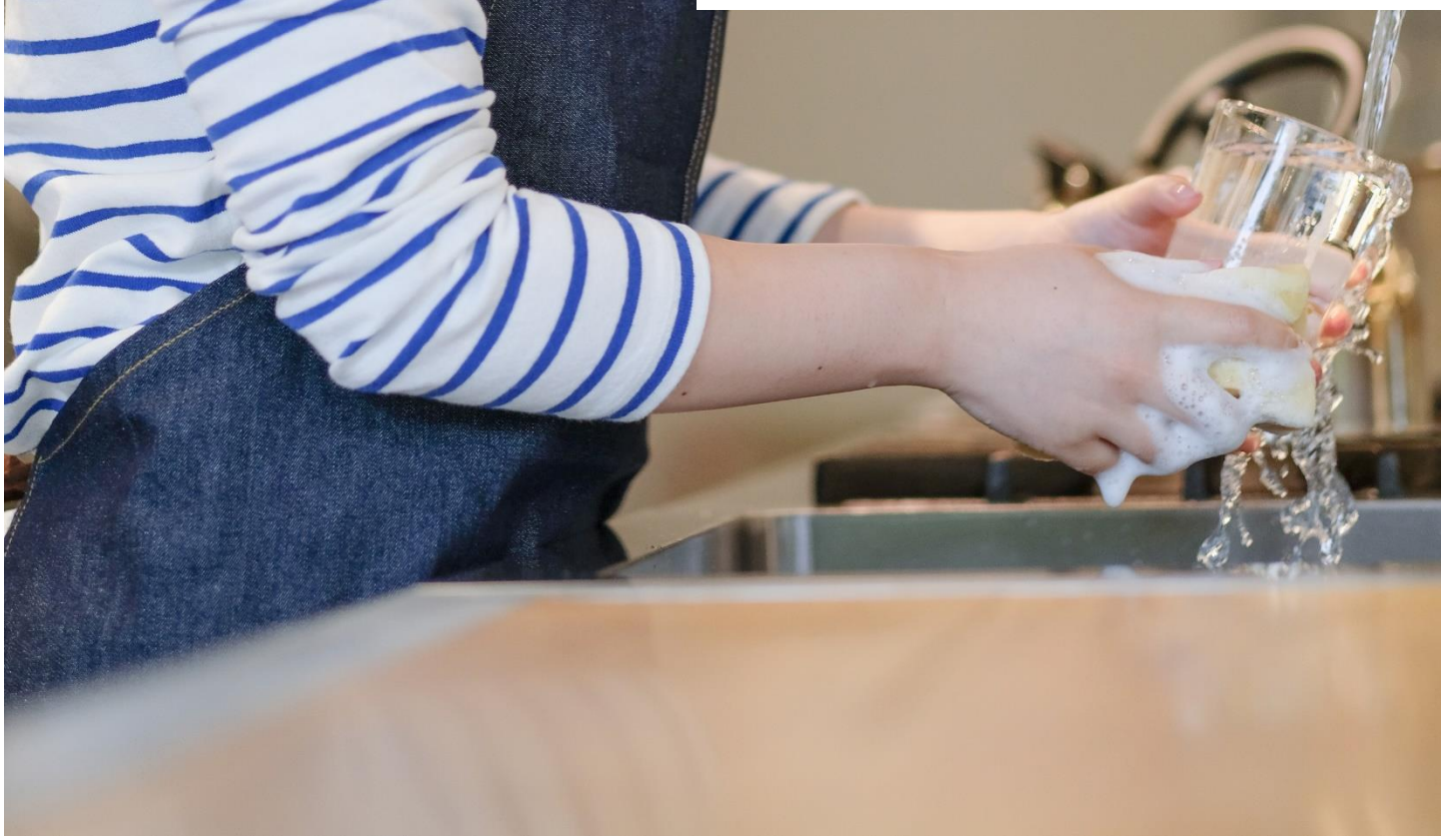
IPART Independent Pricing and Regulatory Tribunal | NSW

Review of prices for Sydney Desalination Plant Pty Ltd from 1 July 2023

Issues Paper

November 2022

Water »



Tribunal Members

The Tribunal members for this review are:

Carmel Donnelly PSM, Chair
Deborah Cope
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The team working on this review includes: Greg McLennan, Rhea Rachel and Simba Kanyongo.

Invitation for submissions

IPART invites comment on this document and encourages all interested parties to provide submissions addressing the matters discussed.

Submissions are due by Tuesday, 31 January 2023

We prefer to receive them electronically via our online submission form.

You can also send comments by mail to:
Review of prices for Sydney Desalination Plant Pty Ltd
Independent Pricing and Regulatory Tribunal
PO Box K35
Haymarket Post Shop, Sydney NSW 1240

If you require assistance to make a submission (for example, if you would like to make a verbal submission) please contact one of the staff members listed above.

Late submissions may not be accepted at the discretion of the Tribunal. Our normal practice is to make submissions publicly available on our website as soon as possible after the closing date for submissions. If you wish to view copies of submissions but do not have access to the website, you can make alternative arrangements by telephoning one of the staff members listed above.

We may decide not to publish a submission, for example, if we consider it contains offensive or potentially defamatory information. We generally do not publish sensitive information. If your submission contains information that you do not wish to be publicly disclosed, please let us know when you make the submission. However, it could be disclosed under the *Government Information (Public Access) Act 2009* (NSW) or the *Independent Pricing and Regulatory Tribunal Act 1992* (NSW), or where otherwise required by law.

If you would like further information on making a submission, IPART's submission policy is available on our website.

The Independent Pricing and Regulatory Tribunal

IPART's independence is underpinned by an Act of Parliament. Further information on IPART can be obtained from IPART's website.

Acknowledgment of Country

IPART acknowledges the Traditional Custodians of the lands where we work and live. We pay respect to Elders both past and present.

We recognise the unique cultural and spiritual relationship and celebrate the contributions of First Nations peoples.

Contents

1 We are reviewing prices for Sydney Desalination Plant Pty Ltd

IPART sets the maximum prices the Sydney Desalination Plant Pty Ltd (SDP) can charge its customers (primarily Sydney Water) for the supply and security of non-rainfall dependent drinking water in the Greater Sydney region.

Our most recent review for SDP was in 2017 when we set its prices to apply from 1 July 2017 to 30 June 2022 (the 2017 determination period). At this time, we carefully considered SDP's role in supplying and securing water in the region particularly during drought periods. We set costs and prices in line with this role.

We are now reviewing SDP's prices to apply from 1 July 2023 and up to the next 5 years (the 2023 determination period). We deferred this review by one year in response to the request from the former Minister for Water, Property and Housing in August 2021. This was to ensure SDP could fully consider the new operating environment and changes to its Network Operator's Licence in its pricing proposal, and that we, in turn, take them into account as part of our review.[1]

The first step of our price review is to consider SDP's 2023-27 pricing proposal submitted to IPART in September 2022. This Issues Paper sets out:

- key issues we identified from that proposal
- general approach we propose to adopt in conducting this review
- our proposed pricing methodology for this review
- significant changes to the existing methodology we propose to consider
- how you can provide input to this review and the questions we would like you to answer.

In setting SDP's prices, we will assess whether the proposal complies with the pricing principles set out in the Terms of Reference as well as matters we must consider under relevant legislation (see Appendix A). At the end of our review, we will decide on prices and price structures that will apply for the 2023 determination period. We will also make decisions on any other relevant matters.

Concurrent to our review of prices, we will also review our 2017 Methodology Paper on SDP's energy adjustment and efficiency carryover mechanisms at the same time. This is to ensure the methodology we use remains fit for purpose and is consistent with our price review. Any changes or updates we decide to make to the methodology will not affect current prices. However, SDP will be responding to the incentives created by the future 2023 Methodology Paper for the 2023 determination period.

1.1 SDP's role has changed under the region's new water strategy

Since our last review, SDP has a new operating framework,[2] which was developed in response to the Greater Sydney Water Strategy that was published in August 2022. The strategy recognises SDP's contribution to the region's water security by remaining operational both in and outside of droughts.[3] Based on this, SDP's proposal assumed it would operate flexibly and continuously to supply water to Sydney Water under a defined level of service.[4] As a result, the costs associated with providing SDP's services have now changed. Under the new operational environment, SDP proposed to incur additional costs to operate flexibly and meet Sydney Water's needs.

SDP also proposed several departures from the 2017 Determination, including:

- A change to a single mode (i.e. operational mode) for regulated pricing purposes over the 2023 determination period. This includes a single set of plant and pipeline service charges and usage charges that would be levied in this 'default' mode.
- The introduction of negotiated or unregulated agreements with Sydney Water for services outside the defined level of service.
- Several adjustments to the existing incentive and risk management mechanisms.

SDP has estimated its proposed prices represent about 8% of a typical residential customer's water and wastewater bills in 2023-24. Further, its proposed prices would result in 0.3% to 3.8% increase in the portion of the bill that relates to the SDP component. The impact varies depending on water production levels.[5] After 2023-24, SDP proposed modest price increases.[6] However, these exclude the impact of proposed cost pass-throughs and true-up mechanisms as well as movements in market rate inputs to our review (e.g. inflation and rate of return).

We will ask you questions on whether SDP's proposal presents the best balance between SDP's incentives to manage risk prudently and efficiently and the long-term interests of consumers. It is important we get the balance right to ensure SDP is appropriately incentivised to deliver what customers want, at an efficient price.

Table 1.1 provides a summary of the main elements of SDP's current price determination and sets out the changes SDP is proposing to make to these elements through this review. Each of these elements are further discussed in this Issues Paper.

Table 1.1 Main elements of the 2017 Determination and SDP's proposed changes to these elements

Regulatory elements	2017 Determination	SDP Proposal for 2023 Determination
Form of regulation		
Scope of regulated services	Set maximum prices for all customers and mode of operations, in line with the financial indifference principle in the Terms of Reference	To set maximum prices for a customer and a single mode under this review The other modes would be covered by negotiated agreements
Length of determination	Adopted a 5-year determination period	To adopt a 4-year determination period from 1 July 2023 to 30 June 2027
Mode based revenue requirements	Set costs and prices for 3 modes of operation – shutdown, restart, and plant operational	To set costs and prices for one mode only – i.e. operational under a defined level of service

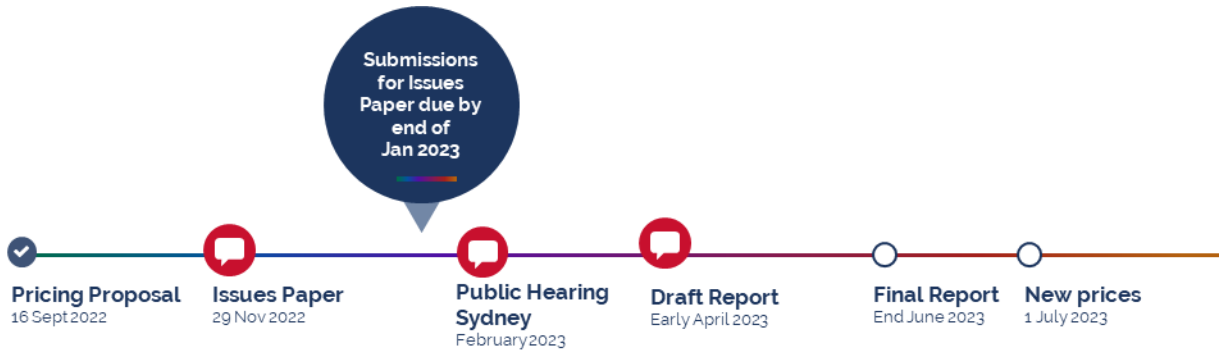
Regulatory elements	2017 Determination	SDP Proposal for 2023 Determination
Expenditure		
Operating and maintenance costs	Set efficient costs for each of the 3 modes of operations	To set efficient costs for operational mode only and at a higher cost level because of the need to operate flexibly
Insurance costs	Allowed for specific insurance coverage insurable events that are outside SDP control	To set insurance costs that apply across all modes. To expand the insurance coverage to include increases in [redacted] business interruption
Energy costs	Set energy costs based on a benchmark approach rather than passing on SDP's actual costs	To set energy costs based on its actual costs
Capital costs	Set the regulatory asset base to include prudent and efficient past capital expenditure, and forecast capital expenditure for the 2017 determination period	To include its proposed capital expenditure in future years that would support its new role
Incentive mechanisms		
Abatement mechanism	Set an abatement mechanism to provide a financial incentive to SDP to maximise its production and supply of water during drought	To replace with Service Level Incentive Scheme. Share a greater proportion of the risk or reward with customers and include a combined cap on financial rewards or penalties of 2.5%
Efficiency carryover mechanism (ECM)	Decided to apply only to non-energy costs Made a distinction between general efficiency savings and mode-specific efficiency savings Efficiency savings to be retained by SDP for a maximum of 5 years	To remove the mode distinction and instead set efficiencies based on actual levels of supply in the relevant period To apply a combined cap of 2.5%
Energy adjustment mechanism	Increased SDP's share of gains or losses outside the core band to 80:20 Set the core band of 5% relative to the contract value of surplus energy sold in the year	To adjust the sharing of gains or losses between customers and SDP to 95:5 To set the core band to 2.5%
Risk mechanisms		
Cost pass-through	Not to include a general pass-through Maintained the cost pass-through for energy network costs and adjust prices each year	To introduce cost pass-throughs and true-up mechanisms for uncontrollable costs To maintain the cost pass-through for network costs and adjust prices each year
Re-openers	Allowed to fully re-open its determination under the current framework for events that would have material impact on SDP's costs	To allow for partial and full re-openers for events that would have material impact on SDP's costs
Setting revenue allowance		
WACC	Applied a real post tax WACC of 4.7%	To use an indicative real post tax WACC of 3.6%
Depreciation	Set asset lives based on pipeline life of 120 years and membrane life of 8 years Capitalise periodic maintenance Accepted SDP infrastructure-based categories with minor adjustment	To shorten the asset lives for pipeline (100 years), membrane (weighted average 4.5 years) and periodic maintenance assets (weighted average 7.6 years)
Prices and bills		
Price structures	Structured prices for shutdown, restart, and plant operational modes For each mode, set separate service charges for SDP's plant, pipeline, membrane and cost of transitioning between modes	To simplify the price structure by setting prices for operational mode only To set service charges for SDP's plant and pipeline, and a usage charge

Regulatory elements	2017 Determination	SDP Proposal for 2023 Determination
	For all modes, set a usage charge	
Unregulated agreement	Did not allow SDP to enter into unregulated agreement with its customers	For other modes or services, to set prices by negotiating directly with Sydney Water and entering into unregulated agreements
Prices and bills impacts	Allowed price to be adjusted each year to pass on changes in costs due to movements in electricity network charges	To adjust prices each year to pass on changes in costs due to movements in electricity network charges, subordinate energy costs, and cost of debt To monitor movements in other costs and pass on net changes to future prices at the next review

1.2 How you can provide your views to this review

We are seeking submissions to this Issues Paper from all interested stakeholders by 31 January 2023. Page ii of this document explains how to make a submission. In February 2023, we will hold a public hearing to give stakeholders another opportunity to have their say on our price review for SDP. We will update our website and stakeholders on the specific date, location and other arrangements in early 2023.

In April 2023, we will release a Draft Report with our draft prices for SDP. In setting draft prices, we will consider stakeholders' submissions and responses to the questions in this Issues Paper (see list below), and the results of our analysis of SDP's proposal. All stakeholders, including SDP, will have another opportunity to provide comments on our draft prices.



Have your say

Your input is critical to our review process.

You can get involved by making a submission, submitting feedback or attending a public hearing.

Submit feedback »

Attend the public hearing »

Seek Comment

2 Our key considerations for this review

We will set maximum prices to allow SDP to recover its efficient costs. Under the Terms of Reference, we are required to determine prices for the services provided by SDP, which are:

1. the supply of non-rainfall dependent drinking water to purchasers (or non-rainfall dependent water supply service)
2. the making available of the desalination plant to supply non-rainfall dependent drinking (or water security service).

2.1 SDP's role has expanded under the new water strategy

In 2017, we set SDP's efficient costs and prices in line with its purpose under the Greater Sydney's water security plan at the time (the Metropolitan Water Plan). Under the Metropolitan Water Plan, SDP's role was to increase water security in the Greater Sydney region, particularly during drought periods.[7]

The NSW Government released the new Greater Sydney Water Strategy (GSWS) in August 2022.[8] The strategy was developed to better use Greater Sydney's existing water supply assets, including SDP, for now and into the future. The GSWS provides key priorities, actions, and strategic direction for Greater Sydney's water supply. The key elements of the strategy are:

- saving 49 billion litres of water a year by 2040 through water efficiency and conservation programs
- making better use of existing assets by operating SDP more flexibly
- planning for new rainfall-independent water supply options to be delivered in the next 5 to 10 years
- building a demonstration plant for purified recycled water and continuing engagement with the community about the potential uses and benefits of this option
- using more stormwater and recycled water to cool and green the city.

Further, the GSWS looks to maximise SDP's contribution to Sydney's water supply and slow dam depletion rates during droughts. These changes to SDP's role have led to changes to the SDP's operating environment and its Network Operator's Licence.

2.2 SDP has a new operating environment and licence requirements

There have been changes to SDP's operating environment to reflect the requirements under the GSWS. These changes are described in Sydney Water's Decision Framework for SDP Operations ('Decision Framework'), which supports the GSWS.[a]

The new operating environment requires SDP to operate flexibly and consider dam levels, risk of spill at dams, outages and maintenance and system shock. The objective of the new operating environment is that SDP should operate as part of Greater Sydney's total water system and maximise water security for the region.[9]

This is a shift from SDP's previous nature of operation. Historically, SDP's role has primarily been as a drought response measure to provide a source of non-rainfall dependent drinking water that can be relied upon when Sydney's available water storage levels fall below a certain threshold.[b] For a summary of SDP's operations under the current regulatory period, refer to Appendix C. In prior reviews, we assessed SDP's costs through the lens of its drought response role. We also set a framework for SDP to maximise its supply during drought by having a mechanism which imposes penalties on SDP if it produces less water than required during a drought response period (an abatement mechanism).

SDP holds a network operator and a retail supplier licence under the *Water Industry Competition Act 2006* (WIC Act). As part of the change to operating environment, IPART recommended a new network operator's licence for SDP with rules and arrangements that align with the GSWS and Sydney Water's Decision Framework for requesting water from SDP.[10] The Minister for Lands and Water approved this licence in September 2022.[11] The primary service obligation under the new Network Operator's Licence for SDP will be to comply with an annual production request (APR or production requests) issued by Sydney Water. However, the provisions of the old licence which specified when SDP must operate will continue in effect until the 2017 Determination is replaced (or until a different day as specified in writing by IPART).[12]

2.3 SDP has a different level of service with Sydney Water

In the 2017 Determination, our final decisions considered the efficient level of costs required to enable SDP to fulfil its primary drought response, rather than its secondary emergency response role.[13] We also set regulated prices for 3 modes of operations based on expert advice.[14] These were:

- water security (shutdown) mode
- plant operational mode
- restart mode (distinguishing between first and subsequent restarts).

[a] The Decision Framework for SDP Operation was prepared by Sydney Water in June 2022 and endorsed by the Minister for Lands and Water in July 2022.

[b] See the 2017 Metropolitan Water Plan.

In this review, SDP proposed prices for a single mode of operation (where it is operating within the defined level of service) over the 2023 determination period.[15] Under this single mode, SDP will operate continuously and be ready to respond to a water request from Sydney Water of between 23 GL to 91.25 GL per year.[16] For other modes, including when it is operating but outside the defined level of service, SDP proposed these charges are not subject to regulated pricing. Instead, charges are proposed to be negotiated between SDP and Sydney Water.[17]

We will consider SDP's revised role under the GSWS in assessing SDP's proposal. Our considerations for costs are discussed further in Chapter 4. We will also seek further advice on whether the proposed operational mode and revised service standards (including the new proposed minimum production rate) appropriately balances the need to provide water supply services with the long-term interests of customers.

2.4 A regulatory framework that considers customers now and into the future

IPART is currently in the process of implementing a new approach to regulatory reviews intended to improve the way prices are set for the water utilities. The new approach moves away from the previous focus on the efficient costs to meet a minimum level of service, to one that more broadly promotes customer value. This should enable water businesses to promote customer value with a flexible approach driven by the business's proposal, as well as provide incentives to promote customer value and earn autonomy.

This will be the last time we review SDP's pricing proposal under the current framework. In reviewing this proposal, we will consider whether the regulatory framework proposed by SDP is capable of servicing customers into the future.

SDP's role as a supplier of non-rainfall dependant drinking water has interactions with Sydney Water's role in supplying water to customers of Greater Sydney. In assessing SDP proposed changes to the regulatory framework, including the introduction of negotiated or unregulated agreements[18], we will need to consider these interactions.

For example, under SDP's new Network Operator's Licence, SDP must comply with Sydney Water's production request within a tolerance limit of ±10% and undertake best endeavours to respond to other short-term requests.[19] SDP's costs are passed-through to Sydney Water via the maximum prices we set and ultimately recovered from Sydney Water's end-use water customers. We will need to consider these incentives in reviewing SDP's proposal (including as they relate to consistency with the new regulatory framework). Like SDP, our next review of Sydney Water prices will also be under the new regulatory framework.

2.5 There are matters to consider based on our statutory obligations

In addition to the pricing principles set out in the Terms of Reference, we will consider matters specified in the *Independent Pricing and Regulatory Tribunal Act 1992* (IPART Act) and the *Water Industry Competition (General) Regulation 2021* (WIC Regulation) in our review of prices for SDP. We discuss how we intend to comply with these matters in Appendix A.

3 We will balance service levels, costs and risks

The operating environment is changing to enable SDP's expanded role. This will necessitate changes in both the level of investment required and the ongoing maintenance costs associated with managing the asset. The change in SDP's role will also have implications for how SDP is incentivised to deliver good outcomes to water customers in the Greater Sydney area.

3.1 We will consider the allocation of risk between SDP and customers

When we set maximum prices for services, we aim to ensure that the proposal is reasonable and fair for customers. It is important that the prices we set are not too low or too high and provide the right incentives to manage the business in interests of customers over the long term. If prices are set too low, SDP may not be able to spend what is required to provide the services expected by customers. If prices are set too high, the customers would pay more than is required and SDP would have little incentive to improve the way it manages its business.

Overall, SDP proposed higher costs over the 2023 determination period (see Chapter 4). Its proposed operating expenditure are higher than the level we set in 2017 to reflect its flexible operating environment. In addition, the proposed capital expenditure is higher than the allowance we previously set, which includes:

- changes to asset lives as SDP proposed reducing the pipeline asset life from 120 years to 100 years,[20] and more frequent replacement of membranes[21]
- new asset classes as SDP proposed creating separate asset class for periodic maintenance[c] with an asset life of 7.6 years.[22]

The proposed increases in capital expenditure, more frequent replacement of membranes and reduction in asset lives reduce SDP's performance risk. As part of our review, we will need to consider whether this reflects an appropriate re-balancing of risk between SDP and its customers.

In addition, SDP proposed several mechanisms that would transfer residual risks (that is risks that have not been mitigated through operating and capital expenditure measures) to customers (see Chapters 6 and 7). This consists of the proposal to:

- change the determination period to a 4-year term.[23] IPART set 5-year terms for both the 2012 and 2017 determination periods. This is discussed in Chapter 6
- introduce negotiated agreements between SDP and Sydney Water for changes in the level of service that SDP is required to provide (outside of its defined level of service).[24] This approach provides greater flexibility for SDP, however it results in additional risk for customers. These agreements are discussed in Chapters 5 and 6.

[c] In the 2017 Determination, the periodic maintenance was rolled into the Plant RAB which had an asset life of 30 years.

- change some of the parameters of the incentive mechanisms. For example, the efficiency carryover mechanism (ECM)[25] allows SDP to carry over efficiency savings and the energy adjustment mechanism (EAM)[26] a mechanism that shares any gains or losses on surplus energy between SDP and customers. SDP proposed several adjustments to shift more of the risk associated with gains/losses to customers.

SDP proposed further limitations on its exposure to unforeseen costs through revenue risk sharing mechanisms (see Chapter 6). This consists of cost pass throughs and end-of-period true-ups for specific cost movements and decision reopeners for other uncertain and uncontrollable costs. These include:

- Maintaining the pass through of electricity network charges.[27]
- Allowing the cost of debt true-up to be passed through to prices annually.[28]
- Introducing 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.[29]
- Introducing a cost pass through of costs including ancillary service charges, AEMO market fees, network losses, unaccounted for energy, reliability and emergency reserve trader charges and generator compensation fees and charges. SDP currently pays Iberdrola Australia an agreed price to cover the cost of electricity (including these charges) as part of their greenhouse gas reduction plan contracts.[30]
- Introducing a mid-period (or whenever costs move by a prescribed amount) decision re-opener for events that are outside SDP control, have resulted in (or have the potential to result in) a material changes in SDP's efficient costs and are unable to be mitigated by other measures. Should an event occur that meets these criteria outlined, SDP proposes it would apply to IPART for a partial replacement of its determination.[31]

Finally, SDP also proposed new service level incentive scheme (SLIS) to replace the former abatement mechanism. Broadly, this scheme focuses on SDP's performance in responding to Sydney Water's water requests and places a cap on incentive payments.[32] The proposed SLIS provides less downside and more opportunity for rewards for SDP. The proposed SLIS also has interactions with SDP's insurance proposal that could lead to customers taking on a greater proportion of risk in relation to insurable events.

Seek Comment

1. Are the operating assumptions that underpin SDP's pricing proposal (i.e. a minimum production level of 23 GL per year with an ability to adjust production levels at short notice both inside and outside of drought) in line with SDP's role identified through the Greater Sydney Water Strategy?

2. Does SDP's pricing proposal represent a reasonable and efficient balance of service levels and costs?

3. Does SDP's pricing proposal represent a fair and efficient allocation of risk between SDP, Sydney Water and end-use water customers?

3.2 We will consider this proposal holistically

As part of our review, we will need to consider whether SDP's proposal meets the required policy intent or is in addition to what is required to meet the new operational environment. It is essential SDP has the appropriate incentives in place to efficiently manage its costs and risks.

IPART sets SDP's revenue allowance so that it can optimise the performance of the plant over its expected life. It is also in the long-term interests of customers that SDP be allowed to earn a reasonable return on its investment. Implicit in the return SDP receives on its investment is compensation for the 'systematic risk' it manages.[d] It is important for SDP to have an incentive to manage this risk. Managing these risks is not new for SDP. Should the allocation of risk shift disproportionately from SDP to customers this may mean other elements of this proposal (e.g. the rate of return) may need to be revisited.

When the right incentives are in place to manage risk, this can improve efficiencies, which may mean lower prices for customers in the longer term. For example, in contracting with third parties SDP would have the ability to negotiate and potentially pass the risk through to them at a reasonable price. In certain circumstances SDP may also have more control over changes or a greater ability to mitigate the consequences of a risk occurring. For instance, it may not be appropriate for SDP to pass the costs of insuring SDP against abatement penalties onto customers. SDP would incur these penalties should it not meet its service obligations. In these circumstances SDP is best placed, not customers, to mitigate the risk of this event occurring.

[d] Systematic risk is determined by the economic exposure of a firm (i.e. how the value of a firm is affected by changes in economic conditions) and its leverage (how much debt a firm holds compared to equity).

4 We will assess the proposed costs of providing services

4.1 Our approach to assessing costs

In setting maximum prices, we consider the efficient costs incurred by a utility in providing its services. These efficient costs are factored into the notional revenue requirement, which is then recovered by SDP through the maximum prices we set. This means ensuring that utilities, like SDP, have sufficient funds to maintain their assets in good condition while delivering reliable services and value for money to customers. A key aspect of this review is assessing SDP's proposed costs to ensure they are efficient and are in the long-term interests of customers.

SDP's pricing proposal outlines its proposed costs over the upcoming 2023 determination period. To ensure these costs are efficient and lead to the delivery of the required services, we will engage an expert consultant to review SDP's proposed costs and provide independent advice on:

- An efficient allowance for SDP's operating costs under various levels of production.
- Whether SDP's proposed capital costs are prudent and efficient.
- How SDP's proposed expenditure compares with that of similar utilities/assets.
- Whether there is any potential to improve the efficiency of SDP's expenditure.

The recommendations from our consultant's expenditure review will be completed and made available to the public in April 2023. These recommendations will inform our draft and final reports under this price review.

4.2 SDP's costs are changing due to its new flexible, continuous operating environment

Unlike previous years, SDP will now move to a new 'flexible and continuous' operating environment. This means that the costs associated with providing SDP's services have changed. Under the new operating environment, SDP will incur additional costs associated with continuously operating (potentially at levels below maximum production for extended periods), as well as for remaining 'ready' to quickly respond to requests for changes in production when required.

Additionally, the costs outlined in SDP's pricing proposal are based on its defined level of service with Sydney Water (i.e. the scope of services that SDP has proposed regulated prices be set for). For services that fall outside this defined level of service, SDP has proposed entering into discrete negotiated agreements with Sydney Water, wherein costs are negotiated on a case-by-case basis. The scope and implications of SDP's proposed negotiated agreements are discussed further in section 6.2.2. Importantly, this proposal suggests a fundamental shift to the scope of IPART's pricing regulation for SDP and excludes some of the services that we assessed costs for under the 2017 Determination.

Our consultant will consider these requirements when undertaking its independent review of SDP's proposed operating and capital costs.

SDP's proposed costs are based on how much water it produces

The costs incurred by SDP for producing drinking water is related to the amount of water it produces, within its proposed level of service with Sydney Water. SDP proposed two different scenarios for costing purposes[33]:

- A baseline minimum volume of water, equivalent to 23 GL per year (approximately 25% of its annual capacity).
- A maximum volume of water, equivalent to 91.25 GL per year (100% of its annual capacity).

Specifically, SDP proposed a total revenue requirement of $831 million if operating under the baseline minimum capacity, and $1,044 million if operating under maximum capacity.[34] These figures are based on a 4-year determination period.

Fundamentally, SDP's two cost scenarios provide the minimum and maximum 'bookends' for potential production requirements within a year. This means that to calculate the marginal cost of producing water, we would need to use linear interpolation from SDP's cost function. However, it may be possible that SDP's costs do not follow a perfectly linear trend, thereby leading to the risk of SDP over or under recovering its costs under different production scenarios. Such a scenario could result in outcomes which are inconsistent with the financial indifference principle[e] and the intent of the Network Operator's Licence.

In light of this issue, we will work with our expenditure review consultant to examine the costs incurred by SDP under different production scenarios. This will allow us to test the appropriateness of SDP's cost assumptions, and its implications for the overall tariff structure.

4.3 SDP proposed increases to its operating costs

Operating costs relate to a utility's day-to-day costs incurred for providing its services. These costs could include wages, electricity, and consumable materials. For SDP, operating costs are largely driven by energy costs and operation and maintenance (O&M) costs (i.e. payments to their contractor, Veolia, for operating and maintaining the desalination plant).

SDP's proposed total operating costs over a 4-year determination period are $239 million and $452 million for minimum and maximum production modes respectively.[35] For maximum production, this amounts to a roughly 7.5%[f] increase from the allowance under our 2017 Determination (Noting that since no minimum production scenario was factored into the price structure in the 2017 Determination, there is no determined comparable value).

[e] See Matters for consideration - pricing principle 4 in Letter to IPART re Amended Terms of Reference, Minister for Lands and Water, 6 June 2022.

[f] Source: IPART calculation, using the yearly average of SDP's proposed costs between 2023-27 and the yearly average of IPART's allowance between 2017-22. Costs are compared in $2022-23 terms for full production operational mode.

In its proposal, SDP stated that its operating costs are increasing across all four of its main operating cost categories:

Source: SDP Pricing Submission to IPART, September 2022, pp. 124-153

As a result, SDP's total proposed operating costs have increased overall relative to the operating cost allowance in the 2017 Determination. We note that while the new flexible and continuous operating regime will likely warrant greater energy and operating costs for SDP, there may still be opportunities for cost savings among some (or all) of the operating cost categories. In our review, we will work with our expenditure review consultant to assess SDP's proposed costs in light of the new operating requirements, the efficiency of its costs, and the level of risk embedded in the overall operating expenditure allowances. We will also consider the following issues in relation to energy and insurance costs discussed below.

Principles underpinning SDP's energy cost forecast

Given that desalination is a highly energy intensive process, energy costs are a major driver of SDP's total operating expenditure. Further, in accordance with its planning approvals, SDP is required to purchase 100% of its energy from renewable sources.[9] Since energy is a major component of SDP's operating costs, setting an appropriate unit cost of energy is critical to ensuring efficiency in its energy expenditure.

In the 2017 Determination, we set SDP's energy cost allowance using benchmark electricity prices. These prices reflected market-based forecasts of efficient energy costs over the 2017 determination period. Our approach provided SDP with an incentive to manage its energy procurement costs efficiently, and in line with the outcomes expected in a competitive market. It also reflected the potential for SDP to renegotiate its energy contracts and pass-through competitive energy costs to customers.

In its submission, SDP has proposed setting its energy cost allowance based on prices from its existing Greenhouse Gas Reduction Plan (GGRP) energy contracts.[36]

[9] See condition 2.2 of the Conditions of Approval under the Minister for Planning's Project Approval dated 16 November 2006, and the Greenhouse Gas Reduction Plan.

In our review, we will consider applying a similar approach as previous years to setting efficient energy cost allowances. We will work with our expenditure review consultant to determine appropriate energy cost profiles and a benchmark unit cost of energy that provides an appropriate incentive for SDP to efficiently procure its energy. The benchmark unit cost of energy will account for SDP's legal requirement to purchase energy from 100% renewable sources, as done in the 2017 Determination.

Principles underpinning SDP's insurance costs

SDP's proposed insurance costs are significantly higher than the level we set in the 2017 Determination. The total insurance allowance in 2021-22 was around $2.7 million[h], compared to SDP's proposed total insurance costs in 2023-24 of $6.9 million (with abatement) or $5.5 million (with SLIS)[37]. In 2026-27, SDP's proposed insurance costs increase to $9.2 million (with abatement) or $6.8 million (with SLIS).[38] In its proposal, SDP stated its rising insurance costs are attributed to increasing premiums within the global insurance market as well as its additional insurance policies.

We will work with our expenditure review consultant to review SDP's proposed insurance costs across a number of key categories. In particular, we will consider the allocation of risk between SDP and customers, as well as the distinction between risks that are within SDP's control, and those that are not. Our preliminary view is that customers should not bear cost of insurance for controllable risks.

In our review, we will consider the following key issues:

- **Director and Officer's liability coverage**: SDP's proposed insurance costs include cover for Director and Officer's liability insurance.[39] Director and Officer's liability insurance provides cover to Directors in relation to wrongful acts, including penalties from licence breaches. However, liabilities resulting from licence breaches are controllable risks, and as such, we will consider whether coverage for Director's personal liability is a cost that should in principle be paid for by customers.
- **Insurance against risks of abatement (or SLIS):** SDP's proposed insurance costs include coverage for financial penalties imposed by the abatement mechanism, or the proposed new SLIS. SDP stated this policy coverage was important for it to appropriately manage the financial risks it would face due to abatement or SLIS penalties during Business Interruption (BI) events.[40] This has different ramifications for customers depending on the type of incentive policy applied to SDP:
  - Under the existing abatement mechanism, SDP's BI insurance would cover 100% of their fixed service fees. This means that if a force majeure event occurred, customers would not need to pay for SDP's fixed service charge as this would be covered entirely via its insurance. This is reflected in SDP's BI insurance limit estimate of $686-$765m ($nominal) under the abatement mechanism.[41]
  - Under the proposed SLIS, SDP's BI insurance would cover only 2.5% of fixed service fees. This is intended to align with the proposed 2.5% cap on financial penalties and rewards

[h] This is based on IPART calculation and the amount is in $2022-23 terms.

imposed by combined incentive schemes[42] (this is discussed further in section 5.3). This means that in the event of a force majeure event, Sydney Water (and by extension, its customers) may be liable to pay up to 97.5% of its fixed service charges, even if SDP is not available (or unable) to provide its services. This reduction in insurance cover is reflected in SDP's BI insurance limit estimate of $22-25 million ($nominal) under the SLIS, a significant reduction from the $686-$765 million ($nominal) cover under the abatement mechanism.[43]

We agree with SDP in principle that it is entitled to insure itself against both controllable and uncontrollable business risks. However, in assessing the insurance costs that should be recovered through regulated prices, we will consider the appropriate governance arrangements whereby the costs of insurable risks are shared between SDP and customers - especially for those risks that are within SDP's control. We will also consider whether the sharing of insurance costs with customers creates the right incentives for SDP to make decisions in the long-term interest of customers, even under force majeure events. We will refer to the principles in Box 4.1 our assessment of efficient insurance cost pass-throughs.

Box 4.1 IPART's insurance guidelines for WICA licensees

We have released a set of guidelines for appropriate insurance arrangements relevant to all WICA licensees. As per these guidelines, licensees 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.
- Obtain insurance from an appropriate insurer that is appropriate for the size and nature of the business activities and associated risks.

Source: IPART, Insurance Guide for WICA Licence Applicants and Licensees, p. 2

In addition to these WICA Guidelines, the following key principles will also be considered in our assessment of the prudency and efficiency of SDP's proposed insurance costs:

- Whether SDP has chosen the most efficient option based on their operating environment: We expect SDP to evaluate the various options available to determine the insurance structure that provides the least cost option relative to the chosen level of insurance cover and provide reasons for any departure from that outcome.

- Whether SDP has strived to achieve the best allocation of risk between itself and customers: As part of its governance arrangement SDP should be able to demonstrate it has carefully followed its processes (e.g. complying with its risk management policies and strategies) and has a clear rationale in circumstances where it has to depart from them (e.g. explanations on why changes have been made to the allocation of risk between itself and customers and evidence of this being considered by decision makers).
- The extent to which the insured risks are outside of SDP's control: We consider SDP should seek to manage those risks which are within their control and use commercial (or self-insurance depending on the specific circumstances) for low probability, high severity events beyond their control.

Seek Comment

4. Is the scope and level of insurance coverage proposed by SDP reasonable and efficient? Should all of SDP's insurance related costs be reflected in prices?

5. Should SDP's energy allowance continue to reflect a market-based benchmark unit cost, or should it be based on SDP's existing energy contracts?

6. The Terms of Reference require IPART to consider SDP's ability to recover all costs it incurs in complying with the Greenhouse Gas Reduction Plan (GGRP) and the GGRP Contracts other than costs related to surplus energy. What factors should IPART take into account as part of this consideration?

4.4 SDP proposed $81 million in capital costs over four years

Capital costs relate to spending on new assets. This may include costs for repairing/replacing broken or ageing assets, buying new equipment to increase reliability, or expanding current infrastructure to meet future needs.

SDP proposed $81 million in capital costs over the next 4 years. This amounts to an average capital spend of $20 million per year, which is roughly 90% higher[i] than the average annual capital cost allowance under our 2017 Determination. A summary of the major capital projects proposed by SDP is provided in Table 4.1 below.

[i] This is based on IPART calculation, using the yearly average of SDP's proposed costs between 2023-27 and the yearly average of IPART's allowance between 2017-22. Costs are compared in $2022-23.

Table 4.1 SDP's proposed large capital projects

Project	Description	Total proposed cost
Membrane Replacement Program	Ongoing program for replacement of ageing RO membranes	$36 million
Periodic Plant Maintenance	Replacement of ageing mechanical and electrical equipment that are approaching the end of their design lives	$23.4 million
RO vessel sampling panels	Installation of new sampling panels to increase operational efficiency	$16 million

Source: SDP Pricing Submission to IPART, September 2022, pp. 169-173

We will assess the prudency and efficiency of each of the capital projects proposed by SDP with our expenditure review consultant. More information on SDP's major capital projects, or some of the other smaller projects SDP plans to undertake, can be found in section 10 of SDP's pricing proposal.

SDP's largest capital project, its Membrane Replacement Program, involves the progressive replacement of ageing membranes over a 4-year determination period.[44] While routine membrane replacement is a critical operational requirement for desalination plants like SDP, it is important to ensure that the principles and assumptions underpinning SDP's membrane replacement program will lead to prudent and efficient capital costs. In reaching its proposed total membrane replacement cost, SDP assumed it would need to operate full-time at maximum capacity over the next 4 years. This assumption would mean that membranes deteriorate more rapidly, leading to an overall higher total cost for membrane replacement. In our review, we will work with our expenditure review consultant to assess the appropriateness of this assumption, and its impact on costs for customers.

Seek Comment

7. Many of the costs in SDP's proposal assume it will be operating at full production for the next 5 years. Is this a reasonable expectation?

4.5 SDP proposed changes to some of its asset lives

Setting the right asset lives is important to how utilities, like SDP, recover costs for the decline in value of their assets over time. These costs are factored into SDP's notional revenue requirement through its depreciation allowance.

SDP has proposed changes to its pipeline, membrane and periodic maintenance asset lives. These proposed changes are discussed in the sections that follow.

Seek Comment

8. Do you support SDP's proposal to reduce the asset lives for its pipeline, membranes and proposed periodic maintenance asset categories?

SDP proposed a reduction in its pipeline asset life from 120 to 100 years

For context, in 2012 IPART determined the asset life for SDP's pipeline as 140 years. This was based on experience with similar pipeline assets owned by Sydney Water. In 2017, SDP requested this be reviewed, and proposed a pipeline asset life of 100 years. As a result, we commissioned a consultant (Atkins Cardno) to undertake a technical review of SDP's pipeline. Atkins Cardno recommended that SDP's pipeline asset life be reduced to 120 years, as this aligned with our general approach that asset lives should reflect the period over which an asset provides a service. We subsequently adopted this recommendation.

SDP has again proposed reducing the asset life of new pipeline assets from 120 to 100 years[45]. It also proposed reducing the remaining asset life for existing pipeline assets from 109 to 89 years. These proposed changes would impact the regulatory asset base (RAB) roll forward from 1 July 2023. For reference, SDP's proposed reduction in pipeline asset lives would add around $2 million per year[j] to the notional revenue requirement (NRR) over the proposed 4-year determination period. In its submission, SDP stated the basis for this proposal is that the asset life should reflect the design life of the pipeline (i.e. the intention, or expectation, under which the asset was originally designed).

We will consider the appropriateness of SDP's proposal in line with our overarching approach to setting asset lives, as well as recommendations from our expenditure review consultant.

SDP proposed a standard membrane asset life of 4.5 years

SDP has proposed a 4.5 year standard asset life for its membranes.[46] SDP has based this proposal on its membrane replacement program, which targets an average membrane age of 4.5 years (for operational purposes).

However, it is important to note that the average membrane age for operational purposes is distinct from the membrane asset life for asset depreciation purposes:

- The average membrane age (for operational purposes) represents the average actual age of all membranes present at the plant. It does not imply that each membrane will be used for only 4.5 years. Rather, it implies that older membranes will be replaced with brand new membranes so that the average age of all SDP's membranes is maintained at 4.5 years. In reality, membranes can be used for significantly longer before being replaced.
- The membrane asset life (for asset depreciation purposes) represents the time period over which membranes will decline in value. SDP has proposed depreciating its membranes over a 4.5-year period.

Our approach to setting asset lives is based on the amount of time for which an asset provides a service. In this case, SDP's proposed 4.5-year asset life for membranes does not appear to align with the time over which the membranes will provide a service. Further, SDP's proposed change to membrane asset lives would result in a gradual increase of approximately $1.0 to $6.4m[k] in the NRR over the proposed 4-year determination period.

[j] This is based on IPART calculation and values are in $2022-23.
[k] This is based on IPART calculation and values are in $2022-23.

Membranes are an integral component of desalination and comprise a significant share of SDP's overall capital expenditure program costs. Once membranes age, the cost of operating them increases (as more energy is required to push water through them). Setting an appropriate asset life for membranes is therefore important in influencing the overall efficiency of the desalination process. Our expenditure review consultant will undertake an independent analysis of SDP's proposed membrane asset life, as well as the proposed membrane replacement program.

SDP proposed changes to periodic maintenance asset lives

In the 2017 Determination, we decided that SDP's periodic maintenance capital expenditure would be grouped within the 'Plant' asset category for depreciation purposes. This meant that periodic maintenance capital costs would adopt the same 30-year life as other assets within the 'Plant' category.

SDP proposed a new discrete category for periodic maintenance, and assigned it a standard asset life of 7.6 years. SDP stated this proposal was based on a weighted average life of the underlying assets within the periodic maintenance category.

SDP's proposal effectively reduces the asset life for periodic maintenance costs from 30 years to 7.6 years. For reference, SDP's proposed reduction in periodic maintenance asset lives would result in a gradual increase of around $0.4 million to $2.5 million[l] in the NRR over the proposed 4-year determination period.

We will work with our expenditure review consultant to assess the appropriateness of SDP's proposed changes to periodic maintenance asset lives.

4.6 SDP calculated a WACC of 3.6%

The weighted average cost of capital (WACC) represents the return that utilities earn on their investments, and by extension, the systematic risk that they bear. The WACC is important for enabling utilities to earn a reasonable return that facilitates efficient infrastructure investments for the benefit of customers. If we set a WACC that is too high, customers would pay too much and utilities could be encouraged to over-invest. Equally, if we set it too low, the utility's financial viability could suffer, and it may under-invest in necessary infrastructure. Neither outcome is in the long-term interest of customers.

We calculate the WACC for regulated utilities in line with our standard WACC methodology. During the 2017 review of SDP's prices, we used a WACC methodology which has since been revised. Our new WACC methodology (referred to as the 2018 WACC method) introduces a trailing average approach to the cost of debt calculation. It also allows a 5-year transitionary period for utilities that are moving from an 'on-the-day' cost of debt approach to the new 'trailing average' cost of debt approach. Since SDP has not yet moved to the new trailing average cost of debt, it will be subjected to the 5-year transitionary period during its upcoming 2023 determination period.

[l] Source: IPART calculation, values are in $2022-23.

In its proposal, SDP calculated a WACC of 3.6%.[47] This rate was calculated using IPART's 2018 WACC method, albeit with the following parameters:

- **Transition to trailing average cost of debt from 1 July 2022**: IPART's 2018 WACC method typically applies the transitionary cost of debt true-up from the commencement year of the new determination period (in this case 1 July 2023). However, in its WACC calculation, SDP has applied the transition period from 1 July 2022. We accepted this modification in our April 2022 correspondence with SDP, in light of the 12-month delay to its price review.
- **Different market observation period for 2022 transition to trailing average cost of debt**: Typically, we apply a [redacted] market observation period for the start of the transition to the trailing average cost of debt. This is to allow us sufficient time to complete our review process in time for June determination. Since SDP's transition to trailing average cost of debt will apply from 1 July 2022, it is proposed an April-May observation period for the 2022 year. We accepted this proposal in our February 2022 correspondence with SDP. SDP's April – May sampling period will be applied [redacted].

We will calculate SDP's WACC in line with our standard WACC methodology, the long-term interests of customers, as well as the holistic level of risk borne by SDP (as discussed earlier in section 3.2).

4.7 SDP proposed no adjustments for the 1-year deferral of the review

Our review of SDP's prices was initially scheduled to be completed by 30 June 2022 and apply from 1 July 2022. However, this review was deferred by one year at the request of the Minister for Water, Property and Housing, so that changes to SDP's operating environment could be finalised. As a result of this deferral, the prices we set under the 2017 Determination continue to apply until the 2017 Determination is replaced. This means that the 2021-22 prices would be held constant in nominal terms in 2022-23.

When price reviews are deferred (and prices are therefore not adjusted for current economic conditions), regulated utilities can be at risk of over or under recovering their costs. If utilities:

- over-recover their costs, then customers would have paid higher prices than they needed to.
- under-recover their costs, this could impact their financial stability and quality of services they provide to customers.

Neither of these scenarios are in the best long-term interests of customers. To avoid this from occurring, future prices can be adjusted to account for any over or under recoveries that may have taken place in delay years.

SDP proposed no adjustments for the 12-month deferral of the review. In SDP's view, an ex-post adjustment would not be consistent with the 2017 Determination, which states that the prices at 30 June 2022 would remain in place until a new determination is in place.[48]

SDP also raised concerns that there was no regulatory precedent whereby IPART had adjusted prices for other utilities due to pricing review delays.[49] This is not the case. For example, in a recent review for WaterNSW's Murray River to Broken Hill Pipeline, we adjusted future prices to account for the 6-month delay in setting new prices (from 1 July 2022 to 1 January 2023). In that price review, we aimed to set prices so that both the utility and customers were no better or worse off as a result of the delay. We adjusted for the difference in revenue if we had applied final prices from 1 July 2022, instead of setting them 1 January 2023.

We will consider options for adjustments for the one-year deferral

In our correspondence with the former Minister for Water, Property and Housing regarding SDP's price review, the Minister requested that we "consider the best interests of water customers" and welcomed our "suggestion to consider compensating water customers for current prices remaining in effect after 1 July 2022". The Minister also asked us to develop a framework that "is in the long-term interests of customers".[50] The impacts of the one-year deferral on prices to customers is therefore relevant to our consideration of customer interests.

In light of this, we will consider options in relation to adjustments for the 2022-23 delay including:

- **Make no adjustments**: i.e. adopt SDP's proposed approach and implement no true-up for the delay year
- **Make an adjustment only for the EAM**[m]: i.e. make a post-NRR adjustment for the EAM only
- **Make a full adjustment:** i.e. implement an adjustment for all the building block components of the NRR, as well as the EAM.

In our review, we will also consider different options for how the adjustments, if any, should apply over the determination period. Each of the adjustment options will be assessed in light of the financial indifference principle, and in recognition that the one-year deferral event was outside of SDP's control. In considering adjustments for the 2022-23 deferral, we welcome feedback from stakeholders on the following:

Seek Comment

9. Should we make an adjustment in response to the one-year deferral? If so, should the adjustment be restricted to just the EAM or should it include all building block components as well as the EAM?

[m] The EAM applies as a post-NRR adjustment. Therefore, the Option 2 adjustment due to the 12-month review delay would not impact the RAB and form a post-NRR adjustment only.

5 We will assess SDP's proposed incentive and risk mechanisms

This chapter discusses the sharing of risks between SDP and its customers as well as how service levels and efficiency gains are incentivised. Many of SDP's current incentive and risk mechanisms need to be reshaped to better suit SDP's new operating environment. Further, as discussed in Chapter 3, SDP's incentive mechanisms play a crucial role in achieving an efficient balance between service levels, costs and risks. We will therefore consider all aspects of SDP's incentive mechanisms in light of the new operating environment to ensure there is a balance which promotes risk management, improved efficiencies and is in the long-term interest of customers.

The structure of this chapter is as follows:

- Section 5.1 discusses key issues related to abatement, including SDP's proposed service level incentive scheme (SLIS).
- Section 5.2 discusses the efficiency carryover mechanism (ECM) and SDP's proposal to remove mode-specific application from the mechanism.
- Section 5.3 outlines SDP's proposed financial incentive cap of 2.5% to be applied across the SLIS and ECM and discusses its alignment with our new water regulatory framework.
- Section 5.4 discusses the EAM and the changes required for the mechanism to better suit SDP's new operating environment.
- Section 5.5 outlines SDP's proposed cost-pass through and end of period true-ups and our preliminary views on these mechanisms.
- Section 5.6 discusses re-opening of the determination, including SDP's proposal for the characteristics of events that should be considered re-opener events.

In addition, Appendix E illustrates how these incentive mechanisms work by using examples. We also present examples of SDP's proposed changes for comparison purposes.

5.1 We will review the abatement mechanism and consider alternatives including SDP's proposal

In 2012, we introduced an abatement mechanism to SDP's pricing determination. Initially, the abatement mechanism was implemented to incentivise SDP to maintain full production when requested. In 2017, we broadened the abatement mechanism to apply not only during plant operation modes, but also in shutdown and restart modes. This ensured that SDP had the right incentives to efficiently restart and ramp up production once triggered under Greater Sydney's water security plan at the time.

During the 2012 and 2017 determination periods, the abatement mechanism was crucial to providing the right incentive for SDP to maximise its production and support Greater Sydney's water needs during drought. It reflected SDP's drought-response function under the previous water security plan. Appendix E.3 provides examples of how the abatement mechanism applies during drought and under minor and major disruption scenarios.

Under the new GSWS, SDP's role is no longer solely drought-response, but to operate continuously and flexibly with the objective of maximising yield to Sydney's water supply network. This shift away from a drought-response role means that the existing abatement mechanism needs to be adjusted to provide the right incentives that align with the new operating environment.

IPART in principle supports incentive-based regulation. Our view is that incentive schemes can deliver considerable value to customers and help efficiently drive good performance outcomes. In our review, we will consider whether any current and proposed incentive mechanisms support the right performance outcomes, and whether these mechanisms align with the new operating environment for SDP.

5.1.1 SDP's abatement mechanism proposal

SDP has proposed a SLIS to replace the existing abatement mechanism. SDP's SLIS is intended to form a more targeted abatement approach that aligns with the new operating environment.

Fundamentally, the SLIS applies a 'performance factor' to SDP's plant service charges. This performance factor is based on SDP's production ratio (i.e. the ratio of the annual volume of water produced to the annual production request (APR)). If the production ratio is within a tolerance band of ±10%, then the performance factor is 0, and SLIS does not apply. However, if the production ratio is outside the ±10% tolerance band, then the performance factor is equivalent to the production ratio, and SLIS applies.

SDP proposed the following key elements under its SLIS[51]:

- The SLIS applies only when SDP is delivering water under an APR. This means that other production requests, including emergency response notices, are outside the scope of the SLIS.
- Further, the SLIS will apply only to APRs that are above SDP's minimum supply (i.e. >23 GL per year as proposed by SDP). Production ratios are subject to a ± 10% tolerance band, such that only significant over or under productions that are outside the band are subject to the SLIS.
- The SLIS does not apply any financial rewards or penalties for circumstances that are outside SDP's control, or that SDP is not insured against.
- A combined cap applies on any financial penalties or rewards under the ECM and the SLIS. This cap is equivalent to 2.5% of SDP's plant service charge. This means that in any given year, SDP cannot be penalised or rewarded more than 2.5% of its plant service charge across both the SLIS and ECM incentives. Section 5.3 further discusses the financial incentives cap.

5.1.2 Key issues related to abatement and the SLIS

While the existing abatement mechanism should be adapted to the new operating environment, the SLIS proposed by SDP introduces additional elements that will need to be considered.

Fundamentally, SDP's proposed SLIS applies penalties for significant underproductions (i.e. when the annual production is <90% of the APR), and rewards SDP for significant overproductions (i.e.

when the annual production is >110% of the APR). This means that if SDP produced water in excess of 110% of the APR, it would be financially rewarded under the SLIS.

Additionally, under certain overproduction scenarios, the SLIS may effectively contravene the intent of the Network Operator's Licence. SDP has stated that the ±10% SLIS tolerance band intends to align with the ±10% production band in its Network Operator's Licence. However, the ±10% production band in the Licence is intended to set the permissible bounds for SDP's compliance with Sydney Water's APRs, recognising the need for its operational flexibility under the new regime. It does not intend to reward, incentivise, or encourage SDP to produce more water than has been requested under an APR. In fact, SDP would be in breach of its licence if its annual production exceeded 110% of the APR[n]. SDP's proposed SLIS would however provide a financial reward for exceeding 110% of the APR, including for instances when it is in breach of its own licence. An example of this is provided in Appendix E.3.2.

Further, as noted in section 4.3, SDP proposed business interruption (BI) insurance policy cover for the financial penalties under the proposed SLIS. This would mean that the risk of financial penalties under the SLIS would effectively be borne solely by customers, given that SDP has proposed passing these insurance costs to customers. Conversely, any financial rewards from the SLIS due to overproduction would be allocated only to SDP, as there is no proposed mechanism in place to share these rewards with customers.

5.1.3 We will consider the scope, applicability and need for a SLIS

We agree in principle with SDP that the current abatement mechanism no longer aligns with its new flexible role, and the new operating environment in which it will service customers. Equally, our view is that incentive-based regulation is important in ensuring utilities meet their required performance standards.

We recognise that SDP's new Network Operator's Licence enables the application of financial penalties for significant over or under production, while allowing appropriate flexibility for SDP to meet its production requirements. We also recognise that in light of this, SDP's licence may be sufficient in providing the right performance incentives, without the need for a SLIS or abatement mechanism at this stage.

Furthermore, we note there is an inherent level of risk with any new incentive mechanism under the 2023 determination period, given that SDP is yet to operate within the new environment, or be 'stress-tested' under the new flexible operating environment. Any incentive mechanism for the 2023 determination period must therefore be cognisant of these risks, and not pose exceedingly high penalties or rewards.

We will therefore consider SDP's proposed SLIS in light of its scope and applicability, as well as the overarching need for an explicit incentive mechanism given the new licence. To support this consideration, we welcome stakeholder comments on the following:

[n] This is based on cl. 1.2(a) of Schedule A, Network Operator's Licence for Sydney Desalination Plant Pty Ltd (Licence no. 10_010, as varied by Notice of Decision dated 19 September 2022).

Seek Comment

10. Is there a need for an explicit abatement mechanism, given the financial penalties for underproduction and overproduction under SDP's new Network Operator's Licence?

11. If the proposed SLIS is adopted, should it apply to emergency response notices (ERNs) as well as annual production requests? That is, should performance under ERNs be subject to penalties and rewards?

12. If the proposed SLIS is adopted, do you think it should provide financial rewards for overproduction? If so, do you think the 10% band is an appropriate bound?

5.2 We will maintain having an efficiency carryover mechanism for SDP, but with some changes to reflect its expanded role

Under a 'price cap' form of regulation, maximum prices reflect the efficient costs required to deliver regulated services over the determination period. This allows businesses to retain, until the next determination, any savings they make. If these cost savings are permanent, they are then passed onto customers at the next price determination.

A shortcoming of this standard approach is that the financial reward the business gets for delivering cost savings reduces over the determination period (as we get closer to the next determination). This means that permanent savings made in the first year of a 5-year determination period can be held for 5 years, whereas savings made in the last year of the determination period can be held for only one year. As a result, a business has an incentive to delay revealing savings from the latter years of one determination period to the beginning of the next.

This shortcoming is addressed through the efficiency carryover mechanism (ECM). The ECM allows permanent efficiency savings to be held by the utility for a specified period before they are passed on to customers. This is regardless of when the efficiencies are achieved within a determination period. As a result, the incentive to make permanent efficiency savings over a determination period is equalised which removes any potential incentive to delay efficiency savings and ultimately ensures that customers benefit from efficiency savings sooner. The Terms of Reference specifically require us to allow SDP to carryover demonstrated efficiency savings for a period of 4 years following the year in which the efficiency saving was achieved.

5.2.1 SDP proposed to remove the mode distinction from the ECM

Over the 2017 determination period, the ECM applied only to non-energy related operating costs. In addition, a distinction was made between 'general efficiency savings' and 'mode-specific efficiency savings'. The 2017 Methodology Paper defined these as follows:

- General efficiency savings occur every year regardless of what mode SDP is in. Therefore, the ECM allows these general efficiency savings to carryover for 5 years.[52]
- Mode-specific efficiency savings, on the other hand, occur only when SDP is in that specific mode. To ensure mode-specific savings are not over-incentivised relative to general savings, the ECM allows mode-specific savings to be held up to 5 years, while SDP is in that specific mode, over a five consecutive year period.[53]

Appendix E.1 illustrates how the 2017 ECM implemented the distinction between these two types of savings through examples.

SDP has proposed that this classification of efficiencies as either 'general' or 'mode specific' be removed from the design and implementation of the ECM.[54] SDP asserted that this distinction no longer reflects the way SDP is required to operate under the GSWS and SDP's Network Operator's Licence. SDP will be required to be constantly operational and as such, they consider that efficiency savings under the ECM should be based on the operating expenditure allowance for the actual level of production in each year and carried over for 4 years in addition to the year the efficiency gain is achieved.[55]

SDP also argued that removing mode specificity from the ECM would strengthen their incentives to deliver efficiency savings given that mode-specific savings could only be held for up to 5 years only while SDP was in that specific mode over a 5-year consecutive period.[56] We present an example of how the ECM would change if mode-specific application was removed as proposed by SDP in Appendix E.1.3.

5.2.2 We will consider removing the mode-based approach

As stated in Chapter 1, we will be reviewing our 2017 Methodology Paper which will include the design and implementation of the ECM. This is to ensure all aspects of the mechanism are consistent with the upcoming determination. When reviewing the ECM, we will consider the requirements outlined in our new Water Regulatory Framework to ensure the ECM is in line with how water utilities will be regulated in the future. We welcome stakeholder input on the questions raised about the ECM below and the review of the 2017 Methodology Paper more broadly.

We consider that the ECM as detailed in the 2017 Methodology Paper was suitable for the intermittent "on" and "off" regime SDP was operating under. However, with the change in SDP's operating environment, the design and implementation of the ECM must in turn be reconsidered. It is also important to note that the final form of the ECM for the 2023 determination period would depend to a great extent on decisions we make on other aspects of SDP's proposal. For instance, we recognise the removal of the mode-based approach is heavily reliant on the proposal SDP has made for a simplified 2-part tariff price structure. Similarly, if we approve SDP's proposal for negotiated agreements, we will need to consider the implications of this on the design of the ECM.

Seek Comment

13. Is the ECM, with SDP's proposed changes, appropriate for the new operating regime? Are there any other changes that should be made to the ECM?

14. Are there any other issues we should consider when reviewing the ECM methodology?

5.3 We will consider setting a financial incentives cap

SDP has proposed a combined cap on incentives across its proposed SLIS and the ECM. Financial rewards and penalties across the SLIS and ECM would be capped at 2.5% of SDP's plant service charges.[57]

SDP considered that the cap would ensure that its incentives for service and cost efficiency performance are in line with good industry practice. In SDP's view, the cap will satisfy the need for financial rewards/penalties applied across service and cost efficiency performance to be proportionate. In addition, SDP asserted the proposed cap would put a downward pressure on SDP's insurance costs by reducing business interruption insurance limits and is reflected in SDP's proposed insurance allowance.[58]

5.3.1 A financial incentives cap aligns with how IPART intends to regulate water utilities going forward

We consider that a financial incentives cap across the SLIS and ECM is forward-looking and aligns with how IPART intends to regulate water utilities into the future. Our new Water Regulatory Framework proposes that capping the size of incentive payments can be used to manage the impact of uncertain and unforeseen events over a determination period. A financial incentive cap can also provide maximum flexibility for businesses to make cost vs service trade-offs within the cap.[59] For these reasons, our preliminary view is to agree with SDP's proposal for a combined incentives cap across the SLIS and ECM.

Our approval of the cap is, however, dependent on decisions we make regarding SDP's SLIS proposal and any other relevant factors we consider during the review. As discussed in section 5.1.3, one of the options we are considering in assessing the SLIS is to forego any form of an abatement mechanism over the 2023 determination period. If this is the eventual outcome, we will consider the size of the cap that would apply only to the ECM. According to the new Water Regulatory Framework, applying a cap across incentives scheme is the most appropriate option as we intend for incentives to operate as a package going forward.

SDP has outlined that the proposed cap of 2.5% of plant service charges represents between 1.5% and 1.9% of total revenues (between full operation and baseline production respectively).[60] This is higher than the default cap of 1% of revenues set in our new Water Regulatory Framework.[61] However, the framework does include a provision for any deviations from this to be assessed on a case-by-case basis. As such, we will assess the merits of SDP's proposal for the cap to be set at 2.5% of plant services charges.

Seek Comment

15. Is there a case for the financial incentives cap to be set higher than the default cap of 1% of revenues set in the new Water Regulatory Framework?

16. If the abatement mechanism is removed from the package of SDP's incentives, should we set a cap that only applies to the ECM? If so, what is the appropriate size of such a cap?

5.4 We will update the energy adjustment mechanism where relevant

As noted in section 4.3, SDP's operating expenditure is largely driven by its energy costs. SDP has entered into a long-term 20-year contract with an energy retailer to acquire fixed volumes of electricity and Large Scale Generation Certificates (LGCs) at fixed real prices that are indexed to inflation. SDP's contract requires it to purchase annual volumes of electricity sufficient to run the plant at full capacity. SDP is then able to sell any surplus electricity and LGCs back into the market at the prevailing market price. This arrangement provides SDP with long-term certainty about energy costs required to operate the plant.[62] However, this arrangement means that SDP is exposed to risk relating to movements in the market price for any surplus electricity and LGCs it needs to sell back into the market. When the market price of electricity and LGCs is below the contract price, SDP incurs a loss on any surplus energy. When the market price of electricity and LGCs is above the contact price, SDP makes a gain on the sale of any surplus energy.[63]

The Terms of Reference for our 2012, 2017 and current 2023 price reviews require IPART to develop and implement a mechanism to pass through the gains and losses, beyond a core band, resulting from the sale of SDP's surplus electricity and LGC contracts to SDP's customers.

We developed an EAM in the 2012 review which applied to surplus energy gains and losses over the 2012 determination period. We updated the mechanism in the 2017 review and this updated mechanism applies to surplus energy gains and losses over the 2017 determination period. We will now review and potentially update the mechanism that will apply to surplus energy gains and losses over the 2023 determination period.

The EAM defines a core band of surplus energy gains and losses that are fully retained by SDP (currently 5% of the surplus energy contract value) and a sharing ratio which is applied to any surplus energy gains or losses outside the core band (currently 20% retained by SDP and 80% passed on to customers). By ensuring SDP retains a share of any gains and losses, the EAM seeks to ensure SDP continues to have an incentive to manage its surplus energy position efficiently so that gains and losses passed onto customers are as efficient as possible in the circumstances.

5.4.1 SDP did not include 2021-22 in their calculation for the EAM adjustment

The 2017 Methodology Paper sets out how we intend to apply the EAM in this price review to pass on surplus energy gains and losses incurred over the 2017 determination period to customers in the 2023 determination period.

The 2017 Methodology Paper defines the application period as the 5 years immediately preceding the review year which at the time it was drafted was expected to cover 2016-17 to 2020-21 (i.e. the 5 years between the end of the previous EAM application period and the next price review).[64] However, because this price review was deferred by a year, we now have an additional year of data available (i.e. 2021-22). SDP proposed a 5-year application period from 2016-17 to 2020-21 (i.e. it has not adjusted the application period to account for the deferral of the price review and the additional year of data that is now available).

Although the 2017 Methodology Paper did not explicitly anticipate what would happen in the event of a deferral, in our view it is clear the application period should cover the years immediately preceding the review year. Therefore, we propose to extend the application period by one year so that it covers all 6 years immediately preceding the price review (i.e. 2016-17 to 2021-22).

5.4.2 The GSWS has implications for how SDP can manage its surplus energy

The EAM we developed in the 2012 review and updated in the 2017 review was designed in the context of the operating rules that defined SDP's drought response role where SDP would either be in shutdown, restart or full production mode. The main implications for the EAM under these operating rules where that:

- SDP was not expected to have surplus energy contracts when in full production mode responding to drought, and
- when SDP was in shutdown and restart modes with a surplus energy position, it would have some ability to predict the quantity and duration of its surplus energy position because of the 8-month restart window.

With the introduction of the GSWS and SDP's new Network Operator's Licence, SDP's role has changed. It is now expected to be available to respond to production requests from Sydney Water that can vary on a month-to-month basis. The main implications for the EAM under these new operating rules are that:

- SDP may have surplus energy contracts when in production depending on the level of production required to respond to production requests from Sydney Water, and
- SDP has less ability to predict the quantity and duration of its surplus energy positions because it is expected to respond to changing production requests at shorter notice.

5.4.3 SDP has proposed amendments to the EAM

SDP has proposed changing the scope, core band and sharing ratio of the 2017 EAM Methodology[o] to suit its new role. For example, SDP proposed for the scope to be more flexible by applying the EAM regardless of SDP's mode of operation or level of production.

[o] The EAM Methodology is detailed in the 2017 Methodology Paper.

In addition, SDP proposed to reduce the core band from 5% to 2.5% of the contract value of SDP's surplus energy. SDP also proposed to increase customers' share of gains and losses outside the core band from 80% to 95%. Appendix E.2 shows examples of how these proposed changes would lead to a greater share of gains and losses being allocated to customers. For these changes, SDP claims the new operating environment limits its ability to actively manage its surplus energy and therefore its share of gains and losses should be reduced.

Table 5.1 summarises the key elements of the 2017 EAM Methodology and SDP's proposed changes to the EAM in response to changes in its operating environment.

Table 5.1 Summary of SDP's proposed changes to the EAM

Element	Current EAM (2017 methodology)	Proposed changes
Scope	The EAM applies to gains and losses on the sale of SDP's surplus energy when SDP is in shutdown or restart mode.[65] The EAM does not apply in operation mode because the plant is assumed to be in full production resulting in full utilisation of SDP's energy contracts.	The EAM should apply to all of SDP's surplus energy regardless of SDP's mode of operation or level of production. [66] This would allow the EAM to be flexible to varying levels of surplus energy resulting from changes in the level of production required to meet production requests from Sydney Water.
Core band	SDP retains gains and losses within a core band of +or- 5% of the contract value of SDP's surplus energy.[67]	The core band should be reduced from 5% to 2.5% of the contact value of SDP's surplus energy.[68]
Sharing ratio	Gains and losses outside the core band are shared 20% to SDP and 80% to customers.[69]	The shares of gains and losses outside the core band should be adjusted to 5% to SDP and 95% to customers.[70]

We will consider SDP's proposed changes and how they might impact SDP's incentive to manage its surplus energy efficiently.

Seek Comment

17. Should we include 2020-21 in the application period when calculating the EAM gains of losses over the 2017 determination period?

18. Should the scope of the EAM be expanded to include all of SDP's surplus energy?

19. SDP has proposed changing the core band and sharing ratio of its EAM. Specifically, it proposed to reduce the core band from 5% to 2.5% and increase customers' share of gains and losses outside the core band from 80% to 95%. For these changes, SDP claims the new operating environment limits its ability to actively manage its surplus energy and therefore its share of gains and losses should be reduced. Do you agree with SDP's proposal to reduce the core band and SDP's share of gains and losses outside the core band?

20. What other issues should we consider when reviewing the EAM methodology?

5.5 We will consider the merit of SDP's proposed true-up mechanisms and cost pass-throughs against our criteria

SDP proposed end-of-period true-ups and cost pass-throughs for costs it considered uncontrollable. SDP defined uncontrollable costs as costs that are driven by market forces or decisions which are outside of SDP's control. SDP stated these costs can be material, difficult to forecast, and cannot be effectively managed by SDP. SDP proposed:

1. Cost pass-through mechanisms for uncontrollable energy costs – including unaccounted for energy, Reliability and Emergency Reserve Trader (RERT) charges and generator compensation fees and charges. These items are in addition to SDP's proposal to continue to pass-through network charges in relation to its electricity costs.[71]
2. An end-of-period true-up mechanism for material movements in other energy costs, land tax and council rates, chemical costs, and insurance.[72] SDP proposed that a materiality threshold of 1% of annual regulated revenue apply to this end-of-period true-up to apply to these costs as a package. We show an example of how we apply our end of period true up mechanism in Appendix E.4.

5.5.1 We will assess SDP's proposed cost pass-throughs

We propose to adopt the cost pass-through mechanisms proposed by SDP if they are consistent with our guiding criteria for cost pass-throughs and are consistent with our overall assessment of the appropriate allocation of risk between SDP and customers. We note that as we transition to the new Water Regulatory Framework, we would expect SDP's proposed cost-pass throughs to be developed in consultation with customers. Further, SDP would also need to demonstrate how their proposed cost-pass throughs would deliver customer outcomes, particularly long-term improvements in service performance and efficiency.[73]

Our guiding criteria for cost pass-throughs are outlined in Box 5.1 below.

Box 5.1 IPART's criteria for cost pass-through mechanism

Cost pass-through mechanisms should only be applied in situations where:

1. there is a trigger event (to activate the cost pass-through), which can be clearly defined and identified in the price determination
2. the resulting efficient cost associated with the trigger event can be fully assessed including whether there are other factors that fully or partially offset the direct cost of the event[a]
3. the resulting cost is assessed to exceed a materiality threshold
4. the regulated business cannot influence the likelihood of the trigger event or the resulting cost

Box 5.1 IPART's criteria for cost pass-through mechanism

5. the mechanism is symmetric in that it applies equally to both cost increases and cost decreases (in cases where the risk can result in both cost increases and cost decreases)
6. it is clear that the cost pass-through will result in prices that better reflect the efficient cost of service

a. Under the IPART Act, the costs are to be passed through must be specified in the price determination.

We currently allow for specific targeted cost pass-throughs (i.e. network costs) where they can be assessed against our pass through criteria. In the 2017 Determination, we considered the limited use of cost pass throughs was appropriate as it achieves the efficient balance of risk between SDP and customers.[74]

Our approach to setting SDP prices includes:

- expenditure reviews to assess expenditure forecasts against our prudency and efficiency considerations
- expenditure allowances which better reflect the efficient costs over time and retain incentives for SDP to prudently manage these costs in the long-term interests of customers
- pass through in specific limited circumstances which meet our criteria
- should there be a significant change in costs SDP is able to request the determination be re-opened.

Our preliminary view is this approach remains appropriate. At the next price review, cost changes are assessed and, if prudent would be passed through to customers and factored into prices going forward. While some costs may be higher than the allowance given, other costs may be less than that allowance. SDP is compensated for the risk of these differences (both positive and negative) through its WACC.

There is a real risk that if we were to pass through actual costs this would result in prices that do not reflect the efficient costs in the short term. Further the allocation of risk is likely to be inefficient with customers taking on a greater share and greater potential for inefficient costs to be passed through to customers in the longer term.

Our view is that cost pass-through mechanisms should only be applied in exceptional circumstances. We will apply the criteria outlined in Box 5.1 above to SDP's proposed items for cost-pass throughs for the upcoming determination.

5.5.2 SDP's proposed end of period true-up mechanisms allow them to shift more risk to customers

The proposed end of period true-up mechanisms would allow SDP to shift a greater share of the risk of doing business to customers. We will assess whether the level of proposed risk sharing is appropriate, and whether the costs proposed by SDP to apply an end-of-period true up are truly uncontrollable costs. This includes ancillary service charges, market fees, network losses, any other new fees introduced by energy market regulators, land tax, council rates, chemical costs and insurance premiums. In addition, we will consider how applying end-of-period true ups to these costs affects the overall balance of SDP's service levels, costs and risk.

Costs such as land tax, chemical costs and insurance differ from the type of costs where we currently apply pass throughs. These costs are not unexpected and can be influenced to some extent by the business. Moving to an end-of-period true-up for these types of costs would be a change to the current incentive based regulatory framework.

Seek Comment

21. Are SDP's proposed end-of-period true-ups reasonable and efficient?

5.6 We will consider the role of partial and full re-openers for SDP

In its pricing proposal, SDP recognised that there are a range of exogenous and uncontrollable events that may arise during the 2023 determination period which sit outside the proposed end-of-period true-up and cost-pass through mechanisms. Such events could have a material impact on SDP's costs, financial position and ultimately impose risks that cannot be adequately managed through insurance.[75]

According to SDP, the 2017 Determination did not explicitly compensate it for bearing risks that fall into this category. Therefore, going forward, it has proposed that these risks should be shared with customers through determination re-openers. SDP would apply to IPART for a partial replacement of its determination for events which have the following characteristics:

- SDP has no control over whether the event occurs
- the event has a defined trigger that results in a material increase or decrease in SDP's costs (materiality defined as at least 1% of notional revenue requirement)
- alternative risk management measures are not appropriate to prevent or mitigate the impact of the event (cost impact cannot be predicted and cost-effective insurance is not commercially available).[76]

5.6.1 We will clarify the type of events that constitute re-opener events

While the 2017 Determination did not include provisions for re-opener events, proposing to re-open a determination has always been an option for utilities such as SDP. The option has been rarely used however, given that the process is considerably resource intensive. Going forward, we agree with SDP that it is important to provide greater clarity on the circumstances in which it can apply for partial or complete replacement of the determination. We note, however, that we consider it to be a last resort measure that should be reserved for exceptional circumstances.

We intend to clarify the type of events that will constitute re-opener events over the 2023 determination period to allow SDP to better manage the risk of uncertain and unforeseen events. Our new Water Regulatory Framework outlines that IPART can agree to replace a determination partially or completely in cases where the business's ability to deliver services is materially affected.[77] However, in its pricing proposal, SDP has argued that applying a materiality threshold would be a more appropriate method of considering whether to re-open the determination. In SDP's view, applying a materiality threshold would uphold the principle of ensuring prices are cost-reflective while limiting the administrative burden of undertaking a re-opener.[78]

Our preliminary view is that SDP should have the opportunity to re-open the determination in cases where unforeseen events cause a material impact to its capacity to deliver services or cause set prices to no longer be cost reflective. However, we do not consider that an explicit materiality threshold is necessary to account for cases where prices are no longer cost-reflective. Our preliminary view is that we should maintain discretion and the ability to assess the impact of events on cost-reflectivity on a case-by-case basis.

Seek Comment

22. Should we accept SDP's proposal to introduce a materiality threshold to determine when we will re-open the determination? Or should we maintain our current approach of using discretion when considering whether to re-open the determination?

23. If we do introduce a materiality threshold, what should the materiality threshold be based on and at what level should it be set?

6 We will assess the proposed prices

When we set prices for regulated water businesses, we aim to set prices to cover the efficient costs of providing their required water services to customers. This enables water businesses to continue providing safe and reliable services now and into the future.

For SDP, we will consider this aim and the matters specified in the Terms of Reference and the IPART Act. Specifically, we will set prices so that SDP can recover the efficient costs in providing its services in the Greater Sydney region. In setting prices, the Terms of Reference require us to consider several pricing principles including (among others) that the structure and level of prices should encourage SDP to be financially indifferent as to whether or not it supplies water.

This chapter discusses our pricing approach for this review having regard to SDP's proposal on costs (see Chapter 4) and sharing of risks between SDP and its customers (see Chapter 5). We will be mindful of our approach in the 2017 price review and the implication of SDP's new operational regime on price setting. We will consider the potential impact of prices and bills on Sydney Water and its water customers.

The structure of this chapter is as follows:

- Section 6.1 outlines the pricing methodology and general approach we propose to adopt for the 2023 determination period.
- Section 6.2 discusses SDP's proposed pricing structures and compares SDP's proposal with our approach under the 2017 Determination.
- Section 6.2.1 and Section 6.22 of this Issues Paper discusses SDP's proposal and the implications for price structures for the defined level of service and services outside the defined level of service (i.e. negotiated agreements).
- In the remainder of this chapter, we discuss SDP proposal for a 4-year agreement and the flexibility to annually adjust prices; the allocation of costs to a single customer; updating prices each year and cost pass throughs.

In addition, Appendix B sets out the approach we propose to adopt, which is to set revenue and prices under the building block approach.[p] Appendix D describes our current pricing methodology under the 2017 Determination.

[p] The building block approach includes the standard components of the notional revenue requirement (NRR). It also includes 2 post-NRR adjustments, which are energy adjustment mechanism and efficiency carryover mechanism.

6.1 We will review our pricing methodology for SDP

6.1.1 The methodology we used in the 2017 Determination

In 2017, we set mode-dependent prices for shutdown, restart and plant operation modes. This was to ensure SDP could recover its costs in different modes and compensate SDP to be financially indifferent as to whether or not it supplied water. Then, for each mode, we determined:

- **Water service charges** ($ per day) that covers the cost of making the desalination plant and other assets (i.e. pipeline and membranes) available. These reflect SDP's fixed operating and capital costs and apply whether or not the plant supplies water.
- **Water usage charge** ($ per ML of water) that covers the cost of supplying non-rainfall dependent drinking water. This reflects SDP's variable operating costs and applies only when the plant supplies water.

In addition to water service charges, we set separate one-off payments to reflect the costs of transitioning between modes of operation. We also maintained having an abatement mechanism to provide SDP with a financial incentive to maximise its production of drinking water when required under its operating rules. Some of the charges we set in the 2017 Determination were affected by this mechanism. We have set out the methodologies used in 2017 in Appendix D. Doing so provides a reference point for any proposed changes to, or departures from, the existing methodologies.

In addition, the prices we set in 2017 were based on the building block approach for the notional revenue requirement (NRR) outlined in Appendix B. As part of this approach, we considered 2 adjustments after determining the NRR, which were related to energy adjustment mechanism and efficiency carryover mechanism.

6.1.2 Our approach to setting maximum prices for regulated services in 2023

A key theme of this review is the fact that SDP's role has changed. It will need to operate flexibly and as part of Greater Sydney's total water system. This means SDP would need to operate most of the time under a defined level of service with Sydney Water (see Chapter 2).[79] We will need to consider how these changes to SDP's operating environment will be reflected in prices as part of our review.

For the 2023 determination, we propose to set the following maximum prices for regulated services to meet the requirements under the Terms of Reference:

- one or more service charge(s) ($ per day) reflecting SDP's fixed costs for the plant
- one or more water usage charge(s) ($ per ML) for supplying non-rainfall dependent drinking water. This charge will reflect SDP's efficient variable operating costs.

In addition, we discussed our considerations for the different incentive and risk mechanisms proposed by SDP in Chapter 5. These considerations will have implications on how we set and structure prices. Therefore, we propose changing our pricing approach to incorporate the changes we make to:

- the existing abatement mechanism by considering SDP's proposal or alternative arrangements (see section 5.1)
- the energy adjustment mechanism by considering SDP's proposal (see section 5.4)
- the efficiency carryover mechanism by considering SDP's proposal (see section 5.2).

We will also consider the cost-pass through mechanisms as proposed by SDP in our pricing approach. In section 5.5, we proposed to adopt the proposed mechanisms if they are consistent with our guiding criteria for cost pass-throughs and are consistent with our overall assessment of the appropriate allocation of risk between SDP and customers.

As part of this review, we will consider unregulated pricing agreements and alternative options including explicit incremental service charges and/or usage charges.

Any changes to our pricing methodologies will be factored into prices over the 2023 determination period.

6.2 SDP proposed changing its pricing methodology to align with its new operating environment

Based on changes to the operating environment, SDP proposed to simplify its price structure by charging a set of prices for plant operational mode only and under its defined level of service.

SDP proposed to simplify its price structures by setting:[80]

- A single operational mode plant service charge ($ per day) that applies when the plant is operating to meet its defined level of service. This charge recovers the fixed cost of the plant under this arrangement, including the cost of SDP's membrane replacement program.
- A single pipeline service charge ($ per day) that applies to recover the fixed costs of the pipeline.
- A single water usage charge ($ per ML) to recover the variable costs incurred to meet SDP's defined level of service.

Table 6.1 compares SDP's proposal on price structures with our decisions in the 2017 price review.

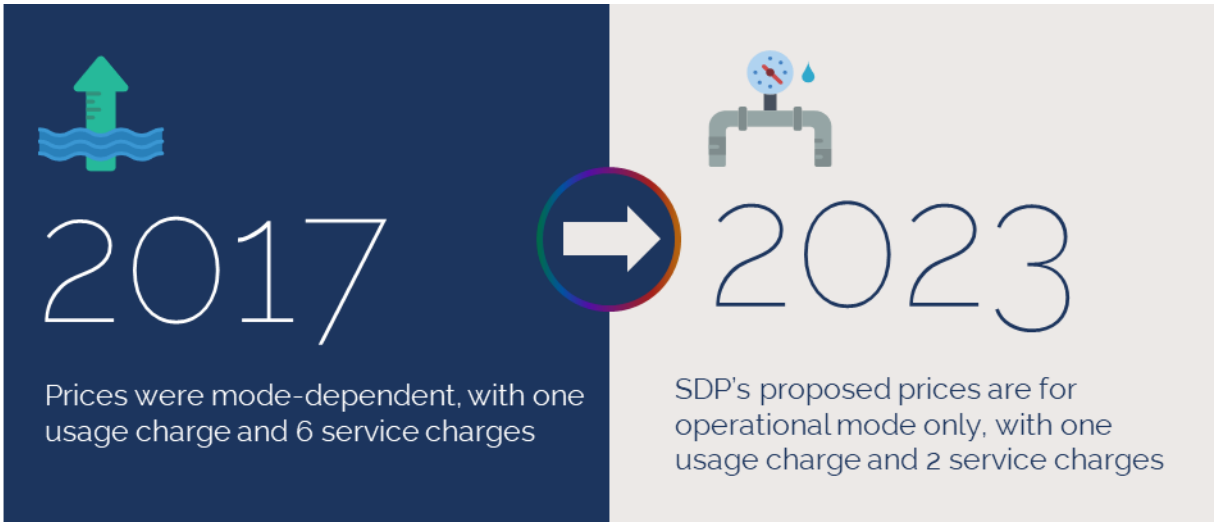


Table 6.1 Comparison of SDP's proposed price structures against the 2017 Determination

Modes	2017 Determination	SDP's proposal for 2023 Determination
Shutdown	• Water usage charge • Base plant service charge • Pipeline service charge • Transition service charge to shutdown • Membrane service charge • One-off residual membrane service charge	• Charges to be negotiated between SDP and Sydney Water
Restart	• Water usage charge • Base plant service charge • Pipeline service charge • Transition service charge to restart • Membrane service charge	• Charges to be negotiated between SDP and Sydney Water
Operational mode (within the defined level of service)	• Water usage charge • Base plant service charge • Incremental plant service charge • Pipeline service charge • Membrane service charge	• Water usage charge • Operational mode plant service charge • Pipeline service charge
Operational mode (outside of the defined level of service)	• Not applicable	• Charges to be negotiated between SDP and Sydney Water

Source: IPART analysis and Sydney Desalination Plant Pty Ltd, Pricing Proposal to IPART – Pricing Submission, September 2022, Table 12.1 p 199.

Under SDP's proposal, Sydney Water would incur charges we set for this review for operational mode only (within the defined level of service). Sydney Water would then pass these charges to water customers. For other modes, SDP would need to negotiate the prices directly with Sydney Water.

When assessing SDP's proposed price structures, we will consider the trade-off between simplicity, transparency of prices (particularly prices under negotiated agreements), and SDP's new role under the GSWS and its new licence. In particular, we will consider:

- the merits of only setting prices for services under a defined level of service
- the appropriateness of allowing SDP and Sydney Water to enter into negotiated agreements and set prices for services outside a defined level of service
- the merits of establishing different service and usage charges for varying water production levels.

We discuss SDP's proposed pricing methodology as well as each of these considerations further in the following sections.

We are interested in your views on whether the proposed simplified price structure supports SDP's new role in Greater Sydney. In the next section, we will discuss our consideration for setting prices for different water production levels under the operational mode.

6.2.1 SDP proposed to set prices that applies for all water production levels

For operational mode within the defined level of service, SDP proposed a price structure that applies for all water production levels. This means water customers would pay the same service and usage charges regardless of how much water SDP produces and supplies to Sydney Water.

In Chapter 3, we indicated that we would assess SDP's costs under different water production levels. This is because we want to understand how sensitive SDP's costs are to the total amount of water it would produce each year.

The financial indifference principle under our Terms of Reference implies that we have to set prices that consider all production levels. Our aim for this review is to set prices that recover efficient costs and minimise the events where SDP can over or under recover its revenues. Similar to our expenditure review, we will consider whether it would be appropriate to structure service and usage charges based on different water production levels. This could mean structuring one or more service and usage charges for this review. As part of this, we will also assess the trade-off between simplicity/practicality and accuracy when determining the appropriate price structure and setting prices.

Seek Comment

24. Should we accept SDP's proposal for a single 2-part tariff to cover all levels of production? If costs are not perfectly correlated with production, should we consider setting multiple service and/or usage charges to better reflect costs at different levels of production?

6.2.2 SDP proposed to negotiate prices with Sydney Water for services outside the defined level of service

For services outside of the defined level of service, SDP proposed to negotiate prices directly with Sydney Water. This would be captured under negotiated or unregulated agreements, and we would not be involved in setting prices for these services.

SDP considered unregulated agreements with Sydney Water could deliver higher value outcomes for water customers in Greater Sydney.[81] For example, if Sydney Water is unable to source water from SDP outside the defined level of service, Sydney Water may pursue alternative sources that could be more expensive. In addition, SDP indicated that unregulated agreements are administratively flexible and would not require SDP and Sydney Water to specify all possible supply arrangements upfront. Further, while prices under the unregulated agreement would not be set by IPART, SDP considered that IPART would retain the ability to oversee the negotiated prices as part of the Sydney Water price review.

SDP also considered a number of reasons why the proposed unregulated agreements would not breach the financial indifference principle. Firstly, SDP could set the pricing principles for these agreements to be consistent with the indifference principle. Secondly, SDP had previous experience in providing alternative services (e.g. emergency response notices) and worked with Sydney Water in ensuring the funding arrangement would be consistent with the indifference principle. Lastly. SDP has noted that IPART would have an opportunity to review the costs of the unregulated agreements that Sydney Water proposes to pass onto water customers as part of Sydney Water's next price review.

In 2017, we decided to continue setting SDP's prices at all times, for all customers. While, in principle, we considered there was an economic argument for unregulated prices, we considered unregulated agreements would be inconsistent with the financial indifference principle. This is because if SDP were to have the option to enter into unregulated agreements, it would only be expected to do so at its benefit. Thus, it would no longer be financially indifferent as to whether or not it supplies water.

For this review, we will consider the need for greater pricing flexibility to accommodate SDP's new operating environment and what this means for water customers. We understand that the next few years will be a learning phase for SDP. We appreciate the flexibility that unregulated agreements would give to SDP as it would not need to determine a range of services and costs for these services upfront. However, we will need to balance pricing flexibility with other matters for this review.

Similar to our views in the 2017 review, in principle, we consider that SDP and Sydney Water should be able to make informed decisions in their own self-interest where SDP has limited monopoly power. However, given the change in operating environment for SDP, we will consider whether the proposal would be consistent with the financial indifference principle.

In addition, we will need to consider the parties involved in the negotiation and implications for water customers. In other water price reviews, we have allowed for utilities to enter into unregulated agreements with their large non-residential water customers. These customers are generally end-use water customers,[q] who are mature, sophisticated, and have the ability to enter into commercial negotiations. However, under SDP's proposal, we have SDP and Sydney Water entering into unregulated agreements. Sydney Water is not an end-use customer, rather it sells water to end-use water customers in Greater Sydney. Therefore, the impact of unregulated agreements is not limited to the parties entering these agreements. The proposed agreements would ultimately affect end-use water customers who would not be a party to these agreements or may not have been consulted by either utility.

Further, we will need to consider how the costs of these agreements can differentiated from the costs outlined in Chapter 4 and would be passed on to end-use water customers. At this stage, we consider SDP's proposal for unregulated agreements would be similar to a cost pass-through mechanism and we will use our cost pass-through principles in our assessment. We will also need to consider how benefits of these agreements may be shared with customers, and any implications to other incentive mechanisms in place for SDP (see Chapter 5).

[q] End-use water customers are customers who use water for their own needs.

Overall, we will assess whether unregulated agreements provide good value outcomes for water customers in the Greater Sydney region. In particular, we seek views on how we can incentivise both SDP and Sydney Water to negotiate and drive the best possible outcomes for water customers. Under IPART's new regulatory framework, we expect regulated utilities to drive good value outcomes for customers. While this new framework will not be applicable for this review, we will consider customer interest and aim to align what we do for this review with the new framework where possible. This is because we consider it important to assess key issues from a longer-term perspective instead of assessing them for one determination period only.

Seek Comment

25. SDP proposed to set prices for services outside its level of service by negotiating directly with Sydney Water. This means IPART will not be involved in setting these prices. Do you think this is appropriate?

26. Should unregulated agreements between SDP and Sydney Water be allowed under the determination?

27. If allowed, should unregulated agreements between SDP and Sydney Water impact prices paid by end-use water customers?

28. If we accept SDP's proposal for unregulated agreements, how can we ensure these agreements deliver good outcomes for end-use water customers?

29. Are there specific events or services which would be more suitable for unregulated agreements?

6.2.3 SDP proposed a 4-year determination period to set prices

We will need to consider the length of period we should set prices for, as there are both benefits and risks in setting prices for a longer period. In our last review, we set SDP's prices for 5 years. For this review, SDP has proposed that we set prices for a slightly shorter period, i.e. 4 years from 1 July 2023 to 30 June 2027.[82]

Under normal circumstances, SDP considers a 5-year determination period would provide certainty and flexibility for its business. However, SDP had to consider the impact of the one-year deferral in setting new prices. In 2021, the former Minister for Water, Property and Housing requested IPART defer the review of SDP's prices by one-year so that the upcoming review would consider the impact of the new GSWS and SDP's new licence.[83] This deferral meant that SDP had to make debt refinancing decisions ahead of the 2023 price review. At SDP's request in 2021, IPART confirmed that the transition period to the trailing average cost of debt would occur over 5 years commencing 1 July 2022 and ending 30 June 2027. This led to SDP undertaking refinancing activities that considered this debt arrangement. [84]

In addition, SDP considered a 4-year period would help reduce the risk of forecasting error for key cost items. Because of its new operating environment, SDP indicated it would use the next 4 years to better understand its operations and performance under its new role. SDP also considered a 4-year period would provide the shortest period for IPART to transition its pricing regulation into the new IPART's regulatory framework.[85]

At this stage, we agree with SDP that setting a 4-year period would balance the need to have funding certainty while learning how the business responds to its new operating regime. We will consider any new and relevant information before making our draft decisions in April 2023.

6.2.4 SDP proposed modest price increases with flexibility to annually adjust prices

SDP proposed to charge the prices set out in Table 6.2 to Sydney Water over the next 4 years.[86] Sydney Water then passes these prices on to end-use water customers.

Table 6.2 Proposed prices over the 2023 determination period ($2023-24)

	2023-24	2024-25	2025-26	2026-27
Plant service charge ($ per day)	418,304	427,331	446,724	445,726
Pipeline service charge ($ per day)	99,324	99,426	99,346	99,183
Water usage charge ($ per ML)	798	800	807	806

SDP has estimated its proposed prices represent about 8% of a typical residential customer's water and wastewater bills in 2023-24. Further, its proposed prices would result in 0.3% to 3.8% increase in the portion of the bill that relates to the SDP component. The impact varies depending on water production levels.[87] After 2023-24, SDP proposed modest price increases.[88] However, these exclude the impact of proposed cost pass-throughs and true-up mechanisms as well as movements in market rate inputs to our review (e.g. inflation and rate of return).

SDP also proposed to adjust prices each year to some of its costs to be passed through to Sydney Water's water customers.

When setting SDP's future prices, we will consider the appropriateness of:

- passing on all costs to Sydney Water as the only customer of SDP
- updating prices each year given the proposed cost pass throughs.

The following sections provide details on these considerations.

SDP proposed to pass all costs to Sydney Water

In 2017, we decided to use a principles-based approach to sharing SDP's costs. We used the impactor and beneficiary pays principles in a hierarchy to create an efficient allocation of costs. At the time, this approach recognised the purpose for which SDP's plant was built and funded, namely the provision of an additional supply of water when dam storage levels were low. It also recognised that third parties may want to use the plant outside of drought.

While SDP proposed to maintain the cost sharing arrangements, it proposed a simple arrangement where Sydney Water would be the only customer over the 2023 determination

period. SDP indicated it would be highly unlikely to supply to a third-party customer[r] in the foreseeable future.[89] Under its new licence, SDP needs to respond quickly to meet Sydney Water's water requests. Sydney Water could request water up to SDP's maximum annual production level of 91.25GL. According to SDP, this limits its ability to supply to another customer. Consequently, SDP considered Sydney Water to be both the impactor and beneficiary in all circumstances. This means Sydney Water would be the only party 'sharing' SDP's costs.

We consider it important that SDP's customers pay their fair share of costs. In principle, we consider sharing SDP's costs among its customers to be reasonable and consistent with the way we regulate other water businesses. If third-party customers emerge, then SDP's fixed costs should be shared between Sydney Water and these customers. However, we are also mindful that SDP's operating regime has changed since our last review. At this stage, we consider SDP's proposal is reasonable given the constraints it has under its new operating regime.

We will consider any new and relevant information on whether SDP has the ability and capacity to supply water to third-party customers.

Seek Comment

30. In 2017, we structured prices to enable third-party customers (in the event they emerged) to pay their fair share of SDP's costs. For this review, SDP proposed to set prices for only one customer (i.e. Sydney Water). Should we continue to facilitate third-party customer pricing through the determination?

SDP proposed to adjust prices each year of the 2023 determination period

SDP proposed to adjust its prices each year of the 2023 determination period.[90] This is to pass on changes to its costs due to movements in electricity network charges, subordinate energy costs, and cost of debt. In addition, SDP proposed to continue having an abatement mechanism (see section 5.1). This means prices could be further adjusted during the 2023 determination period because of this mechanism.

At the end of 2023 determination period, SDP has also proposed to monitor movements in other costs and outcomes of the energy adjustment mechanism and efficiency carryover mechanism. Then, SDP proposed to pass on the net changes in costs to future prices at the next price review. Further information on these mechanisms is available in Chapter 5.

Based on SDP's proposal, the proposed prices shown in Table 6.2 may differ to prices that water customers pay each year depending on any yearly movements in costs. Consequently, this may mean the impact on water customers could be more or less than SDP's initial bill impact for 2023-24.

[r] A third-party customer is a customer that is other than Sydney Water.

As part of this review, we will assess SDP's proposal and decide who would be best placed to manage these costs changes. We will look at what we decided in previous reviews for SDP, consider our regulatory framework and how we can incentivise SDP to deliver good value to water customers. For example, we included a mechanism in the 2017 Determination to pass on changes in energy network costs to Sydney Water's customers. We will assess the proposal based on the current mechanism and any new and relevant information since the last review for SDP.

For the cost of debt, we have a standard approach for the weighted average cost of capital. This approach has the option of passing on the changes in the cost of debt to customers via annual price adjustment or an end of period true-up. We will consider potential financial impacts on SDP and Sydney Water's customers if we adjust prices each year of the 2023 determination period or make a net adjustment at the next determination period.

The proposal to pass on the annual changes of SDP's subordinate energy costs to water customers is a new adjustment. We will consider this proposal as part of our overall assessment of SDP's proposed risk package outlined in Chapter 5. If we decide to accept SDP's risk proposals, we will consider potential financial impacts on SDP and Sydney Water's customers if we adjust prices each year or make a net adjustment at the next determination period.

Seek Comment

31. Should we consider applying a materiality threshold when allowing for prices to be adjusted each year? If so, what are the factors we should consider when setting the appropriate threshold?

32. For the cost of debt, our framework allows for costs to either be adjusted each year or at the end of period. Is there a case to do annual adjustments as proposed by SDP or should we instead apply an end of period adjustment?

Appendices

A Matters that IPART must consider for this review

In making our decisions, we will comply with our Terms of Reference, issued by the Minister for Lands and Water under section 52(1)(a) of the *Water Industry Competition Act 2006* (WIC Act). These terms require us to determine prices for two services:

1. the supply of non-rainfall dependent drinking water to purchasers
2. the making available of the desalination plant to supply non-rainfall dependent drinking water.

We will also comply with:

- relevant sections of the *Independent Pricing and Regulatory Tribunal Act 1992* (IPART Act) which sets out matters that we must have regard to
- Part 5 of the *Water Industry Competition (General) Regulation 2021* (WIC Regulation) which sets out requirements that we must meet in conducting an investigation under the Terms of Reference.

A.1 How we plan to comply with the IPART Act

IPART is required under section 15(1) of the IPART Act to have regard to the following matters in making determinations and recommendations:

a. The cost of providing the services concerned
b. The protection of consumers from abuses of monopoly power in terms of prices, pricing policies and standard of services
c. The appropriate rate of return on public sector assets, including appropriate payment of dividends to the Government for the benefit of the people of New South Wales
d. The effect on general price inflation over the medium term
e. The need for greater efficiency in the supply of services so as to reduce costs for the benefit of consumers and taxpayers
f. The need to maintain ecologically sustainable development (within the meaning of section 6 of the *Protection of the Environment Administration Act 1991*) by appropriate pricing policies that take account of all the feasible options available to protect the environment
g. The impact on pricing policies of borrowing, capital and dividend requirements of the government agency concerned and, in particular, the impact of any need to renew or increase relevant assets
h. The impact on pricing policies of any arrangements that the government agency concerned has entered into for the exercise of its functions by some other person or body
i. The need to promote competition in the supply of the services concerned
j. Considerations of demand management (including levels of demand) and least cost planning
k. The social impact of the determinations and recommendations

l. Standards of quality, reliability and safety of the services concerned (whether those standards are specified by legislation, agreement or otherwise).

Table A.1 outlines how we plan to address each matter.

Table A.1 How we plan to consider matters under section 15(1) of the IPART Act

Section 15(1)	Our approach for this review
Cost of providing the services	We will engage expenditure consultants to determine SDP's efficient costs to deliver its monopoly services over the 2023 determination period. We will consider their assessments of the assumptions and rationale underpinning the proposed operating and capital expenditure. We will also consider undertaking benchmarking where possible.
Protection of consumers from abuses of monopoly power	We will protect customers from abuses of monopoly power by ensuring we set prices to recover the efficient costs SDP requires to deliver its monopoly services. We will also consider the impacts of our pricing decisions on both Sydney Water and end-use water customers (i.e. Sydney Water's customers).
Appropriate rate of return and dividends	We will use our standard approach for the weighted average cost of capital when determining the appropriate rate of return and dividends.
Effect on general price inflation	We understand that SDP's costs contribute to general water costs in Greater Sydney. We plan to assess the overall general water prices in Greater Sydney and how this would contribute to general price inflation of the region.
Need for greater efficiency in the supply of services	We will engage expenditure consultants to determine SDP's efficient costs to deliver its monopoly services over the 2023 determination period. We will consider their assessments of the assumptions and rationale underpinning the proposed operating and capital expenditure. We will also consider undertaking benchmarking where possible.
Ecologically sustainable development	We will engage expenditure consultants to determine SDP's efficient costs to meet all of its regulatory requirements, including its environmental obligations. We will consider environmental factors and incentives to protect the environment when setting prices.
Impact on borrowing, capital and dividend requirements	We will use our standard approach for the weighted average cost of capital when determining the appropriate rate of return and dividends. We will also conduct the financeability test using our standard approach to understand if our decisions would affect the business' financial sustainability.
Impact on pricing policies of any arrangements that the government agency concerned has entered into for the exercise of its functions by some other person or body	When setting efficient costs and prices, we will consider the potential impacts of our decisions on the Greater Water Sydney Strategy, Sydney Water's Decision Framework and other relevant government policies.
Need to promote competition	In determining efficient costs, we will be mindful of relevant principles such as competitive neutrality when making our decisions.
Considerations of demand management and least cost planning	We will engage expenditure consultants to determine SDP's efficient costs to deliver its monopoly services over the 2023 determination period. We will consider their assessments of the assumptions and rationale underpinning the proposed operating and capital expenditure. We will also consider undertaking benchmarking where possible.
Social impact	We will consider potential impacts of our pricing decisions on both Sydney Water and end-use water customers (i.e. Sydney Water's customers).
Standards of quality, reliability and safety	As part of our expenditure review, we will consider SDP's requirements, including standards of quality, reliability and safety in delivering its services.

A.2 How we plan to comply with the WIC Regulation

Part 5 of the WIC Regulation specifies the steps we must take in conducting a significant price investigation referred to us by the Minister for Lands and Water under section 52 of the WIC Act. Section 39 of the WIC Regulation provides a summary of the steps for conducting the investigation:

1. The following is a summary of the procedure set out in this Part for the conduct of significant pricing investigations:
   a. IPART publishes issues paper and invites submissions
   b. IPART first publishes an Issues Paper on the investigation. It then invites submissions on the issues paper from the investigated monopoly supplier and other persons who wish to make submissions. See Division 2.
   c. IPART holds public hearing
   d. IPART holds a public hearing on the published issues paper and hears further submissions on the paper. See Division 3.
   e. IPART publishes draft report and invites submissions
   f. After holding the public hearing and considering submissions on the issues paper, IPART publishes a draft report for the investigation setting out its proposed determination of pricing, its proposed pricing methodology and responses to submissions made in relation to the issues paper. It then invites submissions on the draft report from the investigated monopoly supplier and other persons who wish to make submissions. See Division 4.
   g. Requirements before IPART publishes final report
   h. Before IPART publishes the final report for the investigation, it must consider the submissions made on the draft report and include certain matters in the report concerning its pricing methodology and approach to the investigation. See Division 5.
2. This section does not affect the meaning or interpretation of a provision of this Part that it summarises.

We will follow the process set out in Part 5 of the WIC Regulation. We will provide a copy of this Issues Paper to SDP and publish it on our website for customers, the community and other stakeholders to access. We will invite written submissions on the Issues Paper from SDP and stakeholders, and we will make those submissions publicly available on our website. Submissions to the Issues Paper are due on 31 January 2023. We propose to hold a public hearing on the Issues Paper in early February 2023.

B How we set prices

We will continue to use the building block approach to calculate SDP's notional revenue requirement. This approach breaks down SDP's costs into the following components (or building blocks):

- **operating allowance**
- **capital allowance**
- **tax allowance**
- **working capital allowance**

The annual sum of these building blocks is the notional revenue requirement (NRR) and is our assessment of the total efficient costs SDP should incur in delivering its services (see Figure B.1).

Consistent with our Terms of Reference, we also include additional allowances for an:

- **energy adjustment mechanism (EAM)**, to share demonstrated energy gains or losses with customers, and
- **efficiency adjustment mechanism (ECM),** to allow SDP to carryover demonstrated efficiency savings, net of efficiency losses, in providing water supply and security.

The EAM and ECM allowances are added to the NRR to obtain the target revenue for SDP. The target revenue may be higher or lower than the NRR depending on the EAM outcome. We then set prices to recover the target revenue amount.

B.1 Operating allowance

Operating costs relate to a utility's day-to-day costs for maintaining its operations. These costs include wages, electricity, and consumable materials. For SDP, operating costs are largely driven by energy costs, as well as operation and maintenance costs (i.e. payments to their contractor, Veolia, for operating and running SDP). Operative allowance would be set to cover these costs.

B.2 Capital allowance

To calculate the allowances for a return on assets and regulatory depreciation in the revenue requirement, we need to determine 3 key inputs:

- the value of SDP's RAB, which represents the economic value of the assets used to deliver the monopoly services
- the appropriate rate of return (i.e. using the WACC) on SDP's RAB
- the appropriate asset lives and depreciation method to apply to SDP's RAB.

In the 2017 Determination, we set separate RABs for SDP's plant, pipeline and short-lived assets (or corporate assets). At this stage, we are considering continuing this approach.

Figure B.1 The building block approach

B.3 Tax allowance

The tax allowance is one of the last building block items we calculate, due to its dependence on other items such as operating cost allowances and WACC parameters. Our standard approach is to calculate the tax allowance for each year by applying a 30% statutory corporate tax rate adjusted for gamma to the utility's (nominal) taxable income. For this purpose, taxable income is the notional revenue requirement (excluding tax allowance) less operating cost allowances, tax depreciation, and interest expenses.

B.4 Working capital allowance

We include this allowance in the notional revenue requirement to ensure businesses can recover the costs incurred due to delays between delivering regulated goods or services and receiving payment for those goods or services (net of any benefits received due to delays between them businesses receiving goods or services and paying for those good or services). It typically represents around 1% of their NRR. We have a Working Capital Allowance Policy Paper that outlines our approach, which we will use for this review.

B.5 Energy adjustment mechanism

In 2017, we maintained the energy adjustment mechanism for SDP. The purpose of this mechanism was to pass through to customers any gains and/or losses outside a core band from the sale of SDP's surplus energy while during shutdown and restart. Surplus energy includes electricity and renewable energy certificates. This purpose and how we generally calculate the adjustment is outlined in the 2017 Methodology Paper we prepared for the 2017 price review.

In Chapter 5, we discussed SDP's proposed changes to the energy adjustment mechanism. For this review, we will assess whether the proposal presents good value for customers. As part of this, we will consider any necessary changes to the 2017 Methodology Paper and consult with stakeholders.

For the energy adjustment amounts, we will use the 2012 Methodology Paper to assess the adjustments required for 2016-17 and 2017 Methodology Paper for the 2017-18 to 2022-23 period. When assessing SDP's proposed changes to the methodology paper, we plan to apply any changes from 1 July 2023.

B.6 Efficiency adjustment mechanism

In 2017, we maintained the efficiency adjustment mechanism for SDP. This mechanism removes the incentive for SDP to delay efficiency savings by allowing the business to retain a permanent savings for the same number of years regardless of when the saving is achieved within a determination period, while maintaining all other aspects of the form of regulation. The purpose of this mechanism and how we calculate the adjustment is outlined in the 2017 Methodology Paper.

In Chapter 5, we discussed SDP's proposed changes to the efficiency adjustment mechanism. For this review, we will assess whether the proposal presents good value for customers. As part of this, we will consider any necessary changes to the 2017 Methodology Paper and consult with stakeholders.

C Summary of SDP operations over 2017-2022

	2017	1 July 2017: IPART's 2017 Determination applies
	2018	SDP remains in water security mode due to high dam levels
	2019	12 Jan 2019: Dam levels fall below 60% and SDP is triggered to restart 13 March 2019: SDP begins supplying water 26 July 2019: SDP begins producing water at full capacity
	2020	27 March 2020: Sydney Water issues first emergency response notice (ERN) to SDP due to continuing water quality issues
	2021	Sydney Water issues four additional ERNs due to operational difficulties from high rainfall and emergency repairs at Potts Hill Reservoir
	2022	Sydney Water issues over 10 additional ERNs due to major outage works and flood-induced water quality issues

D Summary of methodologies under 2017 Determination

In this appendix, we discuss our pricing methodology under the 2017 Determination. In particular, we provide further details on the different charges, purposes of these charges and how they apply over the 2017 determination period. We also explained how the abatement mechanism apply to relevant charges.

D.1 Methodologies used to determine maximum prices under the 2017 Determination

In our 2017 Determination, the prices for water supply services are determined by reference to the plant's mode of operation (relevantly, one of: plant operation period, shutdown period or restart period). The prices applicable to each mode of operation consist of one or more of the following charges:

- a water usage charge
- a base service charge (AM)
- an incremental service charge (AM)
- a transition to shutdown charge
- a transition to restart charge
- a pipeline charge
- a membrane service charge (AM)
- a residual membrane charge

Table D.1 below explains the purposes of each charge and provides a summary of the methodology for calculating each charge. Table D.2 sets out which combination of charges apply to each mode of operation (that table appears at the end of Appendix D).

The use of 'AM' above indicates that those charges are **abatable charges** and are subject to the abatement mechanism. The abatement mechanism provides SDP with a financial incentive to maximise its production of drinking water when required under its operating rules. This mechanism operates to reduce SDP's fixed charges if it produces less than the specified volume of drinking water per day when the plant is required to operate.

Section D.2 provides more detail on how the mechanism applies under the 2017 Determination.

Table D.1 Summary of methodologies used to determine the maximum price for each of the charges

Types of 2017 charges	Purpose of the charge	Summary of methodology used in the 2017 Determination	Consideration for the 2023 Determination
Water usage charge ($/ML)	This charge reflects SDP's efficient variable operating costs and applies when the plant produces and supplies water. Although the plant does not produce water during a shutdown period or restart period, our 2017 Determination enabled SDP to charge for water supplied out of storage (i.e. out of its storage tanks) during a Shutdown Period or a Restart Period. Notably, the methodology for the water usage charge allows for a nil water usage charge. The nil charge applies when SDP supplies drinking water to Sydney Water outside its drought response role,[s] minimum run time,[t] and its emergency response role.[u]	The water usage charge that SDP may levy on a customer for a day is calculated by multiplying the number of megalitres of desalinated water supplied by SDP from the Plant to the customer on that day, by the sum of: • the water usage charge for the applicable period (set out in the Determination) • the variable network charge for the incremental amount of electricity required to produce each megalitre of desalinated water. However, the water usage charge that SDP may levy on Sydney Water for a day is nil if: • the date falls outside a drought response period • the desalinated water supplied to Sydney Water on the day is not supplied under an emergency response notice • the day occurs more than 14 months after the most recent drought response trigger day.	We propose maintaining this charge, but we will consider the merit of setting multiple usage charges based on water production levels. We will also consider making some changes to the methodology based on our consideration of SDP's proposal on cost pass-throughs and true-ups. Refer to sections 6.2.1 and 6.2.4.
Base service charge ($/day)	This charge reflects SDP's fixed costs for the plant when in a shutdown period and applies to all modes of operation. These are the minimum costs of maintaining the plant so that it can reliably produce drinking water in a timely manner when required to operate under its licence.	The base service charge that SDP may levy on a customer for a day is calculated by multiplying the customer's share of all water supplied by WaterNSW and/or SDP on that day, for use within Sydney Water's area of operations, by the sum of the: • basic service charge for the applicable period (set out in the Determination) • the fixed network charge for the day	We will consider SDP's proposal to simplify this charge. In particular, SDP proposed to set a plant operational service charge that potentially covers the 2017 base service charge, incremental service charge, membrane service charge and residual membrane charge. In addition, we will consider the merit of setting multiple service charges based on water production levels.

[s] SDP's drought response role is outlined in the 2017 Metropolitan Water Plan and imposed on SDP as a condition of its operating licence. The plan provided that SDP must operate the plant in response to drought when the total dam storage level fell below the designated dam storage level 'off' trigger for the Plant and continue to do so until the total dam storage level exceeded the 'on' trigger.

[t] The 2017 Metropolitan Water Plan (page 38) provided SDP with the option of running the plant for a minimum period of 14 months. This comprises six months of running at up to full capacity, in addition to a maximum eight-month start-up period. The plan provided the minimum run time option, even if dam storage capacity levels exceed the designated dam storage level 'off' trigger for the plant. Outside the minimum run time, the 'off' trigger then applied.

[u] SDP may be required under the June 2012 Water Supply Agreement with Sydney Water to operate the plant as an emergency response measure.

Types of 2017 charges	Purpose of the charge	Summary of methodology used in the 2017 Determination	Consideration for the 2023 Determination
		• the variable network charge for the average daily amount of the annual fixed electricity consumption of the plant, regardless of its mode of operation.	Lastly, we will consider making some changes to the methodology based on our consideration of SDP's proposal on cost pass-throughs and true-ups. Refer to sections 6.2.1 and 6.2.4.
Incremental service charge ($/day)	This charge reflects SDP's additional fixed costs when in a plant operation period.	The incremental service charge that SDP may levy on a customer for a day that falls: • within a drought response period or within 14 months after a drought response trigger day is to be calculated by multiplying the customer's share of all water supplied by WaterNSW and/or SDP on that day, for use within Sydney Water's area of operations, by the sum of the: – incremental service charge for the applicable period (set out in the 2017 Determination) – the variable network charge for the average daily amount of the incremental fixed electricity consumption of the Plant during a plant operation period. • neither within a drought response period nor within 14 months after a drought response trigger day is to be calculated by multiplying the customer's share of all desalinated water supplied by SDP from the Plant to that customer on the day, by the sum of the: – incremental service charge for the applicable period (set out in the Determination) – the variable network charge for the average daily amount of the incremental fixed electricity consumption of the Plant during a plant operation period.	We will consider SDP's proposal to simplify this charge. In particular, SDP proposed to set a plant operational service charge that potentially covers the 2017 base service charge, incremental service charge, membrane service charge and residual membrane charge. In addition, we will consider the merit of setting multiple service charges based on water production levels. Lastly, we will consider making some changes to the methodology based on our consideration of SDP's proposal on cost pass-throughs and true-ups. Refer to sections 6.2.1 and 6.2.4.
Transition to shutdown charge ($/event)	This charge reflects the efficient fixed one-off operating costs incurred when the plant moves from a plant operation period to a shutdown period. There are two circumstances in	*First shutdown period since a drought response day* In this instance, the transition to shutdown charge is calculated by multiplying the transition to shutdown charge for the applicable period (set out in the	We will consider the merit of SDP's proposal to set this as part of unregulated agreements or whether it would be more appropriate to consider alternative arrangements.

Types of 2017 charges	Purpose of the charge	Summary of methodology used in the 2017 Determination	Consideration for the 2023 Determination
	which SDP may levy a transition to shutdown charge: • where the shutdown period is the first since a drought response cease day (i.e. after a drought) • where the shutdown period is triggered by a customer serving a cease supply notice or the occurrence of an emergency response cease day (i.e. outside drought).	Determination), by the customer's share of all water supplied by WaterNSW and/or SDP, for use within Sydney Water's area of operations, for the most recent drought response period prior to the shutdown period. *Shutdown period triggered by a customer* In this instance, the transition to shutdown charge is calculated by multiplying the transition to shutdown charge for the applicable period (set out in the Determination), by the quotient of 1 and the total number of customers who triggered the commencement of the Shutdown Period.	Refer to section 6.2.2.
Transition to restart charge ($/event)	This charge reflects the efficient fixed one-off operating costs incurred when the plant moves from shutdown period into a plant operation period. There are two circumstances in which SDP may levy a transition to restart charge: • where the restart period is the first since a drought response trigger day (i.e. after a drought begins) • where the restart period is triggered by a customer serving a restart plant notice or an emergency response notice (I.e. outside drought).	*First restart period since a drought response trigger day* In this instance, the transition to restart charge is calculated by multiplying the customer's share of all water supplied by WaterNSW and/or SDP, for use within Sydney Water's area of operations, in the 365 days immediately before the Restart Period by the sum of: • the transition to restart charge for the applicable period (set out in the Determination) • the variable network charge for the electricity consumption required during a restart period to commence activities associated with preparing the Plant for production of desalinated water. *Restart period triggered by a customer* In this instance, the transition to restart charge is calculated by multiplying the quotient of 1 and the total number of customers who triggered the restart period by the sum of: • the transition to restart charge for the applicable period (set out in the Determination) • the variable network charge for the electricity consumption required during a restart period to commence activities associated with preparing	We will consider the merit of SDP's proposal to set this as part of unregulated agreements or whether it would be more appropriate to consider alternative arrangements. Refer to section 6.2.2.

Types of 2017 charges	Purpose of the charge	Summary of methodology used in the 2017 Determination	Consideration for the 2023 Determination
		the Plant for production of desalinated water.	
Pipeline charge ($/day)	This charge reflects SDP's fixed costs for the pipeline, which are the same regardless of the mode of operation.	The pipeline charge that SDP may levy on a customer for each day of the relevant period is calculated by multiplying the pipeline charge for the applicable period (set out in the Determination) by the customer's share of all water supplied by WaterNSW and/or SDP to an Impactor on that day, for use within Sydney Water's area of operations.	We consider maintaining this charge, but we may make changes to ensure this charge remains cost-reflective.
Membrane service charge ($/day)	This charge reflects the capitalised costs of a full membrane replacement at the commencement of a restart period. SDP could not levy a membrane service charge if it was previously entitled to levy a residual membrane charge during the term of the 2017 Determination.	The membrane service charge that SDP may levy on a customer for a day is calculated by multiplying the membrane service charge for the applicable period, and the period when the first non-emergency restart period began (set out in the Determination) by: • the customer's share of all water supplied during that period by WaterNSW and/or SDP, on that day, for use within Sydney Water's area of operations (where a drought response trigger day has occurred during the term), or • the customer's share of the desalinated water supplied by SDP from the Plant to all customers on the day (where no drought response trigger day has occurred during the term).	We will consider SDP's proposal to simplify this charge. In particular, SDP proposed to set a plant operational service charge that potentially covers the 2017 base service charge, incremental service charge, membrane service charge and residual membrane charge. Refer to sections 6.2.1 and 6.2.4.
Residual membrane charge ($/day)	To allow SDP to recoup the full cost of the membrane replacement required at a restart, the 2017 Determination set a separate charge for any residual capital costs of membranes. This is a one-off charge payable by the customer(s) on transition to shutdown following a period of operation outside drought. The residual costs payable at	Where SDP may levy a residual membrane charge on a customer,[v] the charge is calculated by multiplying: • the quotient of 1 and the total number of customers who triggered the shutdown period • the residual membrane charge for the applicable period, and the year when the first non-emergency	We will consider SDP's proposal to simplify this charge. In particular, SDP proposed to set a plant operational service charge that potentially covers the 2017 base service charge, incremental service charge, membrane service charge and residual membrane charge. Refer to sections 6.2.1 and 6.2.4.

[v] Under the 2017 Determination, SDP may only levy a residual membrane charge for the first day of a Shutdown Period if:
1. SDP has not previously been entitled to levy a residual membrane charge during the Term;
2. the Shutdown Period was triggered by a customer serving a Cease Supply Notice; and
3. as at the start of the Shutdown Period:
    i. no Drought Response Trigger Day has occurred during the Term; and
    ii. at least one Restart Period has been triggered by a customer serving a Restart Plant Notice during the Term.

Types of 2017 charges	Purpose of the charge	Summary of methodology used in the 2017 Determination	Consideration for the 2023 Determination
	shutdown vary depending on which year the restart occurred during the Term of the Determination.	restart period began (set out in the Determination).	

D.2 Abatement mechanism

The 2017 Determination provides for abatable charges to be multiplied by an 'abatement factor' on each abatement application day.

The 'abatement factor' for a day is calculated as follows:

> The average of daily volumes for the most recent 365 availability days (including that day if it is an availability day)[w] divided by 250ML per day (or if the Plant is expanded, the nameplate capacity per day of the expanded Plant in ML).

The abatement mechanism applies across SDP's different modes of operation. However, the 'level' of abatement applicable varies based on several different factors. The 'levels' of abatement can be described as:

- Full abatement, where:
  - SDP's level of production per day affects the calculation of the abatement factor, and
  - the abatement factor is applied to SDP's abatable charges.
- Partial abatement, where:
  - SDP's level of production per day **does not affect** the calculation of the abatement factor, and
  - the abatement factor is applied to SDP's abatable charges.
- No abatement, where:
  - SDP's level of production per day **does not affect** the calculation of the abatement factor, and
  - the abatement factor **is not applied** to SDP's daily fixed charges.

With these 'levels' of abatement in mind, the application of the abatement mechanism under the 2017 Determination can be summarised as follows:

- Full abatement applies when SDP was required to produce – specifically, in its primary drought response role and its ancillary emergency response role. This means SDP's performance at these times affected the abatement factor, which applies to SDP's fixed charges. This strongly incentivises SDP to operate the plant and ensure that it can supply water when required to do so.

[w] And if fewer than 365 Availability Days occurred up to an including that day, an amount calculated in accordance with (b) of the definition of Available Capacity in the 2017 Determination

- Partial abatement applies outside SDP's drought and emergency requirements, when operation of the plant was at SDP's discretion. This includes supply to third parties outside drought and during the optional minimum run time provided to SDP under the 2017 Metropolitan Water Plan. Under partial abatement, SDP's performance does not affect the abatement factor. This recognises that production is discretionary and flexible. However, SDP's fixed charges would continue to be affected by past performances when it was required to produce. That is, its prevailing abatement factor would be applied to its fixed charges. This provided a strong incentive for SDP to perform during drought and emergency response, so that it exits these periods having supplied volumes at required levels (drought) or agreed levels (emergency response).
- Partial abatement also applied to SDP for up to 8 months during a restart to allow it sufficient time to ramp-up production to fulfil its drought and emergency response roles.
- No abatement applied to SDP's fixed charges for poor performance as a result of uninsurable events outside SDP's control.

D.2.1 Reset of Daily Volumes on Drought Response Cease Day or Emergency Response Cease Day

If the Plant exits a period of required operation with an abatement factor less than one, it is retained and carried over into the next period when the Plant is called into operation. This retains a strong financial incentive for SDP to operate at full capacity once called into operation However, if the Plant exits a period of required operation with the abatement factor above one, it is reset to one so that SDP does not continue to over-recover revenue the next time the Plant is called into operation.

D.2.2 Refund at the end of a drought response period of emergency response period

The Determination includes a 'true-up' mechanism to refund over-recovery of fixed charges during a drought or emergency response period. Under the mechanism there are 3 steps for SDP to undertake:

1. Determine if the refund is payable, and if so, its total amount: On the day when drought ends, SDP evaluates whether it has over-recovered fixed charges during the drought response period. The balance includes holding costs. If over-recovery is positive, this is the total amount of refund that is due to customers.
2. Determine which customers are eligible to receive the refund: On the day when drought ends, for each customer who is an impactor, SDP evaluates whether it over-recovered fixed charges during the drought period from each customer. The balance includes holding costs. If over-recovery from a customer has occurred, this customer becomes eligible to receive a refund.
3. Distribute the total refund among eligible customers: Allocate the total refund amount determined in Step 1 to eligible customers determined in Step 2, proportionate to the customer's share of total impact on the days when over-recovery of charges occurred during the drought response period.

D.2.3 Charges applicable to each mode of operation

Table D.2 Summary of charges applicable to each mode of operation

Mode of operation	Applicable charge
Plant Operation Period	The applicable charges consist of: • a water usage charge (a volumetric charge, including a variable network costs component) ($/ML) • a base service charge (a fixed daily charge, including variable and fixed network costs components) ($/day) • an incremental service charge (a fixed daily charge, including a variable network costs component) ($/day) • a pipeline charge (a fixed daily charge) ($/day) • a membrane service charge (a fixed daily charge) ($/day).
Shutdown Period	The applicable charges consist of: • a water usage charge (a volumetric charge, which applies to Desalinated Water supplied from storage only, and includes a variable network costs component) ($/ML) • a base service charge (a fixed daily charge, including variable and fixed network costs components) ($/day) • a transition to shutdown charge (a one-off charge payable at the beginning of certain shutdown periods) • a pipeline charge (a fixed daily charge) ($/day) • a membrane service charge (a fixed daily charge) ($/day) • a residual membrane charge (a one-off charge payable in certain shutdown periods immediately following the first Plant Operation Period of the Term only).
Restart Period	The applicable charges consist of: • a water usage charge (a volumetric charge, which applies to Desalinated Water supplied from storage only, and includes a variable network costs component) ($/ML) • a base service charge (a fixed daily charge, including variable and fixed network costs components) ($/day) • a transition to restart charge (a one-off charge payable at the beginning of certain restart periods) • a pipeline charge (a fixed daily charge) ($/day) • a membrane service charge (a fixed daily charge) ($/day).

E Examples of current and proposed risk mechanisms and incentive schemes

This Appendix provides examples of how different risk mechanisms and incentive schemes apply under the 2017 Determination. SDP's proposed changes to these mechanisms are also illustrated for comparison.

E.1 Efficiency carryover mechanism

The aim of the ECM is to allow SDP to retain permanent efficiency savings for 5 years regardless of when the saving is achieved within a determination period. In this section, we demonstrate how the ECM works for general efficiency savings and mode specific savings according to the 2017 Methodology Paper. For comparison purposes, we also present an example based on SDP's proposed changes.

For simplicity, we have not included the effects of inflation indexation in these examples. In each example, the ECM application period, which spans from year 5 of determination period 1 to year 4 of determination period 2, is shaded dark grey.

E.1.1 General efficiency saving under the 2017 Determination

Table E.1 shows how the 2017 ECM allows a general efficiency saving achieved in year 3 of determination period 2 to carryover to year 2 of determination period 3. This ensures general efficiency savings are retained by SDP for 5 years before being passed on to customers through lower prices.

Table E.1 General efficiency saving

	Determination 1		Determination 2					Determination 3			
	3	4	5	1	2	3	4	5	1	2	3
	Application Period										
Allowance	100	100	100	100	100	100	100	100	90	90	90
Actual	100	100	100	100	100	90	90	90	90	90	90
Efficiency	-	-	-	-	-	10	-	-	-	-	-
ECM allowance	-	-	-	-	-	-	-	-	10	10	-
Net allowance	100	100	100	100	100	100	100	100	100	100	90
SDP gain	-	-	-	-	-	10	10	10	10	10	-

Note: The figures used in this example are for illustration only.
Source: IPART analysis.

E.1.2 Mode-specific efficiency saving under the 2017 Determination

The 2017 ECM allowed mode-specific permanent efficiency savings to be retained for up to 5 years, while SDP was in that specific mode, over a 5 consecutive year period. In Table E.2, SDP moves from mode 1 to mode 2 in year 3 of determination period 2 and makes an efficiency saving that is specific to mode 2. SDP remains in mode 2 for a total of 4 years before moving back to mode 1 in year 2 of determination period 3. In this example, SDP remains in mode 2 for 4 years out of the 5 consecutive year period following achievement of the mode-specific efficiency saving. SDP therefore retains this saving for 4 years.

Table E.2 Mode-specific efficiency saving

	Determination 1		**Determination 2**					**Determination 3**			
	3	**4**	**5**	**1**	**2**	**3**	**4**	**5**	**1**	**2**	**3**
			ECM Application Period								
Mode	M1	M1	M1	M1	M1	M2	M2	M2	M2	M1	M1
M1 allowance	100	100	100	100	100	100	100	100	100	100	100
M2 allowance	200	200	200	200	200	200	200	200	190	190	190
Actual	100	100	100	100	100	190	190	190	190	100	100
Efficiency	-	-	-	-	-	10	-	-	-	-	-
M1 ECM	-	-	-	-	-	-	-	-	-	-	-
M2 ECM	-	-	-	-	-	-	-	-	10	10	-
Net allowance	100	100	100	100	100	200	200	200	200	100	100
SDP gain	-	-	-	-	-	10	10	10	10	-	-

Note: M1 = mode 1; M2 = mode 2. The figures used in this example are for illustration only.
Source: IPART analysis.

E.1.3 ECM based on SDP's proposal

SDP has proposed that the classification of efficiencies as either 'general' or 'mode specific' be removed from the ECM as it will be required to be constantly operational. Therefore, Table E.3 presents SDP's proposed ECM, which resembles the example in section E.1.1, irrespective of the level of water produced.

Table E.3 General efficiency saving

	Determination 1			Determination 2					Determination 3		
	3	4	5	1	2	3	4	5	1	2	3
	Application Period										
Allowance	100	100	100	100	100	100	100	100	90	90	90
Actual	100	100	100	100	100	90	90	90	90	90	90
Efficiency	-	-	-	-	-	10	-	-	-	-	-
ECM allowance	-	-	-	-	-	-	-	-	10	10	-
Net allowance	100	100	100	100	100	100	100	100	100	100	90
SDP gain	-	-	-	-	-	10	10	10	10	10	-

Note: The figures used in this example are for illustration only.
Source: IPART analysis.

E.2 Energy adjustment mechanism

The aim of the EAM is to allocate the costs or benefits resulting from the sale of SDP's surplus energy between SDP and customers. The mechanism defines a core band of gains and losses that are fully retained by SDP (currently 5% of the surplus energy contract value) and a sharing ratio which is applied to gains or losses outside the core band (currently 20% retained by SDP and 80% passed on to customers). By ensuring SDP retains a share of any gains and losses, the EAM seeks to ensure SDP continues to have an incentive to manage its surplus energy position efficiently so that gains and losses passed onto customers are as efficient as possible in the circumstances.

The following examples illustrate how the 2017 the EAM works. For comparison purposes, we also present examples based on SDP's proposed changes.

E.2.1 Gains and losses within the core band

Core band under existing 2017 EAM

Table E.4 shows how the 2017 EAM allocates gains and losses when they are within the core band of 5%. Because the gains and losses are within the core band in each financial year, SDP retains 100% of the gains and losses. Therefore, under this scenario the EAM passes 0% of the gains and losses on to customers.

Table E.4 Gains and losses within the 5% core band

Financial year	Last review year	Determination period 1					Determination period 2				
		1	2	3	4	5	1	2	3	4	5
		Application period ($ nominal)				Review Year	Adjustment period ($ nominal)				
Year of period		1	2	3	4	5	1	2	3	4	5
Cost - surplus energy sold											
- Electricity	100	100	100	100	100						
- RECs	100	100	100	100	100						
- Total	200	200	200	200	200						
Revenue - surplus energy sold											
- Electricity	104	102	100	98	96						
- RECs	104	102	100	98	96						
- Total	208	204	200	196	192						
Gain or loss											
- Total gain (loss)	8	4	-	(4)	(8)						
- EAM core band	10	10	10	(10)	(10)						
EAM shares											
- SDP within band	8	4	-	(4)	(8)						
- SDP outside band	-	-	-	-	-						
- Customer share	-	-	-	-	-						
- PV customer share						-					
EAM											
- EAM annuity (end of year)								-	-	-	-
- PV of EAM annuity						-					
- EAM allowances (mid-year)						-					

Note: The figures used in this example are for illustration only.
Source: IPART analysis.

Core band under SDP's proposal

SDP has proposed to reduce the core band to 2.5%. Table E.5 shows how the EAM would allocate gains and losses within this band. A proportion of the gains and losses that were totally contained within the core band in the above example are allocated to customers because of the reduction of the core band.

Table E.5 Gains and losses within the proposed 2.5% core band

	Determination period 1						Determination period 2				
Financial year	**Last review year**	**1**	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
		Application period ($ nominal)				Review Year	Adjustment period ($ real)				
Year of period	**1**	**2**	**3**	**4**	**5**		**1**	**2**	**3**	**4**	**5**
Cost - surplus energy sold											
- Electricity	100	100	100	100	100						
- RECs	100	100	100	100	100						
- Total	200	200	200	200	200						
Revenue - surplus energy sold											
- Electricity	104	102	100	98	96						
- RECs	104	102	100	98	96						
- Total	208	204	200	196	192						
Gain or loss											
- Total gain (loss)	8	4	-	(4)	(8)						
- EAM core band	5	5	5	5)	5						
EAM shares											
- SDP within band	5	4	-	(4)	(5)						
- SDP outside band	0.6	-	-	-	(0.6)						
- Customer share	2.4	-	-	-	(2.4)						
- PV customer share						0.54					
EAM											
- EAM annuity (end of year)							0.12	0.12	0.12	0.12	0.12
- PV of EAM annuity											
- EAM allowances (mid-year)							0.12	0.12	0.12	0.12	0.12

Note: The figures used in this example are for illustration only.
Source: IPART analysis.

E.2.2 Gains and losses outside the core band

Core band and sharing ratio under existing 2017 EAM

Under the 2017 EAM, SDP retains 100% of the gain or loss up to the core band and 20% of the gain or loss outside the core band. The remaining 80% of gains and losses outside the core band are adjusted for financing costs and passed through to customers over the adjustment period.

Table E.6 shows how the EAM allocates gains and losses when they are outside the core band. In this example, the present value of the customer share of gains and losses over the application period is $6.3. This is equal to the present value of an annual annuity of $1.4 passed through to customers over the adjustment period.

Table E.6 Gains and losses outside the core band

	Determination period 1						Determination period 2				
Financial year	**Last review year**	**1**	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
	Application period ($ nominal)					Review Year	Adjustment period ($ real)				
Year of period	**1**	**2**	**3**	**4**	**5**		**1**	**2**	**3**	**4**	**5**
Cost - surplus energy sold											
- Electricity	100	100	100	100	100						
- RECs	100	100	100	100	100						
- Total	200	200	200	200	200						
Revenue - surplus energy sold											
- Electricity	80	90	100	110	120						
- RECs	80	90	100	110	120						
- Total	160	180	200	220	240						
Gain or loss											
- Total gain (loss)	(40)	(20)	-	20	40						
- EAM core band	(10)	(10)	10	10	10						
EAM shares											
- SDP within band	(10)	(10)	-	10	10						
- SDP outside band	(6)	(2)	-	2	6						
- Customer share	(24)	(8)	-	8	24						
- PV customer share						(6.3)					
EAM											
- EAM annuity (end of year)							(1.4)	(1.4)	(1.4)	(1.4)	(1.4)

	Determination period 1						Determination period 2				
Financial year	**Last review year**	**1**	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
	Application period ($ nominal)					**Review Year**	**Adjustment period ($ real)**				
Year of period	**1**	**2**	**3**	**4**	**5**		**1**	**2**	**3**	**4**	**5**
- PV of EAM annuity						(6.3)					
- EAM allowances (mid-year)							(1.4)	(1.4)	(1.4)	(1.4)	(1.4)

Note: the figures used in this example are for illustration only and may not add due to rounding. This analysis assumes a nominal financing rate of 5% and an inflation forecast of 2.5%. The nominal interest rate of 5% is used over the application period and the forecast real interest rate (i.e. (1.05 / 1.025) – 1) is used over the adjustment period.
Source: IPART analysis.

Core band and sharing ratio under SDP's proposal

SDP has proposed to adjust the sharing ratio applied to gains or losses outside of the core band to 95:5 between customers and SDP.

Table E.7 shows how the SDP's proposed adjustment would allocate gains or losses to customers outside their proposed core band of 2.5%. In this example, the present value of the customer share of gains and losses over the application period is $9.1. This is equal to the present value of an annual annuity of $1.96 passed through to customers over the adjustment period.

Table E.7 SDP's proposal of gains and losses outside the core band

	Determination period 1						Determination period 2				
Financial year	**Last review year**	**1**	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
	Application period ($ nominal)					**Review Year**	**Adjustment period ($ real)**				
Year of period	**1**	**2**	**3**	**4**	**5**		**1**	**2**	**3**	**4**	**5**
Cost - surplus energy sold											
- Electricity	100	100	100	100	100						
- RECs	100	100	100	100	100						
- Total	200	200	200	200	200						
Revenue - surplus energy sold											
- Electricity	80	90	100	110	120						
- RECs	80	90	100	110	120						
- Total	160	180	200	220	240						
Gain or loss											
- Total gain (loss)	(40)	(20)	-	20	40						
- EAM core band	(5)	(5)	5	5	5						

	Determination period 1						Determination period 2				
Financial year	**Last review year**	**1**	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
	Application period ($ nominal)					**Review Year**	**Adjustment period ($ real)**				
Year of period	**1**	**2**	**3**	**4**	**5**		**1**	**2**	**3**	**4**	**5**
EAM shares											
- SDP within band	(5)	(5)	-	5	5						
- SDP outside band	(1.75)	(0.75)	-	0.75	1.75						
- Customer share	(33.25)	(14.25.)	-	14.25	33.25						
- PV customer share						(9.1)					
EAM											
- EAM annuity (end of year)							(1.96)	(1.96)	(1.96)	(1.96)	(1.96)
- PV of EAM annuity						(9.1)					
- EAM allowances (mid-year)							(1.96)	(1.96)	(1.96)	(1.96)	(1.96)

Note: The figures used in this example are for illustration only and may not add due to rounding. This analysis assumes a nominal financing rate of 5% and an inflation forecast of 2.5%. The nominal interest rate of 5% is used over the application period and the forecast real interest rate (i.e. (1.05 / 1.025) – 1) is used over the adjustment period.
Source: IPART analysis.

E.3 Abatement mechanism

The aim of the 2017 abatement mechanism was to incentivise SDP to maintain full production when requested to ensure that the plant optimally fulfills its drought-response function. It not only applied during plant operation mode but also in shut down and restart modes. This ensured that SDP had the right incentives to maintain the plant during shutdown so that it could efficiently restart and ramp up production once triggered under Greater Sydney's water security plan at the time.

The following examples illustrate how the 2017 abatement mechanism worked and the changes proposed by SDP.

E.3.1 Abatement mechanism under the 2017 Determination

The 2017 abatement mechanism works by reducing SDP's fixed charge in full production if the average production of the preceding 365 days of full production is less than 250ML per day.

The following are simplified examples to illustrate how SDP's fixed charges would be reduced during minor and major disruptions assuming a daily fixed charge of $100. Both examples use a 5-day rolling average for simplicity (this illustrates how the abatement factor is calculated from the average production over the previous 365 days in full production mode.)

Table E.8 Simplified example of abatement during a minor disruption

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
Daily output, ML	250	235	255	255	255	250	250	250	250	250
Average output, ML	250	247	248	249	250	250	253	252	251	250
Abatement factor	1	0.988	0.992	0.996	1.	1	1.012	1.008	1.004	1
Loss/gain of revenue, $	**0**	**(1.20)**	**(0.80)**	**(0.40)**	**0**	**0**	**1.20**	**0.80**	**0.40**	**0**

In Table E.8, the production (i.e. daily output) is 15ML lower on day 5 and the abatement factor is applied leading to revenue loss. SDP is able to offset the underproduction by overproducing at 255 ML per day over the next three days. As they return to full production from day 6-10, the abatement factor rises above 1 and SDP is able to recover the previous loss of revenue.

Table E.9 Simplified example of abatement during a major disruption

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
Daily output, ML	250	125	125	265	265	265	265	265	265	265
Average output, ML	250	225	200	203	206	209	237	265	265	265
Abatement factor	1	0.90	0.80	0.812	0.824	0.836	0.948	1.06	1.06	1.06
Loss/gain of revenue, $	**0**	**(10.00)**	**(20.00)**	**(18.8)**	**(17.6)**	**(16.40)**	**(5.20)**	**6.00**	**6.00**	**6.00**

Table E.9 shows a major disruption that results in production being halved on days 2 and 3 (i.e. 20% of the 10-day period). Then, production is increased to the technical capacity level for the rest of the period of operation. Although the abatement factor eventually rises above 1 from day 8-10, SDP is not able to recover the loss of revenue resulting from the earlier underproduction. In this manner, SDP was incentivised to maximise production when called upon to fulfil its drought response function

E.3.2 Abatement mechanism under SDP's proposal

The following examples illustrate how SDP's proposed abatement mechanism or service level incentive scheme (SLIS) works. SDP's SLIS is intended to form a more targeted abatement approach that aligns with the new operating environment.

The SLIS applies only when SDP is delivering water under Annual Production Requests (APR) above SDP's minimum supply (i.e. >23 GL per year has been proposed by SDP). This means that other production requests, including emergency response notices, are outside the scope of the SLIS. Production ratios are subject to a ± 10% tolerance band, such that only significant over or under productions that are outside the band are subject to the SLIS.

Further, in any given year, SDP cannot be penalised or rewarded more than 2.5% of its plant service charge across both the SLIS and ECM incentives according to its proposed financial incentives cap. This cap is equivalent to 2.5% of SDP's fixed Plant service charge.

Table E.10 outlines the different terms we used for these examples

Table E.10 Terms used for the examples

Terms	Details
FaR	• Fee at risk is the daily fixed charges used to calculate the incentive • This is set to $150 million
APR	• Annual production request provided by Sydney Water to SDP
PR	• Production ratio is the actual water volumes produced by SDP each year divided by APR
TB	• Tolerance band is the adjustment to the PR to ensure only significant under or over production is incentivised • The band is ±10%, which results in PR of 0.9 to 1.1
PF	• The performance factor is the ratio of the annual volume of water produced to the APR • If PR > 1.1, then PF = PR – 1.1, (subject to cap under operating licence) else • If 0.9 ≤ PR ≤ 1.1, then PF = 0, else • If PR < 0.9 then PF = PR – 0.9 • Incentive payment = PF * FaR

Table E.1 shows different examples of how the proposed SLIS would work under different production scenarios. These examples assume Sydney Water would set an APR of 50 GL per year. In addition, SDP would target annual production of 45 GL with maximum level of 55 GL.

Table E.11 Examples of SLIS under various scenarios

Level of under/over production	Rewards (overproduction)	Penalties (underproduction)
Insignificant	SDP produces 51 GL PR = 51/50 = 1.02 PR is between 0.9 to 1.1 therefore PF = 0 Incentive payment: PF * FaR = 0 * $150m = $0	SDP produces 48GL PR = 48/50 = 0.96 PR is between 0.9 to 1.1 therefore PF = 0 Incentive payment: PF * FaR = 0 * $150m = $0
Significant, but within the cap	SDP produces 56 GL PR = 56/50 = 1.12 PR is > 1.1 therefore PF = 1.12 – 1.1 = 0.02 Incentive payment: PF * FaR = 0.02 * 150m = $3,000,000	SDP produces 44GL PR = 44/50 = 0.88 PR is < 0.9 therefore PF = 0.88 – 0.90 = -0.02 Incentive payment: PF * FaR = 0.02 * $150m = -$3,000,000
Significant, incentive capped	SDP produces 60 GL PR = 60/50 = 1.2 PR is > 1.1 therefore PF = 1.2 – 1.1 = 0.1 Incentive payment: PF * FaR = 0.1 * 150m = $15,000,000 reduced to cap of $3,750,000	SDP produces 43GL PR = 43/50 = 0.86, PR is < 0.9 therefore PF = 0.86 – 0.90 = -0.04 Incentive payment: PF * FaR = 0.04 * $150m = -$6,000,000 reduced to cap of -$3,750,000

E.4 End-of-period true-up mechanism

The aim of the end-of-period true up mechanism is to allow businesses to recover material cost changes that occur during a determination period from customers at the next price review. True-ups are based on forecast efficient costs established before actual costs are incurred and are assessable (to ensure that costs remain efficient).

The following example illustrates how the end-of-period true-up mechanism would be applied after the 2023 determination period. This example is based on SDP's proposed true-up for chemical costs. To keep it simple, we assume that another 4-year determination period would be set after the 2023 determination period.

The steps for a typical end-of-period true-up mechanism are as follows:

1. Calculate the difference between SDP's actual chemical costs and the IPART allowance each year from 2022-23 to 2025-26
2. Calculate the net present value (NPV) of gains or losses over the 2022-23 to 2025-26 as at the review year (i.e. 2026-27)
3. Calculate the annuity to be added to the notional revenue requirement. The NPV of the annuity is equal to the NPV calculated in step 2.

Table E.8 Difference between IPART allowance and actual costs

	2023 Determination Period					2027 Determination Period			
	22-23	23-24	24-25	25-26	26-27 (Review Year)	27-28	28-29	29-30	30-31
IPART allowance ($millions)	3	3	3	3					
Actual cost ($millions)	4	2.6	2.3	2.8					
Difference	1.0	(0.4)	(0.7)	(0.2)					
NPV of SDP's gains or losses					0.23				
True-up annuity						0.06	0.06	0.06	0.06

Note: The figures used in this example are for illustration only and may not add up due to rounding. This analysis assumes a nominal financing rate of 5% and an inflation forecast of 2.5%. the nominal interest rate of 5% is used to calculate the PV of SDP's gains or losses and the forecast real interest rate (i.e. 1.05/1.025 – 1) is used to calculate the true-up annuity.

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1 The Minister for Lands and Water, Hospitality and Racing, Letter to IPART re Amended Terms of Reference, 16 June 2022, p 1.
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3 Department of Planning and Environment, Greater Sydney Water Strategy, August 2022
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