented in **Table 9.3: Summary of Proposed Operating Expenditure — Operational Mode (Maximum Production — 91.25GL per year) ($2022-23, $millions)4** and **Table 9.5**.

Table 9.4: *Proposed Plant Operating Expenditure - Operational Mode (Minimum Production - 23GL per year) ($2022-23, $millions)*

	Base year	2023-24	2024-25	2025-26	2026-27	Total
Operating and maintenance	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Energy	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Corporate	8.63	11.53	10.79	13.08	12.68	48.09
Insurance	4.97	4.86	5.48	5.90	6.12	22.35
Total opex	**49.82**	**57.40**	**57.88**	**62.07**	**59.47**	**236.81**
% change		**15.2%**	**0.8%**	**7.2%**	**-4.2%**	**19.4%**

Source: Sydney Desalination Plant

Note: Operatig and maintenance and Insurance use a base year of 2022-23. All other Operating Expenditure categories using a base year of 2021-22.

107 Professional fees and Other corporate costs use an average of 2017-18 to 2021-22 to account for the cyclical nature of these costs.

Table 9.5: *Proposed Plant Operating Expenditure - Operational Mode (Maximum Production 91.25GL per year) ($2022-23, $millions)*

	Base year	2023-24	2024-25	2025-26	2026-27	Total
Operating and maintenance	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Energy	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Corporate	8.63	11.53	10.79	13.08	12.68	48.09
Insurance	4.97	4.86	5.48	5.90	6.12	22.35
Total opex	**97.93**	**110.58**	**110.96**	**115.65**	**113.01**	**450.20**
% change		**12.9%**	**0.3%**	**4.2%**	**-2.3%**	**15.4%**

Source: Sydney Desalination Plant

The principal drivers for the forecast increase in opex for Operational Mode include:

- Increasing fixed O&M costs, including labour and routine asset maintenance required to operate the Plant in a flexible manner in line with our Network Operator's Licence to meet our customer's needs and to maintain an aging Plant in line with Good Industry Practice.
- Increasing corporate costs, including additional costs to oversee the prudent operation and maintenance of the Plant in line with our Network Operator's Licence, customers' needs [redacted]. These costs are forecast to be incurred irrespective of the level of production given the need for the Plant to be able to respond in a timely and flexible way.
- Increasing insurance costs, reflecting increases in the efficient costs of managing risks in a hardening global insurance market characterised by rising insurance premiums. These costs are forecast to be incurred irrespective of the level of production given the need for the Plant to be able to respond in a timely and flexible way to customers' needs.
- Increased fixed costs of maintaining assets and treatment processes in a state where they can be readily available when called upon to meet production requests in line with our Network Operator's Licence. This includes additional and ongoing costs of chemicals and energy which are not used to produce drinking water.
- Increasing variable treatment costs, mainly reflecting an older average membrane age which drives increased chemical usage, and significant upward pressure on chemical supply costs.
- Higher energy costs, also reflecting an older average membrane age which increases electricity consumption.

We propose:

16. Forecast Plant operating expenditure ranging between **$236.81m** and **$450.20m** as set out in **Table 9.4** and **Table 9.5** for the 2023-27 regulatory period in **Operational Mode**.

9.3.2. Pipeline operating expenditure forecasts

Our forecast opex for the Pipeline is presented in **Table 9.6: Proposed Pipeline Operating Expenditure ($2022-23, $millions)6** below. This expenditure is unaffected by the Plant's operating mode.

Table 9.6: *Proposed Pipeline Operating Expenditure ($2022-23, $millions)*

	Base year	2023-24	2024-25	2025-26	2026-27	Total
Operating and maintenance	0.44	0.52	0.49	0.48	0.48	**1.97**
% change		18.3%	-5.9%	-0.3%	-0.3%	10.6%

Source: Sydney Desalination Plant

The principal drivers for the changes in our operating expenditure for the Pipeline are:

- increases in labour and routine asset maintenance to deliver a broader scope of operations and maintenance tasks for this important asset, and
- fixed costs to manage developer and other external parties' Dial Before You Dig enquiries (and delivery of related works by these third parties) that affect or are in close proximity to the Pipeline. These works could put at risk Plant and Pipeline availability or access for future maintenance or capital replacement if not managed.

We propose:

17. Forecast **Pipeline operating expenditure** of **$1.97m** as set out in **Table 9.6: Proposed Pipeline Operating Expenditure ($2022-23, $millions)6** for the 2023-27 regulatory period, which is independent of the Plant's level of production.

9.4. Overview of our approach to forecasting operating expenditure

To forecast opex for the 2023-27 regulatory period we used a fit-for-purpose method that ensures we identify the relevant drivers of each expenditure category.

- We used a 'base-step-trend' approach where Base Year costs are representative of future costs or can be adjusted for future changes in our circumstances and operating environment changes.
- We used a year-on-year method for cost categories where Base Year costs are not representative of future costs.

The 'base-step-trend' method involves the selection of a starting actual opex amount or 'base' which is then escalated and adjusted as appropriate to derive a forecast that best reflects our operating expenditure requirements for the forthcoming period. As noted above, the base year costs are our latest and most accurate estimates of efficient costs. For most opex categories the base year is 2021-22 actual costs. For insurance and O&M, our 2022-23 costs are known as they have been prepaid or committed, respectively. The Base Year is then adjusted to account for:

- **Step changes** – factors that trigger a change in costs required to provide our services. The Base Year opex for the relevant cost categories therefore must be adjusted to account for these changes, which for example may derive from a change to our operating environment or changes in our scope or standard of service.
- **Real cost escalation** – in most cases we propose to escalate our forecasts by the change in CPI, so there is no real price escalation. This is because we consider that increases in these costs will likely change at a similar rate to the CPI. Where we considered this was not likely to be the case, we have used a different price escalation, including for insurance costs.
- **Continuing efficiency** – we have adjusted our O&M and corporate opex cost forecasts for a continuing efficiency factor of 0.3% per year which reflects the ongoing improvements in efficiency that efficient businesses should achieve over time. Given that our revised Network Operating Licence conditions commence on 1 July 2023 and we will be adjusting

our operations to a new operating environment, we propose the continuing efficiency factor be applied to O&M from the second year of the 2023-27 regulatory period.

Appendix 9 provides more details on our approach to forecasting opex, including how we derived our Base Year costs, and accounted for any real price escalation and continuing efficiencies. The following sections provide more information on our forecast opex for each category and the relevant step changes.

9.5. Overview of operating and maintenance (O&M) cost component of forecast opex

9.5.1. Background

Our O&M costs include the cost of operating and maintaining our physical assets as well as inputs such as water quality testing, chemicals and labour to ensure the Plant can provide the level of service expected by Sydney Water and its customers over the 2023-27 regulatory period.

SDP's Network Operator's Licence requires us to maintain and operate our Water Industry Infrastructure in accordance with Good Industry Practice, having regard to the capacity of the Water Infrastructure, its duty, age and technological status.

O&M services are provided by Veolia under a long-term contract, which was awarded following a robust competitive tender process. The contracting strategy is consistent with other large scale municipal desalination plants (and conventional treatment plants) in Australia and internationally.

Veolia is a global leader in desalination and water supply management. In addition to holding the O&M contracts for the Plant and Pipeline, Veolia also operates and maintains a range of other assets along the east coast of Australia including the Gold Coast Desalination Plant, the Illawarra and Woronora Water treatment plants for Sydney Water and the water and wastewater treatment plants for Hunter Water. This significant footprint in NSW (and the wider eastern coast of Australia) provides advantages in general corporate support, knowledge sharing, and experience in similar markets and conditions to the benefit of our customers.

The existing contractual arrangement has proven to be flexible and responsive to manage the unforeseen and rapidly changing circumstances experienced during the 2017-23 regulatory period, including:

- Significant Plant damage due to the Storm Event and subsequent re-instatement and testing – a very disruptive event over multiple years;
- A Plant restart, including full membrane procurement and replacement delivered within cost allowances under the 2017-23 regulatory period, triggered by the rapid decline in dam levels during 2016-2019 (see figure 3.1), which required some Plant restart activities to commence ahead of the 60% dam level restart trigger to meet the 8-month restart period;
- A Plant restart (8-month 'restart period') that exceeded requirements, including 28GL of water produced during the restart period, at a time when water restrictions were in place – therefore providing significant value to water customers; and
- An emergency response period during which SDP responded to Sydney Water and customers' water quality risks arising from bushfires and flooding, and managed the complex logistical and resourcing issues and additional costs resulting from the COVID-19 pandemic: all without reasonable additional cost recovery due to partial production not being explicitly included in the 2017 Determination.

SDP met all major operational requirements through these challenging circumstances. We also delivered substantial savings in both operating and capital expenditure for Plant operation at the age, production capacity and circumstances agreed in the original competitively tendered contracts. These baseline savings will continue to be shared with Sydney Water and customers in the 2023-27 regulatory period. However, as the Plant (particularly the RO membranes) age, industry standard cost pressures (as envisaged in our Plant and Pipeline contracts with Veolia) will trend upwards from this efficient base.

9.5.2. Assessment

SDP and Veolia have gained considerable operational experience, as well as improved performance and cost data, from the Plant being in different operating modes during the 2017-23 regulatory period.

Our actual Plant O&M cost in each year of the 2017-23 regulatory period is provided in Table 9.7. It is compared to IPART's allowance calculated on a pro-rata basis, based on the volume of water we produced.

Table 9.7: *Comparison of actual and allowed Plant O&M costs in the 2017-23 regulatory period ($nominal, $millions)*

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	Total
Actual/Forecast	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
IPART Determination Allowance	8.37	12.72	26.37	18.56	20.45	21.47	107.95
Variance $	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Variance %	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Note: IPART Determination Allowance 2017-18 to 2021-22 calculated on a pro-rata basis using the volume of water produced and escalated to $nominal using June on June CPI. 2022-23 notional allowance calculated by escalating 2021-22 allowance by forecast 2022-23 CPI.

Source: Sydney Desalination Plant

Our operating experience over the 2017-23 regulatory period has improved our understanding of O&M costs and supports more robust forecasts in the 2023-27 regulatory period. It is important to note that the only previous operational experience was obtained during the proving period immediately after the design, construction and commissioning of the Plant — a significantly different circumstance with a brand-new plant supported by a sizable design, delivery and commissioning team, and equipment manufacturer support.

Our forecast O&M costs also reflect SDP's Network Operator's Licence that set out Operating Rules developed in response to the GSWS. The new operating environment will introduce new risks and challenges for SDP, many of which arise because the Plant was not designed to provide the dynamic water supply service envisaged under the Operating Rules.

In making the 2017 Determination IPART noted that in assessing the prudent and efficient level of O&M costs it formed decisions:

> *through the lens of SDP's primary role of drought response. We agree with Atkins Cardno that any need to maintain a higher level of service is ancillary.*

SDP's Network Operator's Licence makes clear that the higher level of service associated with the Plant flexibly responding to Sydney Water's production request is no longer ancillary, but the primary role of the Plant. In line with the intent of the GSWS, we have engaged extensively with Sydney Water to operationalise the higher level of service envisaged under SDP's Network Operator's Licence to meet both the NSW Government's objectives for Greater Sydney's water supply security and the needs of Sydney Water. In doing so we have sought to balance the needs of Sydney Water and customers with the design and operating capabilities of the Plant and the efficient cost of providing these water supply services – particularly relating to the "minimum baseload volume each year" necessary for the Plant to be able to respond to water supply requests from Sydney Water.

Delivering this higher level of service envisaged in SDP's Network Operator's Licence involves additional fixed O&M costs (opex) costs as well as variable opex associated with producing the minimum baseline volumes which are estimated to be 23GL per year.

Our forecast O&M costs are based on our renegotiated costs under amendments to the Plant and Pipeline contracts with Veolia to reflect the Plant's new role reflected in SDP's Network Operator's Licence . Veolia proposed O&M costs with detailed justification, and SDP and its consultants undertook a robust process of assessment and challenge, including obtaining expert advice (discussed further below). Continuing our O&M contracts with Veolia will allow customers to benefit from operational experience gained to date, while also ensuring the operator is held to account for any past performance that leads to increased cost or reduced level of service. Such benefits have already been realised through Veolia carrying out renewals and other works on the Plant under the O&M contract warranty with no additional cost to customers. Continuing our O&M contract with Veolia also avoids substantial costs in re-tendering the contract (estimated to be at least $10m).

Our forecasts include four main step changes over the 2023-27 regulatory period which we consider are consistent with the costs that would be incurred by a prudent service provider acting efficiently in line with Good Industry Practice to respond to water production requests in accordance with SDP's Network Operator's Licence. These step changes ensure that SDP's prices reflect the efficient costs of providing its water supply and water security services.

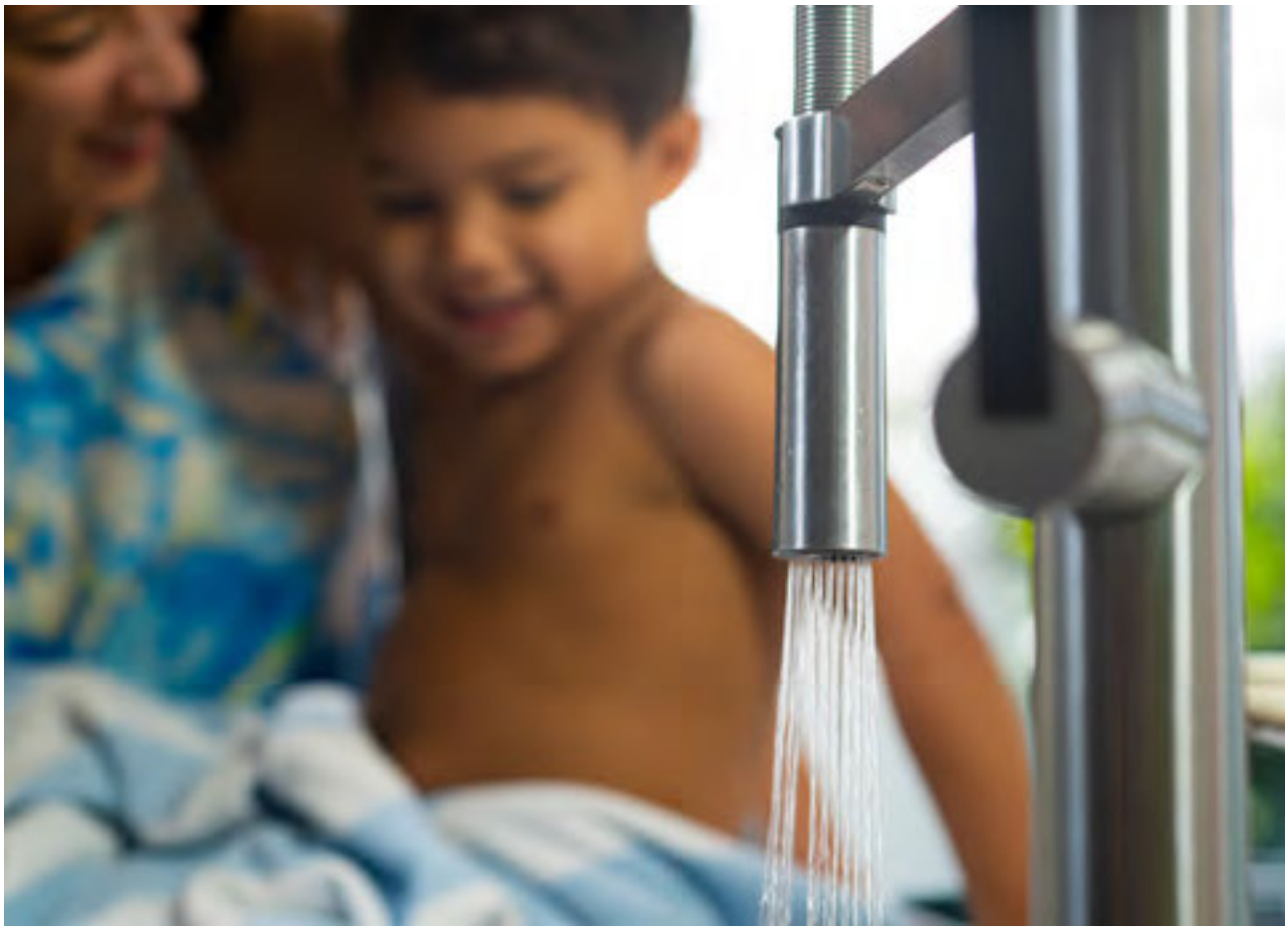
The step changes are summarised below and we have provided full details and justification in Appendix 9:

- **Labour costs** (Plant and Pipeline) — based on experience over the 2017-23 regulatory period, we have identified additional operational roles (FTEs) needed to support asset preservation and reliability, and to maintain safe working conditions for O&M staff in relation to operational changes to meet our Network Operator's Licence. A proportion of these additional staff are already in place (and included in the Base Year), but these costs are not reflected in SDP's current charges. We are proposing an increase in opex allowances over the 2023-27 regulatory period to reflect the efficient level of labour costs incurred by a prudent operator acting efficiently to meet the higher level of service expected under SDP's Network Operator's Licence.
- **Routine asset maintenance (RAM)** (Plant and Pipeline) — we are forecasting increasing RAM which is standard industry experience for a Plant of this age (greater than 12 years old), including significant preventative maintenance scheduled over the 2017-23 regulatory period. The age of the Plant also dictates an increase in renewals and refurbishments of assets below a threshold for capitalisation, which will be delivered under RAM. For example, chemical dosing, instrumentation and controls equipment typically have an asset design life of 10 to15 years. We also have additional RAM in relation to operational changes to meet our Network Operator's Licence. For our Pipeline, the increase in RAM is based on a revised preventative maintenance program identified in a detailed condition assessment of the Pipeline which culminated in our 2020 Pipeline Asset Management Plan. The condition assessment also identified capital renewals to be delivered prior to the increased maintenance scope. These renewals were completed in 2022 - 2023. We consider that the increase in RAM expenditure represents an efficient solution to protect the life of the Plant and Pipeline, ensures

operational reliability which is critical in meeting production requests under SDP's Network Operator's Licence and avoids larger capital works in future, which is in the long-term interests of customers.[108]

- **Treatment costs** (Plant) — increasing treatment costs are primarily driven by older RO membranes and the resulting need for increased chemical dosing to meet drinking water quality requirements. We are also seeing increasing unit costs of chemicals above CPI with the global market increasingly uncertain. Our proposed treatment costs which reflect current price information are below bottom-up benchmarks developed by our expert consultant, Emerald Process Engineering, as outlined in Appendix 9.4. Our proposed treatment costs are also contingent on our membrane replacement program discussed in section 10. However given the volatility in chemical prices we are proposing an end-of-period true-up for the benchmark chemical cost allowance. SDP has limited ability to influence chemical prices and the true-up will avoid any windfall gains or losses by calculating and then passing through at the subsequent regulatory period the movement in the benchmark chemical cost allowance due to changes in the benchmark chemical price component. Appendix 7-4 provides detail on the end-of-period true-up.
- **Other fixed O&M** expenditures (Pipeline) — expenditures (Pipeline) — the increase in other fixed O&M expenditures for our Pipelines relates to the cost of SDP managing Dial Before You Dig and developer enquiries regarding the Pipeline, with technical and design resources to review, assess and approve any activities that have potential to adversely affect the Pipeline. As a single asset owner, SDP carries significant risk on its Pipeline. These costs to date have been absorbed by SDP (within Corporate costs) at no cost to customers. We have also proposed an efficient, prudent and proportionate step change in the level of R&D expenditure over the 2023-27 regulatory period. This will ensure that we continue to innovate to benefit customers, by reducing costs, lowering risks and providing better

108 We note that ESCOSA approved an increase in maintenance costs for SA Water in relation to the aging Adelaide Desalination Plant (ADP). ADP is a similar age to our Plant. ESCOSA, SA Water Regulatory Determination 2020: Statement of Reasons, p165.



services. This ultimately enhances the community's ability to mitigate and adapt to climate change for the benefit of the people of NSW and future generations.[109] Further detail is provided in Appendix 9.

- **Insurance** — Veolia maintains a range of insurance policies to manage the risks of operating and maintaining the Plant. We are proposing an increase in opex allowances for Veolia's insurance based on forecast increases in Veolia's premiums over the 2023-27 regulatory period.

Figure 9.2: Base Year relative to forecast O&M over the 2023-27 regulatory period in Operational Mode (Minimum Production) ($2022-23, $millions) and **Figure 9.2: Base Year relative to forecast O&M over the 2023-27 regulatory period in Operational Mode (Minimum Production) ($2022-23, $millions)** compare our forecast average O&M expenditure over the 2023-27 regulatory period with our Base Year costs. These figures show the relative contribution of the main drivers discussed above. Further information is provided in Appendix 9.

Source: Sydney Desalination Plant

109 In line with IPART's Strategic Plan and climate change statement. IPART, Climate Change Prioritised: Our statement and framework for tackling climate change, 2021.

Source: Sydney Desalination Plant

As indicated above, we commissioned expert advice on prudent and efficient O&M costs to test the robustness of our forecasts. We are confident our renegotiated O&M contract provides substantial long-term benefits for customers including the expertise to respond to Sydney Water and customers' changing needs in a way that mitigates operational risks and shares the benefits of cost savings achieved to date, as well as those efficiencies expected over 2023-27 regulatory period (see **Box 6**).

In our view it would not have been prudent for SDP to retender the O&M contract before the 2023-27 regulatory period given:

- the NSW Government's consideration over 2019-20 to expand the capacity of the Plant;
- continued mitigation under our O&M contract of operational risks of the Plant under the original procurement model — including previous asset management and maintenance performance, and holding Veolia to account for an 'act or omission' that leads to increased cost or below minimum expected level of service;
- uncertainty of the Plant's operating environment — shutdown, to restart to emergency response requests and only the very recent finalisation of SDP's Network Operator's Licence;
- it avoids substantial costs involved in retendering including termination fees from the current O&M contracts, if a different operator was chosen;
- there has been uncertainty around market structure of potential alternative O+M partners of suitable size and experience, with major providers in Australia merging.

Box 6: Why our forecast O&M costs are prudent and efficient

Our O&M forecasts for the 2023-27 regulatory period are prudent and efficient for four reasons:

- They utilise efficient costs from our FY23 Base Year that reflect the outcomes of a competitively tendered long-term O&M contract — a common arrangement across the industry for operating large complex water treatment facilities like our Plant — a strong governance framework and a set of internal policies that ensure we incur operating expenditure only where necessary.
- Our proposed 'step changes' in O&M costs are consistent with the costs incurred by a prudent service provider acting efficiently, in line with Good Industry Practice. Drawing on our enhanced understanding of what is needed to appropriately maintain the Plant and meet service obligations, we undertook a robust process of negotiation with Veolia for O&M costs over the 2023-27 regulatory period.
- Veolia proposed O&M costs and we assessed them employing the same techniques that would apply to a competitive tender such as a formal evaluation, reviewing Veolia's proposal and challenging them to demonstrate and/or substantiate the merits of their proposal (a process that has been documented), appropriately allocating risk between SDP and Veolia reducing proposed costs, and establishing performance standards.
- We systematically assessed Veolia's input costs and other assumptions used to underpin the forecasts to ensure they were reasonable, including any significant interaction between our forecast operating expenditure and forecast capital expenditure program. We assessed that step changes are required for labour, RAM, other fixed O&M and treatment costs as previously noted.

We commissioned bottom-up assessments of efficient O&M costs for our Plant to validate our O&M forecasts. These assessments confirmed our O&M forecasts are consistent with the costs incurred by a prudent service provider acting efficiently.

Expert advice was provided by KBR on our fixed O&M costs and capex, and by Emerald Consulting for our treatment costs and energy consumption (see Appendix 9 for these reports).

We have incorporated continuing efficiency savings of 0.3% per year into our O&M forecasts from 2024-25. We have applied this from the second year of the 2023-27 regulatory period to allow SDP time to adjust to our new operating environment including obligations under SDP's Network Operator's Licence (see Appendix 9 for more information).

9.5.3. Proposal

We propose:

18. To set the O&M cost category of the forecast opex allowance on a base-step trend approach, incorporating a continuing efficiency factor of 0.3% per year from 2024-25, reflecting the efficient cost of SDP operating and maintaining the Plant and other assets in line with Good Industry Practice, as required under our Network Operator's Licence.

9.6. Overview of energy cost component of forecast opex

Our forecast of energy costs consists of:

- The efficient cost or price per unit of energy
- The amount of energy required in each operating mode.

The following sections set out the basis for our estimates of the efficient cost per unit of energy as well as the amount of energy required.

9.6.1. Cost per unit of energy

9.6.1.1. Background

Desalination is an energy intensive process and the price per unit of energy is a key input to the overall cost of energy incurred in the production of water. The Environmental Project Approval for construction of the Plant requires SDP to use 100% renewable energy procured through specific electricity and renewable energy contracts. SDP is legally required to comply with the energy procurement approach specified in the Plant's Project Approval. SDP has a legal obligation under the Environmental Planning and Protection Act (EPA) to comply with the Project Approval. SDP is also obliged under its Network Operator's Licence, issued under the WICA, and administered by IPART, to comply with the EPA and thus with the Project Approval. SDP is also obliged under its lease and the water supply agreement to comply with the Project Approval. Under NSW law SDP is required to acquire electricity and LGC's from the GGRP contracts and so IPART should enable SDP to recover costs it incurs in complying with the GGRP contracts.

9.6.1.2. Assessment

The Project Approval for the Plant under former s75J of the Environmental Planning and Assessment Act 1979 required the development of a greenhouse gas reduction plan (GGRP), to be approved by the Director-General, prior to the commencement of operation of the Plant. The GGRP details a strategic plan for the management, minimisation and offset of greenhouse gas generation associated with electricity supply for the Plant, including a requirement for Sydney Water (and now SDP) to procure electricity from 100% renewable sources.

As required by the approved GGRP, Sydney Water at the time entered into contracts with Infigen Energy (now Iberdrola Australia) to acquire electricity and RECs under an Electricity Services Agreement (ESA) and Renewable Services Agreement (RSA) respectively. There was also a project deed entered into for the construction and operation of the Capital Wind Farm to supply renewable energy to SDP. These agreements are known as the GGRP Contracts and they provide SDP with the electricity to operate

the Plant and Large-scale Generation Certificates (LGCs) which enable SDP to meet its obligation that the Plant be powered by 100% renewable energy. Importantly, this requirement to procure electricity from 100% renewable resources was not simply a general requirement, but a requirement to procure electricity in a particular way as prescribed in the GGRP through the GGRP Contracts.

The GGRP Contracts were established following a competitive tender process undertaken by Sydney Water and are consistent with the energy procurement practices of most major energy users. The contracts provide a valuable long-term hedge against volatility in the price of electricity and renewable electricity, providing a stable and predictable price for energy. This value is evident in the current energy market environment where the prices of electricity and renewable electricity are extremely volatile and government policy as prescribed in SDP's Network Operator's Licence, rather than SDP's decisions, determines when the Plant operates and consumes energy.

In both the 2011 Determination and the 2017 Determination, IPART based the energy cost component of forecast opex on benchmark market prices for electricity and renewable certificates rather than using the prices within the GGRP contracts. IPART's decision in both past Determinations appears to be motivated, at least in part, by the objective of ensuring SDP has incentives to contract for 100% renewable energy in an efficient way. As discussed below, the process that Sydney Water went through before entering the GGRP Contracts was efficient at the time the GGRP contracts were entered into, and we present further evidence on this from ACIL Allen below.

SDP has consistently proposed that IPART set energy cost allowances using the prices within the GGRP contracts, even when IPART's benchmark market price would have provided a higher allowance. This was to prevent SDP from being exposed to windfall gains or losses based on the difference between IPART's benchmark prices and SDP's energy costs under its regulatory obligations. This exposure results in inefficient incentives, risks breaching the financial indifference principle in the Terms of Reference and risks SDP's financial viability. These outcomes would not be in the long-term interests of customers.

The importance of enabling SDP to recover all costs it incurs in complying with the GGRP has increased markedly as SDP moves to a new stage of flexible full-time operation. Because SDP will be operating more often, it will be exposed more often to any difference between the cost to SDP of complying with its Licence and other regulatory obligations—that is, SDP's costs under the GGRP Contracts—and its regulatory allowance for energy costs. Irrespective of the past approach to electricity costs the required shift to flexible full-time operation necessitates a change in approach to electricity costs. This is why the NSW Government has amended the Terms of Reference to include a new pricing principle 7A:

> *The SDP Project Approval under former s 75J of the Environmental Planning and Assessment Act 1979 (05_0082) required the development of a greenhouse gas reduction plan (GGRP), to be approved by the Director-General, prior to the commencement of operation of the plant. The GGRP details a strategic plan for the management, minimisation and off-set of greenhouse gas generation associated with electricity supply for the plant. As part of the approved GGRP, certain contracts were entered into with Infigen (now Iberdrola Australia) to acquire electricity and RECs (GGRP Contracts). The price determination should consider SDP's ability to recover all costs it incurs in complying with the GGRP and the GGRP Contracts other than costs related to surplus energy in relation to which the energy adjustment mechanism described in paragraph 8 (iii) applies.*

This pricing principle was added in the most recent Terms of Reference, along with other changes to reflect SDP's new Network Operator's Licence and the proposed flexible full-time operations of the Plant. The EAM was introduced by IPART in accordance with a pricing principle included in the Terms of Reference to address risks associated with SDP's surplus electricity and RECS. With the change in operating model, IPART should in accordance with new pricing principle 7A "consider SDP's ability to recover all costs it incurs in complying with the GGRP and the GGRP Contracts".

The costs that SDP "incurs in complying with the GGRP and the GGRP Contracts" are the payments that SDP is required to make under the GGRP Contracts for 100% renewable energy. For this reason, the energy cost component of forecast opex should reflect the prices SDP pays for 100% renewable energy under the GGRP Contracts. This ensures that the prices for the 2023-27 regulatory period will reflect the cost of SDP meeting its regulatory obligations in providing its services and responding to Sydney Water production requests.

In addition, setting the energy cost component of forecast opex to reflect the prices under the GGRP Contracts is economically efficient considering the commercial imperative SDP had to purchase renewable electricity through long-term contracts of this kind given its Project Approval obligations, which it has a statutory obligation to comply with.

Given that the GGRP Contracts were entered into following a competitive tendering process, setting the energy cost allowance to reflect the prices SDP pays under the GGRP Contracts reflects the benefit of competitive tension used through a tender process to elicit the best offers from potential energy providers.

The economic efficiency of the GGRP Contracts is borne out by the fact that long-term contracts can be an efficient way to manage risks and transactions costs (as identified in Frontier Economics' report summarised below[110]), that the GGRP Contracts compared favourably with other alternatives available at the time (including alternative contracts and expectations of spot prices) and compared favourably with other similar contracts entered into around that time (as we discuss in more detail below). Since the prices under the GGRP Contracts are efficient, setting the energy cost allowance based on the GGRP Contracts is both consistent with the Terms of Reference and in the long-term interests of customers.

SDP has a legal obligation to purchase electricity and RECs through the GGRP Contracts

The proposal to construct a desalination plant on the Kurnell Peninsula was controversial; not least because of the greenhouse gas emissions that would be produced by operation of the Plant. The political controversy surrounding the potential environmental impacts of the Plant, and the process of Sydney Water applying for planning approval, resulted in a requirement that Sydney Water, and now SDP, procure electricity from 100% renewable resources. Importantly, the requirement that Sydney Water, and now SDP, procure electricity from 100% renewable resources was not simply a general requirement, but a requirement to procure electricity *in a particular way* as prescribed in a greenhouse gas reduction plan. SDP is required, as a legal obligation, to procure electricity and LGCs through the GGRP Contracts. See confidential appendix 9-8 for further details.

The key steps in the process that resulted in this legal obligation on SDP are as follows:

- Following public consultation, and the announcement of the NSW government's metropolitan water plan in February 2006, Sydney Water's Preferred Project Report (the **Preferred Project Report**)[111] committed to 'effectively powering [the Plant] with 100% renewable energy, meaning no net greenhouse gases'.[112]
- The Preferred Project Report included a commitment to prepare a Greenhouse Gas Reduction Plan (**GGRP**) which identified how the desalination plant would be powered to achieve no net greenhouse impact.[113]
- Project approval for the Plant was provided to Sydney Water by the New South Wales Minister for Planning on 16 November 2006 (the **Project Approval**).[114] Among other things, the Project Approval required Sydney Water to carry out the project generally in accordance with the Preferred Project Report,[115] and to develop and submit for the approval of the Director-General a GGRP to detail a strategic plan for the management, minimisation and offset of greenhouse gas generation associated with electricity supply to the desalination plant.[116] The GGRP was required to include a specified outcome that the desalination plant be powered by 100% renewable energy, or equivalent.
- Sydney Water prepared a GGRP dated November 2009,[117] which was approved by the Director General on 11 December 2009. Among other things, the GGRP:
  - describes the process the NSW Government and Sydney Water went through to develop criteria and assess the options available to ensure SDP was powered by 100% renewable energy;
  - describes the procurement process that Sydney Water went through for the supply of 100% renewable energy to SDP over a twenty year term; and
  - explains that, as a result of the procurement process that was undertaken, three agreements were entered into to provide for:

110 Frontier Economics, *Economic justification for SDP's long-term energy contracts*, 11 March 2022.

111 Sydney Water, *Preferred Project Report for Sydney's Desalination Project* (August 2006) <https://sydneydesal.com.au/media/1145/2006-preferred-project-report.pdf>.

112 Preferred Project Report, p1.3.

113 Preferred Project Report, p12.6.

114 Project Approval for Sydney Desalination Plant (16 November 2006) <https://www.sydneydesal.com.au/media/1101/2006-project-approval-desalination-plant.pdf>.

115 Project Approval, cl1.1.

116 Project Approval, cl2.2.

117 Sydney Water, *Sydney's Desalination Plant - Greenhouse Gas Reduction Plan* (November 2009), <https://www.sydneydesal.com.au/media/1089/greenhouse-gas-reduction-plan.pdf>.

- the supply of renewable energy certificates (RECs);
- the construction and operation of the Capital Wind Farm; and
- the supply of electricity and related retail services.

- The energy and REC procurement arrangements approved in the GGRP resulted in SDP procuring 100% renewable energy under the GGRP Contracts.

SDP has a legal obligation to comply with the conditions of its Project Approval (and in turn the GGRP) for several reasons as outlined below.

- SDP has a statutory obligation to comply with the Project Approval (and thus with the commitments and requirements in the GGRP). Specifically, s 75D(2) of the EPA Act in force prior to 1 October 2011 (as preserved for this type of Part 3A approval) provides that a person who has a project approved by the Minister must comply with any conditions to which such an approval is subject. Failure to comply with the Project Approval is thus a failure to comply with the terms of the EPA Act. Such a failure could be the subject of civil enforcement proceedings in the Land and Environment Court pursuant to ss 122-124 of the preserved version of the EPA Act. Such proceedings may be brought by any person: s 123(1). Criminal enforcement might also be possible pursuant to ss 125-127A of the preserved version of the Act.
- Beyond the planning regime, SDP is also required to comply with the conditions of its Project Approval, and thus the GGRP, under other regulatory and contractual arrangements.
- In particular, the mandatory conditions imposed as part of SDP's Network Operator's Licence and Retail Supplier's Licence granted under s 10 of the Water Industry Competition (General) Act 2006 (NSW) require SDP to comply with the requirements of the EPA Act and, thus, with the Project Approval. IPART is responsible for monitoring and enforcing SDP's compliance with its Licence conditions.
- [redacted]

In short, the regulatory and contractual arrangements applying to SDP require it not only to be powered by 100% renewable energy, but that this be achieved through the GGRP Contracts.

SDP's procurement of 100% renewable energy is not a matter on which SDP is able to make commercial decisions or exercise commercial judgement. If SDP were to procure 100% renewable energy other than through the GGRP Contracts, SDP would be in breach of its regulatory and contractual arrangements, which could result in civil enforcement proceedings undertaken by Government.[119]

118 The mandatory conditions are set out in the Water Industry Competition (General) Regulation 2008 (NSW), Schedule 1, clause 4 and Schedule 2 clause 7.

119 In particular, if SDP were to attempt to procure electricity and renewable electricity through purchasing financial derivatives and LGCs on spot markets, as it would have to do to follow the benchmark approach IPART has adopted in setting the energy cost allowance for RP1 and RP2, SDP would in breach of its regulatory and contractual arrangements, which could result in civil enforcement proceedings undertaken by Government.

For these reasons, it is clear that:

- Under NSW law, SDP is required to acquire electricity and LGC's from the GGRP contracts and so IPART should enable SDP to recover all costs it incurs in complying with the GGRP contracts.
- The payments that SDP is required to make under the GGRP Contracts are costs that SDP faces as a result of its regulatory obligations, including mandatory conditions imposed as part of SDP's Network Operator's Licence[120] and Retail Supplier's Licence.[121] As a matter of good regulatory practice, SDP should be able to recover the efficient costs it faces in complying with its regulatory obligations.[122] As IPART notes in its Submission Guidelines in relation to its 'efficiency test':

  "The efficiency test examines whether a utility's capital and operating expenditure represents the best and most cost effective way of delivering services to customers. Broadly the efficiency test considers both the investment decision and how the investment is executed or delivered, having regard to customer needs, ***subject to the utility's regulatory requirements****."*[123]

Similarly IPART noted in its 2020 Sydney Water Final report:

> *"We have set the maximum prices Sydney Water can charge its customers for water, wastewater, stormwater and other miscellaneous and ancillary services. These prices allow Sydney Water to meet the service standards prescribed in its operating licence and other regulatory requirements (such as those imposed by the Environment Protection Authority)."* [124]

If SDP is not able to recover the efficient costs it faces in complying with its regulatory obligations, then, as Frontier Economics points out, SDP "may be reluctant to invest in important infrastructure or require a higher rate of return to invest — neither of which would be in the long-term interests of customers."[125]

[redacted]

120 *Water Industry Competition (General) Regulation 2008* (NSW), Schedule 1, clause 4.

121 Ibid, Schedule 2, clause 7.

122 Appendix 7-6 sets out regulatory precedents regarding processes (including re-openers) for ensuring the efficient costs associated with complying with regulatory obligations are reflected in the revenue requirements and prices

123 IPART, Guidelines for Water Agency Pricing Submissions, 2020, p18.

124 IPART, Review of prices for Sydney Water — From 1 July 2020, Final Report, June 2020, p11.

125 Frontier Economics, *Economic justification for SDP's long-term energy contracts*, 11 March 2022, page 16. Appendix [9-9].

[redacted]

[redacted]

SDP has a commercial imperative to purchase renewable electricity through long-term contracts

In combination with SDP's legal obligation to be powered by 100% renewable energy through the GGRP Contracts, there are good commercial and economic reasons for these long-term contracts.

As identified in Frontier Economics' report,[130] long-term contracts can be an efficient way to manage risks and transactions costs. Given there was a great deal of uncertainty about the future of renewable energy markets at the time Sydney Water entered into the GGRP Contracts, there would have been significant risks and transaction costs associated with a series of short-term contracts or with physical ownership of renewable generation capacity. For instance:

- Renewable markets were in their infancy at the time, and the future of the renewable electricity market was highly uncertain. For instance, at the time the GGRP was being developed, there was no certainty that the existing renewable energy target would continue to operate and to enable a market for renewable energy certificates. Also, as ACIL Allen notes, "the [renewable energy] scheme was finely balanced from its inception in 2001 up to 2009. Additional load from SDP's operations may well have resulted in the RET being in undersupply. Hence it was prudent for SDP to enter a contract for guaranteed supply of LGCs at the time."[131] In short, there was risk at the time that procuring renewable electricity other than through a long-term contract — for instance, by relying on products like GreenPower — would not be possible, and would not be sustainable in the future. Given this, without a long-term contract for 100% renewable energy, SDP risked being unable to comply with its obligation to operate on 100% renewable energy.
- There would have been significant transaction costs in SDP having to search for, negotiate, conclude and coordinate a series of short-term electricity contracts for its uncertain load.

Based on this, Frontier Economics concludes that "[i]t was reasonable for SDP to seek to manage its transactions costs, and its risk of not complying with the conditions of its Project Approval, given the market was in a state of flux, with no settled policies and no sign of settled policies,"[132] and that "there is economic justification for a long-term renewable energy contract of the form SDP entered, given the circumstances at the time SDP executed its contract."[133]

The benefits of efficient management of risks and transactions costs that are provided by the GGRP Contracts will ultimately flow through to customers.

[redacted]

130 Frontier Economics, *Economic justification for SDP's long-term energy contracts*, 11 March 2022. See Appendix 9-9.

131 ACIL Allen, *National Electricity Market analysis – In support of SDP's third regulatory period submission to IPART*, 18 July 2022*, page 10. See Appendix 9-10.*

132 Frontier Economics, *Economic justification for SDP's long-term energy contracts*, 11 March 2022, page 10. See Appendix 9-9.

133 Frontier Economics, *Economic justification for SDP's long-term energy contracts*, 11 March 2022, page 7. See Appendix 9-9.

SDPs contracts are prudent and efficient

In setting an allowance for energy costs that reflects the prices SDP pays under the GGRP Contracts, IPART can be satisfied that these contracts are efficient and reflect prudent decision-making *given the circumstances and information available at the time.*

In entering into the GGRP contracts, Sydney Water undertook a well-considered competitive tendering process to ensure that 100% renewable energy was procured for the desalination plant in a way that best met the needs, including the regulatory and contractual obligations, of the Plant and of customers. The tendering process consisted of the following key steps:

- During 2007, the NSW Government asked Sydney Water to chair a committee of representatives from various NSW Government agencies to develop criteria for procuring 100% renewable energy and to assess the available options. The committee developed a set of option evaluation criteria that are set out in the GGRP.
- In November 2007 Sydney Water issued a request for proposals for the supply of 100% renewable energy. The proposals were assessed against the evaluation criteria established by the committee of representatives from various NSW Government agencies, and six proponents were short-listed to receive a request for tender.
- In January 2008 request for tenders were issued to the six proponents. The request for tender invited tenders for the supply of electricity and RECs for the 250ML per day desalination plant over a 20-year term.
- In March 2008 tenders closed and, following an assessment process, contracts were awarded in July 2008. The GGRP provides a summary of the assessment of the contracts against the evaluation criteria.

Given this well-considered competitive tendering process, IPART can be satisfied that procuring electricity through the GGRP Contracts is the procurement option that best met the evaluation criteria for electricity procurement that were established by the committee of representatives from the NSW Government.

In addition, the available evidence demonstrates that the energy contracts are competitively priced, given the options that were available at the time. ACIL Allen has reviewed the price and other terms of the GGRP Contracts and assessed these against comparable power purchase agreements (PPAs). ACIL Allen concludes:

> *Our key finding in relation to the price levels in the Infigen contracts, is that the bundled price in the contracts were efficient when compared to other observable PPAs executed at the same time as the Infigen Contracts.*[134]

This is demonstrated in the summary of ACIL Allen's review of PPAs shown in **Figure 9.4**. While there is a slight downward trend over time observable in the prices of wind PPAs (reflecting the decline in the capital cost of wind farms over time) it is clear that the price of the GGRP Contracts is comparable with other wind PPAs entered into around that time.

It is also important to note that the electricity supply under the GGRP Contracts is load following (it provides electricity to match SDP's load, rather than only providing electricity at the time the wind farm is generating, as a typical PPA does). ACIL Allen notes that the review of PPA prices has not adjusted for the difference between SDP's firm contract with Iberdrola Australia and a traditional PPA, "which in itself represents additional value to SDP since it does not need to manage any mismatch between load and generation when it is operating".[135]

134 ACIL Allen, *National Electricity Market analysis – In support of SDP's third regulatory period submission to IPART*, 18 July 2022, page 15. See Appendix 9-10.

135 ACIL Allen, *National Electricity Market analysis – In support of SDP's third regulatory period submission to IPART*, 18 July 2022, page 5. See Appendix 9-10

[redacted]

Source: ACIL Allen, National Electricity Market analysis — In support of SDP's third regulatory period submission to IPART, 18 July 2022, page 15.

Note: Values represent the bundle of wholesale electricity and renewable energy certificate price at the time of commissioning; retail operating costs (ROC), retail operator's margin (ROM) and the cost of complying with the NSW Energy Saving Scheme (ESS) have been deducted; actual inflation used for 2012 to 2020. Other PPAs shown in the chart have similar terms to the contracts with Iberdrola Australia.

The available evidence also indicates that the GGRP Contracts have turned out to be efficient contracts, even with the benefit of hindsight. This is seen by comparing the price under the GGRP Contracts with the allowances under IPART's 2011 Determination and 2017 Determination and with current forward prices. As seen in **Figure 9.5**, the price under the GGRP Contracts has generally been lower than the allowances under IPART's determinations, and the price under the GGRP Contracts is well below current forward prices available on ASX Energy.

Figure 9.5: *Comparison with GGRP Contract prices with historical benchmark energy price and current forward prices*

Source: Sydney Desalination Plant

Note: GGRP Contracts as per Table 9.8. 2011 and 2017 Determination benchmark energy prices escalated using actual Jun on Jun CPI. Forward price reflects the 40-day average (up to 30 June) of ASX energy base swap contracts and LGC forward prices published by Mercari from 2022-23 to 2025-26, and then holds prices constant in real terms for 2026-27. These nominal prices are converted to $2022-23 using an inflation assumption of 2.5%. It also includes energy losses and market fees & ancillary services as per Table 9.8 and includes an allowance for retail operating costs of 3%.

9.6.1.3. Summary of proposed cost per unit of energy

Our proposed cost per unit of electricity is summarised in **Table 9.8**. This includes:

- The price of electricity (as set out in the GGRP Contracts)
- The price of renewable electricity (as set out in the GGRP Contracts). Under the GGRP Contracts, SDP does not face any price for the LRET, SRES or ESS that is in addition to the price of renewable electricity.
- Assumptions, based on most recent available evidence, for:
  - market fees and ancillary services costs (see Appendix 7-4)
  - distribution loss factor and marginal loss factor (see Appendix 7-4)
- [redacted]

Note that the amounts for market fees and ancillary services costs, and for the distribution loss factor and marginal loss factor, are proposed to be adjusted through a true-up arrangement (discussed in Appendix 7-4).

Other costs incurred under the GGRP Contracts related to the supply of electricity are proposed to be recovered by means other than through the forecast cost per unit of electricity set out in **Table 9.8:**

- Network tariffs are proposed to be a pass-through, as discussed in section 7.4
- Metering charges (which do not vary with electricity consumption) are included in corporate overheads, (as discussed in section 9.7).

In addition, the forecast cost per unit of electricity set out in **Table 9.8** does not include other Uncontrollable Costs related to the supply of electricity that SDP expects to incur during the 2023-27 regulatory period, but which cannot be forecast. These include:

- Reliability and Emergency Reserve Trader (RERT) payments
- Generator compensation charges
- UFE costs (see Appendix 7-4)

SDP expects any of these costs charged to retailers by AEMO will ultimately be passed through to SDP by Iberdrola Australia under the GGRP Contracts.

Finally, the forecast costs per unit of electricity set out in **Table 9.8** do not include other new costs or charges related to the supply of electricity that SDP may be exposed to during the 2023-27 regulatory period, such as new charges relating to the introduction of a capacity market (see Appendix 7-6)

[redacted]

	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]		[redacted]		
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Source: Sydney Desalination Plant

** Amounts for market fees and ancillary services costs, and for the distribution loss factor and marginal loss factor, are proposed to be adjusted through a true-up arrangement discussed in Appendix 7-4.*

9.6.2. Volume of energy

9.6.2.1. Background

The second component of our forecast energy costs is the amount of energy we require to efficiently run the Plant. We have fixed and variable electricity requirements in Operational Mode.

There are several drivers of the amount of energy used by the Plant when it is operating. These include factors that we cannot control, such as seawater temperature and salinity, as well as those we can, including membrane age (and to some extent membrane condition) and chemical usage.

Electricity consumption is most efficient per ML of water we produce when the Plant is operating at 100% production capacity, with minimal external requests to change production volume, and with optimal membrane replacement. Under our new operating environment, SDP has no control over the volume of water it is requested to produce but will endeavour to manage the day to day production volumes in order to deliver water most efficiently, while also considering optimal scheduling of maintenance for efficiency and reliability. However, SDP does manage the trade-off between membrane replacement, electricity efficiency, optimal chemical dosing and membrane cleaning costs to ensure overall efficient production costs, with appropriate incentives in the O&M Contract. Our overall objective is to minimise total life-cycle costs while meeting our appropriate level of service.

The age of our RO membranes is a key driver of electricity consumption when the Plant is operating. RO processes comprise around 88% of the Plant's electricity use (see Appendix 9 for further discussion).

In the 2017 Determination, IPART set a variable energy consumption benchmark of 3.516MWh/ML in Plant Operation Mode. This was based on the Plant operating at full capacity and with new membranes, as this was the only data scenario available, but it does not take into account membrane aging and the impact on electricity consumption from varying seawater qualities and temperature.

Over the 2017-23 regulatory period when SDP was operating, we averaged approximately 3.48MWh/ML.[136] The key factors that led to outperformance of IPART's energy volume benchmark include:

- the Plant operating on a full set of new RO membranes from the 2019 Restart. This meant that the average age of membranes while SDP was operating was considerably lower than the average membrane life in the membrane performance warranties to meet the Plant's design requirements for water quality and quantity,

136 This reflects average monthly performance over period 2017-18 to 2021-22..

- exceptional seawater quality over the period and minimal changes in temperature range, which led to best-case conditions for energy efficiency. These favourable conditions were partially due to minimal stormwater runoff to the ocean during this period,
- SDP exceeding its production volume requirements through skilled operation thereby gaining efficiencies,
- SDP managing the treatment process to a high standard, and
- SDP maintaining its asset performance primarily driven by new assets in all categories.

These factors combined to make ideal conditions for energy efficiency during the 2017-23 regulatory period. However, as noted above, electricity consumption increases as the average age of membranes increases.

Our recent energy performance is based on preferentially running our most efficient RO trains, while minimising asset rotation and other operational needs that are necessary for sustainable and reliable quick response to emergency production requests. We chose to run in this operating state as a necessity to manage overall opex expenditure as cost pressures increased without the ability to recover any additional costs. However, under a confirmed ongoing and continuous production scenario, we will need to operate more sustainably by targeting broadly equivalent run-hours for all our equipment.

Under the new operating environment, the Plant will be run more dynamically and more often under multiple production requests from Sydney Water. Operating in this manner will:

- put additional strain on the RO system (including membranes) due to the increased number of starts and stops, at the same time as the average age of membranes increases
- require a comprehensive asset rotation policy to ensure all our assets are ready to operate at short notice, but in turn leading to consumption of more energy as treatment modules and mechanical and electrical assets are ramped up and down. Our target to have similar run time on each asset

- lead to operational constraints of running at low production while keeping our treatment modules ready to operate quickly. In this state we treat water purely for internal Plant use (i.e., non-productive from a drinking water perspective – not sold to Sydney Water) thus impacting energy efficiency

In addition, seawater quality or temperature may vary, particularly with climate change, which is outside of SDP's control and which can have material effect on energy consumption.

For these reasons, the efficient level of energy required to produce each ML of water is forecast to increase in the 2023-27 regulatory period.

9.6.2.2. Assessment

We consider that IPART's variable energy benchmark in the 2017 Determination was appropriate given the Plant was operating with a new set of membranes, it was not considered likely that the Plant would restart early in the 2017-2023 regulatory period, and upon restart, the prevailing Operating Licence Conditions would see the Plant running at or close to full capacity where efficiency is greatest. However, this benchmark is not a realistic reflection of expected electricity consumption in the 2023-27 regulatory period due to the increased membrane age, operating environment and, to a lesser extent, aging of other electrical and mechanical assets which increases energy consumption.

For the 2023-27 regulatory period, our forecast energy consumption is based on our proposed membrane replacement program discussed in Chapter 11. A rolling replacement program, standard for desalination plants in Australia and globally, is in our case designed to maintain the average age of membranes at four years for first pass membranes and 6 years for second pass membranes.

The average life in the original plant design was 3.5 and 5 years for first and second pass membranes respectively, which is also the basis of our forward projections for energy consumption once average membrane age across the portfolio reaches steady state. By targeting a higher average life, we are challenging ourselves to produce water at a lower cost than envisaged within the design of the plant. Ongoing replacement delivers a lower whole of life cost once energy costs are factored in, compared to replacing membranes after eight years as per the assumed asset life for membranes in IPART's 2017 determination (see section 11 for more details). Ongoing replacement also allows us to continue to provide our services reliably without a production deficit due to membrane failure or underperformance, and to maintain efficient expenditure on treatment chemicals.

Our proposed variable energy benchmark was determined by:

- Starting with the benchmark of 3.516MWh per ML from the 2017 Determination, reduced by approximately 1.5% for the first two years to reflect actual historical data (i.e. efficiency in operation)
- Year-on-year increases from this reduced benchmark from 2021 onward per the O&M contract algorithm and consistent with membrane performance projections (note: year-on-year increase delayed for more than a year to reflect actual data and due to good operating practice providing savings to customers)
- Further ~1.45% increase from 2025/26 to account for potential inefficiencies associated with maximising average membrane life (AML) to provide the most efficient outcome (i.e. allowing SDP to manage the risk of higher AML with the aim of minimising capital cost for membrane replacements)

Our proposed variable energy benchmarks in Operational Mode for the 2023-27 regulatory period are set out in **Table 9.9**. These are compared to our estimated energy consumption for 2022-23. This table shows that higher AMLs require higher energy volumes, although this relationship is not necessarily linear.

Table 9.9: *Variable energy benchmark (MWh/ML) and Average Membrane Lives (years) in operational mode*

	2022-23	2023-24	2024-25	2025-26	2026-27
Variable energy volume (MWh per ML)	3.60	3.666	3.679	3.732	3.732
Average Membrane Lives 1st pass (years)	3.5	4.0	4.0	4.0	4.0
Average Membrane Lives 2nd pass (years)	3.5	4.5	5.5	6.0	6.0
Total Average Membrane Lives (years)	3.5	4.1	4.4	4.5	4.5

Source: Sydney Desalination Plant

We consider that our variable energy benchmarks are efficient given they:

- are more ambitious (i.e., lower energy volumes) than energy volume benchmarks of our proposed membrane lives, as they align with 3.5 and 5 year first and second pass membrane lives, respectively, rather than the 4 and 6 year lives we have proposed
- are below original design parameters for the Plant (membrane age and energy consumption) included in our O&M contract (see Appendix 9), and
- are below bottom-up estimates we commissioned from Emerald Process Engineering **(Box 7).**

Our proposed membrane replacement program provides the best value for customers on a whole of life basis by achieving an optimal balance between membrane replacement costs, energy (and treatment chemical) costs and long-term reliability of production. For example, if membranes were replaced less frequently (and hence had a longer average life) than we propose, energy costs would be higher and production reliability lower.

Box 7: Expert advice on the Plant's energy consumption

- We commissioned Emerald Process Engineering to estimate energy consumption for the Plant over the 2023-27 regulatory period from first principles.
- The analysis took into consideration RO membrane age (based on SDP's proposed membrane replacement program), energy consumed for non-productive water (i.e. necessary water supply that is not sold to Sydney Water), seawater quality, loss of electrically driven equipment efficiencies due to age of equipment, drinking water pump station energy consumption and other things.
- Emerald Process Engineering derived an estimate of daily variable energy consumption of 3.772MWh per ML, higher than our proposal for the 2023-27 regulatory period.

With regard to fixed energy, relative to the 2017-23 regulatory period we are proposing step changes in Operational Mode to maintain assets in an operational state to meet service levels under our new Operating Rules (e.g. flushing membranes with desalinated water, running a second pre-treatment to meet EPL and availability, ramp-ups requested by Sydney Water, asset rotation and maintenance). This increases our fixed energy consumption in Operational Mode by around 5,000MWh per year above the level allowed in the 2017-2023 Determination period. More information is provided in Appendix 9.

9.6.2.3. Summary of proposed volume of energy

Our proposed total energy volumes for the 2023-27 regulatory period are set out in **Table 9.10: Proposed energy benchmark volumes for the 2023-27 regulatory period (MWh)10**. These are compared to IPART's benchmark allowances from the 2017 Determination.

Table 9.10: *Proposed energy benchmark volumes for the 2023-27 regulatory period (MWh)*

	2023-24	2024-25	2025-26	2026-27
- Fixed	12,650	12,646	12,718	12,718
- Variable (maximum production)	335,439	335,709	340,545	340,545
- Total	348,089	348,355	353,263	353,263

Source: Sydney Desalination Plant

9.6.3. Proposal

We propose to set the energy cost category of the forecast opex allowance to reflect:

19. The cost per unit of energy incurred by SDP under the GGRP Contracts, consistent with the pricing principles in the Terms of Reference. The prices to acquire 100% renewable energy under the GGRP contracts, as well as forecast assumptions for Subordinate GGRP costs, are as set out in **Table 9.8**.
20. Energy volumes that reflect the age of Plant membranes in line with a benchmark efficient membrane replacement program and the required increase in fixed energy use under SDP's new Network Operator's Licence, as set out in **Table 9.10**.

9.7. Overview of corporate cost component of forecast operating expenditure

9.7.1. Background

Corporate costs cover a range of activities including contract administration, corporate governance, financial management, customer and stakeholder interaction, IT, [redacted] land tax and council rates.

SDP's corporate structure consists of a small management team and dedicated resources for ongoing finance, office administration, stakeholder management, regulatory and operational support. Other corporate services are provided under an outsourced model that uses specialist legal, regulatory and other expertise as required. Corporate costs during the 2017-23 regulatory period have been largely consistent across all modes.

We have continued to gain valuable experience in efficiently overseeing the prudent operation and maintenance of the Plant. We have invested in additional expertise that enables us to successfully restart the Plant and respond to ERNs, undertake more effective stakeholder management and improved Environmental, Social and Governance (ESG). We consider that this expertise is needed in all modes to ensure we are ready to restart when required and respond in a timely manner to our customer's needs. As a result, our forecasts of corporate costs for the 2023-27 regulatory period do not vary by mode.

9.7.2. Assessment

Our forecast corporate costs are based on a fit-for-purpose method that ensures we identify the relevant drivers of each expenditure category. We used a base-step-trend approach for most categories because Base Year costs are representative of future costs or can be adjusted for changes in our circumstances.[137]

Our actual corporate costs in each year of the 2017-23 regulatory period are provided in Table 9.11. It is compared to IPART's 2017 Determination allowance calculated on a pro-rata basis, based on the volume of water produced.

Table 9.11: *Comparison of actual and allowed corporate costs in the 2017-23 regulatory period ($nominal, $millions)*

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	Total
Actual/Forecast	6.66	7.88	6.68	8.41	8.64	12.71	50.99
IPART Determination Allowance	6.70	6.90	7.12	7.46	7.89	8.24	44.31
Variance $	(0.04)	0.98	(0.44)	0.95	0.75	4.48	6.67
Variance %	-0.6%	14.2%	-6.2%	12.7%	9.5%	54.4%	15.1%

Source: Sydney Desalination Plant

Note: IPART Determination Allowance 2017-18 to 2021-22 calculated on a pro-rata basis using the volume of water produced and escalated to $nominal using June on June CPI. 2022-23 notional allowance calculated by escalating 2021-22 allowance by forecast 2022-23 CPI.

137 SDP incurs a small amount of corporate office space lease costs which are included in proposed opex allowances. Although the office lease is now technically categorised as a finance lease, we have not adjusted our treatment within this submission. This categorisation still aligns SDP's notional revenue allowances for office lease costs with forecast efficient costs for the corporate office lease.

The principal driver of the variances over the 2017-23 regulatory period as professional fees and other corporate costs including:

- Additional technical support to improve Plant and Pipeline asset management
- Additional legal support to appropriately manage contract risks
- Additional regulatory costs to prepare submissions in both 2021 and 2022 following IPART's decision to defer its next determination of SDP's prices.

We consider that these additional costs could not have been foreseen at the time of the 2017 Determination and were efficient.

For professional fees and other corporate costs, our experience over the 2017-23 regulatory period has shown that costs can fluctuate considerably from year to year. We have therefore used a year-on-year method to forecast these costs and compared our forecast costs to an average level of costs incurred during the 2017-23 regulatory period rather than a single base year.

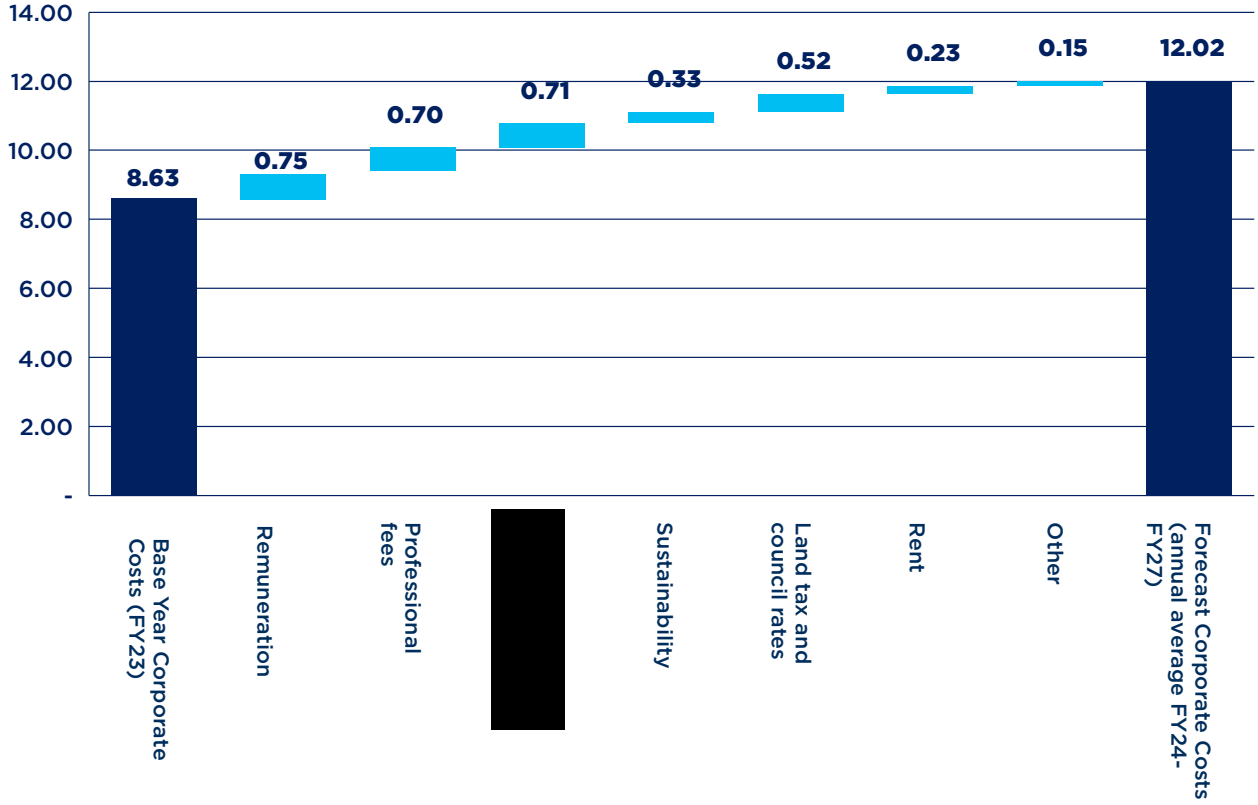
We are proposing increases in several areas that reflect a greater understanding of how to efficiently oversee the prudent operation of the Plant and new activities in response to major changes in external factors. These are:

- **Remuneration costs —** Given experience gained over the 2017-23 regulatory period, we have identified additional roles that are needed to efficiently manage oversight of the Plant. These roles will increase our average staffing levels from 10.5 FTEs in 2021-22 to 13 FTEs over the 2023-27 regulatory period (an increase of around 25%) and allow us to improve our risk management, sustainability objectives and operational processes[138] In addition, maintaining a small high performing team in a tight labour market means we must provide competitive, market-based remuneration to recruit and retain knowledge in our business. We sought advice from Aon on the levels of remuneration needed to progress towards the 50th percentile of comparable roles and have reflected working towards these levels over the regulatory period in our forecasts.
- **Professional fees** — During the 2017-23 regulatory period we obtained greater understanding of the efficient use of professional fees to manage the operation of the Plant. For example, we incurred additional pipeline-related professional fees that were not included in IPART's Allowance but were needed to ensure our Operator's activities are prudent, efficient, safe and in the long-term interests of customers. We consider that ongoing costs in this area are efficient and should be included in our forecast costs over the 2023-27 regulatory period. There are also several costs that are not incurred every year. We have included step changes for these costs in the year in which they will be incurred.
- [redacted]
- **Other corporate costs** — We are forecasting our travel costs will return to levels observed prior to the COVID-19 pandemic.
- **Sustainability —** We are proposing additional costs to implement new sustainability initiatives. We are currently pursuing a range of initiatives including feasibility assessments for carbon neutrality and net zero greenhouse gas emissions (GHG) certification.
- **Land tax and council rates** — We are proposing a step change based on the expected increase in underlying land valuation used to calculate these costs. There is substantial uncertainty over our land valuation which will be used to calculate our land tax and council rates. For the purpose of our forecast costs we have used a land valuation based on the 40 year long term average increase in industrial land in Sydney. As outlined in Chapter 7, we are also proposing a pass through of any difference between our forecast and actual costs for these categories of expenditure that are outside our control.

Figure 9.6 compares our average forecast corporate costs over the 2023-27 regulatory period with our Base Year costs. This figure shows the relative contribution of the main drivers discussed above.

Figure 9.6: *Base Year relative to forecast corporate costs over the 2023-27 regulatory period ($2022-23, $millions)*

138 At 30 June 2022, SDP employed 11 FTEs.



Source: Sydney Desalination Plant

Box 8: Why our forecast corporate costs are prudent and efficient

Our corporate cost forecasts for the 2023-27 regulatory period are prudent and efficient for four reasons:

1. They utilise adjusted actual costs from the 2017-23 regulatory period as a Base Year to reflect the costs incurred by a prudent service provider acting efficiently. While our actual corporate costs were above expenditure allowances, we consider that these costs reflect a greater understanding of the ongoing efficient costs SDP requires to manage the operation of the Plant in the long-term interests of customers.
2. Our proposed 'step changes' in corporate costs are consistent with the costs incurred by a prudent service provider acting efficiently, in line with Good Industry Practice, as required under our Network Operator's Licence.
3. We have incorporated continuing efficiency savings of 0.3% per year into controllable corporate cost forecasts over the 2023-27 regulatory period, from 2023-24 (see Appendix 9 for more information).
4. We commissioned expert advice where needed to forecast the efficient level of costs. For example, our forecasts of land tax and council rates are based on advice [redacted] and our forecasts of remuneration costs are based on advice from Aon.

9.7.3. Proposal

We propose:

21. To set the corporate cost category of the forecast opex allowance on a base-step trend approach, incorporating a continuing efficiency factor of 0.3% per year on controllable costs over the 2023-27 from 2023-24, rewflecting the efficient cost of SDP overseeing and monitoring the prudent operation and maintenance of the Plant.

9.8 Overview of insurance cost component of forecast operating expenditure

9.8.1. Background

Insurance costs include the costs of obtaining and maintaining insurance to efficiently manage risks, as required by our Network Operator's Licence.[139]

SDP relies more heavily on insurance than other regulated water businesses such as Sydney Water, Hunter Water or WaterNSW. These other businesses have greater diversity in the services they provide, and the type and location of assets used to provide services. Greater diversity of services and assets can provide additional support and redundancy in supply and spread risks across a wider asset base requiring less reliance on insurance.

However, SDP relies on a single asset in one location. This reduces our capacity to self-manage risks associated with damage to the Plant and the financial impacts from being unable to operate and produce water when required. In addition, Sydney Water, Hunter Water and WaterNSW are not subject to an abatement regime which can have a substantial impact on revenues and the resulting financial risks that we seek to (partially) manage with insurance. As noted in section 5.1.3, self-insurance is not an appropriate or cost-effective mechanism to address these risks.

Against this backdrop, we maintain a range of insurance policies to manage different risks, summarised in **Table 9.12**. Further details on these policies are contained in Appendix 9.14.

Table 9.12: *Overview of SDP's insurance policies (2022-23)*

Policy	Overview
Industrial Special Risks (ISR) including Business Interruption (BI)	ISR insurance provides coverage for damage to physical assets and a range of scenarios in which SDP suffers material losses. Insured assets largely include the desalination plant, and any specific assets declared under the policy. It also includes BI coverage that rewlates to the financial impact that flows from the loss of an asset. This may include tangible and intangible assets which are owned by or are the responsibility of SDP, or relied upon by SDP to achieve its financial objectives (e.g. supplier assets or facilities).
Combined (Products & Public) Liability	Combined Liability insurance provides SDP with coverage for third party personal injury, third party property damage and third-party financial loss.
Professional Indemnity	Professional Indemnity insurance provides coverage for loss for which SDP is legally liable as the result of an act, error, or omission in the provision of its professional services. An underlying principle of the need for this insurance, is that failure to perform professional services or duties may cause a third-party financial harm.

139 Sydney Desalination Plant Network Operators Licence, Schedule B, clause B2 and B3.

Policy	Overview
Environmental Liability	Environmental Liability insurance provides SDP with coverage designed to address the various financial losses that can occur from a pollution or contamination incident. These losses include: • Compensation to third parties for injury and property damage • Clean-up expenditure including third party claims and statutory clean-up notices • Civil fines and penalties • Legal defence expenditure • Natural resource damages • Emergency response expenditure
Workers Compensation	Worker Compensation insurance provides coverage for payments to employees if they are injured at work or become sick due to their work. Costs for Workers Compensation insurance are included in our Remuneration costs discussed in section 9.7.
Directors' and Officers' Liability	Directors' and Officers' Liability insurance provides coverage to SDP's directors and executives for personal liability and financial loss protection from wrongful acts committed or allegedly committed in their capacity as corporate officers.
Corporate Travel	Corporate Travel insurance provides coverage to SDP's employees when travelling.
Other	Several further policies provide coverage for a range of other risks identified by SDP.

SDP also relies on a range of insurance policies purchased by Veolia. The efficient costs for these policies are included in our O&M forecasts for the 2023-27 regulatory period outlined in section 9.5.

Unlike Operating and Maintenance expenditure, we are forecasting insurance costs that are consistent across all modes for the 2023-27 regulatory period. This is because SDP is fully exposed to production risks at any time over the 2023-27 regulatory period as the Plant now needs to be able to respond in a timely and flexible way to our customers' needs. This is consistent with the approach we have taken during the 2017-23 regulatory period. During this time, we have maintained insurance at the level associated with Operational (Drought) Mode (except when SDP was in water security mode prior to 2019) because the need to operate at full production cannot be predicted at the time we renew our policies each year. This impacts on our public liability insurance where the limit is [redacted] higher in Operational Mode compared to Long-term Shutdown and Industrial Special Risks (Business Interruption) insurance which also requires estimates of how long the Plant will be in particular modes to estimate premiums.

9.8.2. Assessment

Our forecast insurance costs have been developed using an approach that ensures these costs are consistent with those that would be incurred by a prudent service provider acting efficiently in overseeing and monitoring the operation and maintenance of the Plant and to meet our obligations under our Network Operators Licence.

Our approach ensures insurance costs are efficient and meet licence requirements

SDP obtains and maintains appropriate insurance arrangements using an approach that addresses all aspects of IPART's *Insurance Guide for WICA Licence Applicants and Licensees* (see Box 10) and ensures that our customer only pays for the efficient costs of these arrangements. There are two key steps in this approach:

- Deciding on the efficient level of coverage. This involves determining the types of insurance and appropriate limits needed. We do this by applying the holistic risk management framework set out in Chapter 5. As part of this, our insurance broker, Aon, undertakes periodic reviews of SDP's insurable risks and recommends the types of insurance and appropriate limits that can be used to manage those risks. In addition, we consider the size of the financial penalties and rewards under the current abatement mechanism set out in the 2017 Determination and our proposed Service Level Incentive Scheme (SLIS) and how these impact on the types and level of cover we need.
- Obtaining insurance coverage at an efficient cost. This involves our insurance broker Aon negotiating policies that reflect the efficient cost of the necessary coverage. Aon has extensive knowledge of insurance markets including the policies available, current market conditions and the capacity of Australian and overseas insurers. This allowed us to ensure that our insurance costs over the 2017-23 regulatory period were efficient. Aon also advised on the likely market conditions that will apply in the 2023-27 regulatory period and the impacts of these conditions on our forecast insurance costs.

Further information on our approach is set out in Appendix 9.

Box 9: WICA Guidelines on appropriate insurance arrangements

The Guidelines state that to make appropriate insurance arrangements, a licence applicant and Licensee should:

- Clearly identify the business activities proposed to be, or being, undertaken
- Identify and analyse the key risks arising from the business activities
- Consider what types of insurance policies will cover the business activities and associated risks, and what activities or risks are uninsurable or will remain uninsured
- Consider what insurance limits and terms are appropriate for the size and nature of the business activities and associated risks, and
- Obtain insurance from an appropriate insurer that is appropriate for the size and nature of the business activities and associated risks.

The work we undertake with Aon as part of our annual insurance renewals and periodic reviews of SDP's insurable risks is consistent with these guidelines. As part of this work, Aon assessed SDP's insurable risk profile and undertook a gap analysis of SDP's insurance policies.

Aon and SDP developed an initial risk register comprised of seventeen (16) Asset and Business Interruption risks and eighteen (18) Liability risks. Each identified risk was discussed in detail addressing its associated risk source(s), cause(s) and impact(s) of a 'worst case' scenario, with a financial impact rating using a set of rating scales.

Aon then conducted an insurance gap analysis. The objective of this analysis was to map the current insurance program against the identified risks (both in terms of scope and level of cover) and identify areas where different levels of coverage may be efficient.

Aon's review also included a risk analysis of Veolia's insurance coverage. Appendices 9.17 and 9.18 contain copies of Aon's reports.

Our base year expenditure in 2022-23 is efficient

Insurance costs are known in advance at the beginning of each financial year. This means that 2022-23 is the most recent year over which we have confidence in the accuracy and efficiency of these costs and is an appropriate Base Year for forecasting efficient insurance costs.

Our actual insurance expenditure in each year of the 2017-23 regulatory period is provided in **Table 9.13**. It is compared to IPART's 2017 Determination allowance calculated on a pro-rata basis, based on the volume of water produced.

Table 9.13: *Comparison of actual and allowed insurance costs in the 2017-23 regulatory period ($nominal, $millions)*

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	Total
IPART Determination Allowance	2.29	2.53	2.77	2.79	2.96	3.09	16.44
Actual/Forecast	2.06	2.50	3.13	3.58	4.12	4.97	20.35
Variance $	-0.24	-0.03	0.37	0.79	1.16	1.87	3.92
Variance %	-10.4%	-1.3%	13.2%	28.5%	39.1%	60.6%	23.8%

Source: Sydney Desalination Plant

Note: IPART Determination Allowance 2017-18 to 2021-22 calculated on a pro-rata basis using the volume of water produced and escalated to $nominal using June on June CPI. 2022-23 notional allowance calculated by escalating 2021-22 allowance by forecast 2022-23 CPI.

During this period, we had an overspend of $3.9m ($nominal) which is 23.8% higher than IPART's allowance. However, we consider that the insurance costs in our base year of 2022-23 are efficient. This is because we have used the approach outlined above to obtain and maintain appropriate and efficient insurance arrangements. Over the 2017-23 regulatory period, efficient insurance costs have varied from IPART's allowances because of the following:

- An increase in premiums has occurred across all global insurance markets which resulted in insurance costs rising substantially from 2020-21 onwards. As noted above, our insurance broker Aon has market tested our premium rates annually to ensure they continue to reflect efficient costs. However, our insurance costs have increased by an average of 19% a year over the 2017-23 regulatory period as insurance markets have hardened. Further information on the impacts of hardening insurance markets is contained in Appendix 9.
- Several new policies were needed to appropriately manage risks. As part of our periodic reviews of the efficient level of coverage, Aon recommended that SDP take out new policies to manage several emerging risks. Although the 2017 Determination did not include allowances for these policies, we have borne these additional costs during 2022-23 because we consider them to be a prudent means of managing our risks in the long-term interests of customers and consistent with our Network Operator's Licence requirement to maintain appropriate insurances. Further information is contained in Appendix 9.
- Different levels of Business Interruption (BI) insurance coverage were needed to appropriately manage the risk of abatement. We considered that our BI insurance needed to provide coverage for 48 months of the Plant being unable to operate rather than 36 months provided for under IPART's allowance in the 2017-23 regulatory period. This decision was based on our experience following the December 2015 Storm Event. After the Storm Event, we required approximately 34 months to repair the damage and return the Plant to a pre-Storm Event condition. [redacted]. Any larger, catastrophic event would take longer than 36 months to repair the Plant. Our view is that it was prudent to obtain coverage for 48 months over the period 2017-18 to 2020-22 to manage this risk.
- A lower limit for our Professional Indemnity insurance is efficient. Aon also identified that a lower limit for our Professional Indemnity insurance is efficient. We subsequently reduced our limit from $50m to $10m, reducing base premiums by around $0.1m per year.

Step changes in insurance costs depend on the service level penalties that apply

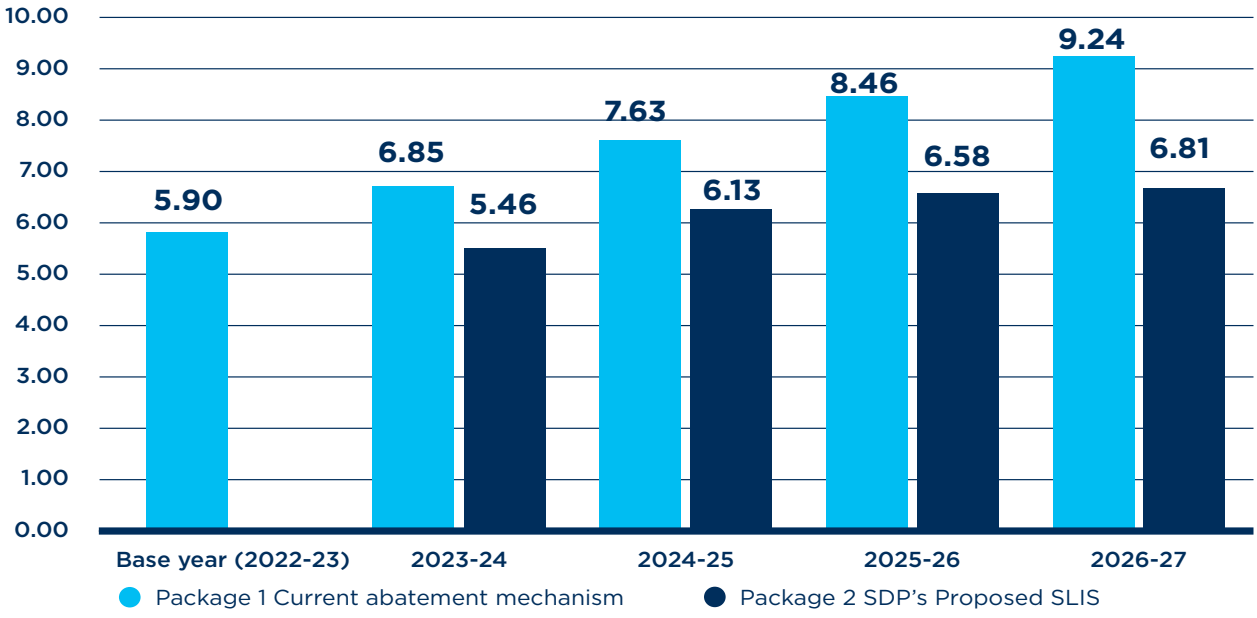
IPART's abatement mechanism directly impacts the size of SDP's and Veolia's insurance limits. For example, during the 2017-23 regulatory period, abatement applied for the time we were in full operational mode January 2019 to March 2020. In other periods we were in water security mode, so no abatement applied. Also, during the emergency response period no abatement applied as the ERN duration was for periods of less than 8 months at a time.

We considered two packages of insurance that have different levels of coverage for Business Interruption (BI) insurance.

- **Package 1 Current abatement mechanism**: This mechanism does not cap the financial penalties. This requires SDP and Veolia to maintain higher levels of BI insurance to manage the risk of financial penalties impacting SDP's revenue over the 2023-27 regulatory period. For example:
  - BI insurance limit in our ISR policy of $686-765m ($nominal) over the period 2023-24 to 2026-27
  - [redacted]
  - Professional Indemnity (PI) Insurance for Veolia with a $60m limit as it includes a component of BI for SDP over the period 2023-24 to 2026-27.
- **Package 2: SDP's proposed SLIS:** The proposed SLIS places a combined cap on financial rewards/ penalties across the SLIS and Efficiency Carryover Mechanism (ECM). Financial penalties would apply to insured events (as well as uninsured events within SDP's reasonable control) up to a cap equivalent to +/-2.5% of annual fixed Plant service charges. The proposed SLIS also seeks to exclude uninsured events where SDP's ability to comply with the APR is prevented wholly or predominantly by an event outside its reasonable control (as per SDP's Network Operator's Licence). This would allow SDP and Veolia to reduce the insurance limits associated with BI. For example:
  - BI insurance limit in our ISR policy of $21.9-24.8m ($nominal) over the period 2023-24 to 2026-27.
  - PI Insurance for Veolia with a $10m limit as it includes a component of BI for SDP over the period 2023-24 to 2026-27.
  - [redacted]

The figure below compares our forecast efficient insurance costs under the two packages.

Figure 9.7: *Insurance costs under existing and proposed SLIS ($M, real 2022-23)*



Source: Sydney Desalination Plant and Aon. Includes Veolia's insurance costs.

We consider that insurance costs under **Package 2 SDP's proposed SLIS** reflect the efficient cost of SDP obtaining and maintaining insurance to appropriately manage risks under our proposed SLIS as required by SDP's Network Operator's Licence. This includes the risks under the proposed SLIS which cap financial

rewards/penalties (in combination with other efficiency mechanisms) at 2.5% of annual fixed plant charges including for insured events and exclude financial rewards/penalties for events for which SDP is not insured where SDP's ability to comply with the APR is prevented wholly or predominantly by an event outside its reasonable control. Package 2 would allow us to reduce insurance costs by a total of $8m compared to Package 1 over the 2023-27 regulatory period. This is reflected in SDP's forecast insurance costs for the 2023-27 regulatory period (see **Figure 9.8**).

The 2.5% cap would apply to SLIS financial rewards/penalties for events that include, but not limited to, insurable events that have a BI impact and are covered by insurances such as Professional Indemnity insurance, [redacted] and Industrial Special Risks insurance. To provide regulatory certainty this requires IPART establishing on an ex-ante basis what is reasonably commercially insurable and included in the insurance cost component of the opex allowance.

In addition, **Package 2 SDP's proposed SLIS** provides an appropriate financial incentive to SDP and its insurers to reinstate the Plant following an insurable event that requires the Plant to shut down. Our experience with the December 2015 Storm Event demonstrated that there were appropriate incentives for this to occur even when abatement did not apply to the Plant. Further information on this incentive and our experience with the December 2015 Storm Event is contained in Appendix 9.

We also note that forecasting our insurance costs under different SLIS arrangements is multi-faceted and requires us to work closely with our insurers over several months prior to policy renewal. If IPART sets a higher or lower SLIS cap then prudent and efficient insurance cost estimates would need to be revised to align with this. We would welcome the opportunity to discuss further details of these arrangements with IPART as part of the review to ensure that appropriate insurance arrangements are in place for the commencement of new prices on 1 July 2023.

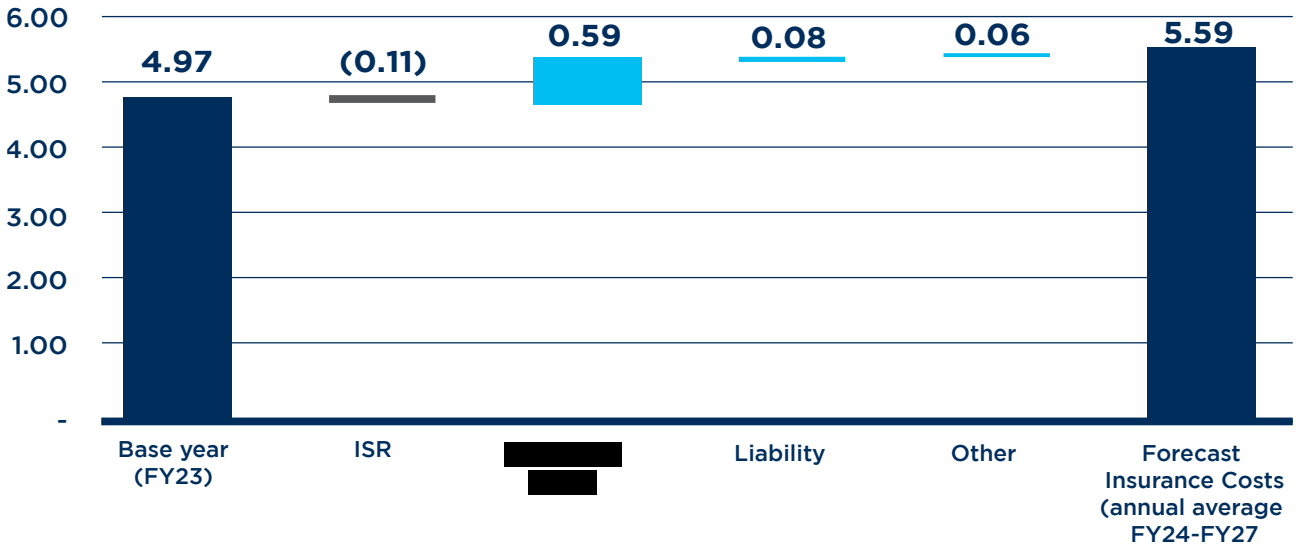
Premium increases are expected to moderate but are still well above CPI

Figure 9.8 and **Table 9.14** summarise the changes between the base year and annual average for the 2023-27 regulatory period. Aon expects the hardening market conditions seen over the last few years to moderate for some insurance policies. However, it is still forecasting increases in insurance premiums of 5-15% (nominal) across our policies.

[redacted]

Detailed information on how Aon forecasts insurance costs for each policy is contained in Appendix 9.

Figure 9.8: *Base Year relative to forecast insurance costs over the 2023-27 regulatory period ($2022-23, $millions)*



Note: This reflects Package 2 including this includes the risks under the proposed SLIS which cap financial rewards/penalties (in combination with other efficiency mechanisms) at 2.5% of annual fixed plant charges, and would not apply financial rewards/penalties for events for which SDP is not insured where SDP's ability to comply with the APR is prevented wholly or predominantly by an event outside its reasonable control (as per SDP's Network Operator's Licence).

Table 9.6: *Proposed insurance costs ($2022-23, $millions)*

	Base year	2023-24	2024-25	2025-26	2026-27	Total
Insurance	4.97	4.86	5.48	5.90	6.12	22.35
% change		-2.2%	12.7%	7.6%	3.7%	23.1%

Source: Sydney Desalination Plant. Proposed insurance costs are based on Package 2 SDP's proposed SLIS.

Box 11: Why our forecast insurance costs are prudent and efficient

Our insurance cost forecasts for the 2023-27 regulatory period are prudent and efficient for the following reasons:

- They are based on meeting our requirements as set out in the WICA guidelines.
- They are based on efficiently balancing incentives for SDP to meet and improve performance with the costs of insuring against penalties under our proposed SLIS.
- They use actual costs from the 2022-23 as a Base Year to reflect the costs incurred by a prudent service provider acting efficiently. Actual costs were above expenditure allowance. However, base year costs represent SDP's revealed efficient costs of insurance. Higher costs were largely a result of increases driven by global market factors which are out of SDP's control.
- Our proposed 'step changes' in insurance costs are consistent with the costs incurred by a prudent service provider acting efficiently in line with Good Industry Practice, as required under SDP's Network Operator's Licence. The coverage we will acquire is based on applying the holistic risk management framework set out in Chapter 5.

9.8.3. Proposal

We propose:

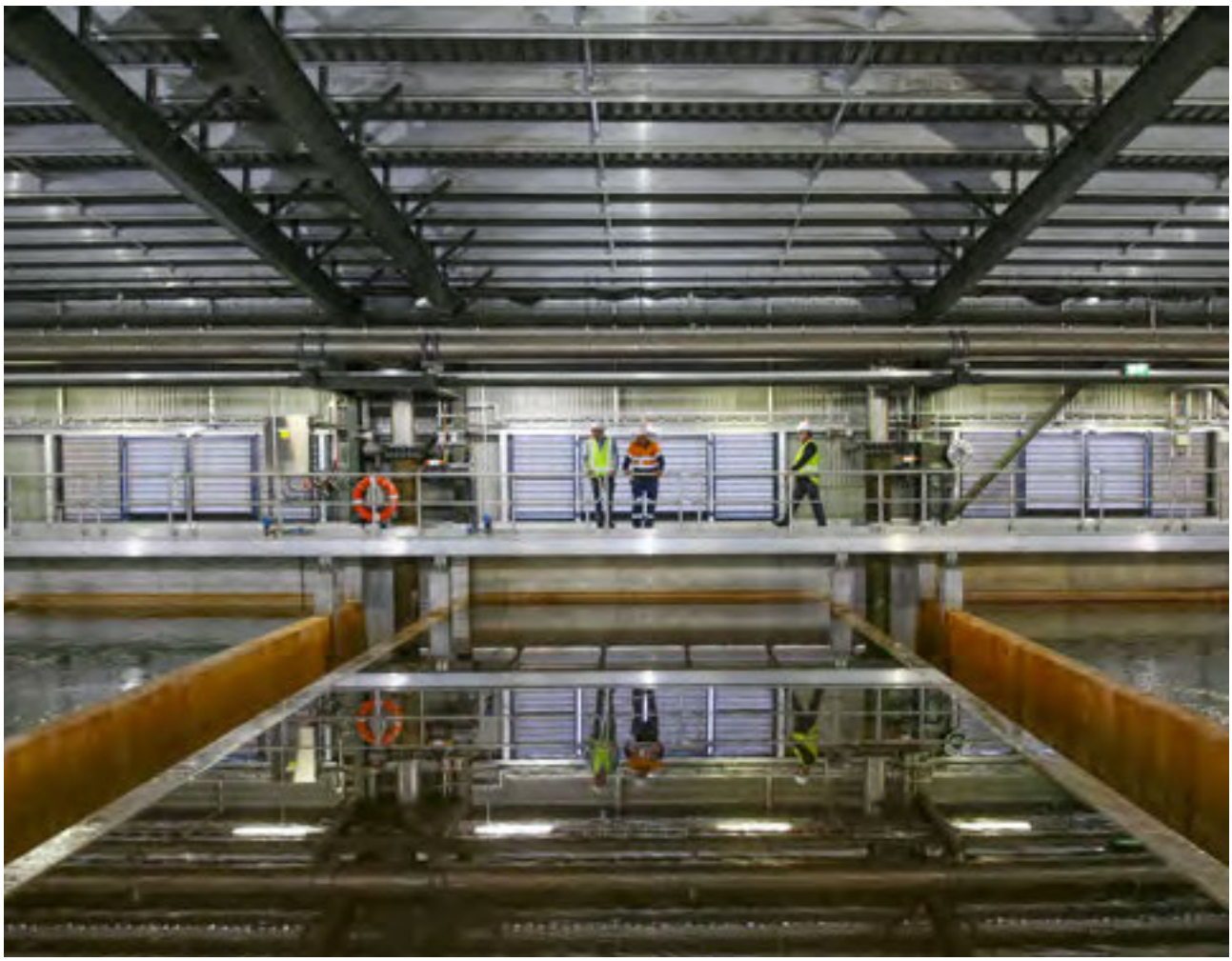
22. To set the insurance cost category of the forecast opex allowance on a base-step-trend approach, reflecting the efficient cost of SDP obtaining and maintaining insurance to appropriately manage risks (including those anticipated under our proposed SLIS) as required by our Network Operator's Licence. This includes the risks under the proposed SLIS which:

- cap financial rewards/penalties (in combination with other efficiency mechanisms) at 2.5% of annual fixed plant charges including for insured events;
- Would not apply financial rewards/penalties for events for which SDP is not insured where SDP's ability to comply with the APR is prevented wholly or predominantly by an event outside its reasonable control (as per SDP's Network Operator's Licence).

10. Forecast capital expenditure

Key messages

- We estimate that our actual capex between from 2017-18 to 2021-22 was 18% lower than IPART's allowance (including inflation). The underspend is due to:
  - significant asset inspections, renewals and refurbishments being undertaken as part of the re-instatement of damaged Plant following the Storm Event. This re-instatement work was appropriately funded by insurance proceeds, and had the effect of renewing assets while rectifying damage or replacing destroyed assets some of which would otherwise have been funded through the 2017 Determination capital expenditure allowances, and
  - SDP making prudent and efficient decisions to delay some capex once the Plant commenced operation in March 2019.
- We expect capex of $12.77m in 2022-23. Note that because the determination period was extended by one-year, there is no explicit capex allowance in 2022-23.
- We forecast prudent and efficient capital expenditure of **$81.00m** for the 2023-27 regulatory period – as set out in **Table 10.3**, an increase from actual capex over the 2017-23 regulatory period (including 2022-23), but modest compared to the total capital cost of the Plant and the remaining RAB.
- The key drivers for the increase in our proposed capex program reflect the expected continuous operation of the Plant over the 2023-27 regulatory period and include:
  - operational and asset performance experience from operating the Plant in different modes during the past three years that SDP did not have for its previous regulatory pricing submission to IPART in 2016
  - an ongoing industry standard membrane replacement program that targets sustainable average membrane lives and delivers optimal energy efficiency in water production
  - increased periodic maintenance of our assets to ensure reliability in performance of assets over their design lives, noting that the Plant is reaching an age where 'full overhaul' capex is required on electrical systems, mechanical assets are due for major renewals and refurbishments, and instrumentation and controls assets are reaching the end of their useful life
  - specific projects that benefit our customers through improved reliability of the Plant and protection from events that affect water production
  - increasing need to upgrade our systems to ensure our critical infrastructure is secure [redacted]
  - lessons learned from other plants and emerging industry consensus regarding prudent improvements to manage safety risks (predominately those associated with high pressure reverse osmosis systems).
- Our plans reflect a standard profile of capex for a desalination plant of this age and will ensure long-term sustainable performance of the Plant.



Forecast capex is an input to the return on and of capital components of our revenue requirement (see section 8). We have proposed the total capex necessary to comply with all relevant regulatory obligations and requirements including our Network Operator's Licence, and to ensure the safety, reliability and responsiveness of our water supply and water security services over the 2023-27 regulatory period.

Our capex includes the investments we make to build the physical assets required to meet our service levels now and into the future. Our long-term investment plan for the Plant is managed through the O&M Contract. This contract provides for the delivery of best practice asset management over the short term and for the efficient long-term management of whole of life asset costs. Risk allocation and incentives within the O&M Contract ensure the O&M Operator manages the assets in a way which optimises the efficient use of resources and the reliability of the Plant. SDP's management team has also invested in, and developed, significant expertise to drive best practice asset management and ensure informed decisions are made on SDP's assets.

Section 10.1 explains our capex categories and section 10.2 reviews the capex outcomes in the 2017-23 regulatory period. Section 10.3 provides an overview of our forecast capital expenditure over the 2023-27 regulatory period.

Subsequent sections then explain:

- the approach we used to forecast our capex over the 2023-27 regulatory period to ensure our capex is consistent with the costs that would be incurred by a prudent service provider acting efficiently
- detail on each element of proposed capex over the 2023-27 regulatory period
- the difference between our forecast capex for the 2023-27 regulatory period and allowed expenditure for the 2017-23 regulatory period, and the key drivers of differences.

10.1 Our capital expenditure categories

Our capex categories for the Plant and Pipeline are summarised in **Figure 10.1: Our capex categories** below.

- **Plant capex** includes our ongoing membrane replacement program, periodic maintenance of the Plant's mechanical, electrical, control and other assets, major projects proposed during the 2023-27 regulatory period and corporate capex, including information technology systems and office equipment.
- **Pipeline** includes all capex related to our Pipeline.

Figure 10.1: *Our capex categories*

Source: Sydney Desalination Plant

10.2 Capital expenditure outcomes in the 2017-23 regulatory period

Table 10.1: Actual versus allowed capex for the 2017-23 regulatory period ($nominal, $millions) shows that actual capex from 2017-18 to 2021-22 of $38.19m is around 18% lower than IPART's allowance of $46.60m for this period, including inflation. In addition we expect capex of $12.77m in 2022-23. Note that

because the determination period was extended by one-year, there is no explicit capex allowance in 2022-23.

Table 10.1: *Actual versus allowed capex for the 2017-23 regulatory period ($nominal, $millions)*

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Actual costs	0.27	32.00	0.30	0.71	4.92	12.77
Expenditure Allowance	1.56	33.86	2.97	4.02	4.18	n/a
Variance	(1.29)	(1.87)	(2.67)	(3.31)	0.73	n/a

Note: Capex is forecast for 2022-23, and excluded from total for comparison purposes

Source: Sydney Desalination Plant

The principal drivers of our capex underspend relative to the allowances set in IPART's 2017 determination for the 2017-18 to 2021-22 period were:

- Renewals and refurbishments undertaken as part of the re-instatement of the Plant following the Storm Event.
- Rigorous assessments of asset condition [redacted], and prudent administration of the O&M Contract so that the Operator rectified any deficiencies rather than SDP incurring significant capital expenditure. [redacted]
- Prudent and efficient decisions by SDP to delay some capital expenditure following condition assessment and analysis of performance data gathered after the Plant commenced operation in March 2019.

Table 10.2: Actual capex by category for the 2017-23 regulatory period ($2022-23, $millions) summarises our actual capex in the 2017-23 regulatory period by capex category. Note that these figures are in $2022-23.

Table 10.2: *Actual capex by category for the 2017-23 regulatory period ($nominal, $millions)*

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	Total
Plant – membranes	-	29.10	-	-	-	2.28	31.39
Plant - other	0.01	2.19	0.18	0.43	4.33	10.24	17.38
Corporate	0.04	0.66	0.10	0.27	0.58	0.11	1.76
Pipeline	0.23	0.04	0.01	0.02	0.01	0.14	0.43
Total	**0.27**	**32.00**	**0.30**	**0.71**	**4.92**	**12.77**	**50.97**

Note: Capex is forecast for 2022-23.

Source: Sydney Desalination Plant

In the 2017 Determination IPART made provision for $30m ($2016-17) in a specific membrane RAB to cover the cost of a full membrane replacement in the (then considered unlikely) event the Plant was required to restart during the regulatory period. This was subject to an ex-post review of the prudency and efficiency of this expenditure.

As noted in section 3, we were in fact required to restart the Plant in 2019. In doing so, we undertook a robust membrane replacement program to guide the purchase, replacement and installation of a full set of new membranes. The membrane replacement costs we incurred covered replacement of the full set of membranes and were prudent because:

- the Plant had been shut down for an unprecedented length of time (from June 2012 to March 2019)

- the membranes had reached the end of their life and their condition could not be determined due to the non-operational nature of the Plant
- there are long lead times for securing new membranes due to global market pressures and there was a need to restore the Plant to full and reliable production as quickly as possible.
- our execution strategy ensured that SDP could quickly and cost-effectively replace the membranes within a supply constrained global market.

We have provided full justification for our membrane replacement capex in 2019 in Appendix 10. In addition to the full membrane replacement, we also incurred relatively minor capex for periodic maintenance on the Plant and Pipeline as well as corporate capex for IT and an office fitout.

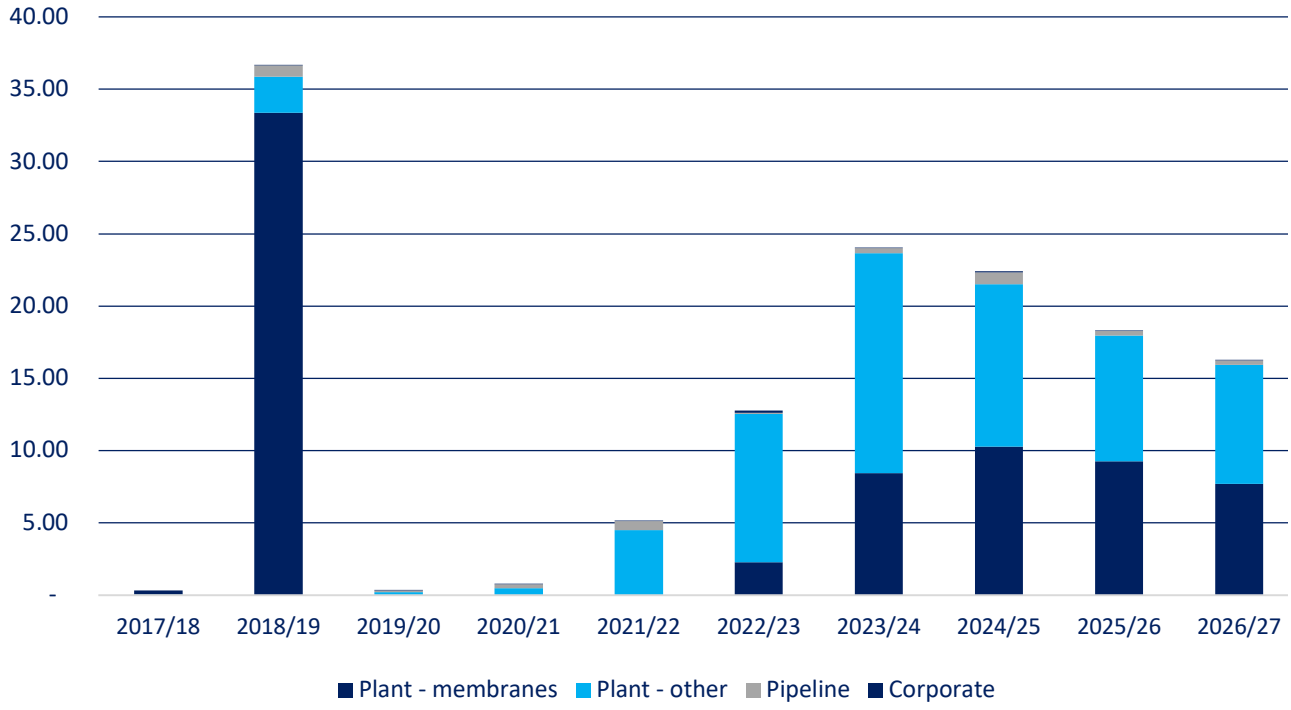
We propose:

23. Actual capital expenditure over the 2017-23 regulatory period of $50.97m– as set out in **Table 10.2** – representing prudent and efficient capital expenditure be incorporated into SDP's opening RAB for the 2023-27 regulatory period.

10.3. Overview of capital expenditure forecasts for 2023-27

Figure 10.2: Comparison of 2017-23 actual and 2023-27 forecast capex ($2022-23, $millions) compares our forecast capex over the 2023-27 regulatory period with our actual capex over the 2017-23 regulatory period.

Figure 10.2: *Comparison of 2017-23 actual and 2023-27 forecast capex ($2022-23, $millions)*



Notes: Capex is forecast for 2022-23.

Source: Sydney Desalination Plant

Our forecast capex in 2022-23 includes periodic maintenance carried over from 2021-22, as well as new work identified through condition assessment and a significant cost for renewal of the Plant's Process Automation System (year two of a multi-year program). It does not include capex related to a Second Drinking Water Tank (see Section 10.5.2.3).

As discussed in more detail in the sections below, the key drivers of our increase in forecast capex over the 2023-27 regulatory period are:

- Our membrane replacement program – which, rather than replacing all RO membranes at once (as was undertaken when the Plant restarted in 2019), will progressively replace membranes to

target sustainable average membrane life and deliver optimal energy efficiency and overall opex in water production. Ongoing replacement of membranes is aligned to industry best practice and is required to meet our new operating environment and defined level of service to Sydney Water.

- Periodic maintenance on the Plant's mechanical, electrical and other assets to ensure reliability in performance of these assets over their design lives, noting that there are major refurbishments due during the 2023-27 regulatory period (Periodic maintenance is similar to routine asset maintenance, but is less frequent. For example, it involves major refurbishments that are capitalised).
- Major projects including the connection of a second 132kV feeder, an additional drinking water pumping station pump and a protection system for our permeate tanks to ensure we can meet the increased level of service under our Network Operator's Licence.

Table 10.3 summarises our proposed capex program in each year of the 2023-27 regulatory period, by category. These forecasts incorporate a 0.3% per year continuing efficiency factor to apply from 2023-24, the first year of the new determination period, as SDP's capital program reflects an established and mature process.

Table 10.3: *Forecast capital expenditure for the 2023-27 regulatory period ($2022-23, $millions)*

	2023-24	2024-25	2025-26	2026-27	Total
Plant (including corporate)	23.69	21.59	17.98	15.95	79.21
Pipeline	0.33	0.80	0.33	0.33	1.80
Total	24.02	22.39	18.31	16.28	81.00

Notes: * This does not include capex associated the Second Drinking Water Tank
(1) Capex forecasts incorporate 0.3% per year continuing efficiency.

Source: Sydney Desalination Plant

In the remainder of this section, we explain the basis of our capex forecasts and the steps we have taken to ensure that the expenditure aims to meet our service obligations prudently and efficiently.

10.4. Approach to forecasting capital expenditure

We have developed our capex forecasts to meet IPART's efficiency test guidelines **(Box 12).**

Our capital delivery process is structured to consider and demonstrate prudent and efficient capex as well as other relevant factors. The approach is outlined in the section below.

Box 12: IPART's efficiency test

- IPART's efficiency test considers both the investment decision (sometimes referred to as the 'prudence test') and how the investment is executed or delivered, having regard to, amongst other matters, the following:
  - customer needs, subject to the utility's regulatory requirements
  - customer preferences for service levels, including customers' willingness to pay
  - trade-offs between operating and capital expenditure, where relevant
  - the utility's capacity to deliver planned expenditure
  - the utility's expenditure planning and decision-making processes.
- The efficiency test is applied to:
  - historical capital expenditure
  - forecast capital and operating expenditure
- IPART's efficiency test is based on the information available to the utility at the relevant point in time.
  - for forecast operating and capital expenditure, IPART assesses whether the proposed expenditure is efficient given currently available information
  - for historical capital expenditure, IPART assesses whether the actual expenditure was efficient based on the information available to the utility and the circumstances prevailing at the time it was incurred

10.4.1. SDP's Capital Works Procedure

Our capex requirements are identified, evaluated and prioritised according to SDP's Capital Works Procedure supported by our expert Operator, Veolia. The SDP Capital Works Procedure is a corporate procedure owned by the Chief Executive Officer and reviewed by the General Manager Operations. The procedure is reviewed, updated and approved by the SDP Board every two years.

A summary of how the procedure enables SDP to satisfy IPART's efficiency test as well as other key requirements is provided in **Table 10.4: Capital works procedure overview**.

Table 10.4: *Capital works procedure overview*

Criteria	SDP Capital Works Process Response
Demonstrate key drivers of capital expenditure. This may include: • customer needs, subject to the utility's regulatory requirements • customer preferences for service levels, including customers' willingness to pay • delivery of agreed level of service	SDP's capital expenditure is categorised into two segments: • Update or addition of major and or critical spare parts or standby equipment expected to be used for a duration longer than one regulatory period • Ongoing asset renewal and asset refurbishment based on an Asset Renewal Plan The drivers for asset expenditure are specified in the submission documentation when expenditure is proposed. The drivers all relate to delivery of legislated or agreed level of service and enabling the Plant to operate with the agreed level of confidence.
Demonstrate that you considered all options when choosing servicing solutions	SDP's capital expenditure program is developed through a business case process. The process requires analysis of technical options and advice from technical experts and consultants. The business case may be proposed by the Plant operator or SDP depending on the type of expenditure. Business cases are submitted to the SDP Procurement Committee for approval, which as discussed further below ensures value for money. Annual capex budgets are approved by the Board as part of the overall annual budget approval process. Further board approval is required for annual capex where the estimate is greater than 10% of the approved annual budget.
Relationship and trade-offs between operating and capital expenditure, where relevant	The business case process considers the relationship between proposed capital expenditure and operational expenditure.
Consideration of risk and allocation of risk between SDP and customer	The business case process considers the risk implications associated with the proposed capital expenditure. This includes consideration of potential impacts of not investing as well as consideration of risk allocation. The assessment may also include consideration of excluding selected expenditure items from pricing where there are uncertainties yet to be resolved.

Criteria	SDP Capital Works Process Response
Undertaking and delivering planned expenditure efficiently.	SDP's business case process considers and outlines options for project delivery as per SDP's procurement strategy (see further detail below). The Operator manages the capital works delivery on behalf of SDP and ensures efficiency through the following: • Procurement Plan, which sets out the Veolia procurement strategy to effectively procure goods and services and to achieve value-for-money • Sound governance, including a Commercial Advisor responsible for providing advice in relation to procurement and contractual issues and for the overall management of the tender process. • Annual renewal planning, which allows best practice planning including synergies between related or similar projects • Minimum requirements as to the procurement method and the number of quotations to be requested. • Pricing structure, based on the scope of works (e.g. fixed price for a defined scope of work, schedule of rates for exploratory work, where time estimates may not be accurate). • Veolia's preferred supplier list, where global or national agreements are in place offering discounted cost and efficient procurement (e.g. pre-selected through long term agreement).

Related to our Capital Works Procedure is our corporate Procurement Policy, which covers all procurement to ensure that the following objectives are met:

- Achieve value for money
- Encourage sustainable competition
- Demonstrate probity, ethical behaviour, and accountability
- Make efficient and effective use of resources
- Mitigate risk

The Procurement Policy sets out the minimum requirements for approval processes and market testing, which vary depending on risk and procurement value. For significant or high-risk procurements, such as O&M contracts, the policy requires a tailored Board-approved strategy using a competitive process. SDP also has effective controls in place to ensure only personnel with appropriate delegated financial authority approve expenditure.

10.5. Forecast plant, Pipeline and corporate capital expenditure

This section summarises our forecast capex for our Plant and Pipeline as well as corporate capex over the 2023-27 regulatory period.

10.5.1. Background

Our forecast capex for the Plant is comprised of:

- a membrane replacement program
- general periodic maintenance on the Plant's assets (including refurbishments and overhauls of individual assets)
- specific capex projects and renewals that fall outside normal periodic maintenance

We also have capex for our Pipeline and corporate capex.

Our major capex for the 2023-27 regulatory period is our proposed membrane replacement program. We also have a number of projects that fall outside our standard periodic maintenance. While these are not major in terms of expenditure, we have provided summary details of these projects. Further information (including business cases) can be provided on request.

Our forecast capex program accounts for assets that were replaced or significantly renewed following the 2015 Storm Event. These assets had their lives reset as a result of there-instatement of the Plant following the Storm Event, reducing the maintenance or replacement expenditure that may have otherwise been required over the upcoming determination period – as reflected in our forecast capex program.

10.5.2. Assessment

10.5.2.1. Plant — Membrane replacement program ($36m, 2023-27)

Membranes are a key element of the RO water treatment process. The RO process is highly energy intensive (see section 9.6) and the efficient management of membranes is critical in ensuring overall efficiency and reliability of the treatment process.

As discussed above, in the 2017 Determination IPART allowed for a full RO membrane replacement if the Plant was required to operate during the regulatory period. This approach would not be prudent or efficient over the 2023-27 regulatory period given that the Plant will remain operational under our revised Network Operator's Licence. We are proposing a standard membrane replacement program in line with global industry best practice which involves progressive replacement of membranes over time, with actual replacement rates based on assessment of performance at the time.

Our proposed membrane replacement program is designed to ensure an efficient AML that maintains warranty coverage, while at the same time achieving a long-term sustainable level of energy efficiency. The proposed AML for first pass membranes is 4 years and 6 years for second pass membranes (note the original Plant design had an AML of 3.5 years for first pass membranes and 5 years for second pass membranes). As noted in an expert report by Emerald Process Engineering, the original design of the Plant was based on replacing membranes in line with AML.

> *To consistently and reliably achieve the potable water quality and capacity, at the lowest most efficient cost, the design of the Plant is based on an Average Membrane Life of 3.5 years for the 1st Pass RO membranes and 5 years for the 2nd Pass RO membranes.*[140]

The AML approach to membrane replacement was also noted by Atkins in its report to IPART for the 2017 Determination:

> *On a normally operating desalination plant there will be annual replacement of some of the membranes in each pressure vessel. After a few years, there will be range of ages for the membrane elements in the pressure vessel, with the oldest element eight years old and the youngest less than one year old. The membrane replacement rate is set to achieve an average age of the elements at three and a half years for RO first pass system and five years for the second pass system.*[141]

[redacted]

While it is not a requirement to always operate the Plant with membranes within this age limit, the manufacturer will not guarantee performance if the average age is greater than four years and six years for first and second pass membranes, respectively. We will not replace membranes automatically each year to meet the average life. Rather, we will comprehensively review membrane performance and assess if replacements are required and how many are required. The assessment will consider energy consumption, permeate quality, lead time (the supply chain risks are substantial as experienced during the 2018-2019 replacement and there continue to be significant delays in procurement) due to high global demand for

140 Emerald Process Engineering, Sydney Desalination Plant RO Membrane Impacts, May 2021, p 3.
141 Atkins, *Sydney Desalination Plant — Expenditure Review — Final Report*, 21 February 2017, p 65.

membranes and supply constraints, salt rejection, likely near-term production volume and other factors before a prudent investment decision is made.

The nature of our operations has changed under the new operating environment. We must remain available to respond to production requests at all times, including for emergency response, with reasonable allowance for the Plant's planned and unplanned maintenance, and scheduled capital works. Waiting until membranes are fully aged before replacing them risks failures, deterioration of Plant reliability and capacity and increasing energy and chemical costs making such an approach imprudent and inefficient for the 2023-27 regulatory period.

Our proposed membrane replacement:

- involves staggered replacement across the membrane portfolio to ensure sustainable procurement of membranes, which is prudent because the market for manufacture and supply is globally constrained due to the highly specialised nature of the equipment.
- maintains the average age of membranes within a reasonable [redacted] specification to ensure the optimum performance of the membranes and the Plant.

With regard to replacing membranes, Sydney Water's submission to IPART's draft report for the 2017 Determination noted:

> *However, Sydney Water notes that while membranes may have a manufacturer's warranty of up to eight years, the economic life may be much shorter. For example, membrane fouling over time will result in higher energy use to produce the same quantity of water. A point will eventually be reached where energy costs rise so much that it becomes cheaper to replace the membrane. This cross-over point is likely to be reached well before the period covered by the manufacturer's warranty.*[142]

Our proposed membrane replacement strategy would apply regardless of the level of production, and provides the following benefits:

- the ability to define and maintain efficient energy consumption
- maintaining drinking water quality within specifications
- maintaining Plant reliability, capacity and availability for emergency response
- limiting procurement lead time risk given the global RO membrane market dictates extended delivery times of up to 12 months.
- limiting Plant capacity reductions for large membrane replacement — multiple areas of the Plant may be shutdown at times of membrane replacement
- allowing an efficient installation strategy to be selected.

Our forecast capex for membrane replacements is based on maintaining the proposed optimal AML. The calculation determines the percentage of membranes that need to be replaced each year. Importantly, the actual percentage replacement each year would be contingent on analysis of actual operational water quality, volume and energy efficiency data, and on the membrane warranty requirements. The actual replacement would also consider the logistics of replacement (i.e. it may be operationally difficult or impossible to replace too many membranes in one year while still meeting availability and water production requirements, or simply to procure the required number of membranes in any one year due to supply side scarcity and long lead times).

We propose that the cost of the ongoing replacement program for future membranes roll into the Plant RAB, not the membrane RAB. IPART provided for the membrane RAB to deal with the full replacement on an uncertain Plant restart timing. We propose that the membrane RAB should remain with the current cohort of membranes until fully depreciated, and that all new membranes from now on should form part of the general capex program and be included in the Plant RAB. The RAB should be set up to either:

- have a separate asset class for membranes, or
- reweight the aggregated asset class to account for membrane lives.

Further information on our proposed membrane replacement program is provided at Appendix 10-6 and 10-7.

142 Sydney Water, submission to IPART's draft report for Sydney Desalination Plant prices, 21 April 2017, p 27.

10.5.2.2. Plant — periodic maintenance ($23.4m, 2023-27)

We need to undertake regular inspection and significant periodic maintenance overhauls of our mechanical, electrical and other assets to ensure they reach their expected design lives and maintain the reliability and required level of service for the Plant.

With the exception of assets that were replaced or significantly renewed following the 2015 Storm Event, the Plant is approaching an age (10-15 years) where 'full overhaul' capex is required such as where complex mechanical and electrical assets are due for major refurbishments and component renewals (many for the first time in their 10+ year lives). Some of this expenditure had been deferred as the assets were not operating in the early part of the 2017-23 regulatory period or since the Plant was placed into Water Security Mode in 2012. Some expenditure was deferred again when the Plant entered a restart period due to the operational requirements of the Plant and the detailed condition and performance data available during the operational period. Now it is time to complete the work to ensure the Plant's long-term performance and durability.

Our forecast capex on periodic maintenance derives from suggested maintenance intervals in equipment manufacturers manuals adjusted using risk-based predictive modelling that considers the age and condition of our assets and the probability of asset failure, which is then calibrated with actual physical inspection condition and performance data.

10.5.2.3. Plant — specific/major projects ($20.3m, 2023-27)

We are proposing other Specific capex projects for the Plant (and Pumping Station) over the 2023-27 regulatory period. These relate to the replacement of existing assets with new assets, major modifications to existing assets or the addition of new assets. These include a major renewal of the Plant's process automation system (SCADA), which is critical to the Plant's operations [redacted]y.

A summary of some other projects is provided below. These projects are not major in terms of proposed spend and so business cases have not been appended to this submission. However, each project is justified with an internal business case to demonstrate the need for the project and its efficiency, and these can be provided to IPART on request. More detailed project summaries are also available in Appendix 10.

Connection of a second 132kV Feeder ($3.2m, 2025-27)

SDP is an Ausgrid network high voltage customer receiving a single supply at 132kV and a backup supply at 11kV. The 132kV feeder provides the full operational load of the Plant with our backup 11kV supply powering only critical systems. In the event of planned or unplanned outages of the 132kV feeder, the Plant needs to shut down and will be unable to produce drinking water. Ausgrid typically requires an outage of once per year for its meter maintenance and testing. This occurred recently in April 2021 when the Plant was shut down for four days coincident with a planned Ausgrid outage (and such planned Ausgrid outages can occur about once a year). In 2016, a power outage during a restart of the Victorian desalination plant in late 2016 interrupted production for more than two months.

It is proposed to install a second 132kV feeder to ensure the Plant remains highly available and reduce maintenance outage times. The key benefit of installing a second feeder is to mitigate against failure of the single supply line and ensure drinking water supply is not disrupted.[143]

Drinking Water Pump Station — Additional Pump ($3.3m, 2024-25)

A critical component of the Plant's delivery of water to Sydney's drinking water system is the Drinking Water Pump Station (DWPS). The DWPS transfers water from the Plant's drinking water tank via the Pipeline into Sydney Water's distribution network at Erskineville. The DWPS has two pumps and both are required to meet maximum production of 250ML per day on average over a 12-month period. Should one pump fail the remaining pump can deliver a maximum flow of around 185ML per day only. Thus the Plant's capacity is reduced to 185ML per day when this occurs. The DWPS has a higher probability of failure than the overall Plant and can potentially restrict the Plant from achieving an average annual water production rate of 250ML per day.

This water security risk was raised by SDP in our submission for the 2017-23 regulatory period. Whilst the justification for the capital expenditure was endorsed by IPART, the proposed installation of the extra pump

143 A second 132kV feeder was initially proposed as part of the expansion planning process for an additional 250ML per day in 2019. While the Plant expansion has been put on-hold, key drivers that justify the second connection remain.

in Water Security Mode was not deemed efficient. Instead, the installation and subsequent maintenance cost was deferred until a Plant restart occurred.

This project was not undertaken as part of the 2019 Restart of the Plant. SDP's investigations concluded that the timeframe for proceeding with the proposed design and installation of the additional pump at that time would have been detrimental to the restart and ultimately would conflict with the objective of maximising the production of drinking water during a period of drought. In summary, the project could not be completed in the eight month restart period. Now that the Network Operator's Licence provides flexibility to the operations of the Plant and the DWPS, it is timely to plan for this investment in the 2023-27 regulatory period.

Ongoing Efficiency Projects ($2.2m, 2024-27)

An allowance to pursue improvement projects to increase efficiency, reliability, availability or safety for the Plant, particularly in relation to new operating conditions in which the Plant will be requested to run more flexibly (increasing and decreasing production) and at below full capacity. The Plant was designed predominantly as a baseload supply and assets and processes are sized for full production and operate most reliably and efficiently at higher production levels rather than at their maximum turn-down at low production.

We have identified some constraints while operating at low production during recent emergency response periods and have proposed some improvements to be delivered in FY23 and FY24 (e.g. Lime System improvements). However, as we operate under new licence conditions and understand the challenges more fully, we will need to implement capital improvements to allow sustainable and efficient operation at the lower end of production capabilities.

Drinking water pumping station — electrical cooling ($1.6m, 2023-25)

The original design and construction of the DWPS electrical building created an excessively hot environment for electrical assets in the summer months that has contributed to historical failures of the DWPS (primarily as a result of the variable speed drives (VSDs) overheating). The option to improve the building and ventilation was considered in 2019 but put on hold because the costs had not been identified in the current regulatory period capital forecast and the Expansion planning presented uncertainty in that the building design might change appreciably as a result of the Expansion.

As a result, since the Plant returned to operation in 2019, temporary air conditioning has been installed during the summer periods to reduce risk and allow the Plant to meet its Emergency Response and water supply requirements. Along with the overheating issues experienced, the design and construction of the

shed-like building allows salt laden air to enter the building and the electrical equipment, which is likely to reduce the life of those assets. This project is to install an air conditioning system in the DWPS electrical building and it is proposed that installation be aligned with the installation of the third drinking water pump.

RO vessel sampling panels ($16m, 2023-25)

This project will significantly reduce the amount of "hazard facing" time for technicians associated with RO train vessel mapping and reduce the amount of time required to sample and analyse a whole train. RO vessel sampling panels are becoming industry standard as they allow fast, accurate and safe ways to identify trouble areas in RO membrane arrays. The project involves installation of one (1) sampling panel at the side of a first pass RO train within the RO building. The construction of the first panel will be used to evaluate the design and collect sufficient information to enable competitive submissions (quotes or tender) for delivery of the remaining 19 panels over the following two years.

Fire suppression ($1.6m, 2023-25)

Our Plant has Pyrozone low pressure carbon dioxide (CO2) gas extinguishing systems installed in the thirteen electrical switch rooms throughout the site. These discharge CO2 into the room and under the floor as a means of suppressing and potentially extinguishing any fire source within the room.

The Pyrozone system is now obsolete [redacted] This project is a safety related initiative to move to a non-lethal inert gas system.

Lime system improvements ($0.9m, 2023-25)

The lime system at the Plant produces lime water (calcium hydroxide solution) from powdered hydrated lime for the purposes of remineralising the blended RO permeate. The proposed improvements present opportunities to increase efficiency at the Plant by reducing lime consumption, reducing lime waste disposal, reducing the time required for maintenance activities during shutdowns, increasing reliability of the Plant and increasing accuracy of Plant operation.

Protection of Intermediate Permeate Tanks ($0.3m, 2026-27)

Two Intermediate Permeate Tanks (IPT) are used to store and buffer the RO First Pass rear permeate before feeding it into the RO Second Pass Process. The IPTs are made of glass fused to steel panels with silo bolts. The first pass permeate fluid within the IPTs is highly corrosive and will aggressively corrode unprotected

steel. An impressed current cathodic protection (ICCP) system would provide additional protection for the tanks and ensure the design life can be achieved or exceeded. The scope of this project includes the design, supply, installation and commissioning of an ICCP system. It is proposed to implement this project in the final year of the 2023-27 regulatory period before the tanks have reached 10 years of age (note: the tanks were fully replaced in 2017 as part of the re-instatement of the Plant following the Storm Event).

Second Drinking Water Tank ($22.9m not included in proposed capex)

Remineralised water is stored in a 40ML Drinking Water Tank (DWT) before being transferred via the pumping station and pipeline to Sydney Water's distribution network. The DWT is constructed from pre-cast concrete panels stressed together (post-tensioned) to form a water-tight structure. There is an area set aside for an additional storage tank to incorporate any expanded production capacity from 250ML/day up to 500ML/day.

SDP has been in consultation with Sydney Water regarding the benefits of installing the second DWT during the 2023-27 regulatory period to provide additional site storage capacity and assist the overall Plant reliability and availability in response to the new operating environment. Whilst there are clear operational benefits to providing additional storage it is difficult for us to quantify the financial benefits to Sydney Water and customers of any improvements to SDP reliability and response time. Likewise, there may be net present value (NPV) benefits to customers from deferred capital expenditure or reduced mitigation costs to Sydney Water as a result of additional functional storage.

We have not included this expenditure in our proposal as we are unable to clearly demonstrate prudency without further information, and endorsement from Sydney Water or other stakeholders. We invite submissions, and the Regulator's view on the validity of including this project in our capital program in the 2023-2027 regulatory period and will continue to work with our customer Sydney Water, to determine whether:

- Implementing this project is a prudent investment.
- How best to include this in prices over the 2023-27 regulatory period, say whether in forecast or potentially as a contingent project

10.5.2.4. Pipeline capex ($1.8m, 2023-27)

Our Pipeline extends approximately 18km from Kurnell to the point of connection into Sydney Water's water supply system at Erskineville and includes 454 individual assets. Based on an extensive asset inspection program in 2017, 2018, and 2022 SDP has identified that most of the air valve pits (16 out of 19) remain inundated with water to within approximately 500mm of the surface, thus critical assets are continuously submerged. [redacted]

Our Pipeline capex involves investigation and implementation of permanent drainage options that will minimise water accumulation in air valve pits by redesigning and modifying the pits' drainage.

10.5.2.5. Corporate capex ($0.14m, 2023-27)

Corporate capex is needed for prudent and efficient management of SDP. It includes investment in IT (for example laptops, screens, phones, software and videoconferencing equipment), an office layout improvement to accommodate additional workstations, and office equipment. Over the 2023-27 r egulatory period we are forecasting $0.15m in corporate capex.

10.5.3. Proposal

We propose:

24. To set the forecast prudent and efficient capital expenditure of **$81.00m** for the 2023-27 regulatory period – as set out in **Table 10.3** – including undertaking our membrane replacement program, periodic maintenance on our aging Plant and specific projects that provide better protection against the risk of asset failure that could affect water production. This includes a continuing efficiency factor of 0.3% pa from 2023-24.

Table 10.5: *Forecast capex for the 2023-27 regulatory period ($2022-23, $millions)*

	2023-24	2024-25	2025-26	2026-27	Total
Plant	5.81	3.24	2.89	3.20	15.14
Membrane Replacement	8.44	10.29	9.26	7.71	35.70
Periodic Maintenance	6.91	5.52	5.80	5.02	23.24
Pumping Station	2.51	2.48	-	-	4.99
Pipeline	0.33	0.80	0.33	0.33	1.80
Corporate	0.02	0.07	0.03	0.02	0.13
Total	**24.02**	**22.39**	**18.31**	**16.28**	**81.00**

Notes: * This does not include capex associated the Second Drinking Water Tank. Capex forecasts incorporate 0.3% per year continuing efficiency.

Source: Sydney Desalination Plant

10.6. Why our forecast capex is efficient

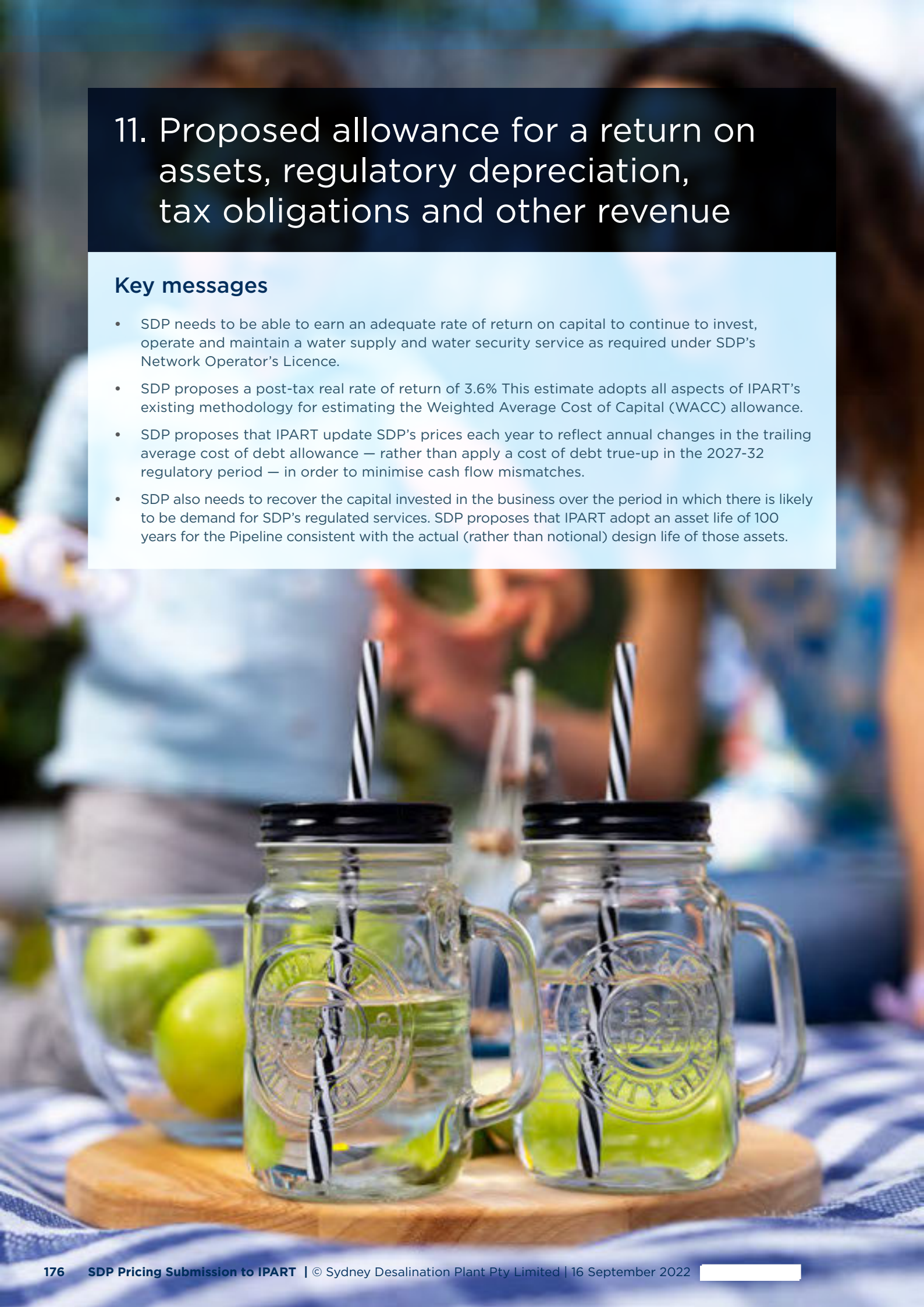
Our forecast capex over the 2023-27 regulatory period is efficient because:

- Our proposal represents a standard profile of capex for a desalination plant of this age and will ensure long-term sustainable performance of the Plant to meet our Network Operator's Licence.
- Our capex requirements are identified, evaluated and prioritised according to a robust Capital Works Procedure.
- Our capex is also subject to our corporate Procurement Policy which:
  - requires business cases that assess different options to address an identified need
  - ensures value for money, risk mitigation, efficient use of resources, sustainable competition, probity, ethical behaviour, and accountability
  - sets out the minimum requirements for approval processes and market testing, which vary depending on risk and procurement value
  - for significant or high-risk procurements, such as O&M contracts, requires a tailored Board-approved strategy using a competitive process
  - has effective controls in place to ensure only personnel with appropriate delegated financial authority approve expenditure.
- We consider all feasible options to meet the service need, with business cases prepared for major capital investments that are submitted to our Procurement Committee for approval.
- Our proposed capex will benefit Sydney Water and customers in Greater Sydney through improved service including greater reliability and protection from events that potentially affect our water production.

11. Proposed allowance for a return on assets, regulatory depreciation, tax obligations and other revenue

Key messages

- SDP needs to be able to earn an adequate rate of return on capital to continue to invest, operate and maintain a water supply and water security service as required under SDP's Network Operator's Licence.
- SDP proposes a post-tax real rate of return of 3.6% This estimate adopts all aspects of IPART's existing methodology for estimating the Weighted Average Cost of Capital (WACC) allowance.
- SDP proposes that IPART update SDP's prices each year to reflect annual changes in the trailing average cost of debt allowance — rather than apply a cost of debt true-up in the 2027-32 regulatory period — in order to minimise cash flow mismatches.
- SDP also needs to recover the capital invested in the business over the period in which there is likely to be demand for SDP's regulated services. SDP proposes that IPART adopt an asset life of 100 years for the Pipeline consistent with the actual (rather than notional) design life of those assets.



To calculate these components of our revenue requirement we must determine a number of key 'building block' inputs including the:

- Proposed rate of return;
- Opening value of the Regulatory Asset Base (RAB);
- Asset lives and depreciation method for the RAB;
- Tax costs including the opening Tax Asset Base (TAB) and roll-forward; and
- Other revenue adjustments including adjustments to reflect a pass through of specified gains and losses under the EAM.

This section provides an overview of each of these inputs for the 2023-27 regulatory period. The notional revenue requirements derived from these inputs represent the amount of revenue we need to generate over the 2023-27 regulatory period to allow us to provide the water supply and water security services in accordance with our regulatory and legislative obligations.

11.1 Proposed rate of return

11.1.1. Background

The rate of return is a key input used to calculate the return on capital allowance, and it represents the costs of funding investments in SDP through borrowings from debt markets and investments from equity holders. SDP needs to be able to earn an adequate rate of return on capital to continue to invest, operate and maintain a water supply and water security service as required under our Network Operator's Licence.

11.1.2. Assessment

11.1.2.1. SDP has applied IPART's 2018 WACC methodology in all respects

SDP's rate of return proposal adopts all aspects of IPART's 2018 WACC methodology.[144] SDP engaged Frontier Economics to implement the 2018 WACC methodology to develop the WACC estimate used in this proposal. Frontier Economics' advice is presented in the expert report in Appendix 11-2.

11.1.2.2. SDP proposes annual adjustments to prices to reflect changes in the trailing average cost of debt

IPART's 2018 WACC methodology decision concluded that IPART would adopt a trailing average approach to set the return on debt allowance. In doing so, IPART noted that a key advantage of the trailing average approach is that annual updates to the cost of debt allowance would ensure closer alignment between the regulatory allowance for the cost of debt and the efficient cost of debt incurred by regulated businesses, thereby reducing refinancing risks.[145]

> *We have considered stakeholders' analysis and decided to change our approach. Because our 2013 method does not update the historic cost of debt within a regulatory period, it implicitly assumes that debt maturing within the period is refinanced at historic costs rather than prevailing interest rates. In general, this means firms are not able to match the cost of debt maturing within a regulatory period with the cost of new debt issuance. As a result, our 2013 method can create refinancing risks for firms on the portion of their debt that is maturing during the regulatory period.*
>
> *We also accept that because a trailing average approach updates the historic cost of debt annually within a regulatory period, it assumes that maturing debt is refinanced at prevailing interest rates. This increases accuracy and reduces refinancing risks for firms.*

144 IPART, Review of our WACC method, Final Report, February 2018.
145 IPART, Review of our WACC method, Final Report, February 2018, p. 27.

Indeed, every regulator that has adopted the trailing average approach to set the cost of debt allowance has recognised the same point, and every regulator that implements the trailing average allowance updates prices annually to ensure that this key benefit of the approach is realised. As far SDP is aware, no other regulator in Australia implements a cost of debt true-up of the sort proposed by IPART. Subsequently, in its pricing decision for the Murray River to Broken Hill Pipeline, IPART reiterated that the trailing average approach allows businesses to better manage their refinancing risks.[146]

> *In our view, a trailing average cost of debt allows regulated businesses to better manage their refinancing risk while maintaining their incentives for efficient investment.*

IPART's 2018 WACC methodology also concluded that IPART would decide on a case-by-case basis whether prices should be updated to reflect the annually-updated trailing average return on debt allowance.[147]

> *...we will decide whether to apply annual price adjustments or a true-up on a case-by-case basis, as part of our review process. In making this decision, we will have regard to any evidence the regulated firm or its customers put forward to support one approach or the other.* ***Neither option would be a default.*** *[Emphasis added]*

SDP proposes that IPART should allow the annual updates to the return on debt allowance to be passed through each year into SDP's prices, rather than trued-up in the next regulatory period.

An annual update of prices to reflect the changes in the trailing average return on debt would provide the closest match between SDP's efficient cost of debt (i.e., the cost of debt of the benchmark efficient business) and revenue requirements. This would minimise cash flow mismatches that might otherwise give rise to financeability concerns.

By contrast, under the true-up approach, the business can face (potentially large) mismatches between the efficient cost of debt and the regulatory allowance that could result in a deterioration in the benchmark business to maintain the benchmark credit rating.[148] Under the true-up approach, IPART would fix the allowed cost of debt for the entire duration of the regulatory period. If, over the same period, the trailing average cost of debt increases, the regulated business would face a difference between the efficient cost of debt it incurs (i.e., the trailing average cost of debt) and the fixed cost of debt allowance over the period.

Such cash flow mismatches cannot be hedged, so would expose a benchmark efficient entity to unnecessary financial risk. These cash flow mismatches could imperil the key financial metrics that determine the creditworthiness and future borrowing costs of SDP. IPART recognised this in its 2018 WACC methodology decision.[149]

> *...SDP noted that while a firm was waiting to receive a true-up in its favour in several years' time, it could potentially breach its debt covenants, which often specify financial ratios that must be met in each year. While the eventual receipt of the true-up would theoretically overcome the problem, it might not be timely from the lenders' point of view.*

As the quotes from IPART above indicate, the avoidance of such cash flow mismatches was one of IPART's key rationales for adoption of the trailing average approach to setting the cost of debt allowance. The application of IPART's cost of debt true-up effectively negates this key benefit of the trailing average approach by reimposing the cash flow mismatches that a proper implementation of the trailing average approach would eliminate.

[redacted]

146 IPART, Murray River to Broken Hill Pipeline, Final Report, May 2019, p. 59.

147 IPART, Review of our WACC method, Final Report, February 2018, p. 38.

148 Note that the cost of debt true-up applied by IPART differs fundamentally from the true-ups for uncontrollable costs proposed by SDP in section 7.5. The latter involve end-of-period true-ups between allowed and actual costs that are difficult to forecast over the period and that are beyond SDP's control. By contrast, IPART's cost of debt true-up involves truing up the difference between (a) the efficient cost of debt allowance in each year of a regulatory period (as determined by the trailing average method) and (b) the cost of debt allowance locked-in at the start of each regulatory period. In SDP's view, the cost of debt allowance should be set equal to the efficient cost of debt in each year of a regulatory period — which changes as the prevailing market cost of debt changes over the period. If IPART does this, then there would be no need to apply any true-up in relation to the cost of debt. That is, IPART could eliminate the need for the cost of debt true-up simply by setting the cost of debt allowance in each year equal to the efficient cost of debt. However, IPART cannot eliminate the need for the true-ups for uncontrollable costs proposed in section 7.5, unless IPART is able to forecast those costs perfectly over the regulatory period. Since IPART does not enjoy perfect foresight, SDP submits that the application of end-of-period true-ups for such costs would be reasonable and appropriate.

149 IPART, Review of our WACC method, Final Report, February 2018, p38.

[redacted]

This means that it is not sufficient to assume that SDP will be made financially whole in the next regulatory period by the cost of debt true-up, and that it can maintain financeability within the current regulatory period. By the time the true-up is actually implemented, SDP may have already suffered the consequences of failing to meet its debt covenants as a direct consequence of the regulatory framework failing to provide a close match between the regulatory allowance and the efficient cost of debt incurred by the business. Appendix 13-2 presents scenario modelling that illustrates the impact that such cash flow mismatches could have on the financeability of an efficient benchmark entity in SDP's circumstances.

To avoid these very adverse outcomes, SDP proposes IPART adopt an approach that ensures the closest possible cash flow match between the regulatory allowance and the efficient cost of debt.

IPART's 2018 WACC methodology indicated that IPART would assess on a case-by-case basis whether annual changes to the cost of debt allowance should be addressed through annual price adjustments or through an end-of-period true-up, and that "neither option would be a default." However, as Frontier Economics' expert report explains, since 2018, IPART has applied a uniform approach to all businesses regardless of their circumstances. Specifically, IPART has applied a cost of debt true-up to each of the three State Owned Corporations (SOCs) as the default option, regardless of whether the business in question sought annual price adjustments, sought a true-up, or expressed no preference at all.

SDP notes that its circumstances differ very substantially from that of the SOCs. Unlike the SOCs that can rely on NSW Treasury Corporation to arrange debt finance (and may therefore be able to manage even substantial cash flow mismatches within a regulatory period), SDP is a relatively small business that raises debt finance

privately. This means it is impractical for SDP to manage the cash flow mismatches that may arise over the regulatory period if updates to the cost of debt allowance are not reflected in prices annually. Moreover, as a standalone, private issuer of corporate debt, the consequences on SDP of large mismatches of this kind could be very severe. Indeed, SDP's debt covenants, which are commonplace among private firms like SDP, require credit metrics to be met every six months in order to avoid a breach of those covenants. [redacted]

Furthermore, there is no way that SDP could hedge the cash flow mismatches that would arise if IPART were to apply an end-of-period cost of debt true-up. This was the reason SDP supported IPART's adoption of the trailing average approach to set the cost of debt allowance. The main reason that IPART has, to date, preferred to address the annual changes in the cost of debt allowance through a true-up is to avoid imposing intra-period price volatility on end consumers. For instance, IPART has stated that:

> *...if we applied an annual update, a large change in the cost of debt would flow through to customer prices in the following year of the determination period, unless additional side constraints were imposed in the determination.*[150]

However, as detailed below, applying annual updates to SDP's prices would be unlikely to impose significant intra-period price volatility on customer bills as SDP's charges are a relatively small component of the final customer bill. Moreover, one of the valuable features of IPART's trailing average cost of debt approach (across both the long-term and current cost of debt estimates) is that large year-on-year changes in the prevailing cost of debt market do not flow fully into the cost of debt allowance since the prevailing cost of debt in any given year represents only a small fraction of the overall cost of debt allowance in that year.

SDP's charges represent approximately 8% of the total cost of water to the typical retail customer. This means that annual changes in SDP's cost of debt allowance (which IPART has acknowledged) would contribute only a very small annual change in prices to end consumers. As Frontier Economic estimates (using data on the volatility of the historical cost of debt) in its expert report, the average annual change in the trailing average cost of debt allowance represents approximately just 0.16% of the average annual prices to end consumers.[151]

This point was made in a submission by Sydney Water to IPART during the last WACC methodology review:[152]

> *We do not expect the changes in the average customer residential bill due to annual changes in the CoD for SDP and WaterNSW to be material, given the size of SDP and WaterNSW's RAB's relative to that of Sydney Water. Our estimate of the average total likely range of impact on average residential customer bills is +/-$1-1.2 per year in nominal prices.*

This demonstrates that annual price changes for customers are likely to be small if SDP's prices were adjusted through the regulatory period to reflect an annually updated cost of debt allowance. However, the end-of-period true-up approach may result in significant cash flow mismatches that no efficient business in SDP's position can hedge. That is, the modest benefits of slightly more stable prices within each regulatory period may only be achieved by imposing a material cost (in the form of a deterioration in financeability) on some businesses. That cost could not be managed by relatively small (relative to SOCs regulated in the water sector), single asset business that is privately-financed such as SDP.

During the last WACC methodology review, Sydney Water was supportive of annual adjustments being made to SDP's prices in response to annual changes in the cost of debt allowance. For example, Sydney Water submitted to IPART that:[153]

> *In reference to the impact on private equity firms, we acknowledge that while our bulk water suppliers may not face the same challenges we face in implementing annual price updates to retail consumers, they may have commercial and financial targets such as maintaining minimum levels of credit metrics and meeting financing covenants. These may require them to pass on immediately the cost/benefits of updated debt allowances rather than at the end of the regulatory period. It may also be the case that such immediate pass-through could reduce the costs to private equity firms, and hence the cost to Sydney Water's customers.*
>
> *We believe we can do this relatively simply, based on extending the existing pass-through arrangements for bulk water costs.*

150 IPART, Review of prices for WaterNSW Greater Sydney, Issues Paper, September 2019, p48.
151 Frontier Economics, The allowed rate of return for SDP, September 2022, p20.
152 Sydney Water's submission to IPART's WACC review draft report 2017-18, 8 December 2017, p. 13.
153 Sydney Water's submission to IPART's WACC review draft report 2017-18, 8 December 2017, p. 12.

Overall, in the interests of flexibility we would support an annual CoD pass-through for bulk water suppliers based on the following views:

Private equity firms may in fact pass-through lower CoD amounts annually.

Existing pass-through arrangements for bulk water costs can easily be accommodated as part of existing regulatory and administrative arrangements (see section below for more detail).

Price impacts from bulk water suppliers (average residential customer bills is +/-$1-1.2 per year in nominal prices and less in real terms), relative to those derived from Sydney Waters RAB.

Absent any unequivocal customer evidence for a preferred approach to cost pass-through/price changes, it would not be principled to deny bulk water suppliers their position (given small customer impacts).

Sydney Water went on to explain that:[154]

Under our current determination, the additional costs to Sydney Water of purchasing desalinated water is passed through to water consumers' fixed service charges at a 1-year lag. This service charge pass-through mechanism can accommodate the additional costs (or benefits) to Sydney Water due to SDP's updated current CoD allowances.

SDP has engaged with Sydney Water to confirm that Sydney Water continues to support the application of annual price adjustments in SDP's case and could accommodate those price adjustments using existing pass-through arrangements.

11.1.2.3. Transition period applicable to the trailing average current cost of debt

Under IPART's 2018 WACC methodology, SDP's current cost of debt allowance for the 2023-27 regulatory period would be subject to a transition (lasting one regulatory period) from the prevailing 'on the day' cost of debt to a five-year trailing average cost of debt (since SDP is typically subject to five-year regulatory periods).

In view of the delay in the commencement of 2023-27 regulatory period, IPART has confirmed to SDP that the transition period to the trailing average current cost of debt would occur over five years commencing 1 July 2022 and ending 30 June 2027, as this is what would have occurred if not for the delay to the forthcoming regulatory period.[155]

SDP has developed this submission on the basis of that guidance from IPART.

11.1.2.4. Sampling period

SDP proposes that the sampling periods used to set the rate of return allowances for the 2023-27 regulatory period be determined according to the sampling periods set out in confidential Appendix 11-1 of this submission.

11.1.3. Proposal

We propose:

25. A post-tax real rate of return of 3.60%.
26. Sampling periods for the purposes of estimating the rate of return for each of the years of the 2023-27 regulatory period in line with the sampling periods set out in confidential Appendix 11-1.
27. Annual updates to prices to reflect annual changes in the cost of debt allowance.

SDP's rate of return proposal has been derived using the approach summarised in Box 13.

154 Sydney Water's submission to IPART's WACC review draft report 2017-18, 8 December 2017, p12.

155 IPART, RP3 WACC approach, Letter from IPART to SDP dated 21 April 2022.

Box 13: Approach to deriving the proposed rate of return

We have derived the proposed rate of return using IPART's current rate of return methodology. This methodology involves:

Estimating the nominal post-tax vanilla rate of return using the standard formula:

$$Nominal\ WACC = Cost\ of\ equity \times (1 - Gearing) + Cost\ of\ debt \times Gearing$$

where the cost of equity is estimated using the Sharpe-Lintner Capital Asset Pricing Model (CAPM):

$$Cost\ of\ equity = Risk\text{-}free\ rate + Beta \times Market\ risk\ premium$$

and the cost of debt is estimated as:

$$Cost\ of\ debt = Risk\text{-}free\ rate + Debt\ premium + Debt\ raising\ costs.$$

Converting the nominal rate of return into real terms by deflating the nominal rate of return estimate using a forecast of inflation:

$$Real\ WACC = \frac{1 + Nominal\ WACC}{1 + Forecast\ inflation} - 1.$$

Table 11.1 summarises the methodology and individual assumptions that are used to estimate the proposed rate of return used in this proposal.

Table 11.1: *Summary of approach to estimating each rate of return parameter*

Rate of return parameter	Current estimate	Long-term estimate
Risk-free rate for cost of equity allowance	40-day average of annualised yields on 10-year Commonwealth Government Securities (CGS), obtained from the RBA. Current risk-free rate estimate fixed for the duration of the regulatory period.	10-year historical average of annualised yields on 10-year CGS obtained from the RBA. Long-term risk-free rate estimate fixed for the duration of the regulatory period.
Risk-free rate for cost of debt allowance	For 2022-23, 40-day average of annualised yields on 10-year Commonwealth Government Securities (CGS), obtained from the RBA. In subsequent years, transitioning to a five-year trailing average of 10-year annualised CGS yields. Current risk-free rate to be updated annually.	10-year (covering the years 2013 to 2022) trailing average of annualised yields on 10-year CGS obtained from the RBA. Long-term risk-free rate to be updated annually.
Inflation	Assume that inflation will turn out in line with the RBA 1-year ahead forecast (May 2022 Statement of Monetary Policy) for 2022-23, and then 2.5% for every subsequent year of the 2023-27 regulatory period. Then compute the geometric average of these five assumed annual rates of inflation.	
Debt premium	For 2022-23, the difference between the annualised cost of debt, using the debt margin for 10-year BBB-rated corporate bonds published by the RBA and the current risk-free rate estimate, and the annualised current risk-free rate estimate. In subsequent years, the difference between the annualised cost of debt, using a transition to a five-year trailing average of the debt margin for 10-year BBB-rated corporate bonds and the current risk-free rate estimate, and the annualised current risk-free rate estimate. The corporate bond yield for each historical year is determined using a two-month average over the relevant sampling period. Current debt premium to be updated annually.	The difference between the annualised cost of debt, using a 10-year trailing average of the debt margin for 10-year BBB-rated corporate bonds and the long-term RFR estimate, and the annualised long-term risk-free rate estimate. The corporate bond yield for each historical year is determined using a two-month average over the relevant sampling period. Long-term debt premium to be updated annually.
Debt raising costs	12.5 basis points.	
Gearing	60% based on 2018 IPART WACC methodology	
Market risk premium	Derived using six methods, including IPART's five variations of the Dividend Growth Model, and the economic indicators method.	6.0%, based on IPART's long-term MRP estimate.
Equity beta	0.7 based on IPART's beta methodology to adopt the status quo estimate unless the empirical evidence has departed materially and for a prolonged period (two regulatory periods or more) from that level.	

Source: Sydney Desalination Plant

Table 11.2 summarises the rate of return parameter estimates that underpin SDP's rate of return proposal, as estimated by Frontier Economics (see the expert report in Appendix 11-2).

Table 11.2: *Summary of each rate of return parameter estimate for the 2023-27 regulatory period*

Rate of return parameter	Current estimate	Long-term estimate
Risk-free rate	3.20%	2.60%
Inflation	2.80%	2.80%
Debt premium	3.10%	2.50%
Debt raising costs	12.5 basis points	12.5 basis points
Gearing	60.0%	60.0%
Market risk premium	8.00%	6.00%
Equity beta	0.7	0.7

Source: Sydney Desalination Plant.

Note: Debt raising costs are embedded within the debt premium figure, shown for illustrative purposes in the table above

Table 11.3 presents SDP's proposed rate of return allowance and underlying parameter estimates.

Table 11.3: *Proposed rate of return ('post-tax real rate of return') (%)*

Parameter	Estimate
Post-tax nominal return on equity	7.80%
Pre-tax nominal return on debt (for 2022-23)	5.70%
Inflation	2.8%
Gearing	60.0%
Gamma	0.25
Corporate tax rate	30.0%
Post-tax nominal rate of return	6.60%
Post-tax real rate of return	**3.60%**

Source: Sydney Desalination Plant

11.2 Return on working capital

11.2.1. Background

IPART's standard approach is to provide an allowance for a return on working capital, which represents the holding cost of net current assets. As IPART has explained:[156]

- the working capital allowance is intended to ensure businesses can recover the costs they incur due to delays between them delivering regulated goods or services and receiving payment for those goods or services (net of any benefits they receive due to delays between them receiving goods or services and paying for those good or services); and

156 IPART, Working capital allowance, Policy Paper, November 2018, p. 1.

- all regulators recognise that a return on working capital is a legitimate business expense and should be recovered in regulated prices.

11.2.2. Assessment

SDP has adopted the method for calculating the proposed return on working capital allowance established by IPART in 2018 (the 2018 Policy Paper).[157] SDP notes that, as part of its ongoing Water Regulatory Framework Review, IPART has proposed to abandon the methodology set out in the 2018 Policy Paper for determining the return on working capital and revert to using its pre-2018 methodology.

The key reason IPART gives for the proposed return to is pre-2018 methodology is a concern that the approach established in the 2018 Policy Paper is overly complex:

> *Our current approach is complex, mainly due to how we calculate receivables. In 2018, we revised how we calculate receivables. In addition to estimating receivables based on the length of the billing cycle, we also allowed for:*

Further delays in receiving payment, which mainly occur because customers are given time to pay after receiving a bill.

Billing fixed charges partly in advance of delivering services.

> *These additions add complexity and are not always well understood, which can divert attention from more material issues. The purpose of the additions was to more accurately match a business's cash flows. However, the accuracy is not symmetrical between debtors (receivables) and creditors (payables). Our approach to payables is the simple and standard 30 days of payment, which does not account for other scenarios*[158]

SDP disagrees with IPART's reasoning on this issue:

- Having undertaken a formal review in 2018 of its methodology for determining the return on working capital, IPART now proposes to disregard the outcome of that review before the new method has even been applied to SDP, a key contributor to that review. This undermines the certainty and predictability of the regulatory framework and reduces the incentive for stakeholders such as SDP to participate meaningfully in future methodology reviews.
- SDP disagrees with IPART's assessment that the 2018 methodology is overly complex. SDP's experience is that it is very straightforward to implement using data that are readily available to the water businesses regulated by IPART.
- Whilst the 2018 methodology did involve a marginal increase in complexity (compared to the approach it superseded), in SDP's view the additional complexity is justified by the associated improvement in the accuracy of the estimated efficient costs. IPART itself acknowledges in the quote above that the purpose of the improvements to the pre-2018 methodology was to "more accurately match a business's cash flows."
- IPART seems to suggest that the improvement in accuracy in the treatment of receivables should be discarded because it was not mirrored by an improvement in the accuracy in the treatment of payables. SDP notes that IPART had an opportunity during the 2018 review to improve the treatment of all aspects of the method for estimating the working capital allowance. The fact that IPART did not take that opportunity to make improvements in the way it estimates payables is not a sound reason to abandon improvements in how it estimates receivables.

SDP notes that application of the pre-2018 methodology would result in a reduction in SDP's proposed revenues of approximately $0.9m per year (approximately $4.5m over a five year regulatory period). This would represent a material adverse impact on revenues for a business of SDP's size. In SDP's view, it would be unreasonable for such a reduction in revenues to occur — particularly since IPART acknowledges that the approach that would deliver this reduction is a less accurate approach than the existing approach.

SDP notes that IPART's Draft Water Regulatory Framework indicates that the earliest it would apply the new regulatory framework it is consulting on (including the proposed reversion to the pre-2018 working capital methodology) is the next round of regulatory price reviews for Sydney Water, WaterNSW Greater

157 IPART, Working capital allowance, Policy Paper, November 2018.

158 IPART, Draft Water Regulatory Framework: Technical Paper, May 2022, Appendix 4, p67.

Sydney and Hunter Water (which would reset prices for those businesses on 1 July 2025).[159] Furthermore, IPART has indicated in discussions with SDP that the new regulatory framework would not be mandated for SDP's 2023-27 regulatory period, and that any aspects of the new regulatory framework that SDP wishes to incorporate into the 2023-27 regulatory period could be proposed to IPART on an opt-in basis. Therefore, even if IPART decides to revert back to its pre-2018 working capital methodology, that approach would not apply to SDP unless proposed by SDP.

For these reasons set out above, SDP proposes to apply the method set out in the 2018 Policy Paper for determining the return on working capital allowance. The 2018 methodology involves two key steps:

- First, forecast the business's net working capital requirements over the regulatory period; and
- Then, apply the nominal rate of return to the forecast working capital balance in each year to determine the required return on working capital.
- The net working capital requirement is computed using the following relationship:
- *Net working capital=Receivables-Payables+Inventory+Prepayments*

The method for determining each component of the formula above is explained in IPART's 2018 Policy Paper. The key parameters proposed by SDP, for the purposes of calculating net working capital, are summarised in **Table 11.4** below.

Table 11.4: *Proposed parameters for calculating Net Working Capital*

Parameter	2023-24	2024-25	2025-26	2026-27	Explanation
Receivables (days)	48	48	48	48	Calculated using historical data on SDP's actual receivables in accordance with its WSA and IPART's prescribed methodology.
Inventory ($millions)	-	-	-	-	SDP holds no inventories.
Payables (days)	30	30	30	30	Adopting IPART's benchmark number of days for payables.
Prepayments ($millions)	5.51	6.19	6.64	6.88	Reflecting projected prepayment of insurance premiums.

Source: Sydney Desalination Plant

In the 2018 Policy Paper, IPART noted that it would set the default assumption for prepayments to zero since they are likely to be small for most businesses. However, IPART explained that it would include an amount for prepayments if a business can reasonably demonstrate the amount is prudent and efficient.[160]

For the purposes of calculating the return on working capital allowance, SDP has assumed annual prepayment amounts of between $5.51m and $6.88m (as shown in **Table 11.4**), based on the approximate projected annual prepayments SDP expects to incur over the 2023-27 regulatory period. These prepayments relate to primarily to insurance premium costs. SDP considers that it is appropriate to include these prepayments since insurance premiums:

- Are efficient and prudent costs for any business, including SDP, to incur when delivering regulated services;
- Must be prepaid prior to the commencement of each insurance year to which the insurance policy relates; and
- Are material relative to SDP's size.
- Therefore, SDP submits that it is reasonable to assume an annual prepayment amounts in line with those proposed in **Table 11.4** for the purposes of calculating the efficient allowance for the return on working capital.

159 IPART, Draft Water Regulatory Framework, May 2022, p. 27

160 IPART, Working capital allowance, Policy Paper, November 2018, p13.

The proposed rate of return used to compute the return on working capital allowance is presented in section 11.1.

11.2.3. Proposal

We propose:

28. The use of IPART's current methodology for determining the allowed return on working capital, as set out in IPART's 2018 Policy Paper on the working capital allowance.
29. The return on working capital allowances presented in **Table 11.5**.

Table 11.5: *Return on Working Capital Allowance – Operational Mode (Maximum Production), ($2022-23, $millions)*

	2023-24	2024-25	2025-26	2026-27
Plant	1.48	1.54	1.62	1.66
Pipeline	0.29	0.28	0.29	0.29
Total	**1.77**	**1.83**	**1.91**	**1.94**

Source: Sydney Desalination Plant

11.3 Opening value and roll forward of the Regulatory Asset Base

11.3.1. Background

The opening value of the RAB is a key input to determining the return on capital and return of capital allowance, and it represents the (as yet) unrecovered past capital investments we have made to provide services to our customers.

The value of the RAB changes over time. As we invest in new assets this expenditure is added to the RAB. As our assets depreciate this value is subtracted from the RAB. If we dispose of assets, these proceeds are subtracted from the RAB.

11.3.2. Assessment

We have calculated the RAB values for each year of the 2023-27 regulatory period consistent with IPART's RAB roll-forward methodology. This involved:

- Firstly, establishing the opening RAB value for the 2023-27 regulatory period by:
  - taking the opening RAB values for the 2017-23 regulatory period;
  - indexing those values for actual and expected inflation (using June-to-June CPI) over the period;
  - adding the value of our expected or actual efficient capital expenditure over that period; and
  - deducting the value of actual regulatory depreciation over the 2017-23 regulatory period.

  SDP did not receive any cash capital contributions or dispose of any assets over the 2017-23 regulatory period t hat require an adjustment to the RAB.
- Rolling forward the RAB over the 2023-27 regulatory period by:
  - taking the opening RAB values for the 2023-27 regulatory period;
  - adding the value of expected efficient capital expenditure over that period; and
  - deducting the value of expected regulatory depreciation over the 2017-23 regulatory period.

  SDP does not expect any cash capital contributions or to dispose of any assets over the 2023-27 regulatory period that require an adjustment to the RAB.

11.3.3. Proposal

We propose:

30. The opening Plant RAB value for the 2023-27 regulatory period of $1,225.7m presented in **Table 11.6.**
31. The opening Pipeline RAB value for the 2023-27 regulatory period of $ 791.8m presented in **Table 11.7**.

Table 11.6: *Regulatory asset base roll forward 2017-23 regulatory period — Plant ($nominal, $millions)*

	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Opening balance	1,281.5	1,263.6	1,245.5	1,249.5	1,196.7	1,191.3	1,213.9
Net capex	0.0	0.2	31.3	0.2	0.4	4.3	12.7
Depreciation	42.3	44.8	47.5	49.3	51.3	54.6	54.6
Indexation	24.3	26.5	20.2	(3.7)	45.5	72.8	53.7
Closing balance	**1,263.6**	**1,245.5**	**1,249.5**	**1,196.7**	**1,191.3**	**1,213.9**	**1,225.7**

Source: Sydney Desalination Plant

Table 11.7: *Regulatory asset base roll forward 2017-23 regulatory period — Pipeline ($nominal, $millions)*

	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Opening balance	691.7	699.7	708.3	714.2	706.0	726.7	764.8
Net capex	-	0.0	0.7	0.1	0.3	0.6	0.1
Depreciation	5.2	6.1	6.2	6.2	6.4	6.8	6.8
Indexation	13.1	14.7	11.3	(2.1)	26.8	44.3	33.7
Closing balance	**699.7**	**708.3**	**714.2**	**706.0**	**726.7**	**764.8**	**791.8**

Source: Sydney Desalination Plant

We propose:

32. The opening Plant RAB for each year of the 2023-27 regulatory period presented in **Table 11.8**
33. The opening Pipeline RAB for each year of the 2023-27 regulatory period presented in **Table 11.9**.

Table 11.8: *Notional RAB roll forward 2023-27 regulatory period — Plant ($2022-23, $millions)*

	2023-24	2024-25	2025-26	2026-27
Opening balance	1,225.7	1,191.5	1,152.1	1,106.0
Net capex	23.7	21.6	18.0	15.9
Depreciation	57.8	61.0	64.1	66.8
Closing balance	**1,191.5**	**1,152.1**	**1,106.0**	**1,055.2**

Source: Sydney Desalination Plant

Table 11.9: *Notional RAB roll forward 2023-27 regulatory period – Pipeline ($2022-23, $millions)*

	2023-24	2024-25	2025-26	2026-27
Opening balance	791.8	783.4	775.5	767.1
Net capex	0.3	0.8	0.3	0.3
Depreciation	8.7	8.7	8.7	8.7
Closing balance	**783.4**	**775.5**	**767.1**	**758.8**

Source: Sydney Desalination Plant

11.4 Plant asset lives, asset categories and regulatory depreciation

11.4.1. Background

The appropriate asset lives and depreciation method for SDP's assets are key assumptions in determining the return of assets allowance (or regulatory depreciation). SDP proposes to retain the straight-line method of depreciation.

For regulatory purposes, it is generally accepted that asset lives should reflect their economic lives rather than their technical/engineering lives. The Terms of Reference specify pricing principles that state explicitly that the "return of assets (depreciation) is to reflect the economic lives of the assets". In its 2017 Determination for SDP, IPART accepted this principle and stated that:

> *We set asset lives on the principle of economic life (ie over what period should the asset provide a service), and not on its design life.*[161]

11.4.2. Assessment

The definition of economic life is the period over which assets can physically provide services and over which the asset generates economic returns. If an asset cannot physically provide a service because it has come to the end of its physical useful life (often estimated as its design life) clearly it cannot generate economic benefits. Equally, if there is no demand for the services an asset provides, the asset will not be able to generate economic returns. This is discussed in greater detail in Appendix 11-3 and the Frontier Economics report on economic life.[162]

The asset lives of the Pipeline, membranes and periodic maintenance asset should be amended to ensure that they appropriately reflect the economic lives of these assets. For the 2023-27 regulatory period, the lives of these assets should be aligned with their estimated physical useful lives. If there is a realistic expectation that demand for the services these assets provide will cease prior to the end of their physical useful life or design life, then the economic life reduces and IPART should reset asset life assumptions to avoid the stranding of the regulated assets. A regulatory framework that fails to reflect expected economic asset lives when determining the return of capital (depreciation allowance), and that allows the stranding of the regulated assets, would disincentivise efficient and prudent investment in the regulated assets that would otherwise deliver services that consumers value.

11.4.2.1. Pipeline asset life

The design life assumption for the Pipeline is best informed by the design life specified by the designers and constructors of the assets. KBR was a member of the Water Delivery Alliance and the designer of SDP's Pipeline and pumping station, making it uniquely qualified to express an opinion on the design life of the Pipeline. We engaged KBR to provide an opinion on the Pipeline asset life. KBR concluded that 100 years

161 IPART, Sydney Desalination Plant Pty Ltd Review of prices from 1 July 2017 to 30 June 2022, Final Report, June 2017, p128.

162 Frontier Economics, Economic life for the purposes of setting the regulatory depreciation allowance

is the appropriate asset life for the combined Pipeline asset. For the reasons outlined in Appendix 11-3 and KBR's expert report, included as Appendix 11-4, we propose that IPART adopt 100 years as the standard asset life of the Pipeline.

11.4.2.2. Membranes asset life

Under its new Network Operator's Licence, SDP will remain in flexible full-time operation with a minimum baseline level of production. In constant operation, there is a trade-off between the cost of membrane replacement capital expenditure and operating expenditure for energy. Membranes are also highly specialised assets with restricted global supply options. Thus, it is prudent to manage supply chain risks in the procurement of membranes. In section 10.5 we set out our proposed membrane replacement strategy that considers these factors and targets an average membrane asset life of 4.5 years. Consistent with this strategy the standard asset life for future membrane assets should be set at 4.5 years.

11.4.2.3. Periodic maintenance asset life

Periodic maintenance capital expenditure covers several asset types across SDP's RAB. During the RP2 Determination, IPART's expenditure consultants recommended that IPART align the periodic maintenance category asset life to that of the Plant asset category. For the 2023-27 regulatory period, we have more accurately estimated a weighted average life for periodic maintenance based on the standard lives of underlying assets within the proposed expenditure for this category.

11.4.3. Proposal

We propose:

34. The standard asset life assumption for Pipeline infrastructure should be set to 100 years, consistent with its design life, 7.6 years for periodic maintenance and 4.5 years for membranes as set out in **Table 11.10**. This would be consistent with the requirement that economic lives should be applied to set SDP's depreciation allowance.

Table 11.10: *Standard and remaining asset lives for Pipeline and certain Plant asset categories as at July 2022*

Category	Standard lives	Remaining lives
Plant	30.0	16.3
Intake Infrastructure	90.0	76.0
Outlet Infrastructure	100.0	86.0
Pumping Station	25.0	11.5
Pre-operations Payment	20.0	6.1
Project Development	44.0	30.0
Periodic Maintenance	7.6	n/a
Membranes	4.5	4.0
Corporate	5.0	4.2
Pipeline	100.0	89.0

Source: Sydney Desalination Plant

11.5 Tax costs

11.5.1. Background

For the 2017 Determination, IPART moved to a real post-tax WACC,[163] and to provide a regulatory allowance for corporate tax liabilities through a separate allowance in the building block calculations. This requires the determination of a separate building block for allowed tax costs.

11.5.2. Assessment

The tax allowance calculations in **Table 11.11** (Plant) and **Table 11.12** (Pipeline) are in accordance with IPART's methodology incorporating the following elements:

- Regulated revenue (excluding tax) and operating costs consistent with regulatory building block allowances;
- Tax depreciation consistent with SDP's fixed asset register;

  SDP does not forecast to receive any non-cash capital contributions that would be treated as taxable revenue or included in SDP's tax asset base for the purposes of estimating tax depreciation expense
- Interest costs based on benchmark debt gearing and cost of debt (ie the same assumptions used to estimate the WACC);
- Corporate tax rate of 30%;
- Gamma of 25%.

As part of calculating the tax costs for the 2022-27 regulatory period, SDP forecasts tax depreciation using the tax asset base, standard ATO asset life assumptions and tax depreciation rules. This is consistent with the approach in calculating the actual tax obligations faced by SDP.

163 IPART, Review of prices for Sydney Desalination Plant Pty Ltd: From 1 July 2017 - Issues Paper, August 2016, p62.

As was the case in SDP's 2017 Pricing Determination, the tax depreciation forecasts for plant result in a positive tax allowance. However, pipeline tax depreciation forecasts result in a tax loss, due to accelerated tax depreciation and material variations between tax and regulatory pipeline asset lives. SDP proposes that plant and pipeline tax allowances should be combined in recognition that 'SDP Pty Ltd' is taxed as a single entity. This allows tax losses for the pipeline to offset tax payable for the plant.

Resultant tax allowances are presented in Table 11.11 (Plant) and Table 11.12 (Pipeline).

Table 11.11: *Tax allowance calculations — Plant ($millions)*

	2023-24	2024-25	2025-26	2026-27
Regulated Revenue (Excluding Tax)	218.62	227.17	240.42	245.34
Operating Costs	(113.68)	(117.26)	(125.64)	(126.21)
Tax Depreciation	(30.55)	(33.21)	(32.91)	(32.15)
Interest	(41.91)	(41.78)	(41.39)	(40.74)
Taxable Income (Excluding Tax Reve-nue)	32.48	34.92	40.48	46.25
Taxable Income (Including Tax Reve-nue)	41.91	45.06	52.23	59.67
Tax (before adj for franking credits)	12.57	13.52	15.67	17.90
Adj for Franking Credits	(3.14)	(3.38)	(3.92)	(4.48)
Tax Allowance in Building Blocks ($nominal)	9.43	10.14	11.75	13.43
Tax Allowance in Building Blocks ($2022-23)	**9.17**	**9.59**	**10.82**	**12.02**

Source: Sydney Desalination Plant

Table 11.12: *Tax allowance calculations – Pipeline ($millions)*

	2023-24	2024-25	2025-26	2026-27
Regulated Revenue (Excluding Tax)	38.41	39.15	39.94	40.73
Operating Costs	(0.53)	(0.51)	(0.53)	(0.54)
Tax Depreciation	(17.66)	(17.20)	(16.72)	(16.27)
Interest	(27.31)	(27.79)	(28.27)	(28.74)
Taxable Income (Excluding Tax Revenue)	(7.09)	(6.35)	(5.58)	(4.82)
Taxable Income (Including Tax Revenue)	(9.15)	(8.19)	(7.20)	(6.22)
Tax (before adj for franking credits)	(2.75)	(2.46)	(2.16)	(1.87)
Adj for Franking Credits	0.69	0.61	0.54	0.47
Tax Allowance in Building Blocks ($nominal)	(2.06)	(1.84)	(1.62)	(1.40)
Tax Allowance in Building Blocks ($2022-23)	**(2.00)**	**(1.74)**	**(1.49)**	**(1.25)**

Source: Sydney Desalination Plant

11.5.3. Proposal

We propose:

35. Tax costs allowances of $35.11m as set out in Table 11.13 for the Plant and Pipeline over the 2023-27 regulatory peruid that reflect an efficient allowance for corporate tax liabilities.

Table 11.13: *Tax Cost Allowance – all production levels ($2022-23, $millions)*

	2023-24	2024-25	2025-26	2026-27	Total
Plant	9.17	9.59	10.82	12.02	41.60
Pipeline	(2.00)	(1.74)	(1.49)	(1.25)	(6.49)
Total	**7.17**	**7.85**	**9.33**	**10.77**	**35.11**

Source: SDP

11.6 Other revenue adjustments

The notional revenue requirement includes an adjustment for other revenue items including the pass through of specified gains and losses under the EAM.

The proposed notional revenue requirement does not include an adjustment to account for the impact of the 12-month deferral of the determination on SDP's 2022-23 prices. Under IPART's 2017 Determination, SDP's 2021-22 prices have been held constant in nominal terms over 2022-23 to allow time for the GSWS to be finalised, including changes to the Network Operator's Licence. IPART has suggested it would consider whether SDP's prices in the 2023 Determination should be adjusted to account for any over-recovery accrued over 2022-23 as a result of the 12-month deferral.[164] Such an adjustment would be inconsistent with IPART's previous practice and best practice regulation. It would also add unnecessary complexity and uncertainty to the regulatory framework for no efficiency benefits. Further detail is set out below.

We propose:

36. Adjustment for other revenue items including the pass through of the customer share of EAM gains of $7.45m over the 2023-27 regulatory period — as set out in **Table 11.14**.

Table 11.14: *Allowance for revenue adjustments — all modes ($2022-23, $millions)*

	2023-24	2024-25	2025-26	2026-27	Total
EAM	(1.86)	(1.86)	(1.86)	(1.86)	(7.45)
ECM	-	-	-	-	-
Total	**(1.86)**	**(1.86)**	**(1.86)**	**(1.86)**	**(7.45)**

Source: Sydney Desalination Plant

EAM adjustment

Under the Terms of Reference, SDP is entitled to recover a portion of the gains or losses, outside a core band, from the sale of surplus electricity and LGCs. SDP has applied IPART's 2017 methodology to calculate the value of the carryover amounts for the 2023-27 regulatory period.[165] SDP has proposed reducing the EAM adjustment period by one year (i.e., changed from the current period of 2022-23 to 2026-27, to a new

164 IPART, Letter to SDP, dated 23 August 2021.

165 IPART, Sydney Desalination Plant Pty Ltd: Energy Adjustment and Efficiency Carryover Mechanisms – Methodology Paper, June 2017.

period of 2023-24 to 2026-27). The purpose of this change is to account for the one year extension of the current regulatory period to include financial year 2022.

Specifically, the calculation of these amounts is based on the following:

- **Application period:** 2016-17 to 2020-21
- **Adjustment period**: 2023-24 to 2026-27
- **Application mode:** Water Security Mode and Restart Mode[166] (as per 2017 Methodology paper) and ERN Mode[167] (as per 2020 Water) Agreement)
- **Total gains (losses):** $10.15m over the period (nominal terms) which were calculated as follows:
  - For electricity, it is the contract value for surplus electricity less the actual revenue on surplus electricity, where actual revenue is the volume of surplus electricity sold in each month multiplied by the average NSW pool price in the NEM for that month, as published by AEMO.
  - For LGCs, actual gains and losses are equal to the contract value of surplus LGCs less the actual revenue on surplus LGCs, where actual revenue is the volume of surplus LGCs sold multiplied by the LGC sale price.
- **Core band:** 5% of the contract value of surplus electricity and LGCs sold in each financial year
- **Sharing ratio:** 90/10 in 2016/17, and 80/20 in the remaining years
- Customer share of gains (losses): $6.3m over the period (nominal terms) (see **Table 11.15**).

Table 11.15: *EAM calculation of gains and losses ($nominal, $millions)*

	2016-17	2017-18	2018-19	2019-20	2020-21	Total
Relevant EAM Mode	**Water Security Mode**	**Water Security Mode**	**Water Security Mode & Restart Mode**	**ERN Mode**	**ERN Mode**	
Total gain (loss)	6.96	7.54	3.24	(2.17)	(5.42)	10.15
Customer share of gain (loss)	4.84	4.64	1.60	(1.52)	(3.28)	6.29

Source: Sydney Desalination Plant

The customer share of the gains and losses were converted using the 2017 methodology into an annuity of $1.86m, totalling $7.44m ($2022-23) to be 'paid back' to customers over the 2023-27 regulatory period.

SDP commissioned Seed Advisory to undertake an independent review of its surplus electricity and LGC trading approach over the 2016-17 to 2021-22 application period. Seed Advisory determined that SDP's trading activities over this period were prudent and efficient. A copy of the Seed Advisory report can be found at Appendix 11-6.

Revenue adjustment for the impact of the deferral of the determination on SDP's 2022-23 prices

SDP's prices for the forthcoming regulatory period were originally scheduled to be determined by 30 June 2022 and apply from 1 July 2022. However, to allow time for the GSWS to be finalised, including changes to our Network Operator's Licence, the Minister for Water asked IPART to defer its review of SDP's prices by up to 12 months, with the 2023 Determination now due by 30 June 2023 for new prices to apply from 1 July 2023. Under IPART's 2017 Determination, this means that SDP's 2021-22 prices will be held constant in nominal terms over 2022-23.

IPART has suggested it would consider whether SDP's prices in the 2023 Determination should be adjusted to account for any over-recovery accrued over 2022-23 as a result of the 12-month deferral, and that in doing so it would take into account all relevant factors, including the long-term interests of customers.

166 1 July 2016 to 12 March 2019
167 27 March 2020 to 30 June 2022

Our proposed notional revenue requirement and prices do not include an adjustment to account for the impact of the deferral on our 2022-23 prices.

Such an adjustment would:

- effectively be an ex-post adjustment to 2022-23 prices, meaning there are no benefits in terms of promoting efficient consumption decisions by consumers and expenditure decisions by SDP
- mean that prices deviate from cost-reflective levels over the upcoming regulatory period and potentially contribute to price instability over time
- conflict with the rule published in the 2017 IPART Determination for SDP, undermine investment certainty and be inconsistent with sound principles of incentive regulation, as the regulated revenue for a year would be effectively determined after that year.

We acknowledge there are circumstances where an ex-post review by IPART leads to future adjustments to prices, such as the EAM. However, the practice of IPART and other economic regulators has been to consult on, explain and establish such mechanisms ahead of time to ensure sufficient investment and operational certainty for the regulated utility. For example, the methodology for the EAM to be applied during the 2017-22 regulatory period was defined at the time of the 2017 Determination.

In this context, it is important to note that IPART's 2017 Determination clearly sets out pricing arrangements to apply if there were to be a delay to SDP's next Determination — i.e., prices as at 30 June 2022 would remain in place until such time as a new Determination were in place. There is no provision for a revenue adjustment in the subsequent determination if it is delayed.

Further, IPART's longstanding practice, across a range of determinations, has been to make no such adjustment following the deferral of price determinations for other water utilities. Instead, prices are held constant in nominal terms based on the last year of determined prices until a new Determination is made. The new Determination has then been made on a forward-looking basis, with no ex-post adjustments to revenue to account for the impact of the deferral. These examples are detailed in Appendix 11-5.

IPART's past practice recognises that there will be circumstances where it makes sense to delay or bring forward a price determination, but this needs to be done in a way that maintains investment and decision-making certainty and price stability, which are in the long-term interests of customers. It is therefore important that prices be set on a forward-looking basis.

A retrospective adjustment to prices for events beyond a utility's control would create significant decision-making uncertainty and price uncertainty/instability, which would be counter to the long-term interests of customers. In this sense, SDP should be treated consistent with IPART's previous treatment of State-Owned Corporations. Having a predictable and certain regulatory regime which delivers on published pricing determinations is an important feature of SDP's risk profile which has pricing implications in private debt markets where SDP procures its debt finance.

We also note that SDP had no control over the deferral of the 2022 Determination. We supported the deferral of the Determination to allow time for the GSWS and SDP's new Network Operator's Licence to be finalised, but we did not contribute to any delay in this process. Indeed, we have done as much as possible to support the timely development and completion of the GSWS, including proactive engagement with Sydney Water and DPE.

For the above reasons, we consider a revenue adjustment for the impact of the deferral of the determination on SDP's 2022-23 prices would not be in the long-term interests of customers.

However, if IPART were to apply a revenue adjustment for the impact of the deferral on SDP's 2022-23 prices, then this adjustment would need to account for all of SDP's building block cost allowances and be symmetric in adjusting for cost increases as well as cost decreases relative to the allowances implied in SDP's 2022-23 prices under the 2017 Determination. There would be no justification for adjusting for only one building block cost element (i.e., the WACC) or for only adjusting for cost decreases.

Appendix 11-7 outlines our estimate of such an adjustment, comparing likely revenues for 2022-23 with costs and accounting for movements in all building block cost elements and cost increases as well as cost decreases. This further highlights the complexity and uncertainty for both SDP and customers of such an adjustment.

12. Proposed prices and customer impacts

Key messages

- Our proposed prices reflect our forecast expenditure and other key inputs used in the 'building block' model to set the revenues required to provide our services, as well as proposed price structures.
- Whilst we largely support the existing charging structure, we have identified scope to deliver some changes that will make the charges simpler and more transparent — primarily relating to defining the Plant service charges for each mode (rather than presenting them as 'incremental charges') and incorporating the membrane service charge into these Plant service charges.
- Our pricing proposal would enable SDP to provide an enhanced service while providing stable customer bills from 1 July 2023 (excluding inflation). There are then modest increases in our proposed charges over the remainder of the 2023-27 regulatory period.
- Our proposed prices are to be adjusted through the 2023-27 regulatory period to pass through movements in electricity network charges and the proposed cost of debt true-up.

Having determined the efficient costs of providing our services, an issue remains on how the structure of water usage charges should be designed to generate the revenue required to recover these costs. In addition to recovering our efficient costs, the structure of water usage charges can influence decisions made both by SDP and customers. The structure of our prices has important implications for the optimal allocation of risk and the incentives to optimise our role in water security and supply.

12.1. Pricing structures

12.1.1. Background

In the 2017 Determination, IPART simplified SDP's modes of operation into three categories for pricing purposes:

- Plant Operation Mode
- Water Security (Shutdown) Mode
- Restart Mode

The triggers for operation and shutdown were specified in SDP's previous Network Operator's Licence.

On this basis, IPART set the following charges:

- **Base service charge** ($ per day) reflecting SDP's fixed costs for the Plant when in Water Security (Shutdown) Mode. On an annual basis, this is equivalent to the NRR in Water Security (Shutdown) Mode.
- **Incremental service charge** ($ per day) reflecting SDP's additional fixed costs when in Plant Operation Mode. On an annual basis, this is equivalent to the NRR in Plant Operation Mode (with all variable costs removed) less the NRR in Water Security (Shutdown) Mode.
- **Water usage charge** ($ per ML) for supplying non-rainfall dependent drinking water. This charge reflects SDP's efficient variable operating costs when the Plant is operating.
- **Pipeline service charge** ($ per day) reflecting SDP's fixed costs for the Pipeline, which are the same in Water Security (Shutdown) and Plant Operation modes. On an annual basis, this is equivalent to the NRR for the Pipeline.
- **Transition to restart charge** ($ per event) reflecting the efficient fixed one-off operating costs incurred when the Plant moves from Water Security (Shutdown) into Plant Operation Mode
- **Transition to shutdown charge** ($ per event) reflecting the efficient fixed one-off operating costs incurred when the Plant moves from Plant Operation Mode to Water Security (Shutdown).

In the 2017 Determination, IPART capitalised the costs of a full membrane replacement on first restart of the Plant into a separate membrane RAB. The cost of this membrane replacement was recovered through a separate **membrane service charge** ($ per day).

12.1.2. Assessment

In proposing price structures for the 2023-27 regulatory period, we have had regard to the Terms of Reference which require IPART to set prices for declared monopoly services to ensure SDP:

- Can recover the efficient costs of its water security and water supply services (providing both the supply of non-rainfall dependent drinking water and the making available of the desalination plant to supply non-rainfall dependent drinking water),
- Is indifferent as to whether or not SDP supplies drinking water.

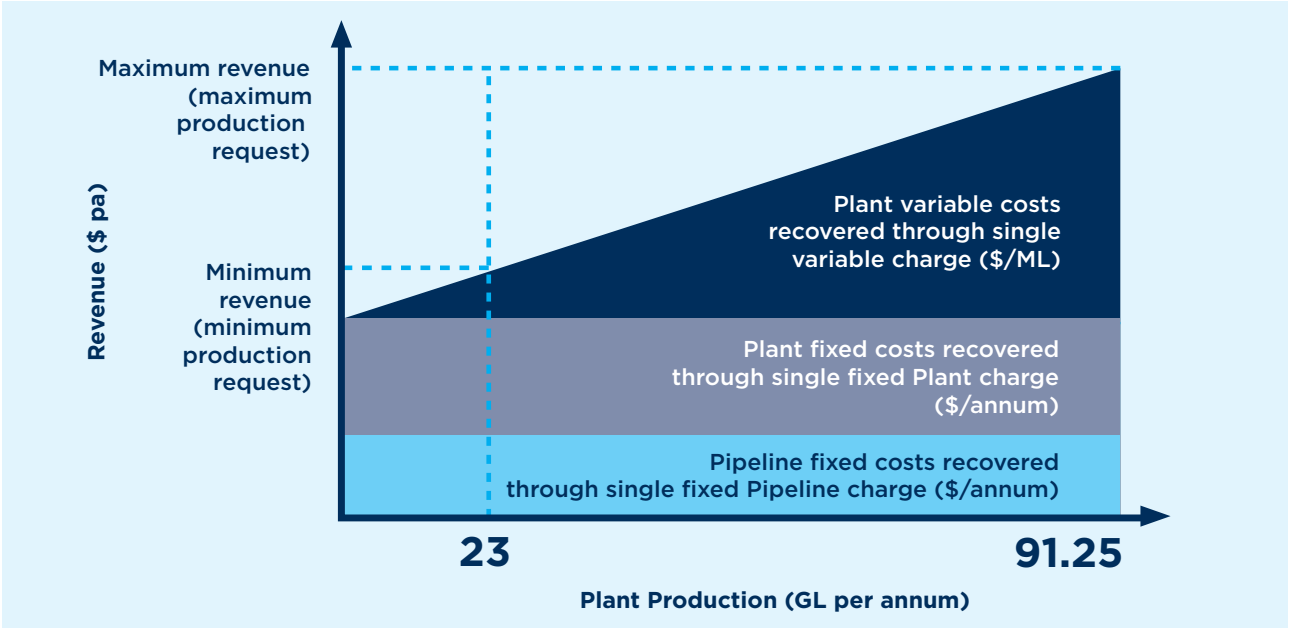
In addition, we consider that our price structures should:

- Drive economic efficiency — prices should be cost-reflective and enable Sydney Water to make efficient production request decisions and to provide incentives to us to operate in a manner consistent with optimising water security.
- Be simple and transparent — so that Sydney Water understands our prices and can respond to price signals.

In section 6.3 we outlined our proposal to maintain a single regulated Operational Mode, which will be the 'default mode' under SDP's Network Operator's Licence that applies when the Plant is available to produce water or is requested by Sydney Water to produce water (irrespective of the amount).

As shown in **Figure 12.1 Plant and Pipeline fixed and variable costs in meeting the defined level of service under SDP's Operating Rule,** responding to Sydney Water's production requests under the Network Operator's Licence involves both fixed and variable costs.

Figure 12.1 *Plant and Pipeline fixed and variable costs in meeting the defined level of service under SDP's Operating Rule*



Note: Revenue is not to scale and illustrative only

Source: Sydney Desalination Plant

In our view, these costs can be translated into simple yet cost reflective fixed and variable costs to align with the price structures in the 2017 Determination and the Terms of Reference with:

- Fixed costs — those costs that do not vary with output such as the return on, and of, capital, tax, fixed O&M costs and fixed energy costs — being recovered through recurrent fixed charges ($ per day or $ per year) or one-off fixed charges ($ per event);
- Variable costs — those costs that "vary with output"[168] such as variable energy and variable O&M — being recovered through a single variable charge ($ per ML).

As per the Terms of Reference, these price structures "should encourage SDP to be financially indifferent as to whether or not it supplies water."[169] This price structure is simple, transparent and common across a number of utilities that IPART regulates including those with similar cost structures such as the WaterNSW's Broken Hill Pipeline where, in the context of minimum supply arrangements, all variable costs associated with transporting water to Broken Hill are recovered through a single variable usage charge.[170]

168 SDP ToR, pricing principle #7.

169 SDP ToR, pricing principle #4.

170 IPART noted "This meant we set access charges to recover efficient fixed costs and usage charges to recover efficient variable costs." IPART, Murray River to Broken Hill Pipeline: Final Report, May 2019, p84.

Reflecting on the experience over the 2017-23 regulatory period, including SDP's changing role in Sydney's water supply, the 2023-27 regulatory period would benefit from:

- Clearly specifying a single fixed Plant Service Charge for Operational Mode (rather than establishing 'base' and 'incremental' charges) to provide greater transparency.
- Incorporating the current membrane service charge (reflecting the remaining capitalised costs of the full membrane replacement) into the Plant service charges for Operational Mode.
- Incorporate the cost of the ongoing membrane replacement program in this Plant service charges.

As shown in **Table 12.1**, the proposed price structures involve a:

- Single Pipeline service charge ($ per day) that is mode independent, to recover the fixed costs of the Pipeline.
- Single Plant service charge ($ per day) for Operational Mode that always applies when the Plant remains in Operational Mode to recover the fixed costs of the Plant in this 'default' mode. This incorporates the current membrane service charge (reflecting the remaining capitalised costs of the full membrane replacement) and the cost of the ongoing membrane replacement program in the Plant service charges.
- Single water usage charge ($ per ML) to recover the variable costs incurred in supplying water during Operational Mode[171], and removes the current 'nil price' in the 2017 Determination for water supplied up to 10% above the APR or any water supplied as a result of responding to another request by Sydney Water. SDP proposed a single variable usage charge even though there are minor increases in variable costs as production decreases given the value of simplicity – a key pricing principle. This is consistent with the 2017 Determination and IPART's regulatory precedence where only material differences in costs are addressed through multiple usage charges (i.e., different usage charges applying in different situations). [172]
- As set out in Box 14, this involves retaining IPART's existing cost sharing arrangements.

Table 12.1: *Summary of proposed price structures*

Proposed mode	Costs incurred in this mode, or to move into this mode	Charges required to cover the costs of this mode
Operational Mode	Fixed operating costs involved in ensuring the Plant can respond to Sydney Water production requests Variable operating costs (incl. chemicals + energy) incl. variable costs incurred to produce the minimum baseload volume (estimated to be 23 GL/pa)	Operational Mode Plant Service Charge ($ per day) Water usage charge ($ per ML) Pipeline Service charge ($ per day)
Operation Mode (outside of defined level of service)	Increment (or decrement) fixed and operating costs depending on the precise services requested by Sydney Water	Charges to be negotiated between SDP and Sydney Water
Shutdown	Increment (or decrement) fixed and operating costs savings depending on the precise services requested by the Sydney Water	Charges to be negotiated between SDP and Sydney Water

171 This includes the variable operating costs (incl. chemicals + energy) incurred to produce the minimum baseload volume each year (estimated to be 23 GL/pa)

172 For example, IPART's Murray River to Broken Hill Pipeline 2019 Determination and 2022 Draft Determination set a single variable usage charge for all levels of pumping. Conversely where there are material differences in the cost of supply IPART has set different usage charges, say Sydney Water's or Hunter Water's supply drought period where there are material changes in the cost of supply.

Box 14: IPART's cost-sharing arrangements

- In the 2017 Determination IPART set prices in and outside of drought according to its cost sharing rules which drew on impactor pays and beneficiary pays principles used by regulators to establish funding and pricing arrangements, particularly in the context of shared costs.
- Under IPART's cost sharing rules those customers who cause the need for the desalination plant to exist always pay the base (and pipeline) service charge (impactors), while those customers who directly benefit from the plant's operation always pay the usage charges (beneficiaries) and those customers who call the plant into operation (or require it to stop operating) pay the transition and incremental service charges.
- Currently, SDP has only one customer (Sydney Water), and it is highly unlikely SDP will supply a third-party customer in the foreseeable future given SDP's Network Operator's Licence and the need to flexibly respond to meet Sydney Water's needs in or outside of drought. This means Sydney Water would remain both the impactor and beneficiary in almost all circumstances and would in practical terms be the only party 'sharing' these costs with SDP's proposed charges levied on Sydney Water designed to recover the efficient costs of providing SDP's water security and supply services.
- For this reason, while we have proposed to maintain the current cost sharing arrangements IPART could consider simplifying these arrangements given:
  - Sydney Water will be the only customer over the 2023-27 regulatory period
  - SDP has proposed a simplification of the proposed charges (relative to the 2017 Determination).

In our view, the same principles apply when adjusting these charges during the 2023-27 regulatory period for movements in material costs that are uncertain and uncontrollable. That is, movements in the specified fixed costs, such as fixed electricity network charges, are incorporated into fixed Plant service charge, and movements in specified variable costs are incorporated into the variable Plant water usage charge as per the 2017 Determination. For example, a key element in this proposal is to introduce annual adjustments for the cost of debt true-up rather than an end-of-period adjustment. These revenue adjustments would be made to the fixed Plant service charges given these are fixed costs that do not vary with output.

Section 12.5 and Appendix 12-1 provide more information on how our prices would be adjusted during the 2023-27 regulatory period to manage movements in these costs.

12.1.3. Proposal

We propose:

37. Single Plant service charges ($ per day) be specified for Operational Mode, reflecting the efficient level of fixed costs when the Plant is available to produce water or is requested by Sydney Water to produce water (irrespective of the amount) in accordance with SDP's Network Operator's Licence. **Table 12.2.**
38. To incorporate the current membrane service charge (reflecting the remaining capitalised costs of the full membrane replacement) and the cost of the ongoing membrane replacement program in the Plant service charges.
39. To retain a single water usage charge ($ per ML) for any water supplied during Operational Mode and remove the current 'nil price' in the 2017 Determination for water supplied up to 10% above the APR or any water supplied as a result of responding to another request by Sydney Water.
40. To retain a pipeline service charge ($ per day) that is mode independent.
41. To remove some previously regulated charges for services supplied under an alternative level of service requested by Sydney Water which are better established through negotiated agreements (see section 6.1). This includes maintaining the current cost sharing arrangements but allowing for SDP and Sydney Water to agree prices for these services, subject to these agreements complying with IPART approved pricing principles.

12.2 Proposed prices — Operational Mode

We propose:

42. To adopt the regulated prices for the Plant and Pipeline in Operational Mode as set out in **Table 12.2**.

Table 12.2: *Proposed prices for the Plant and Pipeline in Operational Mode for the 2023-27 regulatory period ($2023-24*

	2023-24	2024-25	2025-26	2026-27
Plant service charge ($/day)	418,304	427,331	446,724	445,726
Pipeline service charge ($/day)	99,324	99,426	99,346	99,183
Water usage charge ($/ML)	798	800	807	806

Source: Sydney Desalination Plant

12.3 Proposed application of prices

This section summarises how our proposed prices would apply over the 2023-27 regulatory period, and their interaction with other elements of the proposed incentive and risk management framework.

The following summarises the application of prices and mode specific mechanisms to apply in Operational Mode over the 2023-27 regulatory period:

- **Commencement of period:** The default period from 1 July 2023 in which the Plant produces or is requested by Sydney Water to produce water (irrespective of the amount) in accordance with SDP's Network Operator's Licence, the Decision Framework and WSA (up to 91.25GL per year) consistent with the defined level of service.
- **Charges that apply**:
  - Plant Service Charge ($ per day)
  - Water usage charge ($ per ML)
  - Pipeline service charge ($ per day)
- **Mode-specific incentive and risk management mechanisms**:
  - SLIS applies to APR > 23GL per year
  - EAM applies to all surplus volumes
  - ECM applies.
- **End-of-period**: Default period in accordance with SDP's Network Operator's Licence, the Decision Framework and WSA.

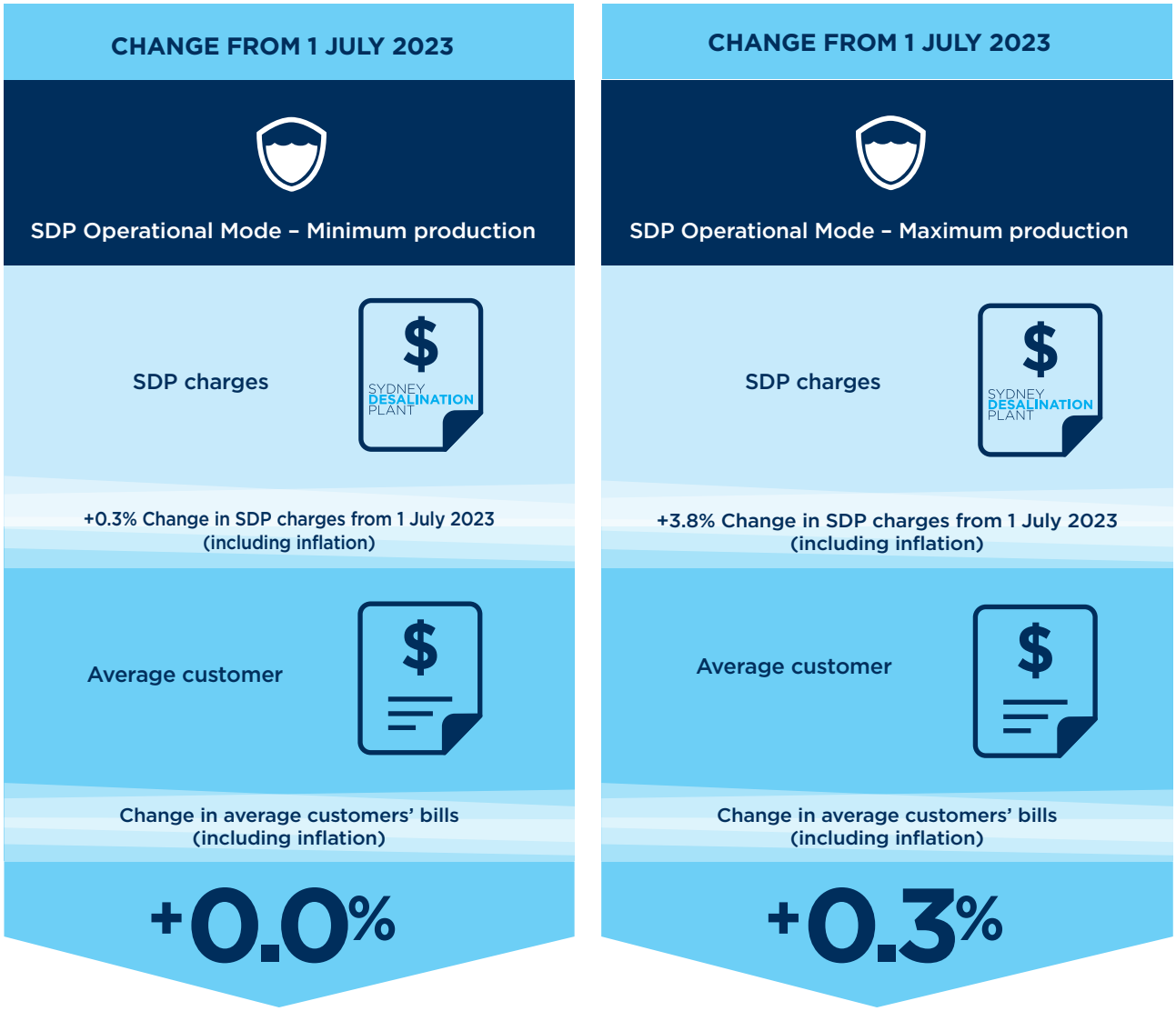
12.4 Customer impacts of proposed prices

Our proposed prices would involve minimal change in customer bills levied by Sydney Water on 1 July 2023 of:

- +0.0% or $0.06 per quarter on customers' bills (including inflation), in Operational Mode (Minimum Production – 23GL per year),
- +0.3% or $1.06 per quarter on customers' bills (including inflation), in Operational Mode (Maximum Production – 91.25GL per year).

Figure 12.2 outlines the indicative impacts on typical customers of our proposed charges in Operational Mode (Minimum Production). These have been calculated relative to the revenue requirements for the 2023-27 regulatory period, on a cost per customer basis.

Figure 12.2: *Indicative customer impacts of our 2022 Submission (including inflation)*



Source: Sydney Desalination Plant

12.5 Adjusting our prices over the 2023-27 regulatory period

To ensure prices reflect the efficient cost of providing services over the 2023-27 regulatory period we are proposing our proposed prices be adjusted through the 2023-27 regulatory period to:

- Enable the continued pass through of electricity network charges (see section 7.4)
- Enable the pass through of other uncontrollable energy costs (see section 7.5Risk management mechanisms for subordinate GGRP energy costs, land tax, council rates and insurance
- Enable the annual pass through of movements in the cost of debt (see section 11.1)

Appendix 12-1 provides more information on how our prices would be adjusted during the 2023-27 regulatory period to manage these uncertainties.

13. Financeability

Key Messages

- SDP considers that any test to assess the financeability of a benchmark efficient business in SDP's circumstances should:
  - Recognise that such a business would raise nominal rather than real (i.e., inflation-linked debt), so should be provided with sufficient cash flows in each regulatory period to service those nominal debt obligations;
  - Allow for the possibility of financeability concerns arising if IPART inadvertently sets operating expenditure allowances (or allowances for other building block components) too low; and
  - Consider Debt Service Coverage Ratio (DSCR), recognising that a financeable benchmark efficient business operating under a limited term concession must have sufficient cash flow to make interest payments and repay the principal of its debt in full within the term of that concession.
- SDP has made a number of key proposals in relation to the application of a backward-looking revenue adjustment for the 2023-27 regulatory period, annual adjustments to prices to reflect updates to the cost of debt allowance, operating expenditure and asset lives. SDP submits that IPART should adopt all of those proposals to ensure that a benchmark business in SDP's circumstances remains financeable over the regulatory period.
- The benchmark business would not be financeable over the 2023-27 regulatory period if none of SDP's proposals were accepted by IPART.

This section provides an overview of the analysis we have undertaken to assess the overall financeability of SDP's revenue proposal, the regulatory factors that could result in poor financeability outcomes, and our recommendations to IPART on factors to consider in its financeability assessment.

13.1. Role of financeability tests in IPART's regulatory framework

IPART explains that the purpose of its financeability test is to check whether its pricing decisions are likely to give rise to a financeability concern and to identify the reasons for any concern.[173]

IPART's framework involves the application of two separate financeability tests:

- The benchmark test is designed to assess whether a benchmark efficient business — which incurs the costs that IPART deems to be efficient, adopts the benchmark level of gearing, and raises debt at the benchmark cost of debt assumed by IPART — would be able to raise finance and maintain a set of credit metrics consistent with a BBB (Standard and Poor's) rating or Baa2 (Moody's) under IPART's pricing decision. The role of the benchmark test is to determine if regulatory allowances for a given regulatory period have been set below the level that would be required in order for "an efficient investment grade rated business to raise finance and remain financeable during the regulatory period."[174] IPART explains that the benchmark test is intended to "identify any estimation and cash flow impacts arising from our building block approach."[175]
- The actual test is designed to assess whether the actual business — with its actual gearing and cost of debt — would be able to maintain a set of credit metrics consistent with a BBB rating under IPART's pricing decision (i.e., whether the actual business would be financeable, with a BBB rating, during the regulatory period).

The benchmark test is an important check on the internal consistency of regulatory decisions by ensuring that the revenue requirements over a regulatory period would be sufficient to ensure the regulated business is able to maintain the benchmark credit rating used to set the allowances in the first place. IPART has explained that if the benchmark test showed the business faced a financeability concern it would reassess its pricing decisions and adjust its regulatory settings. Because the benchmark test is a particularly important safeguard against inadvertent regulatory errors that involve setting allowances too low, and which would undermine the financeability of a benchmark efficient business over the regulatory period, SDP has focussed its analysis on the outcomes of the benchmark test.

13.2 SDP has implemented three modifications to IPART's benchmark test

In its final decision on its 2018 review of its financeability tests, IPART noted that it would be open to considering all the issues raised by businesses during a price review, including modifications to its financeability tests.[176]

SDP engaged debt advisory experts at a major professional services consulting firm (the advisers) to:

- provide on opinion whether IPART's benchmark test is suitable for the purpose of assessing properly the financeability of a benchmark business in SDP's circumstances;
- advise on any improvements that should be made to IPART's benchmark test to make it more fit-for-purpose; and
- assess the financeability of a benchmark business in SDP's circumstances if:
  - all of SDP's regulatory proposals were adopted; and
  - if some or none of SDP's key proposals were not accepted by IPART.

The expert report setting out this advice is included in Appendix 13-1 of this submission.

173 IPART, Review of our financeability test, Final Report, November 2018, p10.
174 IPART, Review of our financeability test, Final Report, November 2018, p2.
175 IPART, Review of our financeability test, Final Report, November 2018, p2.
176 IPART, Review of our financeability test, Final Report, November 2018, p48.

The advisers concluded that there are three key shortcomings in IPART's benchmark test that make it unsuitable for assessing the financeability of a benchmark business in SDP's circumstances:

- Firstly, IPART's benchmark test assumes that the benchmark efficient business raises real (i.e., inflation-linked and capital indexed) rather than nominal debt, and therefore faces real rather than nominal interest cost obligations. The advisers noted that it would be more appropriate for the benchmark test to assume that the benchmark efficient business faces nominal interest cost obligations. Such an approach would be more appropriate for assessing the financeability of Australian corporates without State support, because such businesses raise nominal debt exclusively. As the advisers note, it is extremely rare for Australian corporates to issue inflation-linked debt. For instance, the advisers have identified only one inflation-linked bond issued by any Australian corporate since 2012.
- Secondly, IPART's benchmark test assumes implicitly that the efficient costs (i.e., operating and capital expenditures) the benchmark business will incur over the regulatory period match the cost allowances provided by IPART in its pricing decision. Such an approach would fail to identify any financeability concerns that could arise if IPART were to inadvertently underestimate efficient costs. IPART cannot determine the efficient expenditures of a benchmark business with complete certainty, so must estimate efficient costs with imperfect and limited information. Such an exercise is fraught with uncertainty and scope for error. The benchmark test should recognise this uncertainty rather than assume IPART is able to always set expenditure allowances perfectly in line with the true level of efficient costs. The advisers concluded that the benchmark test should allow for the possibility that the cost allowances determined by IPART could be set lower than the benchmark business's actual, efficient costs — to understand the financeability impacts of IPART misestimating efficient costs..
- Thirdly, IPART's benchmark test excludes the Debt Service Coverage Ratio (DSCR), which is an important financial ratio used by lenders to assess the financeability of firms operating under a limited term concession, and firms with amortising debt profiles. These circumstances apply to SDP, but not SOC water businesses regulated by IPART. The DSCR is used to assess the ability of a firm under such a concession to not only make interest payments on debt, but to also repay principal, within the term of the concession. The advisers recommended that the benchmark test incorporate the use of a benchmark DSCR in order to assess properly the financeability of a benchmark business in SDP's circumstances. We note the DSCR is a standard credit metric used by rating agencies, when rating firms subject to a limited concession life like SDP. [redacted]

SDP raised all these concerns during IPART's 2018 review of its financeability test. Appendix 13-2 elaborates on each of these concerns below. Further detail is available in our submission to IPART's 2018 review of its financeability test.[177]

13.3 Benchmark financeability assessment

The advisers have implemented each of these improvements to the benchmark test applied to assess SDP's financeability under this revenue proposal. Confidential Appendix 13-2 explains how the advisers implemented each of these improvements, and presents the key findings from the modified benchmark test.

The advisers find that if IPART accepts SDP's pricing proposal, then a benchmark efficient entity in SDP's circumstances would (on average over the 2023-27 regulatory period) likely pass the benchmark test and be able to maintain the benchmark BBB rating used to set the WACC allowance for the period. However, the advisers conclude that if IPART rejects a number of key proposals put forward by SDP, then the resulting key financial metrics of a benchmark efficient business in SDP's circumstances would not, over the 2023-27 regulatory period, support the BBB benchmark credit rating used by IPART to set the revenue allowances for that period.

177 SDP, Review of financeability tests – Response to Draft Report, 14 September 2018.

13.4 Maintaining SDP's financeability is critical to promoting the long-term interests of customers

13.4.1. Background

SDP has made a number of key proposals, including that IPART should:

- not make a backward-looking revenue adjustment as a consequence of the one-year extension to the current regulatory period;
- make annual adjustments to prices to reflect updates to the cost of debt allowance over the 2023-27 regulatory period, rather than apply an end-of-period cost of debt true-up;
- accept SDP's operating expenditure proposal — including the O&M, corporate cost and insurance costs; and
- shorten the assumed asset life of SDP's Pipeline infrastructure from 120 years to 100 years, shorten the assumed average asset life of membranes from 8 years to 4.5 years consistent with SDP's proposed efficient membrane replacement strategy, and reduce the life of short-lived periodic maintenance capital expenditure from 30 years to 8 years.

13.4.2. Assessment

The financeability analysis presented in confidential Appendix 13-2 demonstrates that a benchmark efficient entity in SDP's circumstances would (on average) be financeable over the forthcoming regulatory period if all these proposals are adopted by IPART. If one or more of these proposals are not adopted, the benchmark business would face a deterioration in financeability, and could be non-financeable — for instance, if none of the proposals above are accepted by IPART.

When IPART reviewed its financeability tests in 2018, it explained that its key objectives were:[178]

> *1. To ensure the financeability test effectively assesses the impact of our pricing decisions on the short-term financial sustainability of the regulated business.*
>
> *2. That our process for identifying and addressing a potential financeability concern supports efficient and prudent investment decisions by regulated businesses, and supports the long-term interests of consumers.*

IPART was clear that ensuring the financeability of regulated businesses is important to ensuring the businesses are able to attract the capital they require in order to make prudent and efficient investments that support the long-term interests of consumers. Adoption of the key SDP proposals above would, as demonstrated by the financeability analysis presented in this section, ensure the financeability of a benchmark efficient business in SDP's circumstances.

13.4.3. SDP proposal

We propose:

43. IPART should accept all of SDP's proposals to ensure prices reflect those that a benchmark business in SDP's circumstances remains financeable consistent with IPART's benchmark efficiency credit rating assumption over the regulatory period.

178 IPART, Review of our financeability test, Final Report, November 2018, p11.

Glossary

Term	Definition
2017 Determination	IPART determination on the maximum prices SDP may charge from 1 July 2017 to 30 June 2022.
2023 Determination	IPART determination on the maximum prices SDP may charge from 1 July 2023 to 30 June 2027.
Abatement Factor	Factor applied to SDP's charges to reflect its performance under the Abatement Mechanism for the 2017-2023 regulatory period.
Abatement Mechanism	Applies to the 2017-23 regulatory period. A pricing mechanism intended to create a financial incentive for SDP to maximise its production of drinking water when required under the 2017 Operating Rules.
ACT Government	Australian Capital Territory Government.
Annual Production Request	A request made by Sydney Water by 1 May each year for the supply of water from the SDP over the following financial year, of the type referred to in section 4.2.2 of the Decision Framework, and includes a six-monthly modification of such a request and any other request agreed between SDP and Sydney Water from time to time, provided that the modification: complies with the Decision Framework; and is notified by the Sydney Water to IPART and SDP, in writing, before it takes effect.
Annual Production (period)	This refers to the applicable financial year when the Plant is in Operational Mode and is responding to an APR requested by Sydney Water to produce a defined annual volume of water in accordance with SDP's Network Operator's Licence. It includes a Minimum Production (period) and Flexible Production (period). Regulated charges for Operational Mode apply during this period, with a nil usage price for supply in excess of 110% of APR as per SDP's Network Operator's Licence. The SLIS applies to annual volumes during this period for APRs greater than the estimated minimum baseload production of 23GL per year.
Average Membrane Lifetime (AML)	The mean length of time since installation of first and second pass reverse osmosis membranes respectively to maintain operational requirements (potable water quality, required output volume and differential pressure) before replacement is required.
Flexible Production (period)	This refers to a period when the Plant is in Operational Mode and is requested by Sydney Water to produce more than 23GL per year but less than maximum production. Regulated charges for Operational Mode apply during this period, with a nil usage price for supply in excess of 110% of APR. The SLIS applies to annual volumes during this period.

Base Service Charge	Daily fixed charge included in the 2017 Determination to reflect the costs of making the Plant available in water security (shutdown) mode. SDP has not proposed a Base Service Charge for the 2023-27 regulatory period. Rather all fixed Plant costs in Operational Mode would be recovered through the fixed Plant Service Charge
Building Block	IPART's standard methodology to establish notional revenue requirement.
Capacity of the Plant and Pipeline	The capacity of the existing Plant is 250ML per day measured as a rolling average over 365 days. The capacity of the Pipeline is an annual daily average of up to 500ML per day.
Capital Asset Pricing Model	A model used to determine a theoretically appropriate required rate of return on an asset, to make decisions about adding assets to a well-diversified portfolio. The model describes the relationship between the expected return and risk of investing in a security. It shows that the expected return on a security is equal to the risk-free return plus a risk premium, which is based on the beta of that security.
Capital Expenditure	Money spent by a business or organization on acquiring or maintaining fixed assets, such as land, buildings, and equipment. In SDP's case this includes relevant expenditure on the Plant, DWPS and Pipeline and associated assets, including Periodic Maintenance, Specific Capital Projects and RO Membrane Replacement.
Capital Wind Farm Project Deed	The Project Deed dated 28 July 2009 between Infigen Energy Limited (now part of Iberdrola Australia) and SDP, as amended from time to time.
Consumer Price Index	The Australian All Groups Consumer Price Index number (Weighted average of eight capital cities) published by the Australian Bureau of Statistics.
Cost of Debt Allowance	The minimum rate of return required by debt investors in a benchmark efficient regulated business.
Cost Pass-Through	A change in price of the products or services supplied following a change in the efficient costs incurred in producing them following a defined event.
Current Regulatory Period	2017-2023 regulatory period.
Customers	Residential and business water customers in Greater Sydney.
Debt Service Coverage Ratio	Ratio of operating income available to debt servicing for interest, principal and lease payments.
Decision Framework (Sydney Water)	The 'Decision Framework' document prepared by Sydney Water and endorsed by the Minister that sets out the framework for when Sydney Water will request water from SDP so as to align with the 2022 Greater Sydney Water Strategy.
Distributed Energy Resources	Electrical generation and storage performed by a variety of small, grid-connected or distribution system-connected devices.

Draft Water Regulatory Framework	IPART, Draft Water Regulatory Framework: Delivering Customer Value – Technical Paper, May 2022.
Drinking Water Pump Station	Transfers water from the Plant's drinking water tank via the Pipeline into Sydney Water's distribution network at Erskineville.
Efficiency Carryover Mechanism	Financial incentive for service providers to pursue efficiency improvements in operating expenditure.
Electricity Supply Agreement	The agreement between SDP and Infigen Energy Markets Pty Limited (now part of Iberdola Australia) dated 28 July 2008 for the supply of electricity to the Plant, as amended from time to time.
Emergency Response (Period)	This refers to a period when the Plant is in Operational Mode and SDP agrees to a request from Sydney Water to produce a specified volume of water at short notice in accordance with SDP's Network Operator's Licence, the Decision Framework and WSA. SDP must use best endeavours to comply with this request. Regulated charges for Operational Mode apply during this period.
Emergency Response Notice	This refers to a notice issued by Sydney Water and agreed to by SDP to produce a specified volume of water in a specific timeframe (likely at short notice) in accordance with SDP's Network Operator's Licence, the Decision Framework and WSA. The volume of water that is produced in accordance with an ERN is not included in the Annual Production Request cap.
Energy Adjustment Mechanism	As per the Terms of Reference, the energy adjustment mechanism is to provide for the carryover and pass-through to SDP's customers of gains or losses, outside a core band, associated with the sale of surplus electricity and RECs.
Energy Saving Scheme	NSW Energy Saving Scheme; financial incentives to install energy efficient equipment and appliances.
Expansion Determination	Part of the expansion planning process; IPART's determination of prices for the expansion of the Plant.
Financeability	The capacity of a business to finance its activities – including its day-to-day operations and its capital investments to renew and expand the infrastructure required for these activities.
Fixed Network Charge	Fixed component of cost pass through from electricity costs. Based on regulated network prices and actual maximum demand.
Full-Time Equivalents	Measures how many full-time employees or part-time employees add up to full-time employees a company employs.
Funds from Operations	The actual amount of cash flow generated from a company's business operations.
Generator compensation charges	Compensation and contract payments recovered from Market Customers (mainly electricity retailers) related to AEMO administered pricing, spot market suspension and market interventions under the National Electricity Rules.

Good Industry Practice	The exercise of that degree of skill, diligence, prudence and foresight that reasonably would be expected from a prudent desalination plant operator acting in accordance with SDP's Network Operator's Licence, the Decision Framework and WSA good industry practice and applicable Australian and internationally recognised standards having regard to the Capacity of the Water Infrastructure, its duty, age and technological status.
GGRP Contracts	The Electricity Supply Agreement, REC Supply Agreement, and the Capital Wind Farm Project Deed..
GGRP costs	All charges SDP is required to pay Iberdrola Australia pursuant to the GGRP Contracts.
Greater Sydney Water Strategy	The NSW Department of Planning and Environment's strategy to deliver sustainable and resilient water services to Greater Sydney for the next 20 to 40 years. The Greater Sydney Water Strategy, released in August 2022, replaces the Metropolitan Water Plan.
Greenhouse Gas Reduction Plan	A strategic plan for the management, minimisation and off-set of greenhouse gas generation associated with electricity supply for the Plant required under s75J of the EP&A Act 1979 (NSW).
Guidelines for Water Agency Pricing Submissions (IPART)	IPART, Guidelines for Water Agency Pricing Submissions, November 2020.
Incremental Service Charge	Daily fixed charges in 2017 Determination in Plant Operating Mode over and above the Base Service Charge in water security shutdown. SDP has not proposed an Incremental Service Charge for the 2023-27 regulatory period. Rather all fixed Plant costs in Operational Mode would be recovered through the fixed Plant Service Charge.
Industrial Special Risks	Business insurance that provides coverage for high-value physical assets and business interruption.
Interest Coverage Ratio	Debt and profitability ratio used to determine how easily a company can pay interest on its outstanding debt.
Intermediate Permeate Tanks	Used to store and buffer the reverse osmosis First Pass rear permeate before feeding it into the RO Second Pass Process. IPTs are made of glass fused to steel panels with silo bolts.
Large-scale generation certificate	A large-scale generation certificate created pursuant to the Renewable Energy (Electricity) Act 2000 (Cth). One LGC can be created per megawatt hour (MWh) of eligible electricity generated by a power station. Registered LGCs can be sold or transferred to entities with liabilities under the Renewable Energy Target or other companies looking to voluntarily surrender LGCs.
Long-Term Shutdown	This refers to a situation where Sydney Water requests the Plant to be shut down for an extended period in which it is not required to respond to production requests and produce the "minimum baseload volume each year". Charges to reflect the additional costs or cost savings would be subject to negotiation under a framework of 'deferred regulation'.

Membrane Service Charge	Set by IPART in the 2017 Determination as a separate daily fixed charge to recover capital costs of membrane replacement. This has been incorporated into the Plant Service Charge for the 2023-27 regulatory period.
Metropolitan Water Plan	Originally developed in 2004 and updated in 2006 and 2017. Has subsequently been replaced by the GSWS.
Monthly and weekly phasing	Water produced in response to an APR will be, where possible, delivered progressively over the year to meet the needs of Sydney Water in accordance with SDP's Network Operator's Licence, the Decision Framework and WSA. The timing of this water delivery over the year or over a shorter period is termed 'phasing'.
Minimum Production (period)	This refers to a period when the Plant is in Operational Mode and is requested by Sydney Water to minimise annual production, subject to remaining ready to respond to production requests in accordance with SDP's Network Operator's Licence, the Decision Framework and WSA. This is equivalent to an APR of 23GL per year, reflecting the expected minimum baseload volumes. Regulated charges for Operational Mode apply during this period. The SLIS does not apply to annual volumes produced in response to the APR during this period.
Negotiated Agreements	Covering services, incremental costs (or cost savings) and prices within a clear set of approved pricing principles for water supplied in response to an alternative level of service requested by Sydney Water.
Network Operator's Licence	The draft Network Operator's Licence for SDP, recommended by IPART on 18 August 2022 for approval by the Minister for Lands and Water, Hospitality and Racing. The Licence is subject to final Ministerial Approval. If approved, the Licence would be expected to take effect from 1 July 2023.
Next Regulatory Period	2023-2027 regulatory period from 1 July 2023.
Operating & Maintenance (O&M) Costs	Expenditure incurred in facilitating the functioning of the Plant line with Good Industry Practice, as required under SDP's Network Operator's Licence.
Operating Expenditure	Ongoing cost for running a product, business, or system. Expenditure required by SDP for the Plant's functioning in accordance with SDP's Network Operator's Licence, the Decision Framework and WSA.
Operating Rules (New)	The operating regime reflected in SDP's Network Operator's Licence as amended in 2022 to align with the 2022 Greater Sydney Water Strategy and operationalised in the Decision Framework, Terms of Reference and WSA.
Operational Mode	This refers to the mode in which the Plant produces or is requested by Sydney Water to produce water (irrespective of the amount) in response to a production request from Sydney Water in accordance with SDP's Network Operator's Licence, the Decision Framework and WSA. Charges in this mode are subject to regulation in the IPART Determination.
Performance Factor (PF)	Service performance incentives to apply in the Service Level Incentive Scheme (SLIS) to apply in the 2023-27 regulatory period. Factor applied to SDP's Plant service charge to reflect its performance under these incentive schemes.
Periodic maintenance	Periodic Maintenance means works (including marine equipment works) exceeding a threshold value involving the upgrade, replacement or addition of spare parts or the overhaul or renewal of specific items of plant and equipment, but not the replacement of assets or addition of new assets into service. Expenditure on Periodic Maintenance is capital expenditure.

Pipeline	The pipeline system running from Lot 2 in DP 1077972 in the suburb of Kurnell up to, but not including, the connection valve at Shaft 11C on the City Tunnel at Bridge Street in Lot A in DP 365407 in the suburb of Erskineville and consisting of the following infrastructure: (a) an overland pipeline running from the drinking water pumping station at the desalination plant to Silver Beach; (b) a marine pipeline running from Silver Beach to a point 800 metres offshore from Silver Beach; (c) twin marine pipelines running from 800 metres offshore of Silver Beach to Cook Park, Kyeemagh; and (d) an overland pipeline running from Cook Park, Kyeemagh up to the connection valve at Shaft 11C on the City Tunnel at Bridge Street, Erskineville.
Pipeline Service Charge	Separate daily fixed charge for SDP's pipeline.
Plant	The Sydney Desalination Plant located at Kurnell, including the Drinking Water Pump Station.
Plant Service Charge	Single fixed charge to recover the fixed costs of operating and maintaining the Plant in in Operational Mode.
Plant Expansion	The potential future expansion of the Plant to facilitate capacity for an additional 250ML per day of production.
Process water	Water produced by SDP to maintain availability and readiness, preserve assets or processes and/or meet environmental approvals that is not used to make drinking water
Production Request	A request made by Sydney Water to SDP to produce water in accordance with SDP's Network Operator's Licence, the Decision Framework and WSA.
REC Supply Agreement	The agreement between SDP and Renewable Power Ventures Pty Ltd (now part of Iberdola Australia) dated 28 July 2008 for the supply of RECs, as amended from time to time, that enables SDP to meet its obligation that the Plant be powered by 100% renewable energy.
Project Finance Initiative	Public sector projects funded with private sector capital.
Regulatory Asset Base	An accumulation of the value of asset investments that a service provider has made in its network.
Reliability and Emergency Reserve Trader	Function conferred on the Australian Energy Market Operator to maintain power system reliability and system security using reserve contracts. The costs of RERT interventions are recovered from market customers (typically retailers) as ancillary services charges.
Renewable Energy Certificate	An REC is equivalent to one MWh of electricity generation. SDP purchases RECs in order to fulfill its obligations under the GGRP. REC is used as a general term covering both Small-Scale Technology Certificates and LGCs.
Restart	Preparation to bring the Plant back to Operational Mode from Long-Term Shutdown.
Restart Period	The period from the Restart Notice trigger until the Plant is in Operational Mode (first water).

Retail Supplier's License	The draft Retail Supplier's Licence recommended by IPART on 18 August 2022 for approval by the Minister for Lands and Water, Hospitality and Racing. The Licence is subject to final Ministerial Approval. If approved, the Licence would be expected to take effect from 1 July 2023.
Revenue Requirement	The amount of revenue that SDP can recover from the provision of regulated water supply and water security services (equal to the sum of the building block components).
Reverse Osmosis	A water purification process that uses a partially permeable membrane to remove salt and other minerals from seawater to produce drinking water.
RO Membrane Replacement	Capital expenditure on new reverse osmosis membranes to replace used membranes in the reverse osmosis system. It includes removal of used membranes and installation of new membranes.
Routine Asset Maintenance Costs	Expenditure required to maintain reliability and longevity of assets (the Plant).
SDP's Monopoly Services	SDP's declared services referred to IPART under the Terms of Reference are: (a) the supply of non-rainfall dependent water to purchasers, and (b) the making available of the desalination plant to supply non-rainfall dependent drinking water.
SDP's Water Supply Services	Services declared by the Minister under section 51 of the WIC Act.
Security of Critical Infrastructure Act 2021 (C'th) (Critical Infrastructure)	Security of Critical Infrastructure Act 2021 (C'th).
Service Level Incentive Scheme	Service performance incentives to apply in the 2023-27 regulatory period.
Storm Event	On 16 December 2015, SDP sustained significant damage from a Storm Event that occurred across Sydney.
Specific Capital Projects	Specific Capital Projects include all capital expenditure other than Periodic Maintenance, RO Membrane Replacement or Corporate Capital expenditure. It includes the replacement of existing assets with new assets (either like for like, or alternate assets to provide a similar function) and the addition of new assets including major modifications to existing assets.
Subordinate GGRP costs	These include all costs incurred under the GGRP Contracts other than the costs for energy and RECs which have a specified price in the contracts (i.e. a subset of GGRP costs). These costs are driven by market forces or decisions which are outside of SDP's control. Examples of subordinate GGRP costs include ancillary service charges, market fees, network losses, UFE charges, RERT charges and generator compensation charges.
Submission (This)	SDP's 2023-24 to 2026-27 Pricing Submission to IPART
Supplier's Licence	SDP's Retail Supplier's Licence held under the WICA.

Sydney Desalination Plant	Sydney Desalination Plant Pty Limited
Sydney Water (Corporation)	SDP's direct customer and counter-party under the WSA.
Tax Asset Base	The amount deductible for tax purposes against any taxable economic benefits that will flow to an entity when it recovers the carrying amount of the asset.
Terms of Reference	Terms of Reference for Referral of SDP to IPART under Section 52 of the Water Industry Competition Act, dated 16 June 2022.
Transition Charges	Charges in the 2017 Determination including transition to restart charge/ transition to shutdown charge ($/per event) reflecting the efficient fixed one-off operating costs incurred when the Plant transitions from Water Security (Shutdown) Mode to Operational Mode and vice versa.
Unaccounted for Energy	Residual losses of electricity in the system, and includes technical losses, commercial losses and estimation errors. AEMO is responsible for determining and publishing UFE which allocates the costs of UFE to retailers
Uncontrollable Costs	Specified costs driven by market forces or decisions which are outside of SDP's control. These include Subordinate GGPR costs, land tax and council rates, chemical costs and insurance over the 2023-27 regulatory period. This does not exclude any uncontrollable costs that might be the subject of a re-opener event.
Variable Network Charge	Variable component of cost pass through from energy costs. Based on regulated network prices and benchmark energy volumes.
Water Administration Ministerial Corporation	Statutory body representing the Crown established under the Water Management Act 2000 (WMA), administered by the Water Group in the Department of Planning, and Environment.
Water Industry Competition Act 2006 (NSW)	Water Industry Competition Act 2006 (NSW).
Water Industry Competition (General) Regulation 2008 (NSW)	Water Industry Competition (General) Regulation 2008 (NSW).
WaterNSW	WaterNSW is the organisation responsible for managing raw water supply across NSW by bringing together the Sydney Catchment Authority (SCA) and State Water Corporation (State Water) (at 1 January 2015).
Water Service Charge	Fixed daily Plant charge for making the desalination plant available (per IPART's 2017 definition). Charges will vary across modes of operation.
Water Supply Agreement	Between SDP and Sydney Water facilitates purchase of water by Sydney Water from SDP.
Water Usage Charge	For supplying non-rainfall dependent drinking water. This charge reflects SDP's efficient variable operating costs when the Plant is operating.
Weighted-Average Cost of Capital	Weighted average of debt and equity costs required for a benchmark efficient business to invest in necessary infrastructure.

Abbreviations

Term	Definition
ACCC	Australian Competition and Consumer Commission
AEMC	Australia Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AIR	Annual Information Return
AML	Average Membrane Lifetime
APR	Annual Production Request
BAU	Business as Usual
BI	Business Interruption
BOM	Bureau of Meteorology
Capex	Capital Expenditure
CAPM	Capital Asset Pricing Model
CDR	Consumer Data Right
CGS	Commonwealth Government Securities
CoD	Cost of Debt
CPI	Consumer Price Index
D&C	Design and Construct
DBCT	Dalrymple Bay Coal Terminal
DBP	Dampier to Bunbury Pipeline
DER	Distributed Energy Resources
DPE	Department of Planning and Environment
DSCR	Debt Service Coverage Ratio
DWPS	Drinking Water Pump Station
EAM	Energy Adjustment Mechanism
ECM	Efficiency Carryover Mechanism
EPL	Environment Protection Licence
ERN	Emergency Response Notice

Term	Definition
ESA	Electricity Supply Agreement
ESG	Environmental, Social and Governance
ESS	Energy Saving Scheme
FFO	Funds From Operations
FNC	Fixed Network Charge
FTEs	Full-Time Equivalents
GGRP	Greenhouse Gas Reduction Plan
GL	Gigalitre
GSWS	Greater Sydney Water Strategy
HVCN	Hunter Valley Coal Network
ICR	Interest Coverage Ratio
IPART	Independent Pricing and Regulatory Tribunal of NSW
IPT	Intermediate Permeate Tanks
ISR	Industrial Special Risks
kL	Kilolitre
kV	Kilovolt
LGC	Large-scale generation certificate
LRET	Large-Scale Renewable Energy Target
ML	Megalitre
MWh	Megawatt hour
MWP	Metropolitan Water Plan
NEM	National Electricity Market
NER	National Electricity Rules
NPV	Net Present Value
NRR	Notional Revenue Requirement
O&M	Operating and Maintenance
Opex	Operating Expenditure
PFI	Project Finance Initiative

Term	Definition
PIAC	Public Interest Advocacy Centre
PPP	Public-Private Partnership
QCA	Queensland Competition Authority
R&D	Research and Development
RAB	Regulatory Asset Base
RAM	Routine Asset Maintenance
RBA	Reserve Bank of Australia
REC	Renewable Energy Certificate
RERT	Reliability and Emergency Reserve Trader
RFR	Risk Free Rate of Return
RO	Reverse Osmosis
ROC	Retail Operating Costs
ROM	Retail Operating Margin
RSA	REC Supply Agreement
SCADA	Supervisory Control and Data Acquisition (System)
SDP	Sydney Desalination Plant Pty Limited
SIR	Special Information Return
SLIS	Service Level Incentive Scheme
SOC	State Owned Corporation
SRES	Small-Scale Renewable Energy Scheme
SWC	Sydney Water Corporation
TAB	Tax Asset Base
ToR	Terms of Reference
VNC	Variable Network Charge
WACC	Weighted-Average Cost of Capital
WAMC	Water Administration Ministerial Corporation
WICA	Water Industry Competition Act 2006 (NSW)
WSA	Water Supply Agreement

SYDNEY
DESALINATION
PLANT