Pricing Proposal to the Independent Pricing and Regulatory Tribunal

Regulated prices for the Wentworth to Broken Hill Pipeline

30 June 2021

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Chief Executive Officer Foreword

WaterNSW is pleased to present this pricing proposal to the Independent Pricing and Regulatory Tribunal of New South Wales ("**IPART**"), for the second pricing determination for the Wentworth to Broken Hill Pipeline (the "**pipeline**") for maximum prices from 1 July 2022.

The 270km pipeline is designed to provide up to 37.4 megaliters (ML) per day of raw water to Essential Water to meet the needs of the community of Broken Hill.

WaterNSW also owns and operates a bulk water storage facility that can supply Essential Water's need for water for around 22 days while providing emergency supplies.

WaterNSW and our contracting partners, the John Holland MPC Group Joint Venture, safely constructed the pipeline and delivered it on-time and under-budget in 2019.

The pipeline was fully operational in April 2019 and has been critical in ensuring a safe and secure water supply to the Broken Hill community, which is one of the hottest and driest regions in the country.

In 2019-20 we delivered 6,150 ML of water and are on track to deliver 5,620 ML in 2020-21. This is approximately 30% higher than IPART's forecast in the 2019 Determination, largely due to the pipeline becoming the primary source of water for Broken Hill, with less water being sourced from Essential Water's own infrastructure.

We are meeting all of our water security targets and aim to operate the pipeline in a way that keeps water prices low for customers.

This proposal builds on our 2018 pricing proposal, prepared when the pipeline was being constructed and expected use and costs of the pipeline was uncertain.

We now have the benefit of almost two years of operating data and the insights from this period have informed our forecasting of water demand over the 2022 Determination period, the efficient costs of providing these services and the minimum prices necessary to recover these costs.

We consider that this operating performance should provide our customers and IPART with the confidence to set a longer five-year Determination period covering 2022-27. The longer proposed determination period is also supported by our major customer Essential Water.

We propose a five-year determination period with risk mitigation measures to support an efficient allocation of risk and provide WaterNSW with accountability for those factors within our reasonable control. If appropriate risk mitigation measures are not implemented, we propose a shorter determination period (i.e. three years) to reasonably manage risk in the outer years and to align to our other determination timelines.

Our proposal involves targeted investments to operate and maintain the assets in manner that is in the best interest of customers, while continuing to minimise costs to customers.

We are proposing an average revenue requirement of $24.5 million ($2021-22) per annum, which is 4% lower than the final year of the 2019 Determination.

We propose to maintain the tariff structures from the 2019 Determination with average bills proposed to **decrease by 4%** in real terms by the end of the 2022 Determination period (2026-27).

We have consulted with Essential Water in preparing our proposal, recognising IPART will be conducting the pricing determination process for Essential Water concurrently, and have informed offtake customers of our proposal.

As in 2019, we understand Essential Water will seek assistance from the NSW Government to keep water prices at affordable levels for the Broken Hill community.

We look forward to participating in IPART's process to establish the regulated prices for the pipeline that are in the long term interests of our customers.

Andrew George
Acting Chief Executive Officer

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Attachment 1	Cost Allocation Manual
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Attachment 5	Populated IPART Building Block Model

Executive summary

WaterNSW is pleased to submit this pricing proposal to enable IPART to determine maximum prices for the monopoly services for the transportation of water along the Wentworth to Broken Hill Pipeline (“**transportation services”**) from 1 July 2022 (the “**2022 Determination**”).

WaterNSW is Australia’s biggest water supplier and is the major supplier of raw water in NSW, delivering raw water from 42 large dams, pipelines and the State’s rivers.

The pipeline system consists of a 270km subterranean pipeline, pumping stations and bulk water storage facility for transporting, storing and delivering bulk water from the River Murray at Wentworth to Broken Hill and surrounding communities.

In 2017, the Board of WaterNSW received two directions under section 20P of the *State Owned Corporations Act* from the New South Wales Minister of Lands and Water (November 2016 and August 2017) in relation to the construction, operation and maintenance of a pipeline to deliver low salinity raw water from the River Murray to Essential Water in Broken Hill along the route of the Silver City Highway.

Following a competitive tendering process, WaterNSW engaged the John Holland MPC Group Joint Venture to construct the pipeline, which was delivered on-time and under-budget with the pipeline providing “first water” in December 2018, and becoming fully operational in April 2019.

IPART first determined the maximum prices that WaterNSW could charge for the water transportation services provided by the pipeline in 2019 for the three year period from 1 July 2019 to 30 June 2022 in its May 2019 *Prices for water transportation services provided by the Murray River to Broken Hill Pipeline from 1 July 2019 Final Determination* (the “**2019 Determination**”).

Proposal overview

Scope and length of 2022 Determination

Our proposal is for IPART to regulate the maximum prices that WaterNSW can charge for **water transportation services provided by the pipeline** through the 2022 Determination and allow negotiated agreements for other agreed services between WaterNSW and offtake customers.

We are proposing the regulated charges be set for a period of **five years from 1 July 2022 to 30 June 2027** (the “**2022 Determination period**”)**.** We consider that the period of stable operation since the pipeline’s commissioning and its operating history should provide our customers and stakeholders including IPART with the confidence to set a longer 2022 Determination period.

At the time of the 2019 Determination there was considerable uncertainty around the operation of the pipeline, including demand and the resulting pumping profile, and the resulting cost of providing services.

We now have the benefit of almost two years of operating data and the insights from this period have informed our forecasting of water demand over the 2022 Determination period, the efficient costs of providing these services and prices necessary to recover these costs.

A five-year determination period, when supported by a holistic approach to efficient risk mitigation, appropriately balances the uncertainty of forecasts over the 2022 Determination period and the regulatory burden of determinations.

If appropriate risk mitigation measures are not implemented by IPART, WaterNSW proposes a shorter determination period (i.e. three years to 30 June 2025) to reasonably manage forecasting risk in the outer years and to align to other WaterNSW determination timelines.[1]

[1] A three-year determination period would align to the WaterNSW Rural Valleys and WAMC determination timelines and would streamline regulatory processes and associated costs.

Our proposed building blocks

WaterNSW proposes a regulatory pricing framework based on a "building block" approach to calculating the regulatory revenue requirement and maximum price caps. The key elements of our building block proposal ($2021-22) are as follows:

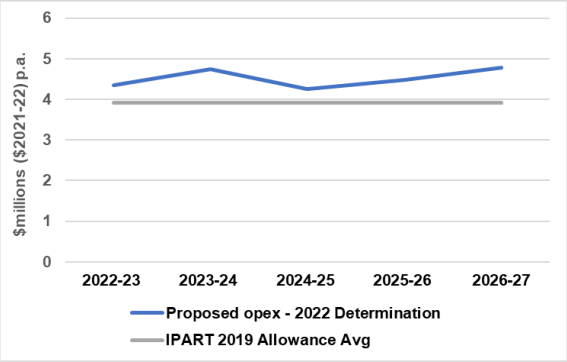
- An **opening RAB** of $401 million;
- A **return on capital** averaging $14.2 million per year based on a post-tax real weighted average cost of capital ("**WACC**") of 3.7% including a 'glide-path' inflation forecasting methodology;
- **A return of capital** (i.e. depreciation) allowance averaging $5.2 million per year based on an average asset life of 90 years;
- Proposed **operating expenditures** that average $4.5 million per year over the five years;
- Proposed **capital expenditures** of $0.1 million per year over the five years;
- An allowance for meeting **tax obligations** that averages $1.2 million per year and an **allowance for working capital** that averages of $0.1 million per year; and
- A cost of debt true-up that reduces revenues by $0.7 million per year.

Our proposed operating and capital expenditures are discussed in more detail below.

Operating expenditure

Forecast operating expenditures for the 2022 Determination period and IPART's average allowance from the current determination are provided in Figure 1 below.

Figure 1 - Allowed, actual / forecast and proposed operating expenditure ($millions, $2021-22)



Actual operating expenditure over the three-years of the 2019 Determination period is **$5.3 million** ($2021-22) per year, or 35% above the average operating expenditure allowed in the 2019 Determination period. This was caused primarily by:

- Higher support costs - WaterNSW applies its cost allocation methodology ("**CAM**") to allocate overhead to the pipeline which is higher than IPART's 5% allocation applied in 2019, but significantly below the costs of establishing a standalone company;
- Higher energy costs than provided for in the 2019 Determination; and
- Other costs – an obligation to landscape the Ski Park (a local boat ramp and recreational area on the River Murray) for the residents of Wentworth.

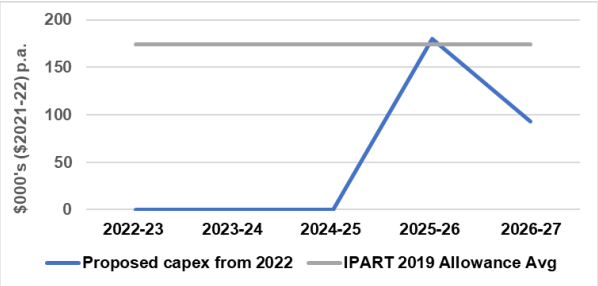
Our proposed operating expenditure is **$4.5 million per year.** This is $0.6 million or 15% higher than IPART's average allowance of $3.9 million per year over the 2019 Determination period and includes:

- Operating and maintenance activities of $1.7 million per year as part of our contractual arrangements with the John Holland Trility Group Joint Venture;
- Electricity costs of $1.5 million per year, which is comparable to the current regulatory allowance;
- Additional operating and maintenance activities of $0.1 million per annum to cover pipeline pigging, landscaping, watering and planting;
- Corporate support costs of $0.6 million per annum based on the application of our existing CAM; and
- Contract management and other costs relating to audits, insurance, administration, regulatory submission preparation and land tax of $0.5 million per annum.

Capital expenditure

Forecast capital expenditures for the 2022 Determination period and IPART's average allowance from the current determination are provided in Figure 2 below.

Figure 2 - Capital expenditure allowed vs proposed ($millions, $2021-22)



Actual and forecast capital expenditure over the 2019 Determination period is $2.7 million, $2.2 million higher than IPART's allowance of $0.5 million ($2021-22). The increased expenditure was primarily due to higher than forecast land acquisition costs and minor pipeline works.

Capital expenditure for the pipeline is relatively small, reflecting the early stage of the pipeline's lifecycle. We anticipate higher capital expenditures in subsequent determination periods as the pipeline and associated infrastructure ages.

WaterNSW proposes minimal capital expenditures of $0.3 million over the 2022 Determination period.

Proposed revenue requirement and prices

The building blocks outlined above result in a proposed a revenue requirement over the five years of the 2022 Determination period of $122.5 million or an average of **$24.5 million** per year. This is illustrated in Table 1 below:

Table 1 - Notional revenue requirement (Essential Water and offtakes) ($000s, $2021-22)

	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Operating expenditure*	3,892	4,353	4,743	4,249	4,476	4,775	22,595
Return on assets	15,683	14,562	14,371	14,181	13,994	13,808	70,916
Regulatory depreciation	5,003	5,147	5,147	5,147	5,165	5,191	25,797
Return on working capital	175	144	153	151	149	149	746
Tax allowance	825	1,185	1,198	1,210	1,221	1,232	6,046
Cost of debt true-up^	0	-729	-729	-729	-729	-729	-3644
Total NRR	**25,578**	**24,662**	**24,883**	**24,208**	**24,275**	**24,427**	**122,455**

* Electricity costs have been adjusted to reflect water sales forecasts provided by Essential Water and average actual sales of offtake customers.
^ 2021-22 is the last year of the 2019 Determination period.

Our proposed revenue requirement is **$1.1 million (4.3%) lower** on average per year compared with the last year of the 2019 Determination period (i.e. 2021-22).

Consistent with the outcomes from the 2019 Determination, we are seeking to recover our charges from Essential Water predominately through a fixed tariff, reflecting the fixed capital costs of the pipeline.

Variable charges have been based on forecast water sales of 5,534ML per annum on average based on forecasts provided by Essential Water plus a small amount of usage by offtake customers. WaterNSW proposes prices for the 2022 Determination period for Essential Water as shown in Table 2 and prices for offtakes in Table 3 below.

Average prices are proposed to **increase by 0.1%** in real terms by the end of the 2022 Determination period compared with the last year of the 2019 Determination period (2021-22).

Table 2 - Proposed charges to Essential Water ($2021-22)

$2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	%Δ FY22-FY27
Fixed charge ($/day)*	63,697.69	63,523.65	63,697.69	63,697.69	63,697.69	-5.3%
Variable charge ($/ML)	221.84	220.79	220.48	220.18	219.90	3.5%

* Fixed charge in 2021-22 (the last year of the 2019 Determination period) is $67,280.98/day and variable charge is $212.52/ML.

Table 3 - Proposed charges per offtake outlet ($2021-22)

$2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	%Δ FY22-F27
Fixed charge ($/day)*	20.22	20.17	20.22	20.22	20.22	-2.7%
Variable charge ($/kL)	0.22	0.22	0.22	0.22	0.22	4.8%

* The fixed charge will be levied irrespective of water take. Price is levied for each offtake outlet. Fixed charge in 2021-22 (the last year of the 2019 Determination period) is $20.78/day and variable charge is $0.21/kL.

WaterNSW is proposing the continuation of the voluntary unregulated pricing arrangements endorsed by IPART in the Final Determination for additional offtake customers. We confirm there are currently no voluntary unregulated pricing agreements entered into with offtake customers.

Our approach to managing risk

In proposing a five-year 2022 Determination period, WaterNSW has identified several key risk areas where outturn results may differ significantly from the forecasts used in setting the determination.

In order to address the impacts on WaterNSW and our customers of these potential differences, particularly in the latter years of the 2022 Determination period, WaterNSW has proposed an efficient approach to risk mitigation.

This includes introducing a framework for efficiently managing movements in those costs that are beyond WaterNSW's reasonable control - such as a mechanism to provide an end of period true-up for movements in the network and wholesale elements of the electricity benchmark price over the 2022 Determination period (similar to IPART's cost of debt true-up mechanism – see Section 10.3).

The proposed mechanisms are designed to ensure WaterNSW is incentivised to take accountability for events within our control, while not exposing WaterNSW to risks beyond its control - particularly where it may not be efficient for WaterNSW to manage this risk. Ultimately, we think this proposed approach to risk mitigation is in the long-term interests of customers. An overarching approach to managing risk is supported by Essential Water.

This approach is identified in Section 5.5.

Summary of proposed changes to the regulatory framework

In general, we support many aspects of the existing regulatory framework in the 2019 Determination.

To assist our customers, stakeholders and IPART to consider our submission, we have summarised the key changes we are proposing over the 2022 Determination period (see Figure 3).

While some of the proposed refinements to the regulatory framework are bespoke to WaterNSW's unique operating environment they draw on standard regulatory principles and the evolution in regulatory best practice across jurisdictions.

In our view the proposed changes will provide:

- Stakeholders with confidence that prices will better reflect the efficient cost of providing services over the 2022 Determination period; and
- WaterNSW with greater focus and accountability for those things within its control and incentives to provide transportation services in a manner that is in the best interest of customers.

We consider these changes are consistent with the Section 16A Direction and the IPART Act and

will promote efficient investment in, and efficient operation and use of, the transportation services in the long-term interests of customers.

Figure 3 - Proposed changes to the regulatory framework

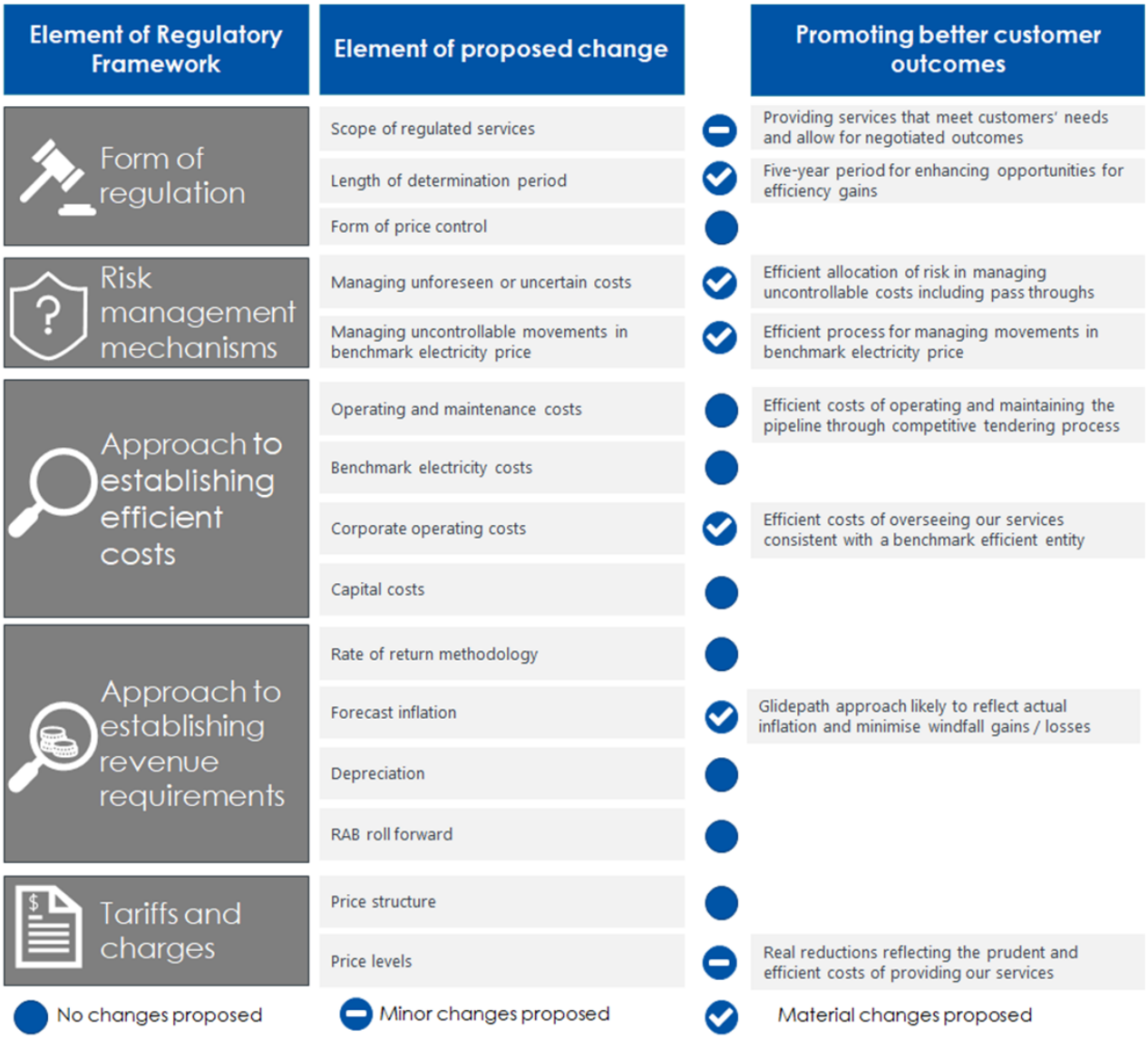


Figure 4 - Above ground pipeline

1. About this proposal

IPART sets the maximum prices WaterNSW can charge for the water transportation services provided by the Wentworth to Broken Hill Pipeline.

Essential Water is the primary customer and pays almost all of the costs of providing these water transportation services. These costs are passed on to end-use water customers in Broken Hill through Essential Water's residential and non-residential prices, which are subject to a separate IPART determination.

IPART's 2019 Determination of prices for WaterNSW's water transportation services expires on 30 June 2022. WaterNSW has therefore prepared this pricing proposal for IPART's review covering the five-year period commencing 1 July 2022.

This pricing proposal forms part of a broader package of 2022-27 Pricing Submission Information as specifically requested and/or additional to information required under IPART's Guidelines for Water Agency Pricing Submissions[2] including:

- Pricing Submission (including Attachments);
- Pricing Submission (Plain English summary);
- A completed annual information return ("**AIR**") and special information return ("**SIR**"), which IPART has indicated will not be published on its website; and
- Declaration of the CEO certifying the accuracy of the information provided.

1.1 Approach used to develop this pricing proposal

IPART has recently clarified that the overarching objective of the regulatory framework review governing the urban water sector in NSW is to promote the long-term interests of customers. It noted that it would make this objective more explicit in future price reviews.[3]

This overarching objective underpins our pricing proposal. We have proposed arrangements which promote efficient investment in, and efficient operation and use of, the pipeline for the long-term interests of customers. This in turn implies:

- Promoting the transportation of water using the least-cost combination of capital and operating inputs (accounting for which can be achieved by ensuring that WaterNSW faces appropriate incentives to incur efficient costs, minimising regulatory risk and allocating risks to the party that is best able to manage them);
- Ensuring that the regulatory framework is sufficiently responsive to changes in the needs of customers and government; and
- Ensuring that WaterNSW is able to set prices at a level that provides a reasonable opportunity to recover the efficient costs of providing our services.

To give effect to these objectives, we recognise the importance of engaging with Essential Water to understand their expectations and preferences for our services over the **2022 Determination period**.

Our pricing proposal recognises the unique role the pipeline plays in servicing the needs of Essential Water.

In developing this submission, we have:

- Engaged with Essential Water on key aspects of our proposal, including the length of determination and the approach to risk mitigation;
- Analysed key changes that have occurred in the policy, regulatory and commercial operating environments and their implications for WaterNSW and Essential Water. In doing so, we have reflected on recent operational experience in the last regulatory period;
- Reviewed the evolution in regulatory settings in a range of infrastructure sectors in Australia and overseas and their applicability to the 2022 Determination period;
- Reviewed the existing regulatory framework applying to WaterNSW as set out in the 2019 Determination to assess whether it is likely to best promotes our customers' long-term interests;
- Considered IPART's requirements in developing a submission, including (but not limited to):

[2] IPART (2020), *Guidelines for Water Agency Pricing Submissions*, November.

[3] IPART *Water Pricing and Licensing – Regulating Water Businesses, Special Review, Review update November 2020*. Page 6.

- The service levels expected by our customers over the **2022 Determination period**;
- Forecasting the efficient level of costs we will incur over this period to meet these service levels;
- Calculating the prices we need to charge Essential Water to recover these costs, and structure these prices so that Essential Water is provided with appropriate price signals about the cost of our water transportation services;
- The incentive and risk mitigation mechanisms to support our customers' long-term interests; and

- Undertaken detailed assessments of prudent and efficient operating costs utilising internal expertise, external expert advice and benchmarking of entities with a similar operating context to WaterNSW.

1.2 How to navigate this submission

The remainder of this submission is structured as follows.

- Section 2 provides background information on WaterNSW;
- Section 3 provides background information on the pipeline and our performance and operational experience during the current regulatory period;
- Section 4 explains our services and how we have engaged with stakeholders and reflected their feedback in our plans for the 2022 Determination period;
- Section 5 sets out the proposed scope, duration and form of regulation, as well as the proposed risk mitigation mechanisms to manage risks and uncertainties;
- Sections 6 to 14 detail the proposed revenue requirements and the underlying components including forecast operating expenditure, forecast capital expenditure, and proposed rate of return;
- Section 15 details the proposed price structure, and proposed prices and charges for the 2022 Determination period; and
- Section 16 presents the customer and financial impacts of our proposed prices.

Our pricing proposal comprises this main submission document including Appendices A to H and the attachments listed below as submitted by WaterNSW to IPART on 30 June 2021:

List of attachments

Reference no.	Supporting document
Attachment 1	Cost Allocation Manual
Attachment 2	Schedule 1 & 2 Water supply agreement between Water NSW and Essential Energy
Attachment 3	Plain English Summary
Attachment 4	Annual Information Return (AIR) / Special Information Return (SIR)
Attachment 5	Populated IPART Building Block Model

This pricing proposal sets out our forecast revenue requirements and prices for transportation services on the Wentworth to Broken Hill Pipeline 1 July 2022 to 30 June 2027.[4]

Unless otherwise stated, the dollars values shown in this pricing proposal:

- For the 2022 Determination period are expressed in 2021-22 'real' dollars;
- Exclude GST.

1.3 Subsidiary

To ensure full ring-fencing of costs and responsibility for the project, the Board of WaterNSW approved the formation of a wholly owned proprietary company limited by shares under the *Corporations Act 2001* (Cth) to construct, operate and maintain the pipeline. The subsidiary, or special purpose vehicle ("**SPV**"), was established on 5 November 2018. Net assets for the operations of the company were transferred to the entity in April 2019 and the

[4] Tables may not add due to rounding.

company commenced its operations on 5 April 2019.

The primary contracts for the pipeline (Design and Construct ("**D&C**") and Operations and Maintenance ("**O&M**") have been novated to the SPV.

This pricing proposal is for IPART to set prices to be charged for the pipeline by the SPV on behalf of WaterNSW from 1 July 2022. This document refers to WaterNSW and not the SPV. Generally, references to WaterNSW for events that occurred after the date of novation of the primary contracts, are references to the SPV acting on behalf of WaterNSW.

1.4 Implementation of IPART Determination under section 18 of the IPART Act

WaterNSW is subject to several IPART pricing determinations in providing regulated services.

The services we supply to Essential Water and a small number of landholders near Broken Hill for the Murray River to Broken Hill Pipeline are subject to the maximum prices under the IPART Determination *WaterNSW Prices for water transportation services provided by the Murray River to Broken Hill Pipeline from 1 July 2019*, which applies from 1 July 2019 to 30 June 2022.

This determination sets out the maximum price and methodologies for calculating the maximum price WaterNSW can charges its customers for pipeline services. WaterNSW has implemented the outcomes of the IPART determination by charging customers the maximum prices as specified by IPART.

Figure 5 - WaterNSW's bulk water storage facility

2. The Role and Functions of WaterNSW

2.1 What we do

WaterNSW is Australia's biggest water supplier. We own and operate 42 dams across New South Wales ("**NSW**"), as well as hundreds of weirs and regulators and a small number of pipelines. We supply and deliver water through our infrastructure and the State's river systems to our customers, including Sydney Water, farmers, irrigators, regional towns and industry.

WaterNSW is a state owned corporation under the *State Water Corporation Act 2004* (NSW) and operates under the *Water NSW Act, 2014* (NSW). The Water NSW Act establishes WaterNSW as a State Owned Corporation ("**SOC**") and sets out our principal objectives, functions and areas of operation.

2.2 Our structure and purpose

The *Water NSW Act 2014* (NSW) (WaterNSW Act) came into effect on 1 January 2015, thereby creating WaterNSW as a statutory SOC under that Act.

WaterNSW further increased its scope on 1 July 2016 when the *Water NSW Amendment (Staff Transfers) Act 2016* took effect to facilitate the transfer of employees of the then Department of Primary Industries - Water to WaterNSW. This enabled WaterNSW to carry out delegated functions[5] of the Water Administration Ministerial Corporation ("**WAMC**") in relation to water delivery, customer transactional dealings, in-field services and resource management for groundwater, regulated and non-regulated surface water.

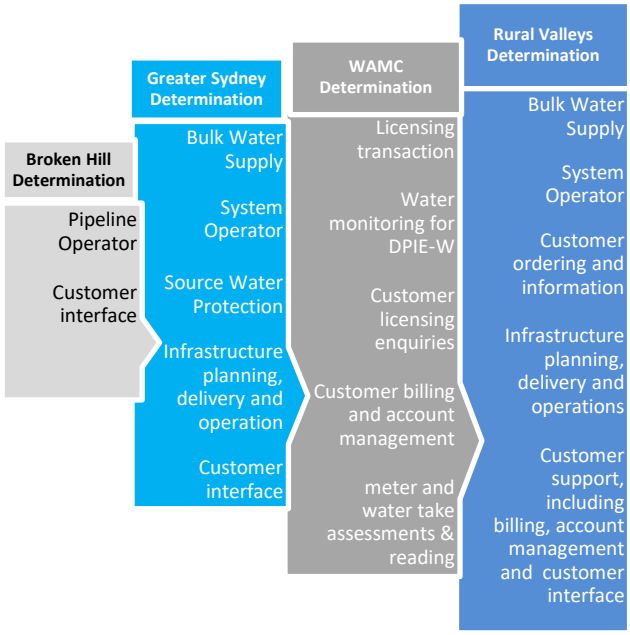
The objectives and functions of WaterNSW were refined to reflect and consolidate the functions of the SCA and State Water Corporation into a single entity.

The legislative environment that we operate within is provided in Appendix F.

2.3 Our regulated and non-regulated services

Figure 6 sets out the regulated functions carried out by WaterNSW, including those contained in the four determinations which WaterNSW is subject to.

Figure 6 - WaterNSW functions



WaterNSW's monopoly (i.e. regulated) services are the subject of four separate IPART price determinations:

- The maximum prices WaterNSW can charge for the water transportation services provided by the pipeline were set by IPART in the *Water NSW, Prices for water transportation services provided by the Murray River to Broken Hill Pipeline. BHP from 1 July 2019 – final Determination, May 2019*;
- The services we supply to Sydney Water and some councils and minor customers in the Greater Sydney area are subject to the IPART Determination – *Maximum prices for Water NSW's Greater Sydney Services from 1 July 2020, June 2020*;
- The services we supply to irrigators, regional councils, mines, energy companies and environmental water holders in rural areas are subject to the IPART Determination – *WaterNSW, Maximum prices for rural bulk water services from 1 July 2017, June 2017* until replaced with a new determination expected on 1 October 2021; and
- The services we supply under our conferred WAMC functions are subject to the IPART Determination – *Water Administration Ministerial Corporation, Maximum prices for Water Management services from 1 July*

[5] The delegations are contained in Schedule A of the WaterNSW Operating Licence 2017-2022.

2016, June 2016 until replaced with a new determination expected to take effect from 1 October 2021. We share this revenue with the Department of Planning, Industry and Environment and with the Natural Resources Access Regulator which also provide WAMC services.

WaterNSW also supplies non-monopoly services such as leasing some of our facilities and certain commercial hydrometrics services.

This pricing proposal covers the services contained in our Broken Hill Pipeline 2019 Determination. It does not cover pricing for the provision of bulk water services to Greater Sydney, bulk water services to Rural Valley customers, or WAMC functions conferred on WaterNSW.

However, it is important to adopt a consistent approach, recognising decisions made by IPART in other price determinations (including the recovery of corporate costs and the allocation of shared costs) may have implications for the pipeline 2022 Determination.

This pricing proposal relates to the monopoly services in respect of the pipeline and will be subject to a separate IPART determination under the *Independent Pricing and Regulatory Tribunal Act 1992* (NSW) (IPART Act).[6]

[6] The water charge rules under Part 4, Division 1 of the *Water Act 2007* (Cth) do not apply, as section 91(3) of the Act provides that the Division does not apply to charges in respect of urban water supply activities beyond the point at which the water has been removed from a Basin water resource. Under sub-section 91(1)(b) offtake customers (stock and domestic) are not prescribed by the regulations (1.05A) as the water must be made available through a bulk water service, that is, one provided for the delivery of water is primarily delivered on-river. Under sub-section 91(1)(d) offtake customers are not of a kind prescribed by the regulations (4.01A) as they relate to an urban water supply network – water service infrastructure that is operated primarily for delivering water for an urban water supply activity beyond the point at which the water has been removed from a Basin water resource.

3. The Wentworth to Broken Hill pipeline

The purpose of the Pipeline was to connect Broken Hill to the River Murray to replace the Menindee Lakes as Essential Water's primary bulk water supply and deliver long term water security to the Broken Hill community. The Pipeline also provides bulk water transportation services to individual customers via offtakes constructed along the Pipeline.

The Pipeline has been designed to run along the Silver City Highway and transport bulk water from the River Murray in Wentworth to Essential Water in Broken Hill. This represents a distance of 270 kilometres and an elevation of approximately 280 metres.

The Pipeline transfers water from the River Murray to a Bulk Water Storage owned and operated by WaterNSW. This Bulk Water Storage has capacity of 830 megalitres ("**MLs**"), capable of meeting Broken Hill's demand for 22 days.

Following a competitive tendering process in October 2017, WaterNSW announced[7] that it had appointed a consortium of John Holland, MPC Group and TRILITY to design, construct, operate and maintain the Pipeline:

- The total cost of the design and construct contract was $467 million (this contract includes some additional works that were undertaken for Essential Water and are not part of the Pipeline and the associated RAB);
- The total cost of the operating and maintenance contract was $107.3 million over 20 years; and
- Construction began in early 2018. In April 2019 WaterNSW reported that the pipeline was operational.

3.1 Directions to the Board of WaterNSW

On 21 November 2016, The Minister for Lands and Water, with approval of the Treasurer, in pursuance of section 20P of the SOC Act, made the *Direction to the Board of WaterNSW to secure the water supply of Broken Hill 2016* (the "**Pipeline Direction**") (Appendix A). The Board of WaterNSW was, amongst other things, directed to:

- Arrange for the construction, operation and maintenance of a pipeline from the River Murray to deliver low salinity raw water to the existing Mica Street Water Treatment Plant in Broken Hill, including any associated infrastructure necessary for operation such as new or upgraded distribution pipelines or pump stations. The pipeline was to generally run along the Silver City Highway road easement;
- Use best endeavours to ensure that supply from the pipeline, when used in conjunction with the current Broken Hill water supply infrastructure, can meet peak daily demand of up to 37.4MLs of water per day;
- Use best endeavours to make the pipeline operational by December 2018, and notwithstanding this, ensure that the pipeline was fully operational before all surface water and the Lake Menindee groundwater source available to the Broken Hill community are depleted; and
- Fund the capital costs for constructing the pipeline from within WaterNSW's existing resources or otherwise borrow the required funds, recognising that IPART will be asked by the Government to allow WaterNSW to recover the total efficient costs associated with the ongoing operation of the pipeline, including the cost of capital.

On 31 August 2017, the Minister for Regional Water, with approval of the Treasurer, in pursuance of section 20P of the SOC Act, made the *Direction to the Board of WaterNSW in relation to the construction of the Broken Hill pipeline 2017* (the "**Construction Direction**") (Appendix B). The Board of WaterNSW was directed to ensure that:

- The minimum targets set in the NSW Infrastructure Skills Legacy Program are met for the construction of the pipeline, in consultation with the Department of Industry to the extent possible given the remote location of the project and with relevant targets negotiated through the tender process; and
- Australian rolled steel is substantially used in the construction of the pipeline, regardless of where the pipe is manufactured.

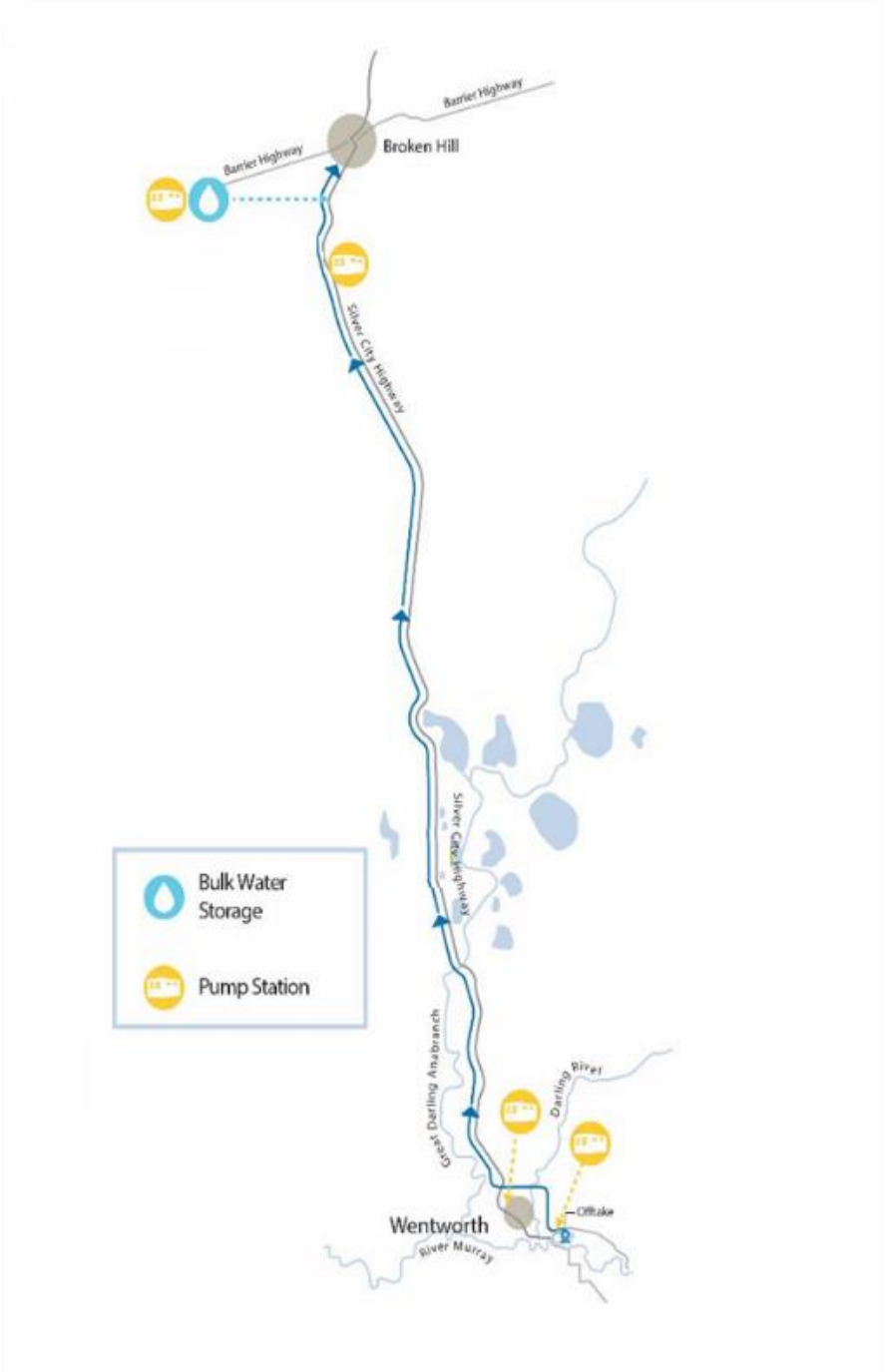
WaterNSW complied with these directions and the pipeline became operational on 5 April 2019. IPART's first determination for the pipeline took

[7] https://www.waternsw.com.au/__data/assets/pdf_file/0003/128532/Media-release-River-Murray-Broken-Hill-pipeline-contract-awarded-Oct-2017.pdf

effect for a three-year period commencing on 1 July 2019.

The legislative and regulatory framework for the pipeline is provided in Appendix E.

Figure 7 - Schematic of the pipeline



3.2 Subsidiary and structure of the Joint Ventures

To ensure full ring-fencing of costs and responsibility for the project, the Board of WaterNSW approved the formation of a wholly owned proprietary company limited by shares under the *Corporations Act 2001* (Cth) to construct, operate and maintain the pipeline. The subsidiary WaterNSW Infrastructure Pty Ltd, or special purpose vehicle ("**SPV**"), was established on 5 November 2018. Net assets for the operations of the company were transferred to the entity in April 2019 and the company commenced its operations on 5 April 2019.

The primary contracts for the pipeline (Design and Construct ("**D&C**") and O&M have been novated to the SPV.

This pricing proposal is for IPART to set prices to be charged for the transportation services provided by the SPV on behalf of WaterNSW from 1 July 2022.

This document refers to WaterNSW and not the SPV. Generally, references to WaterNSW for events to occur after the date of novation of the primary contracts, are references to the SPV acting on behalf of WaterNSW.

3.3 Cost of providing Pipeline Transportation Services

On 19 April 2018, the Minister for Regional Water, with approval of the Premier, made the *Direction to the Independent Pricing and Regulatory Tribunal in relation to the construction and operation of the Broken Hill pipeline 2018* (the "**Section 16A Direction**") (Appendix C).

This directed IPART, when making determinations of pricing for the Services, to include an amount or factor in its methodology representing the cost of complying with the Pipeline Direction and the Construction Direction. Services means the services that are supplied by WaterNSW by means of or in connection with the Wentworth to Broken Hill Pipeline and declared to be government monopoly services for the purposes of the IPART Act.

3.4 The O&M contract

The request for tender ("**RFT**") was specifically designed to ensure that the project delivered substantive value for money for WaterNSW and for customers of the pipeline. This was achieved through a number of mechanisms built into the design of the RFT and the O&M contract as set out below.

Details of the construction process are provided in Appendix F.

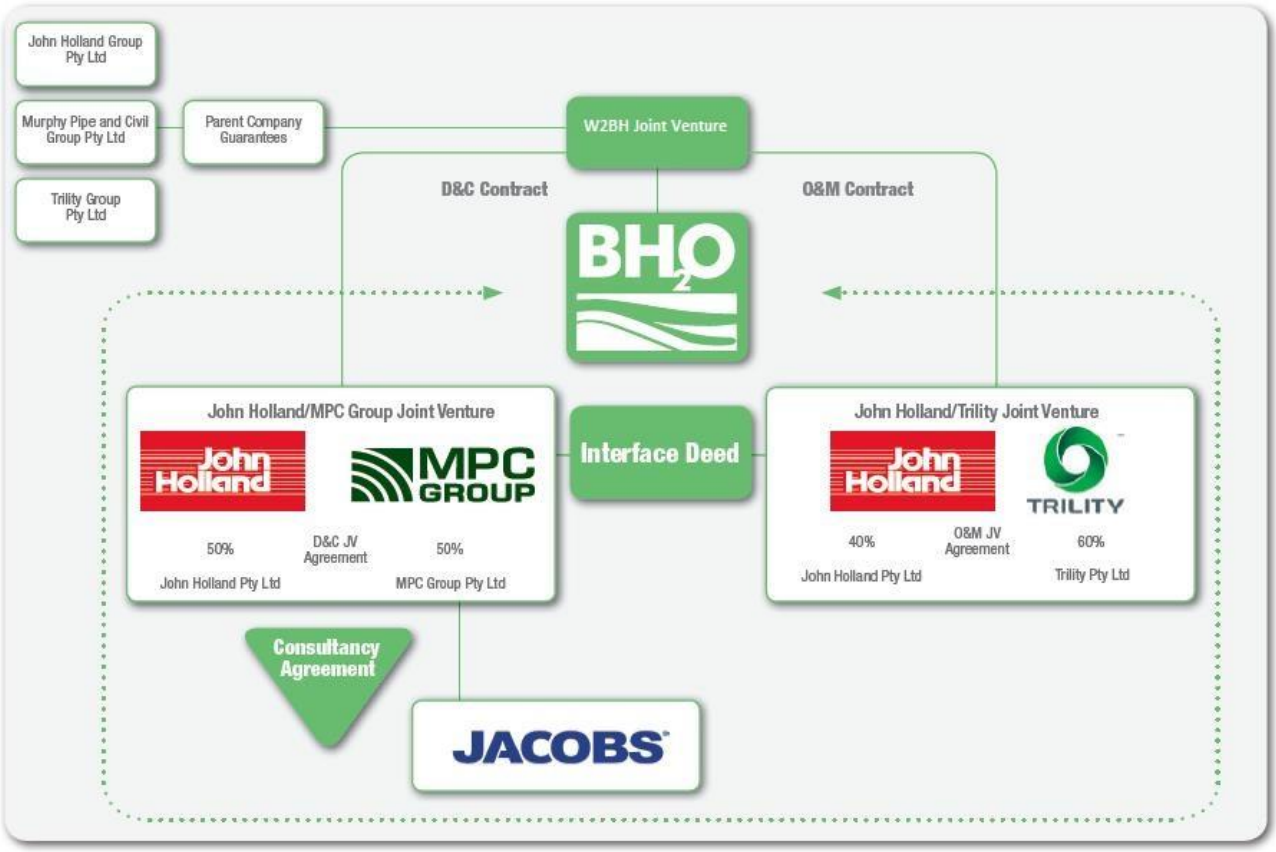
3.5 Structure of the Joint Ventures and interaction between the O&M and D&C

On 23 October 2017, the successful party, the John Holland Pty Ltd Joint Ventures with MPC Group Pty Ltd t/as John Holland MPC Group Joint Venture for the D&C Contract and Trility Pty Ltd trading as John Holland Trility Joint Venture for the O&M Contract ("**JHJV**") was announced by WaterNSW as the successful tenderer.

The contract tender was designed to ensure that one party was responsible for both the D&C and O&M components to ensure lowest whole of life costs.

This is reflected in the structure adopted by the JHJV as the successful tenderer as set out in Figure 8 below.

Figure 8 - Corporate Structure



Each of the individual members of the consortium brings specialised skills to the construction and ongoing operation and maintenance of the pipeline.

4. Services provided by the pipeline

4.1 Customers of the pipeline

The Pipeline Direction specified for the construction, operation and maintenance of a pipeline from the River Murray to the existing Mica Street Water Treatment Plant in Broken Hill. The Mica Street plant is operated by Essential Water and therefore the primary customer of the pipeline is Essential Water.

At the time of the 2019 Determination, WaterNSW undertook to determine whether there were other potential customers of the pipeline that could contribute to its costs. For this purpose, WaterNSW engaged a consulting firm, RMCG, to canvass whether access to the pipeline would promote opportunities for commercial activity along the length of the pipeline. This was assessed on the basis of:

- New agricultural or other commercial pursuits that, on a reasonable basis, may provide additional future demand broadly within a price at which the water supply could be offered; and
- Stock and domestic and other similar type water supplies (water as an essential service) that could be provided by the pipeline.

Targeted discussions with stakeholders were conducted in mid-May 2017 to assist in validating the findings and recommendations, with the final report delivered in July 2017.

The report concluded that three issues limit the potential for the pipeline's use by potential customers along the route:

- Low population;
- Existing water service (from the River Murray & the Darling River) to 70% of the new pipeline's potential stock & domestic (rural) customers; and
- Limited mine demand outside Broken Hill.

Of the opportunities canvassed, only one would potentially provide additional customers wanting to use the pipeline from its commencement: new stock water services for pastoral clients outside the area currently serviced by the Darling Anabranch pipeline who are seeking to secure reliable fresh water (with potential tapping-points along the 70km of the pipeline nearest to Broken Hill). Discussions with the Pastoralists Association of the Western Darling indicated a relatively small number of landholders in the near vicinity of the pipeline (approximately 16 properties). At a meeting held near Coombah NSW there was strong support for a domestic and stock supply for adjoining and nearby pastoralists to be supplied from the pipeline - subject to a much better understanding of the charges likely to apply.

To accommodate this potential immediate demand, the specification in the RFT made provision for installing offtakes along that section of the pipeline, while the O&M contract makes provision for adding additional offtakes to the pipeline during its term should additional demand opportunities emerge over time.

Whilst an offtake agreement and price was put in place there have not been any new customers who have requested to enter into an agreement or any new offtakes.

4.2 Raw Water Supply Agreement with Essential Water

WaterNSW has entered into a Raw Water Supply Agreement with our primary customer, Essential Water (a division of Essential Energy). The agreement sets out the services and service standards to apply to WaterNSW's provision of transportation services to Essential Water.

Under the agreement, WaterNSW is required to use its reasonable endeavours to:

- Extract raw water from the River Murray and supply that water to the Broken Hill Delivery Point[8]; and
- Operate and maintain the pipeline to the extent necessary for the provision of the supply of raw water to the Broken Hill Delivery Point.

Essential Water will be required to give to WaterNSW a written weekly order notice setting out the volume of water it will take for each week, which must be below the Maximum Demand and above the Minimum Take (8ML in any 24-hour period) for that week. Maximum Demand is:

- The Peak Daily Day Demand (37.4ML) in any 24-hour period;
- The Peak Week Demand (226.4ML) in any 7-day period;

[8] The flanged connection located immediately downstream of the flow meter on the bulk water storage outlet.

- the Peak Month Demand (927.4ML) in any month;
- The Peak Season Demand (3,708ML) between 1 December and 31 March in any year; and
- The Peak Annual Demand (7,586.6ML) in any year.[9]

Essential Water will be required to take an amount that is not less than 10% under and not more than 10% over the full amount of the ordered water during the order week.[10]

WaterNSW will have an obligation to monitor turbidity, pH, electrical conductivity, dissolved oxygen, CCPP, temperature and algae at specified test locations and frequencies and make the monitoring available to Essential Water.

4.3 Our engagement with customers

WaterNSW has engaged with our major customer, Essential Water, in the preparation of this submission. This engagement included regular (monthly) meetings to identify the key issues for the pipeline review where the WaterNSW and Essential Water pricing proposals necessarily intersect.

IPART's current pricing arrangements treat WaterNSW's transportation costs as an input into the Essential Water revenue base that is then translated into Essential Water's prices for customers in Broken Hill. On this basis, we have engaged closely with our major customer to ensure it has the information it needs to prepare its pricing proposal.

This engagement has informed the preparation of the WaterNSW pricing proposal. In particular, our approach to volume forecasting, the length of the 2022 Determination period, the approach to end-of period adjustments versus annual adjustments for the cost of debt and WaterNSW's proposed arrangements to manage movements in the cost of electricity were informed and amended in some instances as a result of this engagement.

WaterNSW has also written to our offtake customers to advise of the key elements of our pricing proposal and to advise them of the IPART review process.

Figure 9 - Pipeline Delivery

[9] These amounts are the same as the peak flows in the pipeline design. See Appendix D.

[10] To the extent that water necessary to satisfy the ordered water is available in the bulk water storage.

5. Proposed Regulatory Framework

WaterNSW is proposing the following regulatory framework apply to the pipeline for the 2022 Determination period:

- A **five-year 2022 Determination period** spanning from 1 July 2022 to 30 June 2027;
- **Transportation prices** for Essential Water and offtake customers are subject to regulation, but WaterNSW and its customers can enter into negotiated pricing agreements for other agreed services;
- A **building block approach** is used to calculate WaterNSW notional revenue requirement for regulated transportation services;
- A **price cap** is the form of price control; and
- **Risk management arrangements** to ensure we are able to efficiently manage risks within our control over the 2022 Determination period.

5.1 Scope of services subject to regulation

The starting point for the proposal is to establish the scope of services subject to regulation.

Our proposal is for IPART to regulate the **maximum prices that WaterNSW can charge for water transportation services provided by the pipeline** and **allow negotiated agreements for other agreed services** between WaterNSW and Essential Water and/or any offtake customers.

This would allow individual offtake customers to "enter into an agreement with their utility to receive different levels of service / prices than the determination specifies".[11] This is consistent with IPART's approach in the 2019 Determination and other determinations, including IPART's 2020 reviews of Sydney Water and Hunter Water's prices.[12]

IPART made a decision to defer determining prices for shutdown, standby and restart charges in the 2019 Determination. IPART noted WaterNSW could levy these charges on Essential Water, negotiated on a commercial basis.[13]

WaterNSW proposes that these charges remain unregulated and formed based on commercial negotiation between WaterNSW and Essential Water. A decision to regulate shutdown, standby and restart charges would add unnecessarily to the regulatory burden. We confirm the Pipeline has not been put into shutdown, standby or restart mode over the current determination period.

This approach of regulating maximum prices for pipeline transportation services while 'deferring regulation' by allowing for negotiated agreements for other services ensures offtake customers face efficient prices for provision of these other services while enabling WaterNSW to be responsive to our customer needs, as required.

We would ring-fence any costs and revenues from these negotiated agreements from the transportation services regulated through the 2022 Determination.

5.2 Length of 2022 Determination period

WaterNSW is proposing a determination period of **five years**. A five-year period from 2022-27 appropriately balances the uncertainty of forecasts and the regulatory burden of determinations.

At the time of the 2019 Determination there was considerable uncertainty around the operation of the pipeline, including demand and the resulting pumping profile. The period of stable operation since the pipeline's commissioning ensures we have a good understanding of the pipeline's operating profile and the associated costs. This reduces the uncertainty associated with making forecasts over the 2022 Determination period, meaning a longer determination period is appropriate.

A five-year 2022 Determination period is a proportionate response to managing this regulatory burden. Regulatory determinations involve considerable administrative and managerial effort for regulated businesses, IPART and other key stakeholders including customers. A five-year determination period enables WaterNSW, IPART and our stakeholders to efficiently allocate valuable resources.

As IPART has noted, a longer 2022 Determination period can provide a 'long term

[11] IPART, *Lifting Performance in the Water Sector: Discussion Paper -Special review*, May 2021, p12.
[12] IPART, *Review of prices for Sydney Water from 1 July 2020, Final Report*, June 2020, p151; IPART, *Review of prices for Hunter Water from 1 July 2020, Final Report*, June 2020, p34.
[13] IPART, *WaterNSW Murray River to Broken Hill Pipeline, Final Report*, May 2019, p92.

focus'[14], strengthening the opportunity and incentive for WaterNSW to pursue efficiency gains, and benefiting customers in the long run.

A longer determination period requires appropriate risk management mechanisms to be in place to efficiently manage risks over the determination period, particularly those risks over which utilities have little control, and ensure prices reflect the costs of providing services.

It is common regulatory practice to incorporate risk management mechanisms to amend the regulatory settings if there are unanticipated, material changes in revenues and costs during the course of the 2022 Determination period that are outside the control of the regulated business.

This is to ensure prices remain cost reflective through the 2022 Determination period, and that the utility will be incentivised to take accountability for events within their control, while not unnecessarily exposing them to risks beyond their reasonable control.

Common risk management mechanisms include periodic reviews of specific components, cost pass-through processes and demand volatility adjustment mechanisms. Our proposed risk management mechanisms are outlined in Section 5.5.

A five-year determination period, when supported by a holistic approach to efficient risk mitigation, appropriately balances the uncertainty of forecasts over the 2022 Determination period and the regulatory burden of determinations.

If appropriate risk mitigation measures are not implemented by IPART, WaterNSW proposes a shorter determination period (i.e. three years to 30 June 2025) to reasonably manage forecasting risk in the outer years and to align to other WaterNSW determination timelines.[15]

We understand Essential Water is also proposing a five-year 2022 Determination period to commence from 1 July 2022. Aligning the 2022 Determination period for the pipeline with Essential Water's 2022 Determination period will enable Essential Water's prices to accurately incorporate the cost of the pipeline.

However, it is not necessary to staple the timing of the determinations for the pipeline and Essential Water. For example, in the electricity industry regulatory reviews for regulated transmission businesses and the regulated distribution businesses that include transmission changes in their prices do not coincide. Similarly, when IPART regulated retail electricity and gas prices it did not seek to align these determinations with those made for the distribution and transmission businesses.

This pricing submission includes five years of future operating and capital cost and pipeline charges.

5.3 Building block approach

We support IPART's building block approach to establishing revenue requirements and prices for regulated services. This involves separately estimating the underlying components (or 'building blocks') of allowed revenue, having regard to projections of efficient capital and operating costs of providing regulated services.

The notional revenue requirement (NRR) is calculated as the sum of the building block components:

- **Operating expenditure**, which represents an estimate of the efficient level of WaterNSW's forecast operating, maintenance and administration costs related to the pipeline;
- **A return on the assets** WaterNSW uses to provide transportation services. This amount represents an assessment of the opportunity cost of the capital invested in the pipeline and ensures WaterNSW can continue to make efficient capital investments in the future. To calculate this amount, IPART decides on the efficient and prudent levels of WaterNSW's past and forecast pipeline capital expenditure, the value of the pipeline regulatory asset base (RAB), and the appropriate weighted average cost of capital (WACC);
- **A return of those** assets (regulatory depreciation). This allowance recognises that through the provision of services to customers, the pipeline infrastructure will deteriorate over time, and therefore allows the cost of the RAB to be recovered throughout its expected life. To calculate this allowance, IPART decides on the appropriate asset lives and depreciation method;
- **An allowance for meeting tax obligations**. In the 2019 Determination, IPART used a real post-tax WACC to calculate the allowances for return on assets, and calculate the allowance for tax as a separate cost block; and

[14] IPART, *Lifting Performance in the Water Sector: Discussion Paper -Special review*, May 2021, p6.

[15] A three-year determination period would align to the WaterNSW Rural Valleys and WAMC determination timelines and would streamline regulatory processes and associated costs.

- **An allowance for working capital**, which represents the holding cost of net current assets.

5.4 Setting maximum prices

There are several forms of price control that can be used to determine maximum prices for regulated businesses. These include price caps, revenue caps and hybrids of these two approaches.

We propose that a price cap should continue as the form of price control for the 2022 Determination period. We consider that this approach continues to be fit-for-purpose as it provides certainty and stability for our customers, while preserving scope for negotiated pricing agreements for additional services requested by our customers.

We consider that continuation of capped cost reflective tariffs (i.e. fixed and variable charges) for the transportation services are able to adequately manage demand and revenue risk.

5.5 Managing risk

5.5.1 Our approach to risk management

In providing regulated services, WaterNSW is exposed to a range of risks that may influence the costs of providing services, or the revenues we receive from providing services. These costs and/or revenues may differ from those assumed by IPART in making its determination. This creates a risk that WaterNSW over or under recovers the efficient cost of providing services, as well as a risk that prices do not reflect the cost of efficiently providing these services.

We have analysed the key risks that could impact the costs of providing services over the 2022 Determination period, to determine how best to address each relevant risk. We have sought to consider these risks in an integrated way across the 'regulatory package' and through this determination we are seeking prices and a risk management framework that allow us to efficiently manage and where appropriate share risks with customers. Ultimately, we think this proposed package is in the long-term interests of customers.

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

- Allocating risks to the party best placed to manage them;
- Maintaining appropriate incentives for WaterNSW to manage risks within its reasonable control;
- Considering impacts on regulatory certainty and administrative costs; and
- Ensuring WaterNSW is compensated for risks only once, and that prices do not include compensation for risks shared with customers.

This is consistent with the approach IPART has previously taken when it has analysed and allocated risks faced by utilities over the determination period.[16]

In summary, after analysing the key risks and applying these principles, we are proposing the introduction of two key risk management mechanisms that we consider meets these regulatory principles. These are mechanisms to update access and usage prices:

- At the end of the 2022 Determination period ('end of period true-up') to manage movements in the network and wholesale elements of the benchmark price of electricity during the 2022 Determination period; and
- During the 2022 Determination period to manage movements in the efficient costs of specified events that could occur and are beyond the reasonable control of WaterNSW during the 2022 Determination period.

Figure 10 below outlines our proposed risk management and allocation framework for the 2022 Determination.

[16] See IPART, *Review of regulated retail tariffs and charges for electricity 2010-2013 – Final Report*, March 2010, p52.

Figure 10 - Proposed risk management and allocation framework

Action	Category	Compensation for risk or risk allocation/sharing mechanism	Risk examples	Cost or revenue risk?	Risk allocation
Treat/accept risk	Systematic risk	Rate of return / WACC	Risks that cannot be eliminated through diversification e.g. macroeconomic factors	Cost	Business
	Business-specific risk	Cost allowance (to meet good industry practice –complying w/ licence conditions)	Staff safety in relation to operating and maintenance, breach of licence, equipment failure; energy efficiency (e.g. energy use per ML)	Both	Business
Share risk	Business-specific risk	Cost reflective tariff structures	Water demand/pumping volume risk	Both	Customers
		Negotiated agreements (cost recovery of additional services)	Essential Water unable to accept water	Both	Shared
		Cost allowance (insurance)	Natural disasters, major asset failure	Both	Business (via insurers)
		Cost pass through	Insurance cap/credit/coverage event regulatory & service standards/tax changes	Cost	Customer
		Cost pass through or end period true up	Movements in annual energy prices	Cost	Shared

The framework groups the identified action for each risk (treat, accept or share), whether it is systematic or business-specific and how we propose to be compensated for managing or bearing the risk, or the mechanism for sharing the risk. We also summarise whether the risk affects our costs and/or revenues and whether it is allocated to WaterNSW, our customers or is shared.

Our approach to risk management for the 2022 Determination framework is discussed in detail in Appendix F and G, with the proposed key elements summarised below.

5.5.2 Managing movements in the price of electricity

The cost of electricity represents a significant portion of the variable cost of providing transportation services. The cost of electricity is also highly uncertain given that key components of electricity prices are determined by dynamic market forces, or independent regulators and/or market authorities.

For this reason, retail market electricity prices are generally not available for extended future periods (without building in an uncertainty premium to the price). For example, wholesale futures contracts publicly traded on the ASX are available for 2022-23 and 2023-24 (as of the time of writing this report) only, and most retail market offers for large customers include a pass through of network charges.

The 2019 Determination sought to forecast and 'lock in' an electricity benchmark price for the length of the determination period.

Given the challenge in forecasting prices over a longer determination period, we have considered the options to manage forecast price risk and compared these options using the risk management framework and principles discussed above.

To manage this forecast price risk - which WaterNSW cannot practically manage itself - WaterNSW is proposing changes to the pricing formulae to enable an end of period true-up for movements in the network and wholesale elements of the electricity benchmark price over the 2022 Determination period (similar to IPART's cost of debt true-up mechanism – see Section 10.3).

Compared to alternative options (such as a continuation of IPART's approach in the 2019 Determination) we consider this to be the most efficient means of managing this forecast price risk. For instance, we do not believe that it is in the customer's best interest to set an energy cost allowance that includes an uncertainty premium to manage potential unforeseeable increases in market prices and/or network charges, nor provide WaterNSW with additional compensation (outside the WACC) for bearing the risk of annual movements in wholesale and/or network prices.

The proposed mechanisms to update access and usage prices at the end of the 2022 Determination period are set out in Appendix G.

The proposed mechanisms are designed to ensure WaterNSW is incentivised to take accountability for events within its control, while not exposing it to risks beyond its control - particularly where it may not be efficient for WaterNSW to manage this risk.

In designing these mechanisms, we have drawn on regulatory precedence from across Australia, including IPART's other water and energy decisions. We have also been mindful to ensure the proposed mechanisms:

- Retain incentives for WaterNSW to procure and use electricity as efficiently as possible;
- Result in WaterNSW's prices reflecting the costs that would be incurred by a prudent and efficient benchmark entity in providing these services over the 2022 Determination period; and
- Can be applied simply and mechanically without a need for IPART to exercise discretion through the 2022 Determination period by referring to the relevant published charges.

For these reasons we consider the proposals to update the energy cost allowance to be consistent with IPART's cost pass through criteria and consistent with promoting the long-term interests of customers.

5.5.2..1 Wholesale component of benchmark electricity price

The wholesale electricity cost represents around 40% of the total electricity cost allowance.

We recognise IPART's approach to setting a wholesale electricity cost allowance based on a benchmark price approach and are proposing that a mechanism is introduced to provide an end of period true-up for movements in the wholesale element of the electricity benchmark price over the 2022 Determination period (similar to IPART's cost of debt true-up mechanism).

This is to manage the significant forecast error associated with attempting to forecast wholesale electricity costs for the entire 2022 Determination period. This is particularly the case since market products that can be used as a basis for benchmark market prices for electricity tend only to operate for around two years.

This forecast error creates risk for WaterNSW. At the time that IPART makes its determination, WaterNSW will be able to purchase electricity on forward markets for around the first two years of the 2022 Determination period. WaterNSW will not be able to purchase electricity on forward markets for the final three years of the 2022 Determination period for several years. By this stage, conditions in the electricity market may have changed significantly, and WaterNSW may face electricity prices that are very different from those forecast by IPART.

This creates the risk that prices for transportation services may not reflect the cost of supply, exposing WaterNSW to windfall gains or losses depending on wholesale market conditions.

WaterNSW notes that there is precedent for:

- Annual reviews of wholesale electricity costs to manage this forecasting error (including IPART's 2010 and 2013 Determinations which introduced annual reviews of the wholesale energy component of regulated retail electricity prices, and annual pricing decisions by the Queensland Competition Authority (QCA), Essential Services Commission of Victoria (ESCV) and the Australian Energy Regulator (AER) for electricity retailers); and
- End of period true-up mechanisms to compensate for movements in benchmark costs or prices through the determination period (similar to IPART's cost of debt true-up mechanism, or demand volatility adjustment mechanism).

The proposed mechanism to incorporate a periodic update of the benchmark wholesale electricity cost allowance is set out in Appendix G.

We have proposed a forecast (see Section 6.6 and Appendix G) of the wholesale component of the benchmark electricity price, reflecting information available today, that can be updated through the proposed annual review to reflect the latest available information over the 2022 Determination period.

5.5.2..2 Network price pass-throughs

The network component represents around 41% of the total electricity cost allowance.

Network charges are levied by Essential Energy to cover the cost of transporting electricity through the transmission and distribution networks.

Network charges are subject to independent regulation by the AER. Given its location in regional New South Wales, the pipeline is located within TransGrid's transmission network and Essential Energy's distribution network. WaterNSW has no ability to control the value and imposition of these transmission and distribution costs as these are determined through the AER's regulatory processes.

In contrast to IPART's previous approach of 'setting and forgetting' the network component of the total electricity cost allowance, WaterNSW is proposing an end of period true-up for movements in the fixed and variable electricity

network charges determined by the AER over the 2022 Determination period.

We are proposing that differences between forecast and actual network charges determined by the AER and levied by Essential Water on WaterNSW in respect of Use of System Services are passed through into usage and access charges at the end of the 2022 Determination period. The proposed mechanism is similar to the approach as set out in IPART's Sydney Desalination Plant's (SDP) 2012 and 2017 Determinations (although SDP actual network charges are passed through as incurred rather than as an end of period true-up).

In making the decision to pass through network electricity prices, IPART noted that SDP's network costs are both material and highly uncertain, with SDP having no ability to influence the level of these charges:

> *We consider the cost pass-through mechanism has operated as intended over the 2012 determination period and we have decided to continue to use this method to passthrough SDP's network charges over the 2017 determination period. Similar to the 2012 determination period, SDP's network costs will become uncertain in the 2017 determination period …*
>
> *Sydney Water also supported the use of a pass-through mechanism, noting that any forecast of network charges during the previous price review for SDP would have been significantly higher than actual billed charges. Further, Sydney Water stated that the unpredictability of network charges means that no forecast would be more efficient than a pass-through of actual charges.*[17]

WaterNSW supports the findings from the 2017 SDP Determination regarding the pass through of network charges and proposes a similar mechanism is applied for the 2022 Determination for the pipeline to address a similar (if not higher) level of uncertainty over future network charges.

The AER's current determination for TransGrid ends on 30 June 2023, and for Essential Energy ends on 30 June 2024. It is uncertain how network charges will change in future AER determinations.

We consider that the network electricity costs incurred in providing services are subject to the same level of uncertainty as those paid by SDP.

More detail is provided in Appendix G.

5.5.2..3 Other fees and charges

There are a range of other uncontrollable fees and charges that should be included in the benchmark electricity price.

The relevant uncontrolled charges are:

- **Ancillary service charges** designed to recover the cost of ancillary services purchased by the Australian Energy Market Operator (AEMO) to manage the power system safely, securely, and reliably in line with its obligations under the National Electricity Rules.[18]; and
- **Market fees** designed to recover AEMO's operating and capital expenses.[19]

There are a number of factors that may change over the determination period that will affect ancillary service costs and market fees and these include the following:

- **AEMO currently revising market fee procedure** – The current structure of participant fees in the NEM commenced on 1 July 2016 for a duration of five years, ending 30 June 2021. AEMO is currently consulting on a new structure for market participant fees to apply from 1 July 2021.
- **New capital transformation programs** – This includes the introduction of 5-minute settlement, a global settlement framework for unaccounted for energy, the Distributed Energy Resources (DER) integration program, and the Energy Consumer Data Right (CDR) program. The cost of these programs is not currently included within AEMOs market fee structure.
- **The potential for a step change in ancillary services quantity or price** – A shift to markets with more renewable and less firm dispatchable generation can increase demand for ancillary services and also decrease the number of generators able to supply ancillary services (resulting in higher prices). This can result in substantial

[17] IPART 2017 SDP Final Report, page 113.

[18] AEMO procures ancillary services through two mechanisms. Market ancillary services are acquired through the spot market, and prices are determined using AEMO's dispatch algorithm. Non-market ancillary services are procured through agreements negotiated with service providers, typically on an annual basis. The volume and type of ancillary services required in the future is uncertain and depends on a myriad of market variables.

[19] These include labour-related expenses and IT, forecasting and operating system maintenance, and investments required to plan and operate Australia's energy systems and markets. AEMO's costs are affected by a range of factors that vary over time, including the number and complexity of new rules and market changes, introduction of new compliance functions, technological changes in system planning, cyber security protections, connections analysis and commissioning, and the extent of market and operations consultation.

volatility in participant's payments to AEMO for ancillary services costs.

These factors add considerable uncertainty to the value of ancillary service charges and AEMO market fees over the determination period.

AEMO recovers the costs of ancillary services and its market fees from market participants, who in turn pass them onto electricity customers. WaterNSW has no ability to control the level and of these charges.

In our view, introducing a pass through mechanism to cover these charges could be an efficient means of managing this risk. However, seeking a pass through of uncontrollable ancillary service charges and market fees for the 2022 Determination may introduce a significant level of complexity that may not be warranted given the relatively small costs (of approximately $12,000 per annum as shown in Table 54 in Appendix G). WaterNSW will monitor whether a pass through of these matters is warranted in subsequent determinations.

5.5.3 Other cost pass-throughs

Cost pass through mechanisms are a common part of incentive based regulatory frameworks. They are used to manage the risk associated with external events that occur within a determination period - that are outside the control of the business but have a material impact on costs and hence the financial position of the firm.

These risks are unable to be adequately managed through internal risk management, insurance or self-insurance. Examples can include major changes to regulatory obligations or natural disasters.

Cost pass throughs provide a mechanism to allow regulators to review the efficient costs associated with events (after they have occurred) that could not be forecast as part of the revenue proposal and allow regulated businesses to recover the determined efficient costs to ensure that prices continue to reflect efficient costs.

The costs associated with pass through events are those that would have been included in the 2022 Determination had WaterNSW and IPART known with perfect foresight the scope, timing and efficient costs of the pass through event in advance. For the majority of pass through events, at least one element of the scope, timing or efficient costs of the event are unlikely to be known over the 2022 Determination period.

Therefore, WaterNSW proposes a targeted cost pass through framework to address the risk of defined exogenous events occurring during the 2022 Determination period that may change the efficient costs of providing transportation services (i.e. such that efficient costs differ from those assumed by IPART in setting prices in the 2022 Determination).

Our approach to identifying general cost pass through events has involved:

- Identifying potential changes to our operating environment and regulatory and legislative framework that may create risk over the 2022 Determination period;
- Assessing the certainty, likelihood and consequence of each risk to determine whether risks can be accounted for in expenditure forecasts or in the case of low consequence risks, absorbed internally; and
- Reviewing the available risk management measures that may be used to mitigate or prevent risks, including operating expenditure, capital expenditure, insurance, self-insurance, WACC and specific pass through events.

IPART has long-standing cost pass through principles in place and have discretion under the IPART Act to define a cost pass through mechanism. As set out in Appendix F, we are proposing a mechanism to efficiently manage key risks that involves:

- Defining seven pass through events: a regulatory change event; a service standard event; a tax change event; an insurance coverage event (noting that this addresses costs beyond the insurance cap and beyond the reasonably available insurance cover); an insurer's credit risk event; a natural disaster event and a terrorism event.
- Establishing a process for IPART to determine the efficient pass through amount and the recovery period for the pass through amount at the time of the event (i.e. within the 2022 Determination period rather attempting to specified unknown costs in advance in the determination). This aligns with the standard implementation approach for cost pass throughs across a number of regulatory regimes, including the national energy regulatory regime for electricity and gas networks.

5.6 Benchmark efficient entity

IPART's regulatory framework involves setting revenues and prices with reference to a benchmark efficient entity, which it defines as "a firm operating in a competitive market and facing

similar risks to the regulated business".[20] This means cost allowances, including the cost of capital for this benchmark efficient entity may be different to the regulated business's actual cost.

IPART indicates this is consistent with IPART's price setting objective, which is to attempt to replicate the disciplines of a competitive market. A competitive market would limit prices to the level of efficient and prudent costs.

This approach has implications for other elements of the regulatory framework. In particular, the efficient costs of the pipeline should also be set with reference to an internally consistent set of assumptions for the operations of the entity. For instance, is the pipeline (the benchmark efficient entity) a standalone entity or is it part of a larger utility?

In the 2019 Determination IPART approved a tax allowance based on the assumption that the pipeline was a standalone entity with annual revenues below $50 million and therefore subject to a tax rate below 30%. This reduced the tax allowance below the level of tax paid by WaterNSW as a consolidated entity.

However, IPART also approved corporate operating costs that were not based on those of a standalone business (e.g. no explicit costs for a separate Board, CEO, and other necessary corporate support costs). It used as its starting point the incremental corporate costs allocated across all WaterNSW operations.

WaterNSW considers that for the 2022 Determination, IPART's allowances should be internally consistent. These allowances should build on the assumptions for the benchmark efficient entity used to set the WACC.

To establish the appropriate, more holistic benchmark efficient entity that also considers the approach to costs other than the rate of return, we assessed the structure of infrastructure businesses in Australia of similar size and scope (e.g. utility infrastructure asset values of approximately $400 million) that are subject to economic regulation. Our analysis highlights the following:

- There are few standalone single asset businesses that have assets of at least $400 million with revenues below $50 million that operate as a standalone entity. In our experience, the assets (including water utilities and gas pipelines) are either larger or form part of a consolidated entity that has revenues above $50 million;
- In 2019, IPART set the tax allowance for Essential Water based on Essential Water having regulated revenues over $50 million per annum. Essential Water is part of a consolidated organisation (Essential Energy) that is subject to the 30% corporate tax rate. Excluding the cost of the pipeline, Essential Water's revenues would be below $50 million per annum; and
- SDP is a privately owned infrastructure business, with an annual revenue requirement greater than $50 million. SDP's operating allowances were set by IPART on the basis of it being a standalone entity (IPART changed its approach in the 2017 SDP Determination to reaffirm these standalone benchmark costs).

This evidence from the market demonstrates that the costs of providing transportation services are lower if part of a larger organisation where the allocated costs of separate Boards, CEOs, and other corporate functions can be shared across the entity's business units compared with the costs of operating a standalone business.

We therefore consider that the benchmark efficient entity that should form the basis of setting regulatory revenues for the pipeline is a division of a consolidated utility business providing pipeline services in Australia with revenues greater than $50 million per year.

This has the following implications for the 2022 Determination:

- The appropriate corporate overhead costs as discussed in Section 6 should be those that are allocated to the pipeline based on WaterNSW's cost allocation methodology; and
- The appropriate tax rate as discussed in Section 10 should be based on the tax rate applicable to the larger (revenues greater than $50 million p.a.) organisation.

The counterfactual is to consider the benchmark efficient entity as a standalone entity. This would require the corporate costs to be set on a standalone basis (including establishing a Board, CEO, and other support costs) as per the SDP Determination. As outlined in Section 6, WaterNSW estimates that this cost is approximately $2.5 million per annum higher than our proposed allocation based on our company-wide cost allocation methodology that has been reviewed by IPART in the recent Rural Valleys and WAMC determinations.

[20] IPART's *"Review of our WACC Method"*, February 2018. Page 19.

Figure 11 - The River Murray Pump Station

6. Operating Expenditure

The operating expenditure component constitutes around 18% of the proposed NRR.[21]

Operating expenditure for the pipeline is predominately comprised of fixed operation and maintenance costs incurred by the pipeline contract (38%), the cost of electricity for the pumps to propel the water up the pipeline (34%), corporate support costs (14%) and contract management, audit, insurance, land tax and other minor charges (13%) for additional on site and corporate labour and overhead costs.

6.1 Summary

Actual operating expenditure over the three years of the 2019 Determination period is **$5.3 million** ($2021-22) per year, or 35% above the average operating expenditure in the 2019 Determination period.

The variance is caused primarily by the overhead allowance not adequately providing for the support costs for the pipeline. WaterNSW applied its cost allocation methodology to allocate overhead to the pipeline consistent with the methodology used in its core Determinations, rather than an arbitrary 5% allocation as applied by IPART in 2019. Higher energy costs than provided for in the determination also contributed to these higher costs.

Actual operating and maintenance costs (including contract and other O&M costs) are also higher than allowed. Additional costs were incurred in relation to the Ski Park Rehabilitation. The rehabilitation project was required as a make good obligation to the residents of Wentworth and as a result of the need for WaterNSW to comply with the SOC Act direction issued to the Board of WaterNSW to secure the water supply of Broken Hill.

Proposed operating expenditure is **$4.5 million per year**, which is $0.6 million or 15% higher than IPART's average allowance of $3.9 million per year over the 2019 Determination period.

Proposed operating expenditures over the 2022 Determination period ($2021-22) include on average:

- Operating and maintenance activities of $1.7 million per year as part of our contractual arrangements with the John Holland Trility Group Joint Venture;
- Additional operating and maintenance activities of $0.1 million per annum to cover pipeline pigging, landscaping, watering and planting;
- Electricity pumping costs of $1.5 million per annum based on forecast volumes averaging 5,534ML per year as provided by Essential Water plus a small amount of usage by offtake customers;
- Corporate support costs of $0.6 million per annum based on the application of our existing cost allocation methodology; and
- Contract management and other costs relating to audits, insurance, administration, regulatory submission preparation and land tax of $0.5 million per annum.

The single largest operating activity relates to the contracted O&M costs of the pipeline, which was derived from a well-developed competitive procurement process which was endorsed by the IPART expenditure consultants in the 2019 Final Determination.

The cost of electricity is the second largest operating activity, which is forecast at approximately $1.5 million per annum. This is 4% lower than the current regulatory allowance for the cost of electricity. This reflects a significant reduction in wholesale costs, which is offset to some extent by higher network charges and is consistent with the outcomes from a competitive energy contract procurement process undertaken by WaterNSW in early 2020-21.

Our proposal also includes expenditures for 'make good provisions' required as part of the original pipeline construction. The costs for these activities are a combination of operating and capital expenditures as outlined below:

- Wentworth Ski Park rehabilitation project. We are proposing the rehabilitation costs are recovered from customers gradually over time under the existing RAB framework; and
- Landscape works, replanting and watering which are part of our proposed operating expenditures.

WaterNSW's forecast of operating expenditure requirements for the 2022 Determination period is shown in Table 4 below.

[21] Excluding the cost of debt true up

Table 4 - Operating expenditure forecast for the 2022 Determination period ($000s, $2021-22)

$'000	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Operation and maintenance	1,667	1,783	1,622	1,715	1,896	**8,684**
Electricity costs*	1,563	1,551	1,544	1,537	1,530	**7,724**
SPV audit costs	31	31	32	32	33	**159**
SPV contract management costs	170	170	170	170	170	**850**
Insurance & land tax	175	179	182	186	190	**913**
SPV Overhead	619	675	604	637	679	**3,214**
Other operating costs***	128	354	94	198	277	**1,052**
Total Operating Expenditure	**4,353**	**4,743**	**4,249**	**4,476**	**4,775**	**22,595**

* Electricity payments based on assumed average usage of 5,531MLs for and provided by Essential Water, plus evaporative losses of 435MLs using the electricity price inputs provided by Frontier Economics, plus 3MLs of average usage for offtake customers.
** Totals may not add due to rounding.
*** Includes preparation of regulatory submission, asset replacement costs, operation and maintenance costs additional to the contract (e.g. landscape works), travel costs and other minor expenses.

6.2 Efficiencies built into our proposal

Our pricing proposal reflects significant efficiencies build into our reducing revenue forecasts. These include:

- Reduced borrowing costs for the pipeline, resulting in a lower return on capital (e.g. **lower WACC** of 3.7% vs 4.0%), noting that the lower cost of debt during the 2019 Determination period is being returned to customers through lower costs in the 2022 Determination period;
- Operating and maintenance costs derived from a well-designed competitive procurement process that was endorsed by IPART's expenditure consultants, Synergies in the 2019 Final Determination.
- Efficient energy costs calculated using:
  - An efficient energy profile;
  - Benchmark energy price including forecast wholesale energy costs; and
  - AER-approved rates for network charges;
- Economies of scale and overhead costs based on our cost allocation methodology, which is aligned with our actual expenditure, as reviewed by IPART during the 2021 Rural Valleys and WAMC Determinations;
- Costs increases are limited to mandatory and uncontrollable costs such as insurance and land tax; and
- Minimal capital expenditure on the pipeline reflecting the asset replacement schedule competitively procured from the market.

Even though WaterNSW has achieved cost savings across some of the cost categories for the pipeline over the 2019-22 Determination period, we are not proposing to include an Efficiency Carryover Mechanism (ECM) carry forward in pricing proposal on the basis that:

- WaterNSW's motivation to achieve efficiency gains is not driven by the ECM per se;
- rather we seek to provide secure, high quality water at the lowest price for our customers consistent with our statutory obligations

6.3 Accounting Policies

Our proposed expenditure profiles have been prepared in accordance with:

- Applicable Australian Accounting Standards (which include Australian Accounting Interpretations);
- Applicable International Financial Reporting Standards;
- Financial Reporting Directions mandated by the NSW Treasurer, including Treasury Circulars and Treasury Policy Papers; and
- Accounting policy legislation, including the requirements of the Part 3 of the *Public Finance and Audit Act 1983* (where applicable), *Government Sector Finance Act 2018* (where applicable), the associated requirements of the *Public Finance and Audit Regulation 2015* (where applicable) and the *State Owned Corporations Act 1989*.

We have applied our internal accounting policies to identify the forecast expenditures that are related to capital expenditure and those expenditures that should be expensed.

Our capitalisation policy, as updated from time to time, sets out the criteria determining whether an

asset is created and the materiality thresholds to assess whether an asset should be capitalised or expensed.

Our capitalisation policy complies with the NSW Treasury Policy TPP06-6 "Capitalisation of Expenditure on Property, Plant and Equipment", which is consistent with relevant Accounting Standards including AASB 116 Property, Plant and Equipment. AASB 116 provides guidance on the costs (including corporate costs) which can be capitalised as part of Property, Plant and Equipment.

Under the updated AASB 16 Leases which applies from the 2019-20 financial year, operating lease payments are now recognised in the balance sheet. Our consolidated accounts reflect the updated standard. However, the IPART secretariat has expressed a preference for regulated entities to continue to treat operating lease payments as an expense item for pricing purposes, contrary to the new standards.

On this basis, WaterNSW's continues to treat operating leases as an expense item in its proposed expenditures.

6.4 Operations and maintenance

The largest single component of operating expenditure is a fixed (monthly) rate charge to the pipeline contractor under the O&M contract to perform all the operations and maintenance of the pipeline over the 20-year term. This cost includes staffing costs at the pipeline by the Joint Venture. These costs are set out below on a per annum basis.

Table 5 - Operations and maintenance ($000s, $2021-22)

$'000	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Operation and maintenance	1,667	1,783	1,622	1,715	1,896	8,684

The JHJV assumes responsibility for the operation and maintenance of the pipeline in accordance with the O&M contract. The responsibilities include:

- Developing, implementing and maintaining a Water Quality Management Plan, such as temperature, PH, and turbidity;
- Developing, implementing and maintaining an Incident Management Plan in line with WaterNSW's requirements;
- Developing, implementing and maintaining management plans covering project operations and maintenance requirements for health, safety, environment and quality;
- Monthly reporting requirements providing sufficient detail for WaterNSW to assess performance and compliance with the requirements of the contract, in line with WaterNSW's Operating Licence. The reporting requirements are extensive and include quantity, quality, volumes, energy usage, hydraulic performance, asset management, incident reporting, KPI reporting, fuel usage;
- Communications and day-to-day operational issues, including direct communication with Essential Water, and billing WaterNSW in accordance with the O&M contract;
- Asset management and maintenance, developing, implementing and maintaining an asset management system and asset data requirements, planned/routine maintenance, reactive and unplanned maintenance and other general maintenance services;
- Meeting WaterNSW's operational performance requirements include:
  - Ensuring specified system availability and meeting return to service periods;
  - Meeting operational demand forecasts provided by Essential Water;
  - Meeting water quality thresholds at the specified interfaces;
  - Meeting defined safety and environmental performance indicators; and
  - Continuous monitoring of system performance efficiency and ongoing corrective action if performance does not meet requirements.
  - Continuous monitoring of system leakage or losses and ongoing corrective action if performance does not meet requirements.
- Maintaining the water supply system including:
  - Regular maintenance and checks to minimise rates of equipment/component failures particularly unplanned failures that will impact on the ongoing system availability;
  - Scheduled replacement of equipment;

- Reactive maintenance and replacement within specified return to service periods;
- Regular checks on all equipment / components to ensure ongoing system availability;
- Regular auditing of maintenance systems and processes to ensure maintenance;
- Activities are being carried out in accordance with an accredited maintenance management system; and
- Recording of maintenance activities and associated costs to enable WaterNSW to demonstrate prudent and efficient maintenance management practices to relevant regulators; and

- Arranging for an annual independent audit in conjunction with WaterNSW, which must cover the following matters: financial payments, water volumes, water quality, health and safety, maintenance, asset management and other matters as required under the O&M contract. This cost is treated as a separate cost item identified as the 'SPV audit'.

In the 2019 Final Determination, the operating and maintenance costs were deemed efficient by both IPART and their expenditure consultant Synergies.

6.5 Asset replacement costs (opex)

This is a nominal amount of operating expenditure which covers planned asset replacement incorporated into the O&M contract reflecting the cost profile bid by the contractor in its tender over a 20-year period.

Over the O&M contract term, the contractor will be paid based on the lower of actual asset replacement costs incurred and the cumulative asset replacement cost profile bid by the contractor in its tender (adjusted for indexation). Overall, this mechanism both ensures that the contractor is held accountable to their bid price.

In the 2019 Final Determination, the asset replacement costs were deemed efficient by both IPART and their efficiency consultants Synergies.

WaterNSW is forecasting minor asset replacement works for pipeline exterior coating, replacement and refurbishment on pipeline appurtenances, bulk storage cells, control systems, electrical systems and other minor assets as shown in Table 6 below.

Table 6 - Asset replacement cost ($000s, $2021-22)

$'000	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Asset replacement costs	57	224	5	17	33	337

6.6 Electricity costs

6.6.1 Overview

The cost of electricity represents $1.5 million per year, or around 34% of our total proposed operating expenditure and is the sole element of the variable cost of providing transportation services for charging purposes.

Electricity costs are incurred due to the energy needs of the four pump stations (one of which is illustrated in Figure 11) which operate to transport water up the pipeline.

Figure 12 - WaterNSW pumping station

Consistent with IPART's 2019 Determination, WaterNSW proposes to maintain the approach of recovering the cost of electricity from user charges:

- Fixed electricity costs will be reflected in the access charge; and

- Variable electricity charges, which vary depending on the amount of water ordered or delivered, will be reflected in the usage charge.

The cost of electricity is highly uncertain given that key components of electricity prices are determined by dynamic market forces, or independent regulators and/or market authorities.

Section 5 and Appendix G set out our proposal to introduce a mechanism to provide an end of period adjustment for movements in the network and wholesale component of the benchmark electricity price over the 2022 Determination period (similar to IPART's cost of debt true-up mechanism).

However for the purpose of calculating the notional revenue requirement, we have provided an estimate that can be updated as appropriate to reflect the latest available information at the time of making the 2022 Determination.

6.6.2 Energy use profile

The energy use profile of the pumps at different levels of demand, expected demand and electricity prices are major components in calculating the cost of electricity. Our current operating practice optimises off-peak and shoulder pumping times to minimise on-peak operation and overall energy costs, subject to operational constraints.

For the 2019 Determination period, IPART, recognising that volumes and pumping efficiencies were unknown, determined a hypothetically efficient profile. This profile took into account the network costs and optimised accordingly.

Now, with the benefit of operating the pipeline for almost two years, WaterNSW has a good understanding of energy use and IPART's theoretical approach underestimates the constraints imposed by operational considerations.

Figure 13 - Supply demand table 2019-20

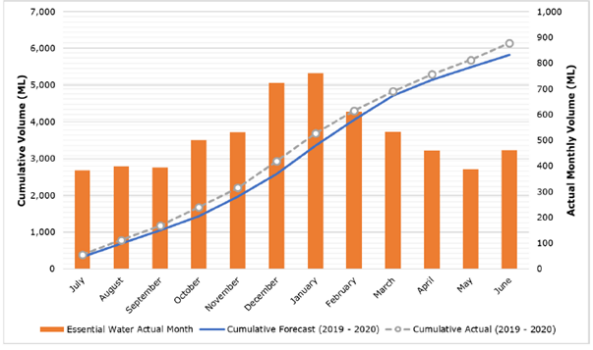
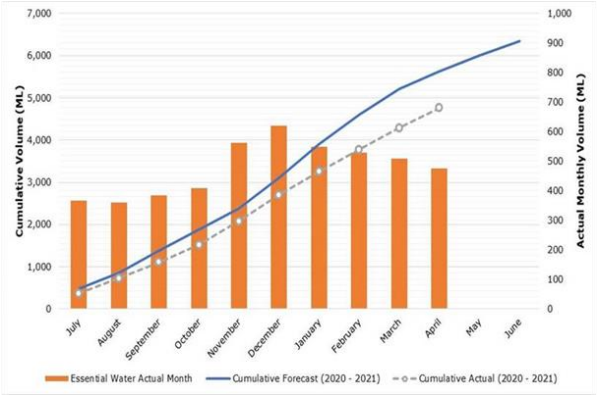


Figure 14 - Supply demand table 2020-21



The differences in the volumes of water pumped in off-peak and shoulder times arise due to a variety of reasons:

- Unplanned outages can occur even when operating and maintaining the assets in line with good industry practice, meaning that pumping which would otherwise occur in off-peak times must instead be done in higher priced shoulder or peak times;
- To ensure no blooms of blue-green algae, a small amount of pumping must be done for most of the day to keep water flowing into the bulk water storage. This means pumping may need to be done in shoulder and peak times;
- Occasions when one cell in the bulk water supply facility is offline due to water quality factors and other operational conditions; and
- Due to the size of the bulk water storage, water must be pumped in addition to Essential Water's request, to account for evaporation losses in the bulk water storage.

Due to the above operational constraints, which are difficult to apply to an optimised profile, using the financial year 2019-20 pumping profile for the water volumes pumped is an appropriate approach.

Adopting a hypothetical efficient profile, which doesn't take into account additional operational constraints, risks systematically underestimating the electricity costs WaterNSW faces.

To create the half-hourly pumping profile, the assumed fixed energy use and pumping efficiency was taken from the 2019 Determination. These assumptions were:

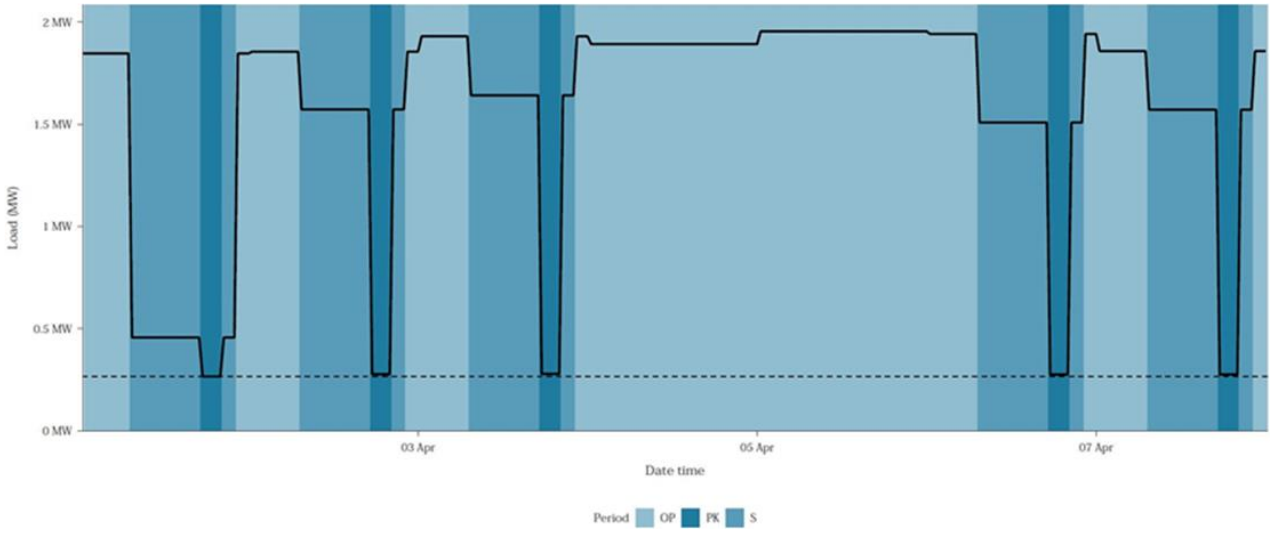
- A fixed energy use of 6.39MWh per day; and
- A pumping efficiency of 1.64MWh per ML pumped

The annual water consumption forecasts were then converted into a half-hourly profile by scaling using the historical pumping profile. This ensured that the pumping profile volumes matched the water demand forecasts, yet still gave effect to any operational constraints not expressed in the 2019 Determination.

An example of the half-hourly energy use profile is provided as Figure 15. The dotted line is the minimum electricity use, estimated from Trility's energy build up. The solid line is the total energy use (in MW) used for pumping. The energy use profile involves pumping first in the off-peak periods (light blue shaded area), then in shoulder periods (medium blue shaded area) when necessary and lastly in peak periods (dark blue shaded area).

The energy use profile highlights that the majority of pumping occurs in off-peak periods; however, there is a significant amount of pumping that also occurs in in the higher priced shoulder periods. Fixed energy use by its very nature requires some pumping at peak periods, as can be observed in the figure below.

Figure 15 - Half hourly energy use profile example for 2022-23



6.6.3 Forecast electricity prices

To generate the illustrative revenue requirement to for the 2022 Determination period, we have proposed a placeholder forecast of the benchmark electricity price and resulting electricity cost (see Table 7 below).

We engaged Frontier Economics to provide us with these forecast prices for the five-year 2022 Determination period.

This forecast reflects information available today, and we are proposing an end of period true-up to manage movements in the network and wholesale elements of the benchmark price of electricity during the 2022 Determination period (see Section 5.5.2 and Appendix G).

Frontier Economics used a cost build up approach to estimate the likely cost of electricity for the five-year 2022 Determination period, including:

- Wholesale electricity costs for the assumed demand profile;
- Costs of complying with state and federal government policies, including the Renewable Energy Target;
- The costs associated with the New South Wales Energy Savings Scheme;
- National Electricity Market fees, ancillary services charges and costs of meeting prudential requirements
- Energy losses incurred during the transmission and distribution of electricity to customers;
- Network costs (including the Climate Change Fund Levy);
- Retail margin; and
- Retail operating cost.

The electricity forecast for the 2022 Determination period is summarised in Table 7 below. Details on the calculation of the costs of electricity are provided in Appendix G.

Table 7 - Forecast electricity costs ($000s, $2021-22)

$'000	2022-23	2023-24	2024-25	2025-26	2026-27	Total **
Wholesale	612	624	622	621	619	**3,098**
Renewable	203	181	178	175	172	**908**
Market fees and ancillary services	12	12	12	12	12	**62**
Network charges	644	643	641	639	637	**3,204**
Retail operating costs and margin	91	91	90	90	90	**452**
Total electricity costs**	**1,563**	**1,551**	**1,544**	**1,537**	**1,530**	**7,724**

* Based on Essential Water's forecast volumes extracted of 5,531ML p.a., plus losses at the bulk supply facility of 435ML p.a., plus usage by offtake customers of 3ML p.a.

**Totals may not add due to rounding

The cost of electricity is dependent on the volumes of water pumped to meet Essential Water's actual demand. We have based our electricity cost forecasts on the water volumes forecast by Essential Water at the bulk water extraction point. To the extent that actual volumes differ from forecast volumes, there will be a cost variation. To manage this revenue risk, WaterNSW has proposed variable usage charges that are calculated to recover the marginal cost of electricity used for pumping. These proposed usage charges are discussed in Section 15. The cost variations arising from volumes forecasts that differ from the base case forecast by plus / minus 10% and 20% are provided in Table 8 below.

Table 8 - Electricity cost sensitivity based on volumes varying by 10% and 20% ($000s, $2021-22)

$'000	2022-23	2023-24	2024-25	2025-26	2026-27	Total **
Electricity costs (-20% usage)	1,316	1,306	1,300	1,294	1,289	6,504
Electricity costs (-10% usage)	1,439	1,428	1,422	1,416	1,409	7,113
Electricity costs – Base Case	**1,563**	**1,551**	**1,544**	**1,537**	**1,530**	**7,724**
Electricity costs (+10% usage)	1,687	1,674	1,666	1,658	1,651	8,335
Electricity costs (+20% usage)	1,810	1,796	1,788	1,780	1,771	8,944

* Based on volumes of **5,534** ML p.a. on average in the Base Case

**Totals may not add due to rounding

As illustrated above, a 10% change in volumes results in an approximate $611,000 or 8%, change in the forecast cost of electricity over the 2022 Determination period.

A 20% change in volumes results in an approximate $1,221,000 or 16%, change in the forecast cost of electricity over the 2022 Determination period.

6.7 Corporate Support Costs

6.7.1 Overview

Corporate support costs are the operational and management costs not directly related to projects, including the cost of providing support services and governance systems.

The creation of the SPV financially separates the pipeline assets from WaterNSW's regulated and non-regulated businesses and assets. WaterNSW has employed this corporate structure to safeguard WaterNSW's regulated and non-regulated customers from cross-subsidising its pipeline customers (either intentionally or unintentionally).

The management function of the SPV (including shared services) is entirely outsourced to WaterNSW. The services are required for the management and good governance of the SPV, and include:

- Corporate risk management;

- Corporate governance including Executive/Board oversite;
- Economic regulation;
- Legal;
- Taxation (GST and Income Tax);
- Finance (Management and Statutory reporting), procurement, billing and account payments;
- Human resources;
- Customer service;
- Supporting infrastructure such as property and IT support;
- Treasury functions; and
- Payroll.

6.7.2 IPART's regulatory approach

IPART's regulatory framework involves setting regulatory revenue having regard to the efficient costs, which may include reference to both the costs of a benchmark firm as well as our actual/revealed costs. This approach is consistent with regulatory best practice and ensures regulated businesses face strong incentives to operate efficiently.

However, in addition, IPART must also consider the s15 A direction issued under the IPART Act which states that IPART shall include WaterNSW's efficient costs of complying with the SOC Act direction for the Board of WaterNSW to secure the water supply of Broken Hill.

In the 2019 Determination, IPART decided to include corporate support costs in operating expenditure of $109,000 per annum in 2019-20 to 2021-22 ($2021-22) excluding regulatory determination preparation costs. IPART's decision represented a 63% reduction from WaterNSW's proposed corporate support costs over the three years of the 2019 Determination.

In significantly reducing WaterNSW's proposed corporate support costs, IPART stated that:

> *Synergies' assessment of WaterNSW's proposed corporate overhead costs found that these costs were not efficient. Based on industry knowledge and external benchmarking, it recommended that an annual average of $104,000 is efficient. However, it also recommended an additional $100,000 be included in the final two years of the determination period, in recognition of the additional one-off costs WaterNSW will incur in preparing its Pipeline pricing proposal for the next determination period. We accepted Synergies' advice.*[22]

Synergies' assessment of proposed corporate overhead was based on the assumption that the pipeline business is not standalone, but is part of a larger, consolidated business. WaterNSW supports this view. Synergies' notes:

> *We have based this estimate on an assumption that WaterNSW's corporate service areas will spend 20% of every week of the year providing services to the SPV.* [23]

In comparison, considering corporate overheads as a standalone business involves an assessment of corporate overheads recognising dedicated resources are required to provide critical functions, including corporate governance, financial management and risk management, to the pipeline.

As Synergies observes:

> *… the WBH Pipeline project has characteristics that lend itself to requiring a relatively high level of corporate overhead input – i.e. it has a high public profile, many interested stakeholders, it was required to be built quickly and is located in a remote location.*[24]

IPART's 2019 Determination significantly underestimates and undercompensates WaterNSW for these important corporate costs.

6.7.3 Corporate support costs for stand-alone, single asset utilities

Corporate support costs are likely to be substantially higher when the pipeline is considered on a standalone basis, compared with the costs allocated by WaterNSW from its consolidated entity. We propose that IPART is consistent in its treatment of whether the pipeline should be regulated as a standalone entity or considered part of a larger organisation, which we support.

As discussed in Section 5.5, WaterNSW considers that if IPART included all relevant costs incurred by a standalone entity to manage and effectively govern the pipeline, the allowance would be far in excess of what WaterNSW is proposing through the allocation of support costs through our existing methodology.

[22] IPART 2019 BHP Determination, page 23.
[23] Synergies Economic Consulting, *Expenditure review of WaterNSW's Wentworth to Broken Hill Pipeline, Final Report*, January 2019, page 124.
[24] Synergies Economic Consulting, *Expenditure review of WaterNSW's Wentworth to Broken Hill Pipeline, Final Report*, January 2019, pages 84-85.

A useful reference point is the Sydney Desalination Plant ("**SDP**"). The SDP is a single asset, stand-alone provider with an outsourced O&M function.

IPART's 2012 determination for SDP included an allocation of corporate costs from Sydney Water Corporation, rather than the corporate costs for a standalone business. Recognising the need for change, in its Issues Paper for the 2017 SDP Determination IPART noted:

> *SDP is now a stand-alone business and no longer part of Sydney Water. Therefore, some of the allowances we set in the 2012 Determination may no longer represent the efficient costs of SDP's operation, particularly with respect to the allocation of corporate overheads.*[25]

SDP has an outsourced model for corporate services, with a small management team and dedicated resources providing finance, office administration and operational support.[26] Additional expertise is accessed using an out-sourced model, including audit services; expert financial management advice, specialist engineering, economic and regulatory support; legal advice and other services including stakeholder engagement and IT support.[27]

Sydney Desalination Plant's 2016 Regulatory Proposal proposed an additional **$2.55 million per annum ($2016-17)** for the *additional* corporate costs associated with managing SDP as a stand-alone entity rather than as a subsidiary of Sydney Water Corporation.[28]

WaterNSW's proposed corporate support costs of $0.6 million per year based on our cost allocation methodology is very conservative in comparison to this benchmark.

In addition, our approach to allocating overhead to the pipeline using the CAM is consistent with the Synergies stated preference. Synergies stated that:

> *In this regard, it is not clear to us why the WBH Pipeline should be segmented from the rest of WaterNSW's busines. Rather, we consider that the WBH Pipeline's corporate overhead cost should reflect a share of WaterNSW's business-wide gross overhead based on its Cost Allocation Methodology.*

Proposed corporate support costs are provided in Table 9 below.

Our approach to allocating corporate support costs was reviewed in detail by IPART's technical consultants for the Rural Valleys and WAMC Determinations.

We maintain that our proposed corporate support costs reflect the efficient level for the operation of the pipeline and the efficient support costs for a benchmark efficient entity (i.e. as part of a consolidated entity).

To maintain the internal consistency of its decision-making relating to the benchmark efficient entity, we submit that IPART revisit its decision to set the tax allowance for the pipeline assuming it operates as a standalone entity. As per the example above, it is more efficient to assume the pipeline operates as part of a larger entity. A larger entity like WaterNSW can take advantage of economies of scale that result in the merger and integration of shared services and corporate support functions across each of WaterNSW's core determinations. As discussed in Section 11, WaterNSW has obtained independent advice stating that consolidated entities cannot get access to lower income tax by demerging.

For the avoidance of doubt, WaterNSW has not included any adjustment to our standard corporate allocation methodology to address any potential decision by IPART whereby WaterNSW should allocate corporate overhead costs on a different basis (i.e. using operating expenditure) as signalled by IPART in its 2021 Rural Valleys and WAMC draft determinations. Any such adjustment could result in increased costs for Broken Hill pipeline customers and would need to be accounted for in the 2022 Determination.

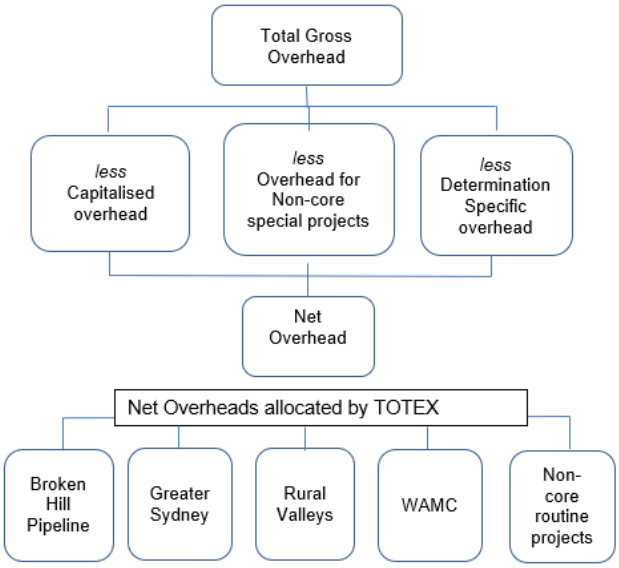
Table 9 - WaterNSW support costs ($000s, $2021-22)

$'000	2022-23	2023-24	2024-25	2025-26	2026-27	Total
SPV overhead	619	675	604	637	679	3,214

[25] IPART, Review of prices for Sydney Desalination Plant Pty Ltd From 1 July 2017, Issues Paper, August 2016, page 55.
[26] Sydney Desalination Plant, SDP Regulatory proposal to IPART: Review of prices for Sydney Desalination Plant Pty Ltd from 1 July 2017, 24 October 2016, page 98.
[27] Sydney Desalination Plant, SDP Regulatory proposal to IPART: Review of prices for Sydney Desalination Plant Pty Ltd from 1 July 2017, 24 October 2016, page 99.
[28] Sydney Desalination Plant, SDP Regulatory proposal to IPART: Review of prices for Sydney Desalination Plant Pty Ltd from 1 July 2017, 24 October 2016, pages 97-98.

The overhead allocated to the pipeline is proposed to be allocated as per our standard cost allocation methodology as highlighted in Figure 16 below.

Figure 16 - Overhead allocation flowchart



WaterNSW's net overheads are calculated by deducting those costs which can be directly allocated to determinations and non-core projects and those costs which are capitalised from the Total Gross Overhead.

Net overhead costs are then fully allocated to the IPART Determinations, including the Broken Hill Determination and Non-core and Other projects based upon the percentage of Total Expenditure ("**totex**"), which is defined as the sum of total operating expenditure and total capital expenditure.

Totex was selected as an ideal and practical allocator based on our understanding of the water industry and the cost drivers of our business. In the provision of bulk water services, WaterNSW constructs, maintains and enhances a significant number of infrastructure assets. WaterNSW incurs corporate costs which are triggered by both capital and operating projects.

WaterNSW believes the Totex allocator provides a practical approach to identify and allocate a supportable proportion of corporate costs to determinations

As referenced in our CAM, the Totex allocator satisfies the IPART allocation as follows

- Directly attributable Totex expenditures are readily observable;
- The use of directly attributable costs as an allocator for indirect/shared costs is a well-established approach with regulatory precedent;
- Totex as a cost concept is consistent with regulatory best practice; and
- It is reasonable to expect direct Totex to be correlated to the cost drivers associated with indirect/shared costs.

While our cost allocation methodology is currently subject to review as part of the 2021 Rural Valley and WAMC Final Determinations, we maintain the position that our approach to allocating overhead using totex:

- Meets accounting standards;
- Is consistent with IPART's Cost Allocation Guidelines;
- Forms the basis of our financial accounts that have been approved by the Audit Office;
- Is used by other utilities in other jurisdictions. For example, Energex - the largest electricity Network Provider in Queensland that provides energy to 3.4 million residents - uses the totex approach to allocate overhead to its regulated business which was approved by the AER;[29]
- Allocates costs based on underlying business activity, in particular growth capex; and
- Was accepted as a basis to set the Greater Sydney Determination allowances.

Our proposed operating expenditures do not include an uplift to pipeline costs (estimated at $0.6 million per year) that would be required to implement IPART's requirement for WaterNSW to move away from our current totex overhead allocator to direct operating expenditure.

A potential change in allocator was signalled by IPART in the draft 2021 Rural Valleys and WAMC Determinations, but as the Final Determinations will not be issued until September 2021, no adjustment has been applied to this pricing proposal. We would seek any uplift in costs from a change in allocator to be accommodated during the pipeline review process and we look forward to working with IPART on this matter should the need arise.

[29] Page 22; https://www.aer.gov.au/system/files/Energex%20-%2033.%202015-20%20Cost%20Allocation%20Method%20-%20October%202014.pdf as updated in https://www.aer.gov.au/system/files/Energex%20-%20Cost%20allocation%20method%20-%2018%20October%202018.pdf as approved by the AER.

6.8 Other operating costs

In the 2019 Determination, IPART decided to include Special Purpose Vehicle ("**SPV**") audit ($105,000 p.a.), contract management ($230,000 p.a.) and insurance and land tax costs ($138,000 p.a.) in the operating expenditure allowance for services to Essential Water in line with WaterNSW's proposal.

The SPV incurs operational expenses necessarily incurred in the running of the pipeline, including contract management, financial governance and audit and insurance.

The SPV is expected to incur financial governance and audit costs of approximately $32,000 per annum as part of its reporting obligations under the *Annual Report (Statutory Bodies) Act 1984*, the SOC Act, the *Government Sector Employment Act 2013,* the *Public Finance and Audit Act 1983* and the *Public Finance and Audit Regulation 2010*. This is 70% lower than IPART's allowance for this activity in the 2019 Determination.

One WaterNSW employee manages the O&M contract on behalf of the SPV, ensuring compliance by the contractor of the requirements of the O&M contract. WaterNSW proposes contract management costs of $170,000 per year, which represents a 26% reduction ($2021-22) compared with the allowance in the 2019 Determination.

The SPV will utilise WaterNSW's current insurance cover with iCare for its infrastructure and property assets, to cover property, public liability, directors and officers liability and statutory liability. The SPV is also expected to incur land tax payable on the land owned by the SPV, calculated on 2% of the value of the land. WaterNSW proposes costs for insurance and land tax of $183,000 on average per year over the 2022 Determination period, which is 33% higher than the allowances in the 2019 Determination ($2021-22).

These other proposed operating expenses for the 2022 Determination period are provided in Table 10 below.

Table 10 - Operating Expenditure by Category ($000s, $2021-22)

$'000	2022-23	2023-24	2024-25	2025-26	2026-27	Total
SPV audit costs	31	31	32	32	33	**159**
SPV contract management costs	170	170	170	170	170	**850**
Insurance and land tax	175	179	182	186	190	**913**

6.9 Proposed costs vs actual expenditure

The following table presents WaterNSW's proposed operating expenditure compared to the actual expenditure incurred over the 2019 Determination period. The only significant cost increase relates to insurance and land tax as discussed in Section 6.8 above. These costs are largely outside of WaterNSW's control and result in mandatory cost increases for WaterNSW.

Actual energy costs are higher than proposed in this submission. Our contract with the Joint Venture requires energy costs to be calculated using the energy volumes that are pre-booked in the contract, whereas the forecast energy rates in this submission use the benchmark efficient profile which is consistent with the IPART approach.

Actual operation and maintenance costs (including contract and other O&M costs) are higher than proposed. Additional costs were incurred in relation to the Ski Park Rehabilitation. The rehabilitation project was required as a make good obligation to the residents of Wentworth and as a result of the need for WaterNSW to comply with the SOC Act direction issued to the Board of WaterNSW to secure the water supply of Broken Hill.

We are proposing to recover the rehabilitation costs from customers gradually over time under the RAB framework. More information on this project is found in Section 7 'Capital Expenditure'.

Table 11 - Proposed vs actual operating expenditure ($000s, $2021-22)

Proposed vs actual operating expenditure ($2021-22, '000s)				
	Average actuals 2020-22 per annum (2019 Determination)	**Average proposed 2022-27 per annum (2022 Determination)**	**Variance ($)**	**Variance (%)**
Operation and maintenance costs	1,762	1,737	-25	-1%
Electricity costs	1,855	1,545	-311	-17%
SPV audit costs	47	32	-15	-32%
SPV contract management costs	155	170	15	10%
Insurance & Land tax	114	183	69	60%
WaterNSW support costs	755	643	-112	-15%
Other operating costs*	619	210	-409	-66%
Total	**5,307**	**4,519**	**-788**	**-15%**

*Includes preparation of regulatory submission, asset replacement costs, operation and maintenance costs additional to the contract (e.g. landscape works), travel costs and other minor expenses.

6.10 Proposed costs vs current allowance

The following table presents WaterNSW's proposed operating expenditure for the 2022 Determination period compared to the IPART allowance provided in the 2019 Determination.

The variances are driven by the need to align our proposed operating expenditure with our actual expenditure. As highlighted in the section above our proposed operating expenditure is relatively aligned with our actual expenditure with the exception of energy costs, where we have used benchmark rates and operating profile as opposed to the pre-booked energy volumes in the contract.

Increased overhead allocated to the SPV using the CAM is the largest driver of the variance between the proposed costs and the current period allowance for overhead which was set using a bottom up build of corporate support costs by IPART's expenditure consultants Synergies.

The only significant cost increase relates to insurance and land tax. These are uncontrollable and mandatory cost increases for WaterNSW.

The current allowance for insurance was calculated by pro rating the company wide insurance premiums by the proportional value of the pipeline. Our forecast premiums for the 2022 Determination period are based on a more accurate assessment of the cost of insuring the pipeline based on the latest advice from iCare, where we have seen a material uplift in the Property and Public Liability insurance items due to the overall increase in claims for bushfires and floods in recent years.

Overhead costs for the pipeline are substantially higher than the current period overhead allowance. WaterNSW is proposing to apply its cost allocation methodology to allocate overhead to the pipeline in line with the current period actuals and WaterNSW's other core determinations rather than an arbitrary 5% allocation as applied by IPART.

Forecast operating expenditure on regulatory submission preparation is forecast to decline over the 2022 Determination period, as internal resourcing is diverted to the other core determinations. WaterNSW has proposed a separate capital allowance to fund the external costs of submission preparation as set out in the section on capital expenditure.

Table 12 - Proposed vs allowed operating expenditure ($000s, $2021-22)

Proposed operating expenditure vs allowance ($2021-22, '000s)				
	Average allowance 2020-22 per annum (2019 Determination)	**Average proposed 2022-27 per annum (2022 Determination)**	**Variance ($)**	**Variance (%)**
Operation and maintenance costs	1,667	1,737	70	4%
Electricity costs	1,602	1,545	-57	-4%
SPV audit costs	105	32	-73	-70%
SPV contract management costs	230	170	-60	-26%
Insurance & Land tax	138	183	45	33%
WaterNSW support costs	109	643	534	491%
Other operating costs*	71	210	140	197%
Total	**3,921**	**4,519**	**598**	**15%**

*Includes preparation of regulatory submission, asset replacement costs, operation and maintenance costs additional to the contract (e.g. landscape works), travel costs and other minor expenses.

7. Capital expenditure

Capital expenditure for the pipeline is relatively small, reflecting the early stage of the pipeline's lifecycle. We anticipate higher capital expenditures in subsequent determination periods as the pipeline and associated infrastructure ages.

7.1 Past Capital Expenditure

Capital expenditure over the 2019 Determination period is expected to be $2.7 million, $2.2 million higher than IPART's allowance of $0.5 million ($2021-22).

Our capital expenditure program over the 2019 Determination period has been characterised by low levels of expenditure as a result of project completion with minimal expenditure carried forward from 2018-19 into the 2019-20 financial year. Further capital expenditure was incurred in relation to SPV implementation costs and administration costs.

The land acquisition allowance from the 2019 Determination of $523,000 is intended to be utilised over the current period and as part of the finalisation of the project. In 2020-21, WaterNSW is forecasting capital expenditure of $489,000 for easement acquisition and leasing costs with landholders, including costs of surveying and planning, the largest landholder being Dareton Aboriginal Land Council.

Further Crown Land acquisition costs of $1.2 million are expected to be incurred in 2021-22. The land acquisitions ensure WaterNSW can place its infrastructure such as pump stations, bulk water storage and access to place pipe on private lands.

Table 13 - Actual and forecast capital expenditure over 2019 Determination period ($000s, $2021-22)

$'000	**2019-20**	**2020-21**	**2021-22**	**Total**
Pipeline	636	-59	-	577
Bulk water storage facility	37	-3	-	33
Plant and machinery	54	-5	-	49
Buildings	11	-1	-	10
Regulatory submission preparation and other support costs	-	278	93	371
Land acquisition	-	489	1,220	1,709
Total	**738**	**698**	**1,313**	**2,749**

7.1.1 Expenditure on Wentworth Ski Park Reserve Rehabilitation and Land Swap Agreement

Due to the disturbance caused during the construction of the Broken Hill Pipeline and associated works, the Greater Murray Darling Junction Reserve at Wentworth Ski Park was rehabilitated by WaterNSW as a 'make good' obligation to the residents of Wentworth.

The pipeline inlet works for the pipeline were located adjacent to the ski park with the pipeline constructed along the streets of Wentworth.

The $1.6 million rehabilitation of the ski park[30] is currently being undertaken to compensate the council and residents for the disturbance caused by the construction project. The rehabilitation included the construction of a functional outdoor recreational space in the Ski Park Reserve at Wentworth, with the works being undertaken in accordance with the Wentworth Shire Management Plan.

The costs associated with the Ski Park Reserve Rehabilitation project were incurred as a result of the need for WaterNSW to comply with the SOC Act direction issued to the Board of WaterNSW to secure the water supply of Broken Hill.

WaterNSW has included expenditure on the Wentworth Ski Park Reserve Rehabilitation project in our RAB roll forward for recovery over 60 years (the assumed asset life of "buildings").

[30] This figure also includes the cost of landscaping and replanting works.

In addition, as part of the construction of the Broken Hill Pipeline, WaterNSW entered into an agreement with an offtake customer to waive usage rate charges and access charges (limited to 300,000KL usage to 2050) in exchange for permitting the subdivision of the part of their land where the Bulk Water Storage Facility is located and also permitting creation of an easement for the Broken Hill Pipeline to pass through the property. Acquisition of the land from the Crown and registration of the easement is in progress as at 30 June 21.

WaterNSW has included the forecast foregone revenue from this agreement in our RAB roll forward for recovery over 30 years (the life of the agreement).

The costs included in the RAB roll forward for these items are shown in Table 14 below.

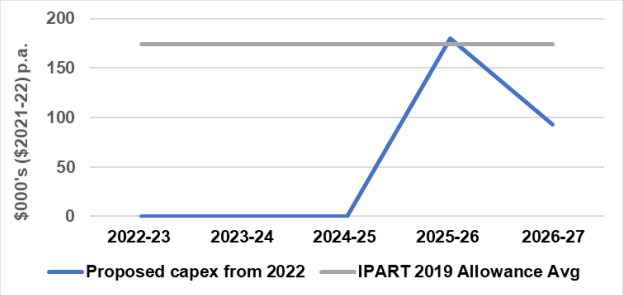
Table 14 - Additional costs included in the RAB over the 2019 Determination period ($000s, $2021-22)

$'000	2018-19	2019-20	2020-21	2021-22	Total
Wentworth Ski Park Reserve Rehabilitation	133	1,213	165	84	1,596
Land swap agreement	0	0	0	296	296
Total	**133**	**1,213**	**165**	**380**	**1,892**

7.2 Forecast Capital Expenditure

Forecast capital expenditures for the 2022 Determination period and IPART's average allowance from the current determination are provided in Figure 17 below.

Figure 17 - Capital expenditure allowed vs proposed ($millions, $2021-22)



The total proposed capital expenditure requirement over the term of the 2022 Determination is set out in Table 15 below.

WaterNSW proposes a relatively small capital program of $272,000 over the five-year 2022 Determination period that consists wholly of regulatory submission preparation costs in the last two years of the determination period.

WaterNSW has proposed a separate capital allowance to fund the external costs of submission preparation, as any professional fees incurred in relation to the incremental costs of preparing a pricing proposal are incremental and directly attributable to the creation of an intangible asset, including the legal right to charge an agreed revenue specified in a price determination and hence can be included in the capital account.

As discussed in Section 6.5, the asset replacement schedule for the pipeline identifies a relatively large number of small assets to be replaced. The costs do not meet the requirements of capital expenditure as set out in our accounting policies for capitalisation of an individual asset. Therefore, the associated asset replacement costs have been considered to be operating rather than capital for the 2022 Determination and are included in the proposed operating costs discussed in Section 6.5.

Table 15 - Proposed capital expenditure for the 2022 Determination period ($000s, $2021-22)

$'000	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Proposed capital expenditure	0	0	0	180	93	272

8. RAB

The allowances for the return on capital and the return of capital are allowances based on the value of the RAB.

8.1 Summary

In 2019, WaterNSW proposed (and IPART accepted) the establishment of a RAB to calculate the capital cost of the pipeline.

IPART originally set an opening RAB at 1 July 2019 of $391 million as reproduced in Table 15 below. The total pipeline RAB comprises the total costs incurred by WaterNSW during the design and construction phase of the pipeline, inflation, financing costs, and a minor cost component for land purchases and renewals.

The RAB has been depreciated from 2019-20 using the straight-line method and assuming asset lives as shown in Section 9.2.1 of this proposal.

The updated closing RAB from the 2019 Determination and the proposed opening RAB for the 2022 Determination is provided in Table 17 and Table 18 below. The updated RAB under this pricing proposal is shown in section 8.3 below. The proposed RAB for Essential Water is provided in Table 19 and the proposed RAB for offtakes is provided in Table 20 below.

Table 16 - RAB from 2019 Determination by asset class ($nominal, '000s)

IPART 2019 Decision	**Pct (%)**	**30 April 2019**	**1 July 2019**
Pipeline	86%	336,905	337,297
Bulk water storage facility	5%	19,493	19,508
Plant and Machinery	7%	28,409	28,296
Buildings	2%	5,900	5,900
Total RAB	**100%**	**390,707**	**391,002**

Source: IPART 2019 Murray River to Broken Hill Pipeline Final Report, table 6.4

8.2 Proposed methodology for calculating the RAB

Our proposed methodology for calculating the RAB adopts IPART's approach from the 2019 Determination whereby an initial (or opening) RAB for the pipeline was established.

The 2022-23 Opening RAB (or the closing RAB for 2021-22) for the pipeline has been formed using the following formula:

$$Opening\ RAB_{t+1} = Opening\ RAB_t + Actual\ Expenditure_t - Disposals_t - Depreciation_t + Indexation_t$$

Actual expenditure consists of all capital expenditure incurred by WaterNSW as outlined in section 7.1.

Indexation (inflation) for the year has been applied to the opening RAB and 50% of the expenditure which enters the RAB in the relevant year, as per the IPART approach. That is:

Indexation = (Opening value + 50% of capex - 50 % of disposals) x June to June inflation factor

8.3 Opening RABs

WaterNSW proposes an opening RAB in 2022-23 for Essential Water of $400 million and an opening RAB in 2022-23 for offtake customers of $322,000 as calculated in Table 17 and Table 18 below, respectively.

Table 17 - Opening RAB for the 2022 Determination period (Essential Water RAB) ($nominal, '000s)

$'000	2018-19	2019-20	2020-21	2021-22
Step 1 - RAB Roll Forward ($nominal)				
Opening RAB	220,211	392,736	388,591	393,813
+ Capex/Additions*	157,231	1,859	842	1,693
- Disposals	0	0	0	0
- Depreciation	825	4,842	4,958	5,082
+ Indexation**	4,780	-1,162	9,338	9,866
+ Holding costs	11,339	0	0	0
Closing RAB	**392,736**	**388,591**	**393,813**	**400,290**

*Includes cost of unfunded operation and maintenance operating expenditure over the 2019 Determination, and cost of the land swap agreement (foregone revenue) with an offtake customer

** Forecast June to June CPI of 2.4% and 2.5% for FY21 and FY22 have been applied to the RAB, as a placeholder for this pricing proposal. This is the standard IPART approach to inflating the RAB. This forecast will be updated for actual June to June inflation as per the IPART approach.

Table 18 - Opening RAB for the 2022 Determination period (offtake RAB) ($nominal, '000s)

$'000	2018-19	2019-20	2020-21	2021-22
Step 1 - RAB Roll Forward ($nominal)				
Opening RAB	208	350	335	329
+ Capex/Additions	131	0	0	0
- Disposals	0	0	0	0
- Depreciation	2	14	14	15
+ Indexation*	4	-1	8	8
+Holding costs	9	0	0	0
Closing RAB	**350**	**335**	**329**	**322**

* Forecast June to June CPI of 2.4% and 2.5% for FY21 and FY22 have been applied to the RAB, as a placeholder for this pricing proposal. This is the standard IPART approach to inflating the RAB. This forecast will be updated for actual June to June inflation as per the IPART approach.

8.4 Proposed RAB (Essential Water)

Table 19 below sets out the forecast RAB for the pipeline for the 2022 Determination period. This has been done by adding to the 2022-23 Opening RAB the proposed capital expenditure for each year of the determination and subtracting depreciation and disposals:

Closing RAB = Opening RAB + Forecast Capex - Forecast Depreciation – Forecast Disposals

Table 19 - RAB for 2022 Determination period (Essential Water RAB) ($000s, $2021-22)

$'000	2022-23	2023-24	2024-25	2025-26	2026-27
Step 2 - Forecast RAB ($2021-22)					
Opening RAB	400,290	395,064	389,837	384,611	379,546
+ Capex/Additions	0	0	0	180	93
- Disposals	0	0	0	0	0
- Depreciation	5,227	5,227	5,227	5,245	5,272
+ Indexation*	0	0	0	0	0
Closing RAB	**395,064**	**389,837**	**384,611**	**379,546**	**374,367**

* No indexation is applied as the forecast RAB is rolled forward in real terms.

WaterNSW has adopted the straight-line method for calculating forecast depreciation of the RAB over the 2022 Determination period, ensuring the value of WaterNSW's assets are depreciated in equal instalments over their useful life.

Over the 2022 Determination period, the RAB ($2021-22) for the pipeline is expected to reduce by 6 per cent in real terms, as additions to the RAB are expected to be below forecast depreciation.

No disposals for the pipeline are anticipated for the period of the determination.

8.5 Proposed RAB (Offtakes)

The proposed RAB for offtakes is presented in Table 20.

Table 20 - RAB for 2022 Determination period (offtake RAB) ($000s, $2021-22)

$'000	2022-23	2023-24	2024-25	2025-26	2026-27
Step 2 - Forecast RAB ($2021-22)					
Opening RAB	322	308	293	278	263
+ Capex/Additions	0	0	0	0	0
- Disposals	0	0	0	0	0
- Depreciation	15	15	15	15	15
+ Indexation*	0	0	0	0	0
Closing RAB	**308**	**293**	**278**	**263**	**249**

* No indexation is applied as the forecast RAB is rolled forward in real terms.

9. Return of capital (depreciation)

The return of capital or depreciation component constitutes around 20% of the proposed NRR.[31]

As outlined in Section 8, WaterNSW has:

- Adopted the straight-line method for calculating forecast depreciation of the RABs over the 2022 Determination period; and
- Applied asset lives for each of the asset categories included in the 2019 Determination period.

9.1 Return of capital from the 2019 Determination

In the 2019 Determination, IPART set the following allowance for regulatory depreciation (return of capital) for determining prices to Essential Water and offtake customers:[32]

Table 21 - IPART's decision on return of pipeline assets at the 2019 Determination ($000s, $2021-22)

	2019-20	2020-21	2021-22	Total
Essential Water	4,988	4,988	4,988	14,965
Offtake customers	14	14	14	43

* Restated from $2018-19 to $2021-22.

IPART includes an allowance for regulatory depreciation that is used in establishing the 'return of capital' building block in the revenue requirement calculation based on a calculation of the value of the RAB. The return of capital is intended to ensure that the capital invested in the regulatory assets is returned over the useful life of each asset.

To calculate this allowance, IPART determined asset lives associated with the assets that make up the RAB, and the appropriate depreciation method.

IPART applied a straight-line method for calculating depreciation over the three-year 2019 Determination period, consistent with IPART's standard approach across the utilities it regulates. The effect is that the total value of the asset is recovered evenly over its assumed life.

IPART considered that straight-line method is superior to alternatives in terms of simplicity, consistency and transparency.[33] For the purposes of calculating the return of capital component of the revenue requirements for the 2022 Broken Hill Pipeline Determination, WaterNSW proposes maintaining the straight-line method. IPART's decision on asset lives is discussed below.

9.1.1 Asset lives from 2019 Determination

At the 2019 Determination, IPART determined the following asset lives:

Table 22 - Asset lives from the 2019 Determination[34]

Asset class	Asset life (years)
Pipeline	100
Bulk water storage facility	80
Buildings	60
Plant and machinery (including pumping stations and river intake)	25
Offtakes	25

[31] Excluding the cost of debt true up
[32] See *IPART 2019 Broken Hill Pipeline Final Report*, Table 6.14, page 61. Restated from $2018-19 to $2021-22.
[33] Ibid. Page 62.
[34] Ibid. Table 6.15 from page 62.

9.2 Proposed return of capital

9.2.1 Proposed asset lives

WaterNSW proposes the following remaining asset lives for the 2022 Determination period for assets existing at the beginning of the 2022 Determination period, and for new assets:

Table 23 - Average remaining asset lives for existing assets for the 2022 Determination

Asset class	Asset life (years)
Pipeline	97
Bulk water storage facility	77
Buildings	57
Plant and machinery (including pumping stations and river intake)	22
Regulatory submission preparation and other support costs	5
Offtakes	22
Weighted average life	90

Table 24 - Asset lives for new assets for the 2022 Determination

Asset class	Asset life (years)
Pipeline	100
Bulk water storage facility	80
Buildings	60
Plant and machinery (including pumping stations and river intake)	25
Offtakes	25
Regulatory submission preparation and other support costs	5

9.2.2 Proposed return of capital for Essential Water

Based on the RAB values as outlined in Section 10 and the asset lives outlined in Section 9.2.1, WaterNSW proposes the return of capital (depreciation) allowance for Essential Water as shown in Table 24 below.

Table 25 - Proposed return of capital for Essential Water ($000s, $2021-22)

Proposed return of capital ($2021-22, $000s)						
	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Essential Water	5,132	5,132	5,132	5,150	5,177	25,724

WaterNSW requests that the useful life of existing assets is revisited in subsequent pricing reviews to ensure alignment with the pipeline's actual/observed useful life.

9.2.3 Proposed return of capital for offtakes

Based on the RAB values as outlined in Section 8, WaterNSW proposes the return of capital (depreciation) allowance for offtake customers as shown in Table 26 below. The calculation is based on a remaining asset life for existing assets of 22 years, consistent with rolling forward the 25-year economic life of offtakes that IPART determined at the 2019 Determination.

WaterNSW does not forecast any additional capital expenditure for offtakes over the 2022 Determination period. Minor costs for asset replacement as per the relevant schedule of the O&M contract have been included as operating expenditure.

Table 26 - Proposed return of capital for Offtake customers ($000s, $2021-22)

	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Offtake customers	14	14	14	14	14	72

10. Rate of return

The return on assets component constitutes around 56% of the proposed NRR.[35]

The return on capital covers the cost of servicing our debt and provides a return to our shareholders for their equity investment in our business. It is calculated by multiplying the value of our regulated asset base by the rate of return on capital. WaterNSW is proposing to apply the Weighted Average Cost of Capital ("**WACC**") methodology for determining the rate of return on capital.

10.1 Background on the rate of return

The WACC is the minimum ('benchmark') financial return an investor requires from an investment given its risk in order to commit capital to that investment. It is the weighted average of the required return on debt capital and the required average equity capital.

In determining the appropriate rate of return, we seek to set an allowance that is commensurate with the *true* WACC, which must be estimated because it cannot be observed directly. This ensures that customers do not pay more than the efficient cost of capital that the business must pay to finance the assets required to deliver regulated services.

In this section, we outline an approach to estimating the WACC based almost entirely on IPART's standard methodology. As part of IPART's methodology, market data will be updated closer to the Draft and Final Determinations, with the cost of debt allowance updated during the determination period. Therefore the rate of return proposed in this section should be considered to be a '**placeholder**' (based on IPART's February 2021 Bi-annual WACC Update) as the estimate will need to be updated during the review process and during the 2022 Determination period.

10.1.1 Why is it important?

The return on capital makes up approximately 56% of the revenue allowance that we need to provide pipeline transportation services. The return on capital is the single largest driver of revenues and prices for the pipeline, responsible for 2.75 times the revenue of the next nearest building block (the return of capital – depreciation).

If IPART sets the allowed rate of return below the true WACC, the business will not be able to attract the capital it requires in order to invest in regulated assets. This would encourage inefficient under-investment.

If IPART sets the allowed rate of return above the true WACC, consumers would pay more than the efficient cost of delivering regulated services, and the business would be incentivised to over-invest. Since neither of these outcomes would promote the long-term interests of customers, IPART should seek to adopt methodologies for estimating the WACC that are as accurate as possible.

10.2 Our rate of return proposal

We have estimated the rate of return by largely applying IPART's method for estimating and determining the WACC as published in the IPART Final WACC Report in 2018 (2018 WACC Methodology).[36] We propose that IPART adopts this methodology in its 2022 Determination for the pipeline for all elements except for the treatment of inflation, where we outline our proposed approach in Section 10.5.

IPART's 2018 WACC Methodology is based on a 'post-tax real' framework. The methodology sets a fixed cost of equity allowance for the determination period, and requires annual updates to the cost of debt during the determination period using updated market information. Whether the revenue impact of the annual cost of debt updates is addressed at each annual price change or held and adjusted at the subsequent determination is a separate consideration that is addressed below.

We consider that IPART's methodology (subject to our concerns regarding IPART's approach to forecasting inflation outlined below), is a reasonable proxy for our benchmark cost of capital and is in the best interests of customers for the 2022 WaterNSW Broken Hill Pipeline Determination.

WaterNSW proposes a placeholder **post-tax real WACC of 3.7%** for the five-year determination

[35] Excluding the cost of debt true up

[36] See *IPART Review of our WACC method – Final Report 2018*. https://www.ipart.nsw.gov.au/files/sharedassets/website/shared-files/investigation-administrative-legislative-requirements-sea-wacc-methodology-2017/final-report-review-of-our-wacc-method-february-2018.pdf

period. This proposed rate of return is determined by applying:

- IPART's estimates of sector-wide parameters and financial market information as published by IPART in its Bi-annual WACC Update from February 2021 for a benchmark business with a five-year determination period;[37]
- IPART's 2018 WACC methodology for calculating the post-tax nominal WACC; and
- A glidepath approach to forecasting inflation.

The current placeholder rate of return allowance represents a reduction from the rate of return allowance of 4.0% in the current 2019 Determination that reflects, amongst other things, a lower interest rate environment.

10.3 Cost of debt

Under the 2018 WACC methodology, IPART has indicated it will:

- Initially set the long-term cost of debt allowance using a 10-year trailing average, with the prevailing rate for each historical annual tranche estimated over a consistent 40-day period; and
- Update the long-term cost of debt allowance annually for each year of the determination period by rolling forward the 10-year trailing average.
- Adopt a short-term trailing average approach to calculate the current cost of debt, where the period of the trailing average equals the length of the regulatory period.

WaterNSW supports this approach and has computed the proposed historical cost of debt allowance using this methodology.

Under the 2018 WACC methodology, the current cost of debt allowance is to be determined using a trailing average approach, where the historical averaging period is set equal to the length of the determination period. Once again, WaterNSW supports this approach to determining the current cost of debt allowance.

As WaterNSW proposes that the 2022 Determination period should be five years in length, we have computed the proposed current cost of debt allowance using a five-year trailing average.

10.3.1 How to pass through annual changes in the cost of debt

Under IPART's trailing average approach for determining the allowances for the long-term and current cost of debt, IPART must update its decision on the cost of debt each year.[38]

IPART has indicated that it would decide whether to reflect the annual updates of the cost of debt allowance through annual price adjustments or via an end-of-period true-up on a case-by-case basis, as part of its review process. IPART indicated that in making this decision it would have regard to any evidence the regulated firm or its customers put forward to support one approach or the other, with neither option being viewed as the default.

WaterNSW's usual preference is for IPART to allow annual updates for the cost of debt on the following basis:

- **Cash flow timing impacts**: without annual updates, the cashflow impact of differences between the cost-of-debt allowance and actual interest costs are borne by the business. This may impact the financeability of the firm, particularly if the firm needs to raise additional debt to fund capital or operating expenditure not factored into the determination allowances and caused by unforeseen circumstances, an outcome which is not in the best interest of customers. A trailing average with annual price adjustments allows the firm to properly align its actual costs with the cost-of-debt allowance to mitigate the cash flow risks described above.
- **Incentive to incur efficient debt raising costs:** Under annual updates, the aim is to determine an annual cost-of-debt allowance which reflects, as much as possible, the actual interest costs expected to be incurred by a prudent and efficient firm, in each year of the determination period.

  Annual updates would provide greater ability for a business to adjust its debt raising practices on an annual basis to matching the benchmark allowances.
- **The realisation of immediate price reductions by consumers:** Under the annual price adjustments approach proposed by WaterNSW, if the cost of debt allowance declines during the determination period, the resulting price reductions would be passed through to consumers immediately rather than at the end of the regulatory period. WaterNSW expects that the cost of debt allowance to fall over the 2022 Determination

[37] See https://www.ipart.nsw.gov.au/Home/Industries/Special-Reviews/Regulatory-policy/WACC/Market-Update/Spreadsheet-WACC-model-February-2019

[38] IPART *Review of our WACC method – Final Report*, February 2018. Page 38.

period, since estimates of the prevailing cost of debt have fallen materially over the past 10 years. As the trailing average cost of debt allowance is rolled forward over the next determination period, the overall cost of debt allowance is likely to decline as relatively expensive tranches of debt early in the last decade are replaced by relatively cheap tranches of new debt.

Under the true-up approach, consumers would only benefit from any such decline in the cost of debt allowance through lower prices at the end of the next determination period.

WaterNSW maintains that annual true-ups are more likely to minimise the risk of material price changes between determination periods compared with end of period adjustments.

To date, IPART has applied a true-up in every regulatory decision since it finalised its 2018 WACC methodology. IPART's main reason for preferring an end-of-period true-up rather than annual price adjustments is to avoid imposing intra-period price volatility on consumers.

While WaterNSW's usual preference is for annual changes to the cost of debt, we have listened to the concerns of our major customer, Essential Water on this matter. Essential Water has expressed concerns over its ability to pass through changes in prices within the 2022 Determination period and has requested that WaterNSW not seek annual adjustments on this basis.

While WaterNSW considers that the annual adjustments are likely to be small under the trailing average method because only a fraction of the benchmark business's debt portfolio is assumed to be refinanced each year.[39]

However, in recognition of the views of our major customer and the likelihood that the annual changes would likely be small, WaterNSW proposes that an end-of-period true-up is appropriate for the 2022 Determination period. WaterNSW notes that this position is specific for the pipeline and we anticipate advocating for annual adjustments for our other determinations.

10.4 Cost of equity

Under IPART's 2018 WACC methodology, the cost of equity allowance is determined using the Capital Asset Pricing Model (CAPM). Under the CAPM, the cost of equity may be estimated as:

- The **risk-free rate** (i.e., the return required by investors when committing capital to a zero-risk asset); plus
- An **equity risk premium**, which is estimated as the product of the market risk premium or "**MRP**" (i.e., the risk premium that would be demanded by an investor in a perfectly-diversified asset) and the **equity beta** (i.e., a measure of the non-diversifiable risk of the asset).

Under its 2018 WACC Methodology, IPART will continue to determine the cost of equity allowance as the midpoint between its estimates of the current and long-term cost of equity at the start of the determination period, and to not update this cost during the determination period.

If there are market extremes occurring (as measured by IPART's Uncertainty Index) IPART may consider moving away from the midpoint. WaterNSW notes that in April 2020 IPART advised that its Uncertainty Index was operating outside the 'normal' control limit of +/- 1 standard deviation from the long-term mean.

Gearing

IPART typically adopts a midpoint gearing level (debt to debt-plus-equity ratio) of 60% for regulated water businesses. WaterNSW considers that the assumptions underpinning the gearing level from the 2019 Determination remain appropriate and a benchmark gearing level of **60%** should be maintained for the 2022 Determination.

Equity beta

IPART currently uses the Sharpe Lintner (SL) CAPM to calculate the cost of equity. According to this model, only systematic (i.e., non-diversifiable) risk affects the expected return required by the marginal equity investor. This is because the marginal investor would hold a well-diversified portfolio of equities, and would therefore not require compensation for diversifiable risk.

Equity beta is defined as the covariance between the returns of the firm or asset in question and the returns of the overall market:

- An equity beta of one implies that the returns of the firm covary perfectly with those of the overall market, and so investing in the firm is as risky as investing in the market as a whole;

[39] IPART *Review of our WACC method – Final Report*, February 2018. Page 27.

- An equity beta below one implies that the firm's returns are less sensitive to upturns and downturns than the market overall, so investing in the firm is less risky than investing in the market; and
- An equity beta above one implies that the firm's returns are more sensitive to upturns and downturns than the market overall, so investing in the firm is riskier than investing in the market.

The equity beta is estimated empirically by regressing individual stock returns on the returns on the market as a whole. In practice, regulators (including IPART) consider empirical equity beta estimates for a sample of 'comparator' firms, and then combine those estimates to obtain an estimate of the equity beta for the regulated business in question.

IPART's current estimate of the equity beta for the water industry is **0.7**.

In August 2020, IPART published a new methodology for estimating equity beta.[40] In that methodology decision, IPART recognised that beta estimates are imprecise and volatile, and that small changes in beta can lead to large changes in prices. IPART also explained that empirical estimation of beta could result in departures from the status quo beta estimate of 0.7 that are driven by noisy data rather than genuine market trends.

In recognition of these considerations, IPART concluded that it would contemplate departing from its status quo equity beta estimate of 0.7 only if:[41]

- The new empirical estimate was one standard deviation or more from the status quo estimate of 0.7; and
- The evidence supporting a different equity beta had persisted over a long timeframe (i.e., one determination period or longer).

IPART set a beta allowance of 0.7 for the 2019-21 Determination period.

Given IPART's new approach of maintaining its existing beta allowance of 0.7 unless there is persistent evidence (i.e., over one determination period or longer) that the estimate of beta has changed significantly (i.e., by one standard deviation or more), WaterNSW proposes an **equity beta of 0.7** for the 2022 Determination period.

Market Risk Premium

Under the 2018 WACC Methodology IPART will continue to estimate the **historic MRP as a range with a midpoint of 6.0%**.

Additionally, under the 2018 WACC Methodology, IPART will estimate the current MRP value using six different methods—five Dividend Discount Models ("**DDM**") and the market indicators method—and then selects a single point estimate. The point estimate is determined by giving two-thirds weight to the median of the DDM estimates and one-third weight to the market indicators estimate.[42]

WaterNSW supports this approach and proposes a **current 'placeholder' MRP of 8.4%** based on the application of IPART's February 2021 Biannual Update.

Value of imputation credits

The observed equity returns that IPART uses to estimate the market risk premium are taken after corporate tax. However, the observed equity returns do not take account of the franking credit benefits that Australian investors receive. To take account of this benefit, IPART's current MRP estimates make an implicit adjustment for dividend imputation. This adjustment assumes a value of imputation credits (gamma) of 0.25, in line with IPART's standard WACC method.

The value of imputation credits effectively reduces projected revenues, so they more closely reflect the impact of franking credit benefits that Australian investors receive. The higher the value of imputation credits (ranging from 0 to 1, or 0 per cent to 100 per cent) in a determination, the lower the revenues the business can expect to receive in compensation for paying corporate income tax.

Gamma is directly applied by IPART in its post-tax framework by reducing the corporate tax allowance for the impact of the imputation credits (see Section 11 'Tax allowance' for further detail).

IPART's 2018 WACC Methodology specified the **value of gamma as 0.25** and this has been applied by WaterNSW in determining the revenues and prices contained in this pricing proposal.

10.5 Forecast inflation

IPART's existing method for forecasting inflation in calculating the real WACC involves two steps:

[40] IPART *Estimating Equity Beta for the Weighted Average Cost of Capital – Final Report*, August 2020.
[41] IPART *Estimating Equity Beta for the Weighted Average Cost of Capital – Final Report*, August 2020. Page 6.
[42] IPART *Review of our WACC method – Final Report*, February 2018. Page 48.

- IPART adopts the one-year ahead RBA forecast of inflation, and then assumes that inflation will be 2.5% (the midpoint of the RBA's inflation target range) in every remaining year of the determination period.
- IPART then calculates a geometric average of the expected rates of inflation over the determination period.
- In the case of a business with a five-year determination period, four out of the five numbers over which IPART computes a geometric average will be 2.5%. This guarantees that IPART's forecast of inflation will always be close to 2.5%, irrespective of whether that is a realistic forecast or not. IPART's approach assumes that inflation will always be 2.5% in the second year of every determination period, and remain at that level, regardless of:
    - Prevailing economic conditions or the economic outlook over the determination period;
    - Whether actual inflation is close to 2.5%;
    - Whether the RBA's 1-year ahead forecast rate of inflation is close to 2.5%;
    - Whether the RBA's 2-year ahead forecast is close to 2.5%; and
    - Whether investors' prevailing expectations of inflation over the next five years is close to 2.5%.

In WaterNSW's view, supported by historical outcomes, the main shortcoming of IPART's existing approach to forecasting inflation is an assumption that inflation will return to 2.5% in year 2 of the determination period, under any circumstances. Such an assumption is unrealistic in the present low-inflation environment.

For instance, the Reserve Bank of Australia (RBA), which IPART has recognised is "objective, and best-placed, to analyse what the available information suggests for expected inflation" has said consistently that the outlook for inflation remains low as the Australian economy recovers from the COVID 19 pandemic. The RBA's February 2021 Statement of Monetary Policy reaffirmed that view, noting that:

> *Spare capacity will remain for some years, dampening inflationary pressures.*[43]

The RBA went on to note that recent increases in inflation were due to the reversal of temporary government policies, such as free childcare, which have now run their course:

> *Headline inflation has been volatile since the pandemic started. The introduction and subsequent reversal of various temporary policy support measures, such as free childcare, have resulted in large price movements. Working in the opposite direction, prices of some retail items, especially household goods, were initially boosted in response to strong demand and supply disruptions. Most of these effects have now run their course.*[44]

Hence, there is no reason to suppose that any recent, short-lived increase in the rate of inflation would continue over the 2022 Determination period. To the contrary, the RBA emphasised that inflation is likely to remain "subdued" and "muted" for a number of years due to spare capacity in the economy:

> *Underlying inflation pressures remain subdued and are expected to be fairly muted in the period ahead. Spare capacity in the labour market remains elevated, and wages growth has eased further from already low rates. Many employers have responded to the economic challenges of the pandemic by delaying wage increases, imposing wage freezes and, in some cases, applying temporary wage cuts. Forward indicators suggest wages growth will remain soft this year.*
>
> *Both underlying price inflation and wages growth are expected to remain below 2 per cent over the forecast period, out to mid 2023. Trimmed mean inflation is expected to be 1¼ per cent over 2021 and 1½ per cent over 2022. For inflation to be sustainably within the Bank's target range of 2–3 per cent, a period of labour market tightness that leads to faster wages growth is needed. However, even the latest, upgraded, forecasts for economic activity and employment still imply a degree of spare capacity and slow wages growth over coming years.*[45]

WaterNSW notes that until recently, most regulators in Australia employed approaches to forecast inflation that were very similar to IPART's existing 'RBA geometric average' approach—namely, adopting RBA forecasts for the first year or two of the regulatory period, assuming an immediate return to 2.5% thereafter and then averaging forecast/assumed rates over some future horizon.[46]

[43] RBA, *Statement on Monetary Policy, February 2021*. Page 1.
[44] RBA, *Statement on Monetary Policy, February 2021*. Page 2.
[45] RBA, *Statement on Monetary Policy, February 2021*. Page 2.
[46] The notable exception was the Economic Regulation Authority in Western Australia, who has consistently used breakeven inflation to forecast inflation.

However, in recognition that such an approach has produced unreasonable and unrealistic inflation forecasts for many years, including in the current low-inflation environment, nearly all Australian regulators have now made fundamental changes to their inflation forecasting approaches:

- In its June 2020 determination for SA Water, the Essential Services Commission of South Australia (ESCOSA) adopted a glidepath approach whereby it adopted the RBA's 1-year ahead and 2-year ahead forecasts of inflation for years 1 and 2 of the regulatory period, assumed that the rate of inflation would transition gradually to 2.5% thereafter by year 7 (i.e., a 5-year glidepath) and remain at that level until year 10;[47]
- In every determination since June 2020, the Essential Services Commission in Victoria (ESC - VIC) has forecast inflation by applying 50% weight to RBA-based forecasts (similar to IPART's) and breakeven inflation;[48]
- In December 2020, the Australian Energy Regulator (AER) decided that it would adopt a glidepath approach to forecast inflation. Under that approach, the AER would adopt the RBA's 1-year ahead and 2-year ahead forecasts of inflation for years 1 and 2 of the regulatory period, and then assume that inflation would transition gradually via a linear glidepath to 2.5% by year 5. The overall inflation forecast would then be calculated as the geometric average over the rates for years 1 to 5;[49]
- In April 2021, the Independent Competition and Regulatory Commission (ICRC) published a draft WACC methodology decision in which it proposed to adopt the AER's glidepath approach to forecasting inflation;[50] and
- Furthermore, in March 2021 the Queensland Competition Authority (QCA) launched a standalone review of its inflation forecasting methodology. The Issues Paper used by the QCA to initiate that review noted that a number of regulators had recently made significant changes to their inflation forecasting methodologies.

The QCA has sought views from stakeholders particularly on whether it should adopt either the AER's glidepath method or market-based measures (such as breakeven inflation) to derive its inflation forecasts.

- In summary, due to concerns about the reliability of the 'RBA geometric average' approach—a version of which is employed by IPART—nearly all regulators in Australia have either made fundamental changes to their inflation forecasting inflation recently, or are currently consulting on whether and how they should improve their method for forecasting inflation; and
- This leaves IPART as one of the only regulators in Australia to retain its inflation forecasting approach.[51]
- WaterNSW submits that there is overwhelming evidence—including from the RBA—that current inflation expectations over the 2022 Determination period are significantly lower than the forecasts produced by IPART's inflation forecasting approach. There has also been broad acceptance that the RBA geometric average approach is producing unreasonable and unrealistic inflation forecasts in the current low-inflation environment.

Given these considerations, WaterNSW proposes that IPART should make some minor modifications to its existing inflation forecasting approach that would significantly improve the reliability of its inflation forecasts. WaterNSW submits that adoption of the AER's glidepath approach would represent the smallest possible departure from IPART's existing approach that would achieve the greatest improvement in the reliability of forecasts. In order to implement such an approach, IPART would:

- Retain its approach of computing a geometric average of forecast / assumed inflation rates over the regulatory period. In the case of the five-year regulatory period proposed by WaterNSW, IPART would continue to compute a five-year geometric average. That is, no change to IPART's existing approach would be required in relation to the averaging period;
- Continue to adopt the RBA's 1-year ahead inflation forecast as the relevant forecast for year 1 of the regulatory period. Once again, no change to IPART's existing approach would be required in that regard;
- Adopt the RBA's 2-year ahead inflation forecast as the relevant forecast for year 2 of

[47] ESCOSA, *SA Water Regulatory Determination 2020, Final Determination: Statement of Reasons*, June 2020. Page 5.
[48] See, for example: ESC, *Melbourne Water Draft Decision*, 17 March 2021. Page 53.
[49] AER, *Regulatory treatment of inflation*, December 2020. Page 6.
[50] ICRC, *Review of methodologies for the Weighted Average Cost of Capital*, April 2021. Page 2.
[51] WaterNSW acknowledges that IPART shortened the geometric averaging period from 10 years to the length of the regulatory period, in its 2018 WACC Methodology decision. However, that change alone has made little difference to its inflation forecasts. IPART's forecasts remain consistently very close to 2.5% — well above any reasonable estimate of inflation expectations over the forthcoming determination period.

the regulatory period, rather than assuming that inflation would revert to 2.5% in year 2 in all circumstances. This would be a reasonable change to make given that (a) the RBA routinely publishes 2-year ahead forecasts in its quarterly Statement on Monetary Policy, and (b) IPART has stated that the RBA is "best-placed, to analyse what the available information suggests for expected inflation"; and

- Assume that inflation would transition gradually, via a linear glidepath, from the RBA's 2-year ahead forecast to 2.5% by the end of the regulatory period. This would be more reasonable than assuming inflation would return to the midpoint of the RBA's inflation target range by year 2 and remain at that level thereafter. None of the RBA's commentary on the outlook for general inflation suggests that inflation would return to 2.5% by year 2 and remain at that level thereafter. To the contrary, the RBA has indicated that due to spare capacity in the economy, inflation is likely to remain below the midpoint of its inflation target range "for some years".

WaterNSW submits that adoption of the AER glidepath approach would have two key advantages:

- The approach would be simple and transparent;
- It would make use of RBA information only, so would require minimal change to IPART's existing approach;

WaterNSW considers that modification of IPART's existing approach in line with the AER's glidepath approach would be a reasonable interim measure until such time as IPART is able to undertake a comprehensive assessment of its inflation methodology as part of its next WACC Methodology Review in 2022.

WaterNSW has therefore developed its rate of return proposal using the AER glidepath approach.

10.6 Our rate of return proposal

WaterNSW proposes a placeholder **post-tax real WACC of 3.7%** for the 2022 Determination period.

This placeholder WACC represents a reduction from the allowed rate of return of 4.0% for the current regulatory period that reflects, amongst other things, a reduction in interest rates that affect the cost of capital. This lower allowed rate of return is good news for customers as it results in downward pressure on regulated prices.

Table 27 below presents WaterNSW's proposed 'placeholder' WACC used in our calculation of proposed revenues and prices in this pricing proposal.

Table 27 - Proposed WACC for the 2022 Determination period

WACC Parameter	Current	Long-term	Midpoint
Nominal risk free rate	2.0%	2.7%	2.4%
Inflation forecast	1.9%	1.9%	1.9%
Debt margin	1.9%	2.5%	2.2%
Benchmark gearing	60%	60%	60%
Market risk premium	8.4%	6.0%	7.2%
Gamma	0.25	0.25	0.25
Equity beta	0.7	0.7	0.7
Cost of equity (nominal post-tax)^	7.9%	6.9%	7.4%
Cost of debt (nominal pre-tax)^	3.9%	5.2%	4.6%
Nominal Vanilla WACC^	**5.5%**	**5.9%**	**5.7%**
Post-tax real WACC^	**3.5%**	**3.9%**	**3.7%**

Note: All estimates rounded to one decimal place

10.7 Return on Capital

The application of the WACC presented in section 10.6 to WaterNSW's RABs results in a return on capital for Essential Water and offtake customers for the 2022 Determination period per the table below.

Table 28 - Proposed return on capital for the 2022 Determination period ($000s, $2021-22)

	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Essential Water*	14,550	14,360	14,170	13,984	13,798	70,862
Offtake customers	12	11	11	10	10	53
Total	14,562	14,371	14,181	13,994	13,808	70,916

*The return on capital presented for Essential Water includes the tax allowance and working capital allowance relating to the RABs for unfunded operating expenditure over the 2019 Determination and the foregone revenue from the land swap agreement.

11. Tax allowance

WaterNSW has included in its proposed notional revenue requirement its estimated tax liability (or the regulatory tax allowance), in accordance with IPART's decision on the *Incorporation of Company Tax in Pricing Decisions*.

The first step is to estimate taxable income. In simple terms, this considers gross income, tax depreciation, tax deductions (including deductible interest) and tax losses. The estimated taxable income is then multiplied by the corporate tax rate (with an appropriate adjustment for franking credits) to determine the tax bill for the transportation services.

WaterNSW has used a notional gearing ratio of 60:40 debt to equity to compute the interest deductions for the tax allowance. This is the standard IPART approach.

There are two elements of the regulatory tax allowance which are discussed further in this section:

- The accumulated tax losses; and
- Tax depreciation.

11.1 Tax losses

IPART requires expected tax losses to be rolled forward for each subsequent year of the regulatory period, with a starting balance of zero from the formation of the tax asset base ("**TAB**").

Consistent with the IPART methodology, WaterNSW has rolled forward the accumulative tax losses from the 2019 Determination Period.

11.2 Tax depreciation

IPART typically uses the agency's forecast of tax depreciation to calculate the regulatory tax allowance. There are two assumptions for IPART to consider:

- The effective life of depreciating assets for tax purposes; and
- The rate at which the assets are depreciation (e.g. prime method or diminishing method).

WaterNSW has applied effective lives for each of the TABs consistent with the lives used by IPART in the 2019 Determination. These are consistent with the assumptions used in forming the RABs in Section 6.

WaterNSW has adopted the prime cost method to calculate the tax depreciation forecast for the 2022 Determination period consistent with the approach used in the 2019 Determination. The prime method is consistent with the expected wear and tear of the pipeline asset. The SPV is not expected to run down its assets in the first half of its useful life as implied under the diminishing method.

WaterNSW has forecast a regulatory tax allowance of $1.2 million per annum on average across the 2022-27 regulatory period as shown in Table 29 below.

Table 29 - Tax Allowance ($000s, $2021-22)

	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Tax allowance	1,185	1,198	1,210	1,221	1,232	6,046

In the subsequent regulatory periods, it is anticipated that WaterNSW will update the tax allowance using the SPV's TAB.

11.3 Tax rate

We have calculated the tax allowance for the Broken Hill Pipeline using a notional corporate tax rate of 30% in accordance with the 2011 IPART review of *The incorporation of company tax in price determinations*.

In the 2019 Final Determination, IPART used the small business concessional tax rates of between 25% and 27.5% to set the Broken Hill Pipeline tax allowance. The decision was based on the view that the 25% to 27.5% tax rates were applicable to the business unit as if it were a separate entity. IPART considered that if Pipeline was treated as a separate business unit, it will be eligible for a lower tax rate.

WaterNSW will not be able to access the reduced corporate tax rate for the Broken Hill Pipeline under the *Income Tax Assessment Act 1997* and *Income Tax Rates Act 1986* ("ITRA 1986").

Appendix I of this submission sets out this view from our tax advisors to this effect; that the SPV is not a base rate entity and will not qualify for the reduced corporate tax rate. Therefore, it is not appropriate for IPART to state that if the Pipeline is considered as a separate business unit "it may be eligible for a lower tax rate". The SPV is not eligible for a reduced corporate tax rate as it is not a base rate entity.

In simple terms, the current tax allowance does not provide the funding necessary to meet our legislated tax liabilities. This is also evidenced by Income Tax Assessments for the Financial Year ended 30 June 2019 and 30 June 2020.

The efficient costs for the pipeline is a core component of the Essential Water operations as shown below and therefore is subject to the 30% tax rate under the Essential Water Determination. However, if the costs of the pipeline are excluded, it would be subject to the small business concessional tax rate under the IPART approach.

Table 30 - Total net pipeline costs ($millions, $2018-19)

Essential Water Revenue Requirement 2018-19 $			
Total costs $millions	**2019-20**	**2020-21**	**2021-22**
Essential Water Target Revenue	45.8	46.5	47.2
Pipeline costs	24.4	24. 4	24.4
Total Net Pipeline Costs	21.4	22.1	22.8

Source: Table 4.1 2019 Essential Water IPART Final Report

In addition, The IPART approach to setting the pipeline tax allowance is inconsistent with the s15a direction issued to IPART which states that IPART shall include WaterNSW's efficient costs of complying with the SOC Act direction for the Board of WaterNSW to secure the water supply of Broken Hill

We note that the Section 16A direction does not state that IPART shall provide an allowance for the efficient cost of a standalone entity to secure the water supply of Broken Hill and in this case a fictional standalone entity which is not owned by WaterNSW and subject to the lower company tax rate.

The Section 16A direction does not promote the determination of allowances that fail to provide the necessary funding for WaterNSW to meet our legislated tax liabilities to secure the water supply of Broken Hill (e.g. mandatory/legislative costs).

We further note that IPART's approach to setting the tax allowance is inconsistent with regulatory best practice.

For instance, in the AER's *Regulatory tax approach review December 2018,* the AER specified four criteria that should be considered in setting the tax allowance[52]

- Is it reflecting the efficient costs of operating the regulated network?
- Is it a material change?
- Is it an achievable tax practice?
- Is it a broader tax issue?

In regard to the achievability criteria, the AER stated that:

> *The third criterion is whether a possible tax management practice is able to be implemented or adopted by NSPs. Firms that seek to adopt the benchmark efficient approach should be able to do so. Certain practices may be considered efficient for certain situations, but for legal or practical reasons may be unachievable by all networks. This includes an assessment of the validity of such a practice under current tax legislation.*
> *…*
> *We consider that tax management practices assumed by the benchmark regulatory tax approach should be able to be adopted by NSPs.*

The AER rejected the view that it should consider adopting multiple benchmarks for the company tax rate (e.g. Government entities, private entities and offshore entities). In the review, the AER stated that:

> *Under our achievability criteria, we have also considered whether it would be possible for regulated networks to align with a benchmark tax approach based on non-corporate owners. Overseas sovereign wealth funds currently benefit from the lowest tax rates. If we were to change the benchmark to this level, it would not be possible for the current owners of regulated networks to align with the new benchmark as they cannot change to become overseas sovereign wealth funds. Meeting the benchmark would require a sale transaction where the pool of buyers was relatively small. This would likely impose windfall losses on existing owners and reduce long term*

[52] https://www.aer.gov.au/system/files/AER%20-%20Tax%20review%202018%20-%20Final%20report%20-%2017%20December%202018_0.PDF

investment in the Australian regulated networks. While this is the most extreme example, risks of this nature would also occur if the benchmark was shifted to be a foreign-held MIT or an Australian superannuation fund

As an NTER entity WaterNSW is subject to the 30% company tax rate for pipeline services. It is not possible for WaterNSW to achieve a tax position where it can claim the small busines concessional tax rate of between 25% to 27.5% for the Broken Hill Pipeline. As mentioned previously, the SOC Act direction issued to WaterNSW states that WaterNSW shall secure the water supply of Broken Hill.

11.3.1 Tax for a benchmark efficient entity

For the reasons cited above, and in recognition that the benchmark efficient entity for providing pipeline services would be part of a larger consolidated firm as discussed in Section 5.6 and not a standalone firm, WaterNSW considers that the tax allowance should be calculated using the 30% corporate tax rate.

This is necessary to ensure internal consistency of the cost assumptions regarding whether the pipeline benchmark efficient entity is a standalone business or part of a larger consolidated firm.

As outlined in Section 5.6, evidence from the market demonstrates that the overall costs of providing pipeline services are lower if part of a larger consolidated organisation where the allocated costs of separate Boards, CEOs, and other corporate functions can be shared across the entity's business units compared with the costs of operating a standalone business.

This has the following implications for the 2022 Determination:

- The appropriate corporate overhead costs as discussed in Section 6 should be those that are allocated to the pipeline based on WaterNSW's cost allocation methodology; and
- The appropriate tax rate as discussed in this section should be based on the tax rate applicable to the larger (revenues greater than $50 million p.a.) organisation.

The counterfactual is to consider the benchmark efficient entity as a standalone entity. This would require the corporate costs to be set on a standalone basis (including establishing a Board, CEO, and other support costs) as per the SDP Determination. As outlined in Section 6, WaterNSW estimates that the costs of a standalone firm would be approximately $2.5 million per annum higher than our proposed costs based on our company-wide cost allocation methodology.

12. Working capital

An additional building block is working capital. The difference between current assets and current liabilities arising from the timing differences between accounts payable and accounts receivable, creating a financial liability for WaterNSW.

IPART's methodology of determining the working capital allowance is generally based on a 45-day payment term for account receivable and a 30-day payment term for accounts payable. The calculation for the working capital allowance is as follows:

$$\left[Accounts\ Receivables\ X\ \frac{Creditor\ Days}{365} - Accounts\ Payable\ X\ \frac{Debtor\ Days}{365}\right] X\ WACC$$

IPART typically uses the revenue from the year prior to compute accounts receivables. However, as this was unavailable at the beginning of the 2019 Determination, IPART applied, for accounts receivables, the revenue requirement for the current year, instead of the revenue accrued in the year prior. WaterNSW has continued to use this approach for consistency.

The proposed working capital allowance is set out in Table 31 below. This is a small amount and has been included in notional revenue requirement.

Table 31 - Return on working capital ($000s, $2021-22)

	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Return on working capital	144	153	151	149	149	746

13. Forecast customers numbers and sales forecasts

To convert the notional revenue requirement ("**NRR**") into prices, IPART needs to determine the forecast number of customers and offtakes, and the volume of water sales to those customers in each year of the determination period.

The number of customers and offtakes are used to determine fixed access charges, and the water sales volume forecasts are used to estimate what proportion of the NRR will be recovered through variable usage charges.

13.1 Customer numbers

13.1.1 IPART's 2019 Decision on customer numbers

In 2019, IPART decided to accept WaterNSW's forecast customer numbers and the number of offtakes for the pipeline as shown in Table 32 below.

Table 32 - Forecast customer and offtake numbers from the 2019 Determination

	2019-20	2020-21	2021-22
IPART decision			
Essential Water	1	1	1
Offtakes	5	5	5

Source: WaterNSW pricing proposal to IPART, June 2018, pp 71-72 and supporting modelling provided with the pricing proposal. IPART Table 7.1 from the Final Report.

13.1.2 Proposed customer numbers

The pipeline's primary customer continues to be Essential Water. The pipeline's primary purpose is to transport water to provide Essential Water with a source of bulk water to improve the security of water supply for its customers (i.e. end-users in the Broken Hill area).

WaterNSW also uses the pipeline to transport water to a number of offtakes along its route, under separate agreements with the relevant customers.

Engagement with potential offtake customers was undertaken in May 2017 when RMCG met with landholders at Coombah Station as part of their report into determining what additional customers were potentially available to connect to the pipeline.

Potential locations for the offtakes, as discussed with customers, are shown in Figure 18 below.

Figure 18 - Offtake locations

WaterNSW currently has **five offtakes**:

- Kudgee Station;
- Netley Cattle Yards;
- Netley Station;
- Pinepoint / Sunnydale; and
- Balaclava.

Netley Cattle Yards and Netley Station are not taking any water and have not entered into a

Water Agreement. All the other Offtakes are taking water.

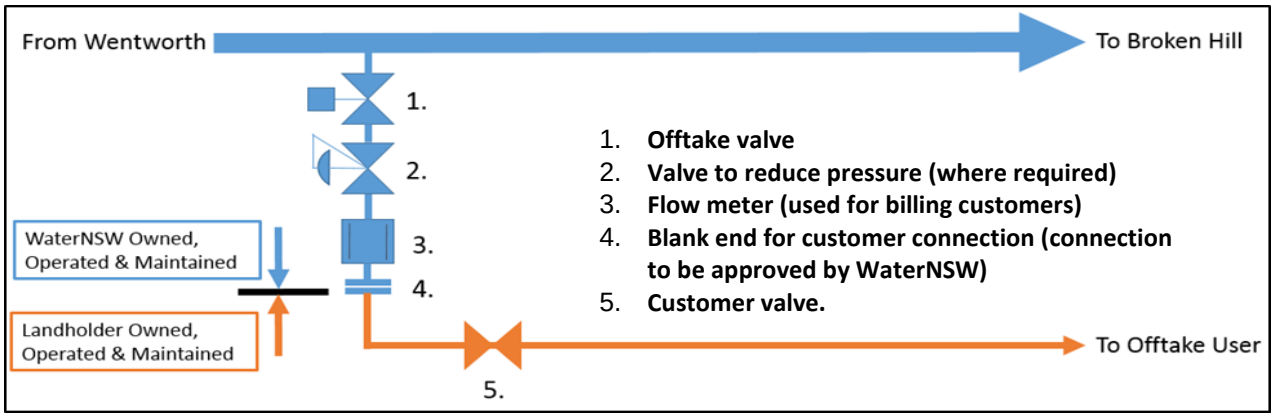
The Offtake Structure Pinepoint/Sunnydale is one structure but two customers who share the costs 50:50 for that offtake. WaterNSW therefore refers to five offtakes with four offtake customers.

There are no plans for additional offtake customers at the moment.

One offtake customer (at Balaclava) receives access to an offtake close to the bulk water storage as part of the agreement to the purchase land from that offtake customer for the storage.

Ownership arrangements for the pipeline and offtake assets are set out in Figure 19 below.

Figure 19 - Offtake ownership arrangements



We note that IPART's pricing methodology for offtakes can be applied for new offtakes during the period.

WaterNSW proposes to maintain the forecast number of offtakes at five, as we are not aware of any additional offtakes that are imminent or likely to be required over the next few years.

WaterNSW proposes to maintain the customer numbers from the 2019 Determination in each year of the 2022 Determination period. That is:

- Essential Water (1 customer); and
- Offtakes (5 offtakes).

13.2 Water volumes

WaterNSW's sales forecast is made up of the following elements:

- Essential Water forecast sales; and
- Offtake customers forecast sales.

IPART's forecasts for water sales from the 2019 Determination and WaterNSW's forecasts for the 2022 Determination period are outlined below.

13.2.1 IPART's 2019 decision on forecast water volumes

In the 2019 Determination, IPART did not accept WaterNSW's forecast water sales volumes to Essential Water and instead set these volumes as shown in Table 33 below. IPART's volumes were 23% per year lower than WaterNSW's forecast volumes, on average.

Table 33 - Forecast water sales to Essential Water from the 2019 Determination – Proposed vs Allowed (ML)

	2019-20	2020-21	2021-22
WaterNSW proposed (ML)	5,650	5,700	5,750
IPART decision (ML)	4,401	4,387	4,370

Source: WaterNSW pricing proposal to IPART, June 2018, page 71 and IPART analysis, Table 7.2 in the 2019 Final Report.

The forecast water sales in the table above reflect IPART's decisions to:

- Adopt the forecast metered water sales to end use customers in Broken Hill used in IPART's concurrent review of Essential Water's prices as a baseline in estimating the water demand from the pipeline;
- Make adjustments to this baseline to account for the potential impact of two factors on Essential Water's demand for water from the Pipeline:
- Water losses from Essential Water's existing network (which would need to be made up with more water from the Pipeline), and
- A preference to source water from Essential Water's own storages, when it is cost effective and there is sufficient rainfall to make this possible, before transporting water from the River Murray using the Pipeline.

Table 34 below shows this starting point and the adjustments IPART made to arrive at its forecast of WaterNSW's water sales to Essential Water using the Pipeline. This includes:

- Adding IPART's estimate of Essential Water's real losses from its existing network, and
- Subtracting IPART's estimate of the amount of water that Essential Water will source from its water storages before transporting water using the Pipeline.

WaterNSW considers that the first adjustment for real losses was not unreasonable. However, the second adjustment regarding the ability of Essential Water to source water supply from its own storages, which reflected that the pipeline is not its only source of water, has proven not to be accurate.

Table 34 - Forecast water sales to Essential Water from the 2019 Determination (ML)

	2019-20	2020-21	2021-22
Essential Water's forecast metered sales (ML)	5,968	5,955	5,939
Add real water losses	343	342	341
Subtract supply from existing storages	-1,910	-1,910	-1.910
Essential Water's purchases from WaterNSW	**4,401**	**4,387**	**4,370**

Source: IPART analysis, Table 7.4 in the 2019 Final Report.

As illustrated in Table 34 above, IPART assumed that 30% of Essential Water's customers' demand for water could be supplied from Essential Water's storage reservoirs, on average. IPART noted that although the volume of water supplied by these storages can be volatile because it's affected by rainfall, IPART considered it appropriate to subtract the median amount of water supplied from these storages (1,910ML per year) from the overall amount of water that Essential Water will require.

As illustrated in the following section, while IPART's assumption on forecast metered water sales for Essential Water has proven to be reasonably accurate, IPART's assumptions of the amount of supply from Essential Water's own storages has proven to be the main cause of actual volumes being approximately 30% higher than the allowances in the determination.

13.3 Sales volume forecast for Essential Water

Sales volumes are a major driver of operating expenditure for the pipeline (through the cost of electricity), as discussed in Section 6.6, and is also relevant to the tariff structure discussed in Section 15.

Table 35 below illustrates IPART's decision on forecast sales from the 2019 Determination and compares this to actual and forecast sales for the

current period and forecasts for the 2022 Determination period (**5,534ML** per annum on average). The figures exclude any evaporative losses at the Bulk Water Storage.

Table 35 - Projected annual consumption met by the Broken Hill Pipeline

Consumption (ML)	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	Avg FY23-27
IPART 2019 Determination									
Essential Water	4,401	4,387	4,370	N/A					
Offtakes	50	50	50						
Total	**4,451**	**4,437**	**4,420**						
WaterNSW actual / forecast water sales for the 2022 Determination									
Essential Water	6,145	5,620	5,596	5,575	5,553	5,531	5,510	5,488	5,531
Offtakes	4	1**	3	3	3	3	3	3	3
Total	**6,149**	**5,621**	**5,599**	**5,577**	**5,556**	**5,534**	**5,513**	**5,491**	**5,534**
% Change (IPART vs Actual)	***38%***	***27%***	***27%***						

* Shaded area (2019-20 to 2021-22) is the 2019 Determination period. 2019-20 is actual data, while 2020-21 and 2021-22 information is forecast data. WaterNSW is proposing a five-year determination period from 2022-23 to 2026-27. Forecast for the 2022 Determination excludes assumption of evaporative losses at the Bulk Water Storage of 435ML per year.
**Forecast based on volumes up to February 2020-21

It is evident from Table 35 that there is a significant (i.e. 27%-38% per year) variance between IPART's determined volumes and actual sales.

Forecast sales for Essential Water are based on a detailed 'bottom-up' analysis provided by our major customer. The Essential Water forecasts are largely consistent with forecasts provided by WaterNSW at the 2019 Determination and are 10% lower than 2019-20 data.

What is not initially obvious from the data in Table 35 is that the forecast metered data sales for the 2022 Determination is relatively similar (although somewhat below) forecasts from the 2019 Determination if the impact of Essential Water's use of their own infrastructure is removed.

On the basis that very little (if any) water is currently sourced from Essential Water's own infrastructure, and little (if any) is forecast to be sourced by Essential Water for the 2022 Determination period, WaterNSW proposes that no adjustments be made by IPART to the Essential Water metered data forecasts for Essential Water's use of its own infrastructure for the supply of water.

We therefore consider that the forecasts provided in Table 35 are reasonable and should be approved by IPART for pricing purposes.

WaterNSW also notes that, as discussed in Section 15.2, and based on our proposal to maintain the tariff structure from the 2019 Determination, the risk of getting the sales forecast 'wrong' for WaterNSW is mitigated by the approach to setting variable usage charges that reflect the marginal costs of electricity associated with pumping.

WaterNSW will actively participate in IPART's review of forecast sales and comment on IPART's decisions with respect to sales forecasts throughout the 2022 Determination process to ensure that WaterNSW is provided with a reasonable opportunity to recover its efficient costs (including any marginal electricity costs).

14. Notional Revenue Requirement

14.1 Building block approach

WaterNSW supports the continued use of the 'building block' approach to develop our target revenue allowance. The building blocks form the regulated entity's cost base for pricing purposes. The sum of the building blocks is called the notional revenue requirement, which is used by IPART to construct prices.

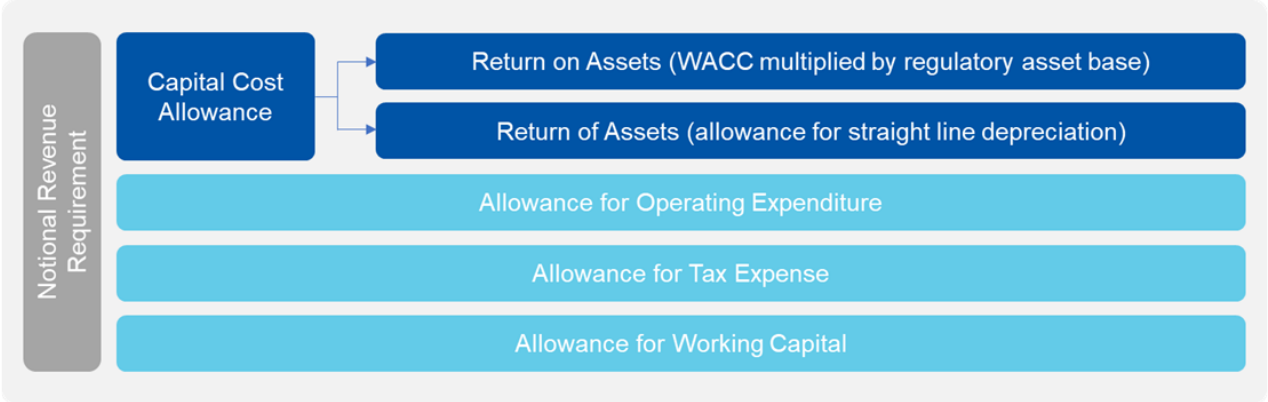
To apply this approach, IPART made decisions on the revenue WaterNSW would require in each year of the regulatory period, based on the following building blocks:

- The revenue required for **operating expenditure** over the period. This amount represented IPART's estimate of WaterNSW's forecast efficient operating, maintenance and administration costs;
- An allowance for a **return on the assets** used to provide the regulated services. This amount represented IPART's assessment of the opportunity cost of the capital invested in WaterNSW by its owner and debt providers to ensure that it can continue to make efficient investments in capital in the future. The return on capital was calculated by multiplying an inflation indexed RAB by a rate of return on capital that excluded the impact of inflation, or a 'real' framework, so as to not double count the impact of inflation;
- An allowance for a **return of assets (depreciation)**. This allowance recognises that through the provision of services to customers, a water utility's capital infrastructure will wear out over time and therefore revenue is required to recover the cost of maintaining the RAB;
- An allowance for meeting **tax obligations**. As part of its 2019 Determination, IPART adopted a post-tax real WACC and calculated WaterNSW's tax liability as a separate cost building block as IPART considered this method more accurately estimates the tax liability for a comparable commercial business; and
- An allowance for **working capital**. This allowance represents the holding cost of net current assets, such as receivables and payables.

The total revenue requirement represents the efficient costs that can be recovered by WaterNSW for the provision of monopoly services. The revenue requirement is set by IPART at efficient levels to ensure that WaterNSW can meet its legislative and regulatory obligations as well as any service standards and customer driven discretionary requirements.

A diagram of IPART's building block revenue requirement approach is shown in Figure 20 below:

Figure 20 - IPART's building block approach



WaterNSW has calculated its notional revenue requirement using the regulatory asset base (RAB) building blocks approach for both the pipeline assets and offtake assets.

Sections 6 to 14 of this pricing proposal work through each element of the notional revenue requirement, as shown in Table 36 below.

Table 36 - Building Blocks

Building Block	Description	Section of the Pricing Proposal
Return on Assets	▼ Return on assets which is calculated by multiplying the value of the assets (the 'Regulated Asset Base' or RAB) by the Weighted Average Return on Capital (WACC)	▼ The RAB is discussed in section 8, including the capital expenditure assumptions. ▼ This section also discusses the approach used to compute the capital cost for the offtake assets. ▼ The WACC is discussed in section 10.
Return of Assets	▼ Return of assets, also known as the regulatory depreciation allowance, is calculated by dividing the value of the RAB by the useful life of the assets	▼ Depreciation and asset lives are discussed in section 9.
Operating Expenditure	▼ The operating expenditure allowance consists of a bottom up forecast of the operating expenditure needs of the pipeline including the costs associated with the management and good governance of the SPV	▼ Operating expenditure is discussed in section 6.
Tax Allowance	▼ The regulatory tax allowance is an estimate of the SPV's tax liability calculated in accordance with IPART's decision on the Incorporation of Company Tax in Pricing Decisions	▼ The tax allowance is discussed in section 11.
Working Capital allowance	▼ The working capital allowance, is a nominal amount which compensates the SPV for the liability that arises due to the timing differences between accounts payable and accounts receivable	▼ The working capital allowance is discussed in section 12.
Customer Charges	▼ Individual charges to recover the notional revenue requirement, including specific charges for Essential Water and the offtake outlet customers.	▼ The charges are discussed in section 15.

14.2 Notional revenue requirement

Relative to the last year of the 2019 Determination (i.e. 2021-22), the proposed revenue requirement for the 2022 Determination period is **$1.1 million (4.3%) lower** on average per year based on the following:

- A lower return on capital due primarily to a **lower WACC** (3.7% vs 4.0%);
- A reduction of $3.6 million over the period due to the need to '**true-up' the lower cost of debt** arising during the current regulatory period compared with IPART's forecast debt costs;
- These reductions are partially offset by **corporate support costs that are $0.5 million** per annum higher on average than allowed in 2019 derived by applying our cost allocation methodology. The figures above do not include an additional amount (estimated at $0.6 million per year) that would be applicable if IPART requires WaterNSW to move away from 'totex' to direct operating expenditure as the corporate cost allocator as signalled in the draft 2021 Rural Valleys and WAMC Determinations;
- **Electricity costs** of $1.5 million per year when adjusted for volumes; and
- Some minor adjustments for actual and forecast **capital expenditure**.

WaterNSW's proposed revenue requirement for the 2022 Determination period is provided in Table 37 below.

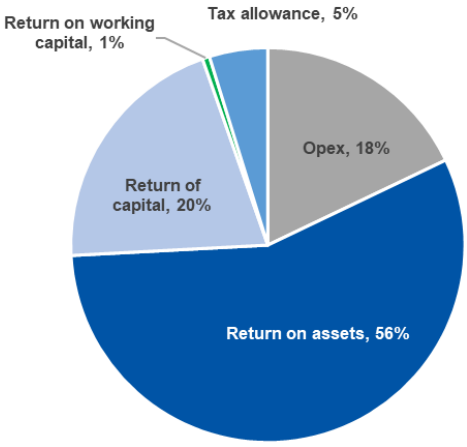
Table 37 - Notional Revenue Requirement (Essential Water and Offtakes) ($000s, $2021-22)

	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Operating expenditure*	3,892	4,353	4,743	4,249	4,476	4,775	22,595
Return on assets	15,683	14,562	14,371	14,181	13,994	13,808	70,916
Regulatory depreciation	5,003	5,147	5,147	5,147	5,165	5,191	25,797
Return on working capital	175	144	153	151	149	149	746
Tax allowance	825	1,185	1,198	1,210	1,221	1,232	6,046
Cost of debt true-up^	0	-729	-729	-729	-729	-729	-3644
Total NRR	**25,578**	**24,662**	**24,883**	**24,208**	**24,275**	**24,427**	**122,455**

* Electricity costs have been adjusted to reflect sales forecasts provided by Essential Water and average actual sales of offtake customers.
^ 2021-22 is the last year of the 2019 Determination period.

As illustrated in Figure 21, the largest building block component is the return on assets (56%), followed by the return of capital (20%) and operating expenditures (18%).

Figure 21 - Building block components of the revenue requirement



Source: WaterNSW analysis. Excludes cost of debt adjustment.

14.3 Actual vs allowed revenue

The table below presents the variance between WaterNSW's actual revenue over the 2019 Determination period and the revenue from charges determined by IPART. Noting that only one year of complete data is available (2019-20) and the relatively high proportion of revenues derived from fixed charges, actual revenue is relatively similar to what was allowed.

Table 38 - Actual vs allowed revenue over the 2019 Determination ($000s, $2021-22)

	2019-20	2020-21*	2021-22
Allowed revenue from charges	25,549	25,557	25,526
Actual revenue	26,308	26,508	25,770
Variance ($)	759	951	245
Variance (%)	3%	4%	1%

*2020-21 values are YTD March values scaled upwards to represent a full year

15. Prices and customer bill impacts

Having calculated WaterNSW's notional revenue requirement for the 2022 Determination period as discussed in Section 14, IPART then converts the notional revenue requirement into prices. To do this, IPART makes a number of decisions, including the following:

- The target revenue for each year;
- The revenue expected from other sources;
- Forecast water sales and customer numbers over the determination period;
- The structure of WaterNSW's prices, and the revenue to be generated from various charges; and
- The level of prices.

WaterNSW considers that IPART's approach for converting the notional revenue requirement into prices for the 2019 Determination was appropriate and proposes that the approach is continued for the 2022 Determination period.

15.1 Introduction

Section 15 of the IPART Act requires IPART to have regard to a number of matters in making its pricing determinations:

- Protecting consumers from unreasonable price increases or inefficient practices;
- Ensuring monopoly service providers earn a fair rate of return on prudent and efficient investments
- Encouraging regulated service providers to improve their economic efficiency and maintain or improve their service quality Encouraging competition where possible ensuring that regulated service providers remain financially viable
- Maintaining ecologically sustainable development and protection of the environment.

WaterNSW has considered the principles prescribed in Section 15 (where relevant) in developing its proposed charges for Essential Water and offtake customers.

WaterNSW has proposed a cost reflective charging structure for the pipeline to promote the economically efficient use of the pipeline and to ensure a fair sharing of risk between WaterNSW and its customers. Our proposed pricing structure maintains the approach to pricing from the 2019 Determination.

Individual charges have been apportioned to Essential Water and offtake customers by reference to the service standards provided to the pipeline customers, the contribution each customer makes in creating the cost and their requirements for the pipeline.

Much of the cost of the pipeline will be passed onto Essential Water, for whom the pipeline has been constructed, in line with the principles described above. The proposed charges to Essential Water include:

- A fixed charge ($/day) to recover:
  - Cost of capital and other internal and external costs incurred by WaterNSW in complying with the Pipeline Direction;
  - Fixed operational and maintenance costs; and
  - Fixed electricity costs, including a daily charge and demand charges;
- A variable usage charge ($/ML) recovering variable (electricity) costs.

Offtake customers will contribute to a lower cost of supply as the supply arrangements between WaterNSW and Essential Water preference the delivery requirements of Essential Water instead of offtake customers. Consistent with the 2019 Determination, it is proposed that charges to offtake customers will comprise:

- A fixed charge ($/day) to recover the incremental fixed cost of the offtakes, such as the cost of capital; and
- A variable usage charge ($/kL) to recover variable electricity costs, for each kL of water ordered/delivered.

The extent to which Essential Water's end users should contribute to the cost of the pipeline is a matter to be decided by IPART under the Essential Water Determination, in consultation with customers, Essential Water and the NSW Government. WaterNSW anticipates that Essential Water will seek additional funding from Government to offset some or all of the cost of the pipeline.

15.2 Summary of 2019 Determination pricing structures

In setting prices at the 2019 Determination, IPART adopted price structures that it considered cost reflective. This meant IPART set access charges to recover efficient fixed costs[53] and usage charges to recover efficient variable costs.[54]

IPART did not accept all of WaterNSW's proposed price structures, as IPART considered they may create undesirable incentives affecting the demand for transportation services by Essential Water.

IPART's decisions on price structures from the 2019 Determination are summarised in Table 39 below.

Table 39 - IPART's decisions on pricing structures from the 2019 Determination

To recover:	Essential Water pays:	Offtake customers pay:
Fixed costs	Access charge ($/day) recovering: ▼ Pipeline capital costs ▼ Fixed operating costs ▼ Fixed electricity costs (daily charge and minimum load)	Access charge ($/day) recovering: ▼ Incremental fixed costs of offtake
Variable costs	Usage charge ($/ML)	Usage charge ($/kL)

Source: Table 9.1 of IPART 2019 Determination

IPART adopted a two-part tariff for Essential Water, with WaterNSW's fixed costs recovered through an access charge and WaterNSW's variable costs recovered through a usage charge. That is:

- The access charge ($/ day), reflected the pipeline's efficient fixed costs, comprised of the following:
  - Capital costs;
  - Fixed O&M costs;
  - Internal and corporate costs;
  - Fixed energy costs (both daily charge and minimum load); and
- The usage charge ($/ML), reflected the pipeline's efficient variable costs, being the energy cost associated with delivering a ML of water to Essential Water.

Access charge

IPART set access charges for Essential Water to recover all fixed energy costs, including the fixed requirement for electricity that occurs irrespective of the volume of water pumped (discussed in Section 6.6).

In assessing how to allocate efficient fixed charges between Essential Water and offtake customers, IPART decided the following:

> *We have made a decision to allocate the efficient fixed costs between Essential Water and offtake customers on the basis of each party's contribution to the need to incur the cost of the Pipeline. The Pipeline was built (and designed) to supply Essential Water (and its customers in Broken Hill) – as reflected in Essential Water's guaranteed right to the Pipeline's transportation services, whereas offtake customers do not have such a guaranteed right.*
>
> *On this basis, under our prices,* ***Essential Water would pay for the fixed costs of the Pipeline; whereas offtake customers would pay the incremental fixed costs associated with their supply*** (emphasis added).[55]

The main difference the between the pricing structure that WaterNSW originally proposed in 2018 and IPART's decision lies in how the electricity charges for fixed energy use (i.e. the fixed requirement for energy that the pipeline has irrespective of the volume of water pumped) are recovered. WaterNSW proposed recovering this cost as part of the usage charge while IPART

[53] Fixed costs are those that do not vary over the short-term and do not change with the amount of output produced. Access charges are paid by customers regardless of the amount they consume.

[54] Variable costs are those that change with the amount of output (in this case the amount of water transported through the Pipeline). Usage charges are paid by customers based on the amount they consume.

[55] IPART *2019 Broken Hill Pipeline Final Report*, page 90.

decided to recover it as part of the access charge.

IPART decided to set a single usage charge, reflecting its estimate of the cost of energy required to deliver a ML of water to Essential Water.

Usage charge

IPART set the Pipeline usage charge ($/ML) as the efficient variable energy costs ($) divided by forecast water demand (ML). For Essential Water's usage price:

- The efficient variable energy cost ($) was set by calculating a weighted average benchmark energy unit cost based on three demand scenarios (corresponding to high, low and median demand for pipeline transportation services). This approach resulted in efficient variable energy costs that IPART considered:
- Took into account the possibility of very high and very low demand years to ensure WaterNSW can recover its efficient cost on average over time (i.e. if IPART based the usage price on the median demand scenario only, WaterNSW would under recover efficient costs in very high and very low demand years);
- Took into account evaporative losses (ML) occurring at the bulk water storage, and
- Reflected the prioritisation of off-peak energy over shoulder energy (and shoulder energy over peak energy).

Shutdown, standby and restart charges

WaterNSW originally proposed that IPART set a maximum price for these services.

In relation to the costs of these shutdown, standby and re-start charges, IPART noted the following:

- These costs are driven by Essential Water, and should be internalised by Essential Water. Essential Water should make water source decisions to achieve its water supply requirements at an efficient total cost. That is, Essential Water should choose to incur these costs if it lowered its overall total cost of supply.
- IPART did not want to set up an expectation that these costs would be automatically passed through to and recovered from Essential Water's customers.
- IPART indicated that its expenditure review consultant (Synergies) could not confirm whether the proposed shutdown and restart charges were cost reflective (i.e. Synergies considered the proposed charges could be 'punitive' rather than cost reflective).

However, on page 110 of the Synergies Report, Synergies indicated that the shutdown and restart fees were reasonable:

> *We assess the proposed standby payments as being reasonable, as they are of a similar order of magnitude to the fixed operating and maintenance charge proposed under the O&M contract.*[56]

Taking these issues into account, IPART made a decision to defer determining prices for shutdown, standby and restart services in the 2019 Determination. IPART indicated it will consider this issue for the next determination, when IPART may have more information on the likely costs of these services.

IPART indicated that WaterNSW could still levy these charges on Essential Water, as negotiated on a commercial basis between the two parties.[57]

15.2.1 WaterNSW's proposed pricing structures for Essential Water

WaterNSW proposes to maintain the pricing structures for Essential Water from the 2019 Determination for the upcoming 2022 Determination period.

That is, WaterNSW proposes the following pricing structures:

- An access charge ($/ day), reflecting the pipeline's efficient fixed costs, comprised of the following:
  - Capital costs;
  - Fixed O&M costs;
- Fixed energy costs (both daily charge and minimum load); and
- A usage charge ($/ML), reflecting the pipeline's efficient variable costs, being the energy cost associated with delivering a ML of water to Essential Water and offtake customers.

[56] << https://www.ipart.nsw.gov.au/files/sharedassets/website/shared-files/pricing-reviews-water-services-rural-water-prices-for-waternsw-murray-river-to-broken-hill-pipeline-services-from-1-july-2019/legislative-requirements-prices-for-waternsw-murray-river-to-broken-hill-pipeline-services-from-1-july-2019/consultant-report-by-synergies-expenditure-review-of-waternsw-broken-hill-pipeline.pdf, page 110 >>

[57] See IPART 2019 Determination, page 92.

WaterNSW's proposed pricing structures are summarised in Table 40 below.

Table 40 - Proposed pricing structures

Charge	Customer	Charge Type	Consistent with existing pricing structure?
Access Charge	Essential Water	**Fixed access charge**, levied irrespective of water take: ▼ Recovers fixed costs of the pipeline including, internal and corporate costs, operational and maintenance costs, funding costs of the pipeline (debt & equity), forecast tax liabilities and depreciation of the pipeline, and fixed energy costs associated with the fixed energy use	✓
Usage Charge	Essential Water/Offtake customers	**Usage charge** levied on the volume of water take Recovers the variable cost of energy including: ▼ Network demand costs, including fees for the network variable charge and the maximum demand charge; ▼ Wholesale energy costs; ▼ Retail costs; ▼ Costs of carbon abatement schemes; ▼ Regulatory costs/fees	✓
Offtake Charge	Offtake outlet, (levied on a per offtake basis)	**Fixed Charge**, levied irrespective of water take: ▼ Recovers the fixed costs of the offtake assets, including funding costs, depreciation and forecast tax liabilities associated with the delivery of offtake services.	✓

Consistent with the 2019 Determination, the vast majority of the revenue will be recovered through fixed charges, with a small proportion of revenue recovered through variable charges reflecting the variable cost of electricity, consistent with the principles of cost reflective pricing.

A cost reflective charging structure promotes the economically efficient use of the pipeline while providing WaterNSW with a reasonable opportunity to recover its efficient costs.

The fixed to variable split is approximately 95% to 5%, assuming 5,534MLs of average demand per annum. The revenue by fixed and variable tariff components is shown in the tables below.

Table 41 - Fixed Revenue by Charge Category ($000s, $2021-22)

$'000	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Pipeline						
Operating expenditure excl energy	2,789	3,192	2,702	2,931	3,244	14,857
Energy costs – fixed energy use	325	324	323	323	323	1,619
Return on assets	14,550	14,360	14,170	13,984	13,798	70,862
Regulatory depreciation	5,132	5,132	5,132	5,150	5,177	25,724
Working capital and tax allowances	1,328	1,350	1,359	1,369	1,380	6,784
Cost of debt true up	-729	-729	-729	-729	-729	-3,644
Total pipeline	**23,396**	**23,629**	**22,958**	**23,027**	**23,192**	**116,202**
Offtakes						
Operating expenditure excl energy	1	0	3	8	1	14
Return on assets	12	11	11	10	10	53
Regulatory depreciation	14	14	14	14	14	72
Working capital and tax allowances	1	2	2	2	2	8
Total offtakes	**29**	**27**	**30**	**34**	**27**	**147**
Pipeline and Offtakes						
Total fixed revenue	23,424	23,657	22,988	23,062	23,219	116,350
Fixed revenue as a % of total	95%	95%	95%	95%	95%	95%

Table 42 - Variable Revenue by Charge Category ($000s, $2021-22)

$'000	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Essential Water variable charge	1,237	1,226	1,220	1,213	1,207	6,102
Offtake Customers variable charge	1	1	1	1	1	3
Total variable revenue	**1,237**	**1,227**	**1,220**	**1,214**	**1,207**	**6,105**
Variable revenue as a % of total	5%	5%	5%	5%	5%	5%

* Variable revenue based on an average usage of 5,531ML for Essential Water and 3ML per annum for offtake use

15.3 Proposed charges for Essential Water

The proposed charges for Essential Water are listed in Table 43 below.

Table 43 - Proposed charges to Essential Water ($2021-22)

$2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	%Δ FY22-F27
Fixed charge ($/day)*	63,697.69	63,523.65	63,697.69	63,697.69	63,697.69	-5.3%
Variable charge ($/ML)	221.84	220.79	220.48	220.18	219.90	3.5%

* Fixed charge in 2021-22 (the last year of the 2019 Determination period) is $67,280.98/day and variable charge is $212.52/ML.

The fixed charges have been calculated by dividing the annual fixed costs of the pipeline by the number of days in the year. The variable charge has been calculated by dividing the annual variable costs of electricity by annual forecast demand.

With regards to affordability concerns, we note that on 19 April 2018, the Minister for Regional Water, with approval of the Premier, made the *Direction to the Independent Pricing and Regulatory Tribunal in relation to the construction and operation of the Broken Hill pipeline 2018* (the "**Section 16A Direction**") (Appendix C). This directed IPART, when making determinations of pricing for the Services, to include an amount or factor in its methodology representing the cost of complying with the Pipeline Direction and the Construction Direction. Therefore, any affordability concerns will be addressed by IPART under the Essential Water Determination.

15.4 Offtake customer charges

15.4.1 IPART's 2019 decision on offtake charges

In the 2019 Determination, IPART made the following decisions with respect to offtake customer charges:

- To adopt a two-part tariff for offtake customers that reflects the incremental fixed and variable costs to WaterNSW of serving them, consisting of an:
  - Access charge ($/day), reflecting the efficient fixed capital and operating costs; and
  - Usage charge ($/kL), reflecting the efficient variable costs of the offtake, being the energy costs associated with delivering a kL of water.
- To set the prices to be charge to offtake customers as per Table 9.6 (reproduced as Table 44 below).

Table 44 - Maximum prices for offtake customers from 2019 Determination ($2018-19)

Maximum prices for offtake customers 2019 Determination ($2018-19)			
	2019-20[a]	**2020-21**	**2021-22**
Access charge ($/day)	19.81	19.86	19.86
Usage charge ($/kL)[b]	0.20674	0.20906	0.20309

[a] Calendar year 2020 is a leap year (i.e. 2019-20 has 366 days).
[b] The usage charge per ML is the same for Essential Water and is $206.74/ML in 2019-20, $209.06/ML in 2020-21 and $203.09/ML in 2021-22.
Source: IPART 2019 Determination, Table 9.6.

15.4.2 Proposed charges to offtake customers

Our proposed charges for each of our offtakes are summarised in Table 45. Our approach to offtake charging maintains IPART's methodology from the 2019 Determination. This methodology was based on the number of offtakes constructed.

We note that there are currently three customers for the purpose for charging the fixed charge (two customers with separate offtakes, and two customers on a shared offtake), while the fixed charge is calculated based on an assumption of four customers.

As outlined in our 2018 Pricing Submission, WaterNSW will not levy the fixed charge on the offtake asset which is subject to the land acquisition agreement.

Table 45 - Proposed charges per offtake outlet ($2021-22)

$2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	%Δ FY22-27
Fixed charge ($/day)* ($2021-22)	20.22	20.17	20.22	20.22	20.22	-2.7%
Variable charge ($/kL) ($2021-22)	0.22	0.22	0.22	0.22	0.22	4.8%

* The fixed charge will be levied irrespective of water take. Price is levied for each offtake outlet, excluding the offtake subject to the land acquisition agreement as flagged in our 2018 Pipeline Submission. Fixed charge in 2021-22 (the last year of the 2019 Determination period) is $20.78/day and variable charge is $0.21/kL.

15.5 Proposed prices for shutdown, standby or restart

WaterNSW can request from the pipeline operator a cessation of the operation of the pipeline, at Essential Water's request, under certain conditions to be negotiated under the raw water supply agreement. Additional costs for placing the pipeline in shutdown mode are incurred under the O&M contract.

Consistent with IPART's thoughts in the 2019 Determination (page 92), WaterNSW proposes that these charges remain unregulated and formed based on commercial negotiation between WaterNSW and Essential Water.

15.6 Capital charge for additional offtakes

WaterNSW will offer to install additional offtakes at cost over the 2022 Determination period via either the annual charge or an upfront capital charge.[58]

The O&M contract allows for the installation of additional offtakes at a fixed cost of $70,290 plus an agreed margin for profit and overhead of 10%.[59] WaterNSW considers this to be the efficient cost for additional offtakes.

This offer may be attractive to additional pastoral customers or customers engaged in large scale commercial activities (such as mining).

Customers who pay this upfront capital charge will only thereafter be required to pay the variable charge for each ML (or kiloliter) of water ordered/delivered. Alternatively, the pricing will be subject to any unregulated pricing arrangement negotiated between the parties.

The upfront capital charge is shown in Table 46, and the variable charge is the same as the variable charge for existing offtake customers as provided in Table 45.

Table 46 - Capital Charge - Additional Offtakes ($2021-22)

Upfront capital charge	$77,319

15.7 Impact on customer charges

The following table sets out WaterNSW's proposed bill to Essential Water assuming a constant demand of 5,596ML from Essential Water for all years, consistent with our forecast of 2021-22 sales.

[58] Noting that any additional supply will be subject to the availability of capacity in the pipeline.

[59] Schedule 15 of the O&M contract.

Table 47 - Bill impact for Essential Water ($2021-22)

	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	%Δ FY22-27
Access charge ($)	24,557,558	23,249,658	23,249,658	23,249,658	23,249,658	23,249,658	-5.3%
Usage charge ($)	1,189,333	1,241,491	1,235,614	1,233,880	1,232,201	1,230,634	3.5%
Total Bill ($2021-22)	**25,746,890**	**24,491,148**	**24,485,272**	**24,483,537**	**24,481,858**	**24,480,291**	**-4.9%**
Total Bill ($nominal)*	**25,746,890**	**25,103,427**	**25,724,839**	**26,366,092**	**27,023,391**	**27,697,203**	**7.6%**

* Assuming CPI of 2.5% per annum as specified by IPART.

The analysis below quantifies the bill for each offtake customer for the upcoming determination period compared to the 2021-22 bill under assumed usage of approximately 0.7ML or 700 kiloliters. The total bill is approximately $8,000 per annum on average in nominal terms assuming CPI of 2.5% per annum, as specified by IPART.

Table 48 - Bill impact for offtake customers (levied on a per offtake outlet basis) ($2021-22)

	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	%Δ FY22-27
Access charge ($)	7,585	7,381	7,381	7,381	7,381	7,381	-2.7%
Usage charge ($)**	148	155	155	155	155	155	4.8%
Total Bill ($2021-22)	**7,732**	**7,536**	**7,536**	**7,536**	**7,536**	**7,536**	**-2.5%**
Total Bill ($nominal)*	**7,732**	**7,725**	**7,918**	**8,116**	**8,319**	**8,527**	**10.3%**

* Assuming CPI of 2.5% per annum as specified by IPART.
** Usage bill assumes that the usage forecast for offtake customers is split equally between all four offtake customers.

With regard to affordability concerns for offtake customers, we note that our proposal for offtake customers results in a 2.5% reduction in bills in real terms over the upcoming determination period.

16. Impacts on the agency – credit ratings, financial viability and financeability

16.1 Background

Financeability refers to the capacity of a business to finance its activities – including its day-to-day operations and its capital investments to replace, renew and expand the infrastructure required for these activities.

IPART conducted a financeability test as part of its 2019 Determination, using the methodology reviewed in November 2018. We have applied the benchmark test consistent with this methodology.

The objective of the financeability test is to ensure the regulated utility is "financeable" over the course of the regulatory determination – that is, is sufficiently likely to be able to meet its financial commitments, remain solvent and access capital markets.

IPART uses three financial ratios to apply its financeability test:

- Real interest cover
- Real FFO / Net Debt
- Net Debt / RAB

where FFO = Funds from Operations.

16.2 Application of ratios

WaterNSW has applied a benchmark test using notional inputs. For the pipeline, actual and notional inputs will be very similar, given:

- WaterNSW's capital structure target is consistent with NSW Government Capital Structure Policy TPP16-03 *Capital Structure Policy for Government Businesses* – noting that this is lower than IPART notional efficient capital structure assumption
- WaterNSW's debt management strategy for the pipeline is to replicate the IPART cost of debt methodology – as published in IPART's 2018 WACC Methodology Review Final Report. WaterNSW's SCI assumptions are based on IPART WACC Market Update midpoints. This results in our forecasts aligning to the notional WACC midpoint parameters.

In constructing notional financial statements with "notional" inputs, we have used revenue, operating cost, capital expenditure and WACC assumptions consistent with this proposal and IPART's financeability test. Assumptions we have made in applying the financeability test are:

- Interest rate of 2.6% pre-tax real – consistent with the IPART WACC Market Update midpoint;
- Gearing of 60%;
- FFO has been calculated based on Accounts Receivable Days of 45[60] and Accounts Payable Days of 30; and
- No adjustments for operating leases or pension adjustments are necessary.

The results of the ratios on the pipeline project are set out in Table 49 and Figure 22 and Figure 23 below.

[60] 30 days plus 15 'days of delay'

Table 49 - Financeability Ratios

	2022-23	2023-24	2024-25	2025-26	2026-27
Real interest cover	3.0	3.0	3.1	3.1	3.1
FFO / Net Debt	5.2%	5.1%	5.4%	5.4%	5.4%
Net Debt / RAB	60%	60%	60%	60%	60%

Figure 22 - Real Interest Cover

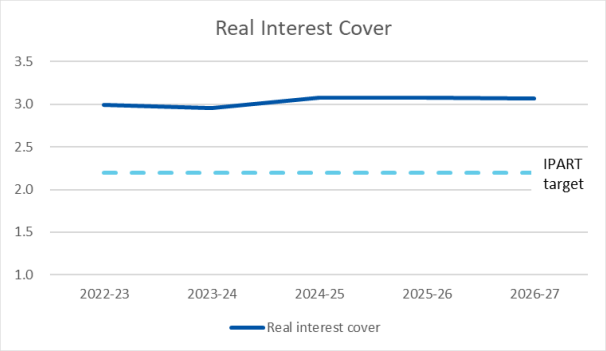
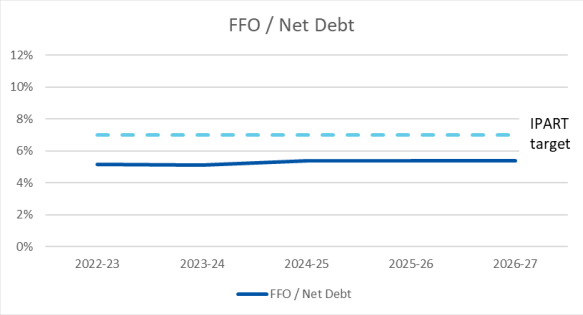


Figure 23 - FFO/Net Debt



As Table 49 and Figure 22 and Figure 23 above show, at the 60% notional (and actual) Net Debt / RAB gearing level, the real interest cover is above IPART's target of 2.2, and the FFO / Net Debt is below IPART's target of 7%.

If the business fails on one metric (FFO / Net Debt) but passes on another (real interest cover), IPART should use this result to diagnose the source of the problem. A failure on the FFO/debt could indicate that the business:

- Has an insufficient depreciation allowance, and/or
- Receives too low a real return on equity.

The real return on equity might be too low because:

- The nominal return on equity is too low; and/or
- The inflation forecast is too high.

However, we consider the financeability ratios could be adversely affected, and a financeability could issue arise, if the assumptions are varied – such as WACC.

WaterNSW will monitor the impact of IPART's decisions on our credit metrics following the release of the draft determination to ensure that the financeability of the pipeline is maintained over the 2022 Determination period.

17. Quality assurance certificate and CEO Declaration

28 June 2021

Mr Stevan Munic
Regulatory Economist
WaterNSW
Level 13, 169 Macquarie Street
Parramatta, NSW 2150

Dear Stevan

Re: Murray River to Broken Hill Pipeline Prices from 1 July 2022
Quality Assurance Review Findings

Sapere Research Group ("**Sapere"** or **"we"**) has undertaken quality assurance procedures over the Murray River to Broken Hill Pipeline Pricing Proposal prepared by WaterNSW (**Pricing Submission**). This letter sets out the procedures we have undertaken and the findings of these procedures.

Scope Limitations

The scope of our engagement does not provide for an absolute opinion on the accuracy and completeness of information provided in the Pricing Submission.

We have not been requested, nor have we undertaken, an audit of the information in the Pricing Submission. Our findings are limited to the procedures we have undertaken.

Procedures

We have reviewed the Pricing Submission, in accordance with the following guidelines provided by IPART [Guidelines for Water Agency Pricing Submissions November 2020]:

1. Information in your pricing submission is consistent with the information return (AIR and SIR), your financial accounts, and reports against output measures, as relevant. Where there are variations in figures, these need to be explained.
2. Figures in your pricing submission are accurate and correctly sourced. The figures need to sum correctly. Your use of nominal or real dollars should also be explained in clear and simple terms so that stakeholders can follow the logic of their use.
3. Your pricing submission addresses all the information we have requested (such as in the SIP or the Issues Paper, these Guidelines, or in correspondence [for the purpose of this QA ⁻ IPART's SIP letter]).
4. Your pricing submission includes proposed prices for all your regulated services.

Only procedures stated in this letter have been undertaken in our quality assurance review.

For the avoidance of any doubt, we highlight the following examples of aspects of the Pricing Submission which are not included in the scope of this quality assurance review:

1. non-financial information

2. reviewing the methodology applied by WaterNSW
3. checking the accuracy of all calculations in WaterNSW workings, and
4. ensuring the accuracy of source data relied upon by WaterNSW.

Findings

In conducting the review, we identified some matters, which we believe WaterNSW has subsequently addressed. We form the conclusion we have no reason to believe that the WaterNSW's Pricing Submission does not comply.

Independence

The quality assurance procedures have been undertaken by staff members of Sapere that have not been involved in the preparation of the Pricing Submission.

Dr Richard Tooth
Director
Sapere Research Group Pty Ltd

Sydney
28th June 2021

CEO Declaration

In accordance with the Guidelines for Water Agency Pricing Submissions, December 2020 (the Guidelines), of the Independent Pricing and Regulatory Tribunal of New South Wales, I declare that:

a) the information provided in our pricing submission submitted on 30 June 2021 is the best available information of the financial and operational affairs of WaterNSW as it relates to the operations of the Broken Hill Pipeline and has been checked in accordance with the Guidelines; and

b) there are no circumstances of which I am aware that would render the information provided to be misleading or inaccurate.

Certified by the Chief Executive Officer:

Andrew George
Acting Chief Executive Officer

Dated: 30 June 2021

Pricing submission checklist	Provided
Chapter 2 – Summary and performance requirements	
Executive summary	Section 1
A separate plain English summary for customers	Attachment 3
Your role and functions	Section 2
Your performance over the current determination period	
▼ Service levels	Section 4 Attachment 2
▼ Sales volumes and customer connections	Section 13
▼ Historical revenue	Section 14.3
▼ Historical operating expenditure (data presented in nominal $) – Totals or comparisons in real $ of the year stated in your SIP letter from IPART	Executive Summary Section 1 Annual Information Return Section 6
▼ Historical capital expenditure (data presented in nominal $) – Totals or comparisons in real $ of the year stated in your SIP letter from IPART	Executive Summary Section 1 Annual Information Return Section 7
▼ Implementation of current determination under section18(5) of the IPART Act	Section 1.4
Standards of service	
▼ Service levels (quantity, quality and scope) for next determination period	Section 4 Attachment 2
Chapter 3 - Key building block inputs	
Forecast operating expenditure	Section 6
▼ A business case for proposed operating expenditure	Not applicable. Extracts of O&M contract can be provided on request
▼ Five years of future operating expenditure by service	Section 6 Annual Information Return
▼ Operating expenditure in real $ of the year stated in your SIP letter	Section 6
▼ Drivers, justification and service levels	Section 3 Section 4 Attachment 2 Section 6
▼ Approach to allocating common or shared costs	Section 6.7
▼ Forecasting methodology, rationale, assumptions and risks	Section 6.
▼ Potential efficiency gains	Section 6.3
Forecast and historical capital expenditure	
▼ A business case for proposed capital expenditure	Not applicable
▼ Five years of future capital expenditure by service	Section 7 Annual information return
▼ Long-term investment plan (at least 10 years)	Annual information return. See contract costs – fee schedule

Pricing submission checklist	Provided
▼ Capital expenditure in real $ of the year stated in your SIP letter	Section 7
▼ Drivers, justification and service levels	Section 3 Section 4 Attachment 2 Section 7
▼ Forecasting methodology, rationale and assumptions and risks	Section 7
▼ Key assumptions underlying forecasts and identified risks	Section 7
▼ The relationship between forecast capital and operating expenditure	Section 7
Proposed Regulatory Asset Base (RAB), Weighted Average Cost of Capital (WACC), depreciation and asset lives	
▼ Total RAB for each year of the determination, RAB by service and/or service area and supporting calculations	Section 8
▼ Proposed WACC, WACC components and supporting analysis	Section 10
▼ Proposed allowance for return on capital	
▼ Outline of proposed depreciation method	Section 9
▼ Proposed asset lives	
▼ Proposed allowance for regulatory depreciation (return of capital)	
▼ Historical and forecast cash capital contributions	Annual Information Return N/A
Asset disposals	
▼ Asset disposals, by type and year	Section 8 Annual Information Return
Working capital and tax allowances	
▼ Working capital allowance and supporting information	Section 12
▼ Forecast tax depreciation with written explanation of estimation method	Section 11 N/A
▼ Historical and forecast (non-cash) asset contribution	Annual Information Return
Chapter 4 – Forecast sales volumes and customer numbers	
Sales volumes	
▼ Sales volumes by year and service, and methodology used to forecast sales (including for drought conditions if applicable)	Section 13
Customer numbers	
▼ Customer numbers by year and service	Section 13
▼ Entitlement and licence numbers by year, valley, water source and type (bulk water utilities)	N/A
Evidence to support drought forecasts, if applicable	N/A
Chapter 5 – Prices and impact	
Proposed prices	
▼ Proposed tariffs for each service over the next five years (real $ of the year stated in your SIP letter)	Section 15
▼ Non-drought conditions	N/A
▼ Drought conditions, if applicable	N/A
Impacts of proposed prices	

Pricing submission checklist	Provided
▼ Indicative prices and bill impacts for the last year of the current determination in nominal $, and all forecast prices and bills in $ of the first year of the new determination period.	Section 15.7 (forecast prices and bills presented in $2022-23 are included in the Annual Information Return)
▼ Any transitional arrangements to manage or mitigate price changes	N/A
▼ Any rebates or other measures to mitigate price impacts	N/A
▼ Other impacts and matters in section 15 of the IPART Act	N/A
▼ Analysis of affordability	Section 15
▼ Financial impacts on your agency	Section 16
Customer consultation	
▼ Details of customer engagement and how it has informed your price proposal	Section 4.3
Chapter 6 – Recycled water	
Recycled water	
▼ Check pricing principles for recycled water	N/A
▼ Evidence that costs are suitably fully ring-fenced	N/A
▼ Supporting information for any proposed cost offsets (such as business cases for avoided or deferred costs, or evidence that other customers are willing to pay for any external benefits of recycled water schemes)	N/A
Chapter 7 – Discretionary expenditure	
▼ Discretionary expenditure framework considered	N/A
If discretionary expenditure is proposed: ▼ Definition of proposed project or outcome ▼ Evidence of your customers' willingness to pay ▼ Forecast, and where relevant actual, expenditure for discretionary projects ▼ Proposed prices for discretionary expenditure ▼ Output measures	N/A
Chapter 8 – Additional requirements	
Unregulated costs and revenue	
▼ Ring-fencing of any unregulated costs and revenue	Attachment 1
Finance and operating leases	
▼ Finance and operating leases treated in accordance with our policy	Section 6.4
▼ Accounting values for operating leases included in the SIR	Annual Information Return
Outstanding issues from the previous determination	
▼ Explanation of how outstanding issues have progressed with a summary of analysis in appendix	• ECM addressed in section 6.3 as per the SIP letter • Confirmed no unregulated pricing agreements entered into for offtake services as per SIP letter • Confirmed pipeline did not enter shutdown mode in current determination period as per SIP letter

Pricing submission checklist	Provided
Elements of regulatory framework **Length of determination period**	• Attachment 2 - excerpt from water supply agreement attached to submission as per SIP letter Section 5
Chapter 9 - Quality assurance requirements	
Quality assurance requirements and CEO's Declaration ▼ QA check has been performed ▼ CEO's Declaration has been provided and signed	 Confirmed Confirmed

Glossary

2019 Determination	IPART Determination *WaterNSW Prices for water transportation services provided by the Murray River to Broken Hill Pipeline from 1 July 2019*, which applies from 1 July 2019 to 30 June 2022.
ABS	Australian Bureau of Statistics
ACHA	Aboriginal Cultural Heritage Assessment
ACHCR	Aboriginal Cultural Heritage Consultation Requirement
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AHIP	Aboriginal Heritage Impact Permit
AIR	IPART Annual Information Return
Australia ICOMOS	Australian ICOMOS Charter of Places of Cultural Significance
Capex	Capital Expenditure
CCPP	Calcium Carbonate Precipitation Potential
CEMP	Construction Environmental Management Plan
CEO	Chief Executive Officer
CER	Clean Energy Regulator
Construction Direction	Direction to the Board of WaterNSW in relation to the construction of the Broken Hill pipeline 2017
CHAR	Cultural Heritage Assessment Report
CPI	Consumer Price Index
D&C	Design and construct
DBOM	Design, build, operate and maintain
DECCW	Department of Environment, Climate Change and Water (NSW)
DLF	Distribution Loss Factor
DoI	Currently known as the NSW Department of Planning, Industry and Environment or DPIE
Early Water Services	The supply of water after the Ready for Water milestone has been reached but before practical completion of the pipeline
EOI	Expression of Interest
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
ESC	Energy Saving Certificate
ESC - VIC	Essential Services Commission of Victoria
ESCOSA	Essential Services Commission of South Australia
ESS	Energy Savings Scheme
EW	Essential Water
FFO	Funds from Operations
FTE	Full Time Equivalent
ICOMOS	International Council on Monuments and Sites
ICRC	Independent Competition and Regulatory Commission
IPART	Independent Regulatory and Pricing Tribunal
IPART Act	*Independent Regulatory and Pricing Tribunal Act 1992* (NSW)

IPART Final WACC Report	IPART's Final Report "Review of our WACC Method" February 2018
IPART Methodology	IPART's updated methodology published in the IPART Final WACC Report
IV	Independent Verifier
JHJV	John Holland Pty Ltd Joint Ventures with MPC Group Pty Ltd t/as John Holland MPC Group Joint Venture for the D&C Contract and Trility Pty Ltd t/as John Holland Trility Joint Venture for the O&M Contract
kL	Kilolitre
kVA	Kilovolt ampere (1000 times volt times ampere)
kWh	Kilowatt hour (3.6 megajoules)
LGC	Large-scale Generation Certificate
LRET	Large-scale Renewable Energy Target
Minimum Take	8ML in any 24-hour period
MCL	Maximum Credit Limit
ML	Megalitre
MLF	Marginal Loss Factor
NEM	National Electricity Market
NER	National Electricity Rules
NPV	Net Present Value
NPW Act	*National Parks and Wildlife Act 1974* (NSW)
NSW	New South Wales
NT Act	*Native Title Act 1993* (Cth)
NTER	National Tax Equivalent Regime
O&M	Operation and maintenance
OEH	Office of Environmental Heritage
Opex	Operating Expenditure
ORF	Offtake Reduction Factor
ORP	Offtake Reduction Percentage
OTTER	Office of the Tasmanian Economic Regulator
P90	A probability of exceedance measure. p90 means that 90% of the estimates exceedance the p90 estimate
PE	Polyethylene
Peak Season	December – March
Pipeline Direction	Direction to the Board of WaterNSW to secure the water supply of Broken Hill 2016
PLC	Programmable Logic Controller
PN35	3.5MPa or 3.5 megapascals
PSA	Power Supply Agreement with an energy retailer
PSR	Price Scanning Range
PWA	Public Works Advisory, NSW Water Solutions
QCA	Queensland Competition Authority
RAB	Regulated Asset Base
RAP	Registered Aboriginal Parties
RBA	Reserve Bank of Australia

Ready for Water	The point at which the pipeline is able to be operated safely to deliver 8 ML of water per 24-hour period
REF	Environmental Factors Report
RET	Renewable Energy Target
RFT	Request for Tender
Right of Way	Where the pipe will be laid
ROR	Rate of Return
RPP	Renewable Power Percentage
RNN	Regional Reference Node
River Murray	Referring to the River Murray System / Operations as defined by the Murray Darling Basin Authority
SCADA	Supervisory Control and Data Acquisition
SCI	Statement of Corporate Intent
SIP	Submission Information Package (e.g. IPART SIP Letter)
SIR	IPART Special Information Return
SOC Act	*State Owned Corporations Act 1989* (NSW)
SP 1	Separable Portion 1
SP2	Separable Portion 2
SP3	Separable Portion 3
SPV	Special Purpose Vehicle
SRES	Small-scale Renewable Energy Scheme
STC	Small-scale Technology Certificate
STP	Small-scale Technology Percentage
TAB	Tax Asset Base
Totex	Total Expenditure
WACC	Weighted Average Cost of Capital
WAL	Water Access Licence
WaterNSW Act	*Water NSW Act 2014* NSW
WEC	Wholesale Electricity Charge
WLD	Western Lands Division

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Appendix A – Pipeline Direction

New South Wales

Direction to the Board of WaterNSW to secure the water supply of Broken Hill 2016

under the

State Owned Corporations Act 1989

I, Niall Blair, MLC, Minister for Lands and Water, with approval of the Treasurer, in pursuance of section 20P of the *State Owned Corporations Act 1989*, make the following direction to the Board of WaterNSW, being satisfied that because of exceptional circumstances, it is necessary to give the direction in the public interest.

Dated this 21st day of November, 2016.

[redacted]

Minister for Lands and Water

Explanatory note

This direction is made under section 20P of the *State Owned Corporations Act 1989*. The object of this direction is to require WaterNSW to arrange for the construction, operation and maintenance of a pipeline from the Murray River to Broken Hill along the Silver City Highway. This direction will ensure that the people of Broken Hill have long term water security.

Direction to the Board of WaterNSW to secure the water supply of Broken Hill 2016

under the

State Owned Corporations Act 1989

1 Name of Direction

This direction is the *Direction to the Board of WaterNSW to secure the water supply of Broken Hill 2016*.

2 Commencement

This direction commences on the day on which it is signed and will remain in force until it is revoked, either in whole or in part.

3 Direction

The Board of WaterNSW is directed to:

a) Arrange for the construction, operation and maintenance of a pipeline from the Murray River to deliver low salinity raw water to the existing Mica Street Water Treatment Plant in Broken Hill, including any associated infrastructure necessary for operation such as new or upgraded distribution pipelines or pump stations. The pipeline is to generally run along the Silver City Highway road easement.

b) Use best endeavours to ensure that supply from the pipeline, when used in conjunction with the current Broken Hill water supply infrastructure, can meet peak daily demand of up to 37.4 mega-litres of water per day.

c) Use best endeavours to make the pipeline operational by December 2018, and notwithstanding this, ensure that the pipeline is fully operational before all surface water and the Lake Menindee groundwater source available to the Broken Hill community are depleted.

d) Fund the capital costs for constructing the pipeline from within WaterNSW's existing resources or otherwise borrow the required funds, recognising that the Independent Pricing and Regulatory Tribunal will be asked by Government to allow WaterNSW to recover the total efficient cost associated with the ongoing operation of the pipeline, including the cost of capital.

e) Chair and regularly consult with a Project Consultative Committee established for the project involving representation from the Department of Primary Industries, Department of Premier and Cabinet, NSW Treasury, NSW Planning and Environment, Infrastructure NSW, Essential Energy and NSW Public Works.

f) Report on progress of the project to Infrastructure NSW under the High Profile, High Risk reporting framework.

Appendix B – Construction Direction

New South Wales

Direction to the Board of WaterNSW in relation to the construction of the Broken Hill pipeline 2017

under the

State Owned Corporations Act 1989

I, Niall Blair, MLC, Minister for Regional Water, with approval of the Treasurer, in pursuance of section 20P of the *State Owned Corporations Act 1989*, make the following direction to the Board of WaterNSW, being satisfied that because of exceptional circumstances it is necessary to give the direction in the public interest.

Dated this 31st day of August, 2017.

[redacted]

Minister for Regional Water

Explanatory note

This direction is made under section 20P of the *State Owned Corporations Act 1989*. The object of this direction is to require WaterNSW to ensure that the pipeline, the subject of the previous Direction to the Board of WaterNSW to secure the water supply of Broken Hill 2016, is constructed substantially of Australian rolled steel (irrespective of place of manufacture of the pipe) and the project meets the minimum targets of the NSW Infrastructure Skills Legacy Program, to the extent that is possible given the remote location of the project.

Direction to the Board of WaterNSW in relation to the construction of the Broken Hill pipeline 2017

under the

State Owned Corporations Act 1989

1 Name of Direction

This direction is the *Direction to the Board of WaterNSW in relation to the construction of the Broken Hill pipeline 2017*.

2 Commencement

This direction commences on the day on which it is signed and will remain in force until it is revoked, either in whole or in part.

3 Direction

The Board of WaterNSW is directed to ensure that:

a) the minimum targets set in the NSW Infrastructure Skills Legacy Program are met for the construction of the pipeline, in consultation with the Department of Industry to the extent possible given the remote location of the project and with relevant targets negotiated through the tender process; and

b) Australian rolled steel is substantially used in the construction of the pipeline, regardless of where the pipe is manufactured.

Appendix C – Direction to IPART

New South Wales

Direction to the Independent Pricing and Regulatory Tribunal in relation to the construction and operation of the Broken Hill pipeline 2018

under the

Independent Pricing and Regulatory Tribunal Act 1992

I, Niall Blair, MLC, Minister for Regional Water, with approval of the Premier, in pursuance of section 16A of the *Independent Pricing and Regulatory Tribunal Act 1992*, make the following direction to the Independent Pricing and Regulatory Tribunal.

Dated this 19th day of April, 2018.

[redacted]

The Hon. Niall Blair MLC
Minister for Regional Water

Explanatory note

This direction is made under section 16A of the *Independent Pricing and Regulatory Tribunal Act 1992*. The object of this direction is to require the Independent Pricing and Regulatory Tribunal, when making determinations of pricing for the government monopoly services relating to the Murray River to Broken Hill pipeline to include an amount or factor in its methodology representing the efficient cost of complying with the following two section 20P directions issued to Water NSW under the *State Owned Corporations Act 1989:* the first issued on 21 November 2016 to construct, operate and maintain the Murray River to Broken Hill pipeline and the second issued on 31 August 2017 to ensure that in constructing the Murray River to Broken Hill pipeline, the minimum targets set in the Government's Infrastructure Skills Legacy Program are met and that the pipeline is constructed substantially using Australian rolled steel.

Direction to the Independent Pricing and Regulatory Tribunal in relation to the construction and operation of the Broken Hill pipeline 2018

under the

Independent Pricing and Regulatory Tribunal Act 1992

1 Name of Direction

This direction is the *Direction to the Independent Pricing and Regulatory Tribunal in relation to the construction and operation of the Broken Hill pipeline 2018*.

2 Commencement

This direction commences on the day on which it is signed and will remain in force until it is revoked, either in whole or in part.

3 Direction

The Independent Pricing and Regulatory Tribunal is directed, when making determinations of pricing for the Services, to include an amount or factor in its methodology representing the efficient cost of complying with the Section 20P Directions.

4 Definitions

In this direction:

Section 20P Directions means the following directions issued to WaterNSW under section 20P of the *State Owned Corporations Act 1989*:

(a) the *Direction to the Board of WaterNSW to secure the water supply of Broken Hill 2016* dated 21 November 2016; and

(b) the *Direction to the Board of WaterNSW in relation to the construction of the Broken Hill pipeline 2017* dated 31 August 2017.

Services means the services that are:

(a) supplied by WaterNSW by means of or in connection with the Murray River to Broken Hill pipeline; and

(b) declared to be government monopoly services for the purposes of the *Independent Pricing and Regulatory Tribunal Act 1992*.

Appendix D – Overview of the pipeline project

Expression of Interest process

Following receipt of the Pipeline Direction, WaterNSW commenced activities including obtaining a handover of material from the Department of Industry (DoI), updating design and preliminary costings, initiation of environmental and cultural heritage surveys, preparing the procurement strategy, market soundings, risk assessment, preliminary risk allocation and preparation of key commercial terms.

Then on 5 April 2017, WaterNSW formally commenced an Expression of Interest ("**EOI**") process for the construction and maintenance of the proposed pipeline. Prospective tenderers were requested to outline their relevant experience, financial capacity, consortium structure, key individuals and high-level approach to completing the project.

The primary purpose of the pre-qualification/EOI phase was to maximise competition during the Request for Tender ("**RFT**") stage by ensuring that all tenderers had the necessary experience and capacity to undertake the project, so that they could be confident that they had a good chance of success - thus providing an incentive to invest more into providing a detailed and comprehensive tender response. It was important to ensure respondents to the RFT invested in detailed designs as part of their tender responses as different designs would produce different whole of life cost outcomes, with WaterNSW looking for the least cost whole of life cost outcome.

Ten EOI submissions were received on 28 April 2017 and were evaluated. Three were non-compliant with the EOI terms and conditions, leaving seven for detailed evaluation. The EOI process was designed to shortlist four tenderers. The four proponents with the highest evaluation scores were shortlisted to take part in the RFT stage.

The four shortlisted tenderers arising from the EOI process were:

- Silver City Water Partnership, a joint venture between Downer Utilities Australia Pty Limited and Spiecapag Australia Pty Ltd (Downer Spiecapag JV);
- John Holland Pty Ltd with partners MPC Group Pty Ltd and TRILITY Pty Ltd (JHJV);
- McConnell Dowell Constructors (Aust) Pty Ltd with partner Acciona Agua Australia Pty Ltd (McConnell Dowell); and
- UGL Engineering Pty Ltd with partner Veolia Water Operations Pty Ltd (UGL).

Design of the RFT

The RFT was specifically designed to ensure that the project delivered a substantive value for money outcome for WaterNSW and for customers of the pipeline. This was achieved through a number of mechanisms built into the design of the RFT, set out below.

DBOM model

Through the RFT, WaterNSW structured the delivery of the construction of the pipeline and the maintenance for the first 20 years of the pipeline as a design, build, operate and maintain (DBOM) model.

This model means that the successful contractor is the single line of responsibility for both the D&C and O&M phases and incentivises the D&C contractor to design and construct an asset which minimises whole of life costs (as they will bear the responsibility for operating costs and risks).

This model ensures the contractor's goals are aligned to those of WaterNSW, in that the delivered solution will deliver an effective technical solution, be competitive and efficient on a whole of life basis.

Pricing pro-forma

The RFT required tenderers to complete a detailed pricing pro-forma which required disclosure of:

- A detailed breakdown of the D&C cost of the project into pre-defined components and sub-components;
- Details of any D&C components purchased in a foreign currency and the relevant exchange rates;
- A detailed breakdown of all items comprising the O&M cost and the flexibility to adjust operating scenarios (e.g. water demand) to test the impact of the scenarios on this cost; and
- A detailed breakdown of asset replacement costs expected to be incurred over the life of the project.

This level of detail provided a high level of transparency in relation to the elements which comprised the tenderer's price, encouraging competition and efficiency in all aspects of pricing

(as cost discrepancies between components would be identifiable). This level of detail would also constrain the contractor's ability to seek future price increases.

O&M term

The O&M term specified in the RFT consisted an initial 10 year period as well as options, for WaterNSW, to extend the O&M contract for up to two consecutive periods of 5 years after the initial period expires (i.e. 10+5+5).

This term structure provides the following advantages over shorter term alternatives:

- Shorter O&M terms typically have reduced maintenance and lifecycle obligations relative to longer terms and therefore weaken the incentive for the contractor to design and build an asset which minimises whole of life costs;
- A longer O&M term increases the aggregate value of the O&M contract and therefore is likely to attract greater market appetite and competition;
- The longer the total term of the contract, the greater price certainty WaterNSW will have (where the price is locked in at a time where competition is greatest, i.e. during the tender for the DBOM contract); and
- A longer initial O&M term provides operators with a greater time period over which to recover their bid costs and the longer total term (taking into consideration the optional extensions) means that any retender costs associated with the contract are deferred for longer for both parties involved.

In the lead up to the end of year 10 and year 15, WaterNSW will market test the existing O&M price and, if the existing price is considered to be above the market rate, WaterNSW has the following options under the O&M contract:

- End the contract (i.e. do not extend the contract) and retender the O&M contract; or
- Negotiate with the contractor to reduce prices in line with the market testing and then extend on the revised prices.

Both of the options above will result in a realignment of the O&M price with that of a competitive market price. The market testing and retender (if required) would be commenced in time to allow for a smooth transition between contract terms.

Alternatively, if the market testing results indicate that the existing O&M prices are in line with the market or lower, WaterNSW can extend the contract on the existing prices contained in the O&M contract.

In addition, at any time during the term, where WaterNSW determines that its current O&M price is above the market rate (via market testing or otherwise), it has the ability to terminate the O&M contract and retender. Upon the decision to terminate, WaterNSW will be liable to pay for the contractor's demobilisation and other reasonable and unavoidable costs directly incurred by the contractor as a result of termination and a predetermined amount representing loss of opportunity and loss of profit of the contractor.

Power supply

Under the O&M contract, the contractor will be paid based on its forecast energy volumes applied to pricing according to its agreement with an energy retailer (Power Supply Agreement (PSA)).

During the tender process, the forecast energy volumes were bid back by tenderers in volumetric bands based on the volume of water to be delivered to Essential Water. The volumetric bands allowed tenderers the flexibility to incorporate bespoke operating and system efficiencies into the tender price (noting that gains from any additional operating efficiencies realised over the O&M term will be captured by the efficiency sharing mechanism outlined below).

The contractor is responsible for arranging and entering into a PSA throughout the term. To ensure competitive market rates, the contractor will be required to source three quotes and select the most competitive from these. Overall, this mechanism aims to produce the same competitive pricing outcomes that would be achieved if WaterNSW were to procure the PSA itself (i.e. it will uncover available market prices). WaterNSW will retain review powers over the electricity procurement process.

The Broken Hill energy retail market is not limited as there are approximately 15 energy retailers active in NSW. While it is expected that three quotes can be obtained, if three quotes cannot be sourced, the contract requires the contractor to source as many quotes as possible with the resulting price to be taken as competitive.

Efficiency sharing mechanism

The O&M contract is designed to motivate the contractor to find efficiency gains throughout the term and to share the benefit of those gains. To incorporate this principle, the O&M contract includes a mechanism to share any benefits greater than $100,000 realised from any discrete changes in the operating regime or design of the project.

That is, if during the term the contractor finds ways to improve the operating efficiency of the project, these gains would be shared 50/50 between the contractor and WaterNSW.

Efficiency saving factor

An additional efficiency enhancing mechanism included in the O&M contract is an efficiency saving factor that reduces fixed and variable costs by a percentage year on year, reflecting the contractors assumed ability to improve operating efficiency throughout the term.

Asset replacement costs

Over the O&M contract term, the contractor will be paid based on the lower of actual asset replacement costs incurred and the cumulative asset replacement cost profile bid by the contractor in its tender (adjusted for indexation).

In establishing the amount of actual asset replacement costs incurred, the O&M contract requires the contractor to demonstrate that the relevant invoices have been paid, the relevant work has been completed and certified and all asset replacement services are consistent with the Asset Management Plan (which is agreed annually with WaterNSW).

Overall, this mechanism both ensures that the contractor is held accountable to their bid price and that WaterNSW only pays for asset replacement services actually required.

RFT process

On 8 June 2017, WaterNSW issued the RFT to the four shortlisted tenderers, with 29 August 2017 the closing date for tenders.

The strategies employed through the tender process to increase competition included:

- Building market appetite and interest through industry briefings and engagement;
- Promoting a level playing field through strict probity practices; and
- Holding interactive workshops with tenderers to provide ongoing feedback to ensure that each final tender would be competitive and meet project requirements.

A schedule of the interactions held during the tender process is set out in Table 1 Schedule of Interactions below.

Table 50 - Schedule of Interactions

Milestone	Indicative date
Release of RFT	8 June 2017
Access granted to Project Data Room	The date the Tenderer returns a duly executed Deed of Disclaimer
Briefing meeting	16 June 2017
Site inspections	22 – 23 June 2017
Interactive workshops	26 June 2017 – 17 August 2017
Interim Tenderer submission of Project Documents departures	24 July 2017
WaterNSW reissue of Project Documents	4 August 2017
Closing date for Tenders	29 August 2017

Tender evaluation

The four shortlisted tenderers arising from the EOI process each submitted a conforming and complete tender.[61]

The WaterNSW evaluation committee (including external experts) conducted a detailed review of the tenders. Different criteria of the bids were provided with different evaluation weightings as set out in Table 51 below.

Table 51 - Evaluation Weightings

Evaluation Criteria	Weighting
Design	15%
Delivery	10%
Operations	10%
Commercial Solution	5%
Financial Capacity	Pass / Fail
Price	60%

On 4 September 2017, the tenderers presented the main features of their proposals to the tender evaluation committee. By 19 September 2017, the evaluation committee shortlisted the two tenderers with the highest scores based on the criteria and weightings set out in Table 2 Evaluation Weightings above. The price differential between the two highest scoring tenderers and the other two tenderers was of such significance that it was considered unlikely that the lower scoring

[61] No alternative tenders or options proceeded to evaluation as only limited information was provided in respect of any proposed alternatives and it was considered that none would deliver improved outcomes in relation to project objectives.

tenderers could overcome that differential. Therefore, the two higher scoring tenderers were shortlisted and all the tenderers were notified of this on 21 September 2017.

Upon shortlisting, the two highest scoring tenderers were requested to engage in face-to-face meetings on 22 September 2017. The primary focus of the meetings was to provide the opportunity for the shortlisted tenderers to work with the evaluation committee to clarify and resolve any outstanding issues, in particular departures from WaterNSW's project documents.

Beyond this meeting, the evaluation committee continued to actively negotiate with both shortlisted tenderers until such a time that the committee was confident that contract close would be achieved with a preferred tenderer within the project timeframe (mid-October 2017).

On 12 October 2017, WaterNSW provided separate revised final drafts of the D&C contract, O&M contract and output specification to the shortlisted tenderers. These contracts included the relevant tenderers requested departures to the extent they were acceptable to WaterNSW. The output specification was based on the original RFT with amendments to incorporate elements of the relevant tenderers technical solution that were deemed to be of key importance to WaterNSW.

WaterNSW required that the tenderers advise by 13 October 2017 that they accepted the D&C contract, O&M contract and output specification as drafted or, if not, provide detailed departures. All departures were provided by 16 October 2017 and the evaluation committee then revised the evaluation scores.

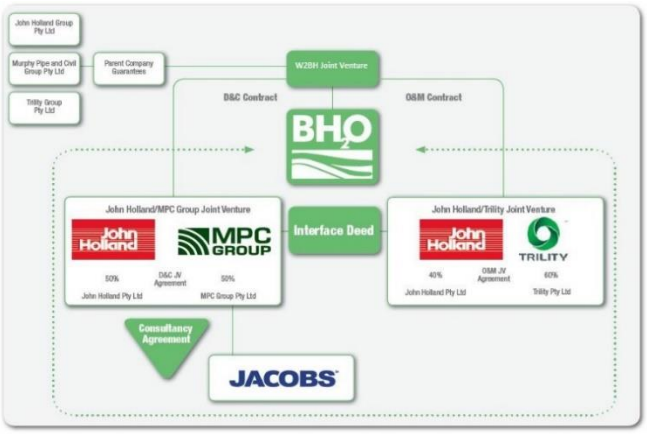
The John Holland Pty Ltd Joint Ventures with MPC Group Pty Ltd t/as John Holland MPC Group Joint Venture for the D&C Contract and Trility Pty Ltd t/as John Holland Trility Joint Venture for the O&M Contract (JHJV) was the preferred contractor based on the scores.

On 23 October 2017, the successful party, JHJV was announced by WaterNSW as the successful tenderer.

Structure of the successful party and interaction between the O&M and D&C

As noted above in section 4.2.1, the contract tender was designed to ensure that one party was responsible for both the D&C and O&M components to ensure lowest whole of life costs. This is reflected in the structure adopted by the JHJV as the successful tenderer as set out in Figure 24 below.

Figure 24 - Corporate Structure



Each of the individual members of the consortium brings specialised skills to the construction and ongoing operation and maintenance of the pipeline:

- John Holland Pty Ltd has a vast track record in delivering major water and other infrastructure projects in Australia
- MPC Group Pty Ltd is a leading Australian pipeline contractor with expertise in large diameter and remote cross country pipeline construction in the water, gas, energy and mining sectors. MPC Group are involved in the installation of the pipeline
- Trility Pty Ltd is an experienced provider of operations and maintenance services across Australia, with particular experience in asset management and water quality management
- Jacobs is a leading multidisciplinary consultancy with experience in pipeline, pump station, water treatment and quality and high voltage design.

Each of the parties who are members of the JHJV and who are required to perform the D&C and O&M contracts are guaranteed by their parent companies.

RFT major pipeline design features and operation and maintenance requirements

The major design features of the pipeline that were included in the RFT were:

- A screened river offtake from the River Murray near Wentworth;
- A pump station to deliver raw water from the offtake;
- Approximately 270 km of supply pipeline from the river offtake to a new bulk water storage near Broken Hill (the pipeline will be underground and constructed substantially of Australian rolled steel);

- A series of supply pump stations and associated infrastructure along the supply pipeline necessary to deliver raw water to Broken Hill including any required storages;
- Electrical works to run the supply pump stations; and
- Supervisory Control and Data Acquisition (SCADA), telemetry and Programmable Logic Controller (PLC) systems.

The major features of the operation of the pipeline included in the RFT were:

- Ensuring ongoing system availability and meeting return to service periods;
- Meeting operational demand forecasts provided by Essential Water;
- Meeting any agreed water quality thresholds at the specified interfaces;
- Meeting defined safety and environmental performance indicators;
- Continuous monitoring of system performance efficiency and ongoing corrective action if performance does not meet requirements; and
- Continuous monitoring of system leakage or losses and ongoing corrective action if performance does not meet requirements.

Maintenance of physical infrastructure as set out in the RFT was to include:

- Regular maintenance and checks to minimise rates of equipment/component failures particularly unplanned failures that would impact on the ongoing system availability;
- Scheduled replacement of equipment;
- Reactive maintenance and replacement within specified return to service periods;
- Regular checks on all equipment/components to ensure ongoing system availability;
- Regular auditing of maintenance systems and processes to ensure maintenance activities are being carried out in accordance with an accredited maintenance management system; and
- Recording of maintenance activities and associated costs to enable WaterNSW to demonstrate prudent and efficient maintenance management practises.

Design solution

Overview

The successful tenderer, the JHJV, proposed a design solution in response to the requirements set out in section 5.1 and described in this section.

In determining this solution, the supply pipeline diameter and bulk water storage capacity together with the locations of the specified pumping stations were weighed up to obtain the lowest whole of lifecycle cost. The following was considered in detail:

- Hydraulic analysis to determine the operating pressure based on each pipe size to ensure that pipe pressure rating was adequate for the static pressure rise and pipeline friction losses at the design flow;
- The optimal number of pump stations, resulting in 4, in the locations identified in the RFT (avoiding the cost and time delay associated with further environmental approvals if alternative locations were considered);[62]
- Estimating the capital cost of pipelines, pump stations, balancing tanks, bulk water storage and power supply;
- The volume/size of the bulk water storage considering the relative impacts of evaporation, algae management, available area and geotechnical issues for each option
- Estimating the major operating cost of power – electricity consumption for each configuration;
- The availability and timing of the nearest power source; and
- Net Present Value (NPV) analysis of capital and operating costs to determine the lowest 'Whole of life' cost in today's dollars.

[62] The RFT proposed an additional pump station which was not required by the JHJV design.

Pipe diameter

Figure 25 - Pipes

The RFT, in accordance with the Construction Direction, required a substantial portion of the pipeline to be constructed from Australian rolled steel.

The JHJV options analysis determined that significant cost and construction benefits would accrue in using polyethylene (PE) pipe for the first pipeline section between the river intake and the first pumping station (8.75km), given the ground conditions and the construction of the number river crossings.

For the 220km section from the first to the third pumping station a number of pipe diameters were considered. A spreadsheet based on the hydraulic model for the preferred configuration was used to confirm that the pipeline operating pressure for the different pipe sizes would not exceed the 3.5MPa (PN35) pipe pressure rating. This was on the basis that the operating pressure would need to be limited to the PN35 rating of readily available pipeline valves, flanges and fittings. Higher rated fittings would be “specials” and could materially impact cost and project delivery timing.

Based on this pressure limit, the number and location of pumping stations were checked. This confirmed that the second pumping station proposed in the RFT could be designed out, resulting in significant cost savings that would be required to construct an additional pump station and the associated power supply infrastructure for this location.

In the desktop optimisation process of the preferred option, the NPV of capital and operating costs for the range of acceptable pipeline diameters and associated pumping stations, bulk water storage and balancing tanks were estimated and compared. Based on this analysis it was found that a 711mm diameter[63] pipeline had the lowest lifecycle cost for the 720ML bulk water storage.

However, after contacting the key suppliers it was found that there was less manufacturing capacity for 711mm pipe. This diameter pipe could not be manufactured to meet the project timeline. Therefore, a 762mm pipeline was selected over a 711mm pipeline for a combination of reasons:

- A 711mm pipeline could not be constructed within the required timeline using predominantly Australian rolled steel
- A predominately 711mm pipeline would require an additional pump station and an extra 26km of electrical transmission line
- The concept design using a predominately 711mm pipeline was less robust than the one using 762mm diameter pipeline and the risk to needing system changes during the detail design was considerably less than that of a 711mm pipeline.

For the 21km section from the third pump station to the Bulk Water Storage a 559mm pipeline was selected and included in the JHJV tender. It was thought that the smaller pipeline could be used for this section due to the relatively short distance and manageable height difference (static lift).

However, following the awarding of the contract and further design work, it was considered that the design could be further optimised by increasing the diameter of this section to 762mm. Although, this had a marginal capital cost increase, an NPV analysis over 20 years demonstrated that the reduction in power costs more than compensated for the increase in pipe diameter.

Pump stations

Four pump stations were constructed, at sites selected by WaterNSW. Using sites with progressed environmental approval processes minimised time and cost implications of proceeding with alternative sites.

Bulk water storage

An 830ML bulk water storage reservoir was constructed with two cells. It comprises:

- A 662ML balancing storage facility to balance peak season inflow and demands and allow for dead storage and evaporation losses; and
- A 168ML reserve storage to provide emergency volume (3 days of Peak Day Demand, 112.3ML) and volume sufficient to manage supply system outages (1.5 days of Peak Day Demand, 56ML).

[63] All pipeline diameter references are in millimetres.

This design provides high levels of flexibility for O&M, enabling:

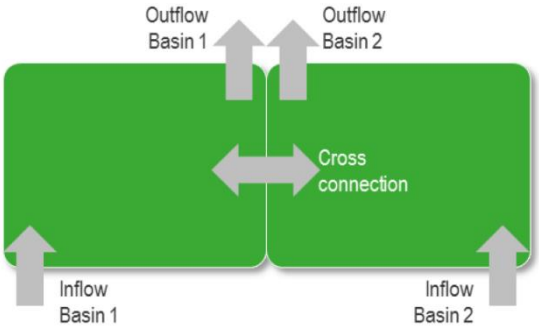
- Temporary cessation of extraction of river water should water quality events be identified;
- Optimisation of power consumption during low demand periods; and
- Consistent asset maintenance.

It ensures that there is a balance of inflows and outflows and the stored volume does not fall below the reserved storage volume at any time other than during emergency operating conditions.

The general operation of the storage is shown in Figure 5 Operation of Storage below. Each cell will have an inflow and outflow pipe so that they can be operated independently, as well as cross connections to enable flow between them.

The cells will also be able to be isolated from the main supply pipeline to enable them to be bypassed such that the supply pipeline can discharge directly to the balancing tank at the bulk water storage pumping station. Inflow and outflow points will be located on diagonally opposite sides of each cell to create mixing flows.

Figure 26 - Operation of Storage



Generally, the system design deemed dosing to not to be required. However, for rare events where river water falls outside typical limits for pH, dosing can occur in the balance tank prior to the flowmeter on the bulk water storage outlet, which includes an online monitoring point and sampling cabinet downstream.

Water Quality Approach

The approach to water quality arising from the design provides for:

- No chemical dosing of any kind;
- Use of a seal coat on the interior of the pipeline to enhance asset life and prevent any pH impacts from cement lining leaching and calcium carbonate precipitation potential; and
- Use of a passive system to ensure algae management and dissolved oxygen parameters are met during typical operation, and mechanical aeration systems utilised throughout a-typical water quality events to ensure superior whole of life outcomes.

To meet the delivered water quality requirements for dissolved oxygen in the bulk water storage, aeration and mixing is implemented at the inlet to the bulk water storage. Aeration of inflows and mixing in each storage cell is to:

- Dissolve sufficient oxygen into the water to overcome dissolved oxygen depletion in the source water and mitigate risks of further depletion with at least 3.5 days detention in the pipeline (the minimum time it will take for water to be conveyed from the River Murray to the bulk water storage);
- Prevent potential stagnant areas forming in the bulk water storage and reduce short circuiting; and
- Reduce the risks associated with potential storage stratification in calm weather.

It also assists in stripping volatile compounds from the water before it enters the storage which provides some additional operational flexibility in managing water quality.

The design includes nine internal pipe cleaning (referred to as “pigging”) facilities along the pipeline to enable effective and environmentally acceptable removal of biofilm growth and sediments. There is some potential for relatively small volumes of solids to settle in the balancing tanks at each pump station and therefore provision has been made to safely access and clean the tanks.

To mitigate the potential long-term impact of negative Calcium Carbonate Precipitation Potential (CCPP) water on the cement lining of the mild steel cement lined pipeline, and to gain the benefit of improved pipeline durability, a protective seal coating over the cement lining of each pipe was applied during manufacture. By providing a seal coat the CCPP issue is removed and pH leeching is restricted to less than 1%, removing the need for additional water quality conditioning.

Power

Permanent grid connections were constructed close to the town centres of Broken Hill and Wentworth. These locations minimised the amount of assets to be built and provide redundancy:

- Enabling 24-hour pumping at all of the sites if required by Broken Hill water demand; and

- Allowing for excess energy generated by any future renewable generation source to be exported into the grid providing income.[64]

The ownership of the grid connections transferred to the local electricity provider, Essential Energy, upon completion. The cost of this component is not included in this pricing proposal.[65]

In the event of mains power outages, temporary generators will be connected within 1.5 days to resume operations until grid supply is restored, while the bulk water storage power supply will be provided with a permanent back-up diesel generator.[66]

Peak demand and usage

The configuration of the pipeline described above has been designed to ensure it is capable of meeting a number of specified "peak" flows (referred to as "demand"), that is, the maximum flow that the pipeline can sustain over different demand periods, as set out in Table 52 below.

Table 52 - Pipeline demand

Demand	Volume	Description/Definition
Peak Season (December – March) Peak Flow	3,708ML for the peak season	The maximum volume that Essential Water will extract from the Broken Hill Delivery Point over the peak season
Peak Day Demand	37.4ML per day	The maximum volume of water that Essential Water will extract from the Broken Hill Delivery Point over any Day
Peak Week Demand	226.4ML per week	The maximum volume of water that Essential Water will extract from the Broken Hill delivery Point over any week
Peak Month Demand	927.4ML per month	The maximum volume of water that Essential Water will extract from the Broken Hill delivery Point over any month
Peak Annual Demand	7,586.6ML per Year	The maximum volume of water that Essential Water will extract from the Broken Hill delivery Point over any year
Minimum Demand	56.0ML per Week (based on an average of 8.0ML per Day)	The minimum volume of water that Essential Water must extract from the Broken Hill Delivery Point over any week (excluding during a shutdown or Force Majeure Event). The minimum demand will be delivered at the minimum flow rate

* Sourced from WaterNSW Murray To Broken Hill Pipeline output specification document table 4.1 (Table of demands) which is attached to the D&C contract

The design flow rate is based on pumping 24hrs/day at the following flow rates:

- 27ML per day (313 L/s) for the supply pipeline system from the river intake to the bulk water storage
- 37.4ML per day (433 L/s) for the supply pipeline system from the bulk water storage to Essential Water's Mica St water treatment plant,

noting that the bulk water storage is used to balance the peak demand and long run delivery rate.

Offtakes

Five 100mm diameter offtakes are currently provided to enable connection of farm services to the pipeline. Water will not be supplied to the offtakes when the pipeline is operating at its maximum capacity to meet Essential Water demand requirements, or when the pipeline is required to be shut down for maintenance purposes. This will ensure there are no impacts to the peak flow requirements of 37.4ML per day for Essential Water/Broken Hill.

Each offtake includes a strainer, an actuated open/closed value, a pressure reduction valve limiting pressure to a maximum of 800kPa, a surge relief value (if required), a flow restriction

[64] A solar power connection was considered but delivered at best a zero NPV or negative NPV for larger installations over 20 years, assuming grid power costs will increase at CPI.
[65] This component is known as Separable Portion 3. Funding for Separable Portion 3 was a matter for Essential Energy and the NSW Government and did not form part of WaterNSW's 2018 pricing proposal.
[66] Batteries were considered for grid outages but there was insufficient return on investment for these systems over the design life.

device to limit flow to each offtake to 1ML per day, a flow meter to measure instantaneous and totalised flow, isolation valves to allow access to the flow meter, a pressure reduction valve and actuated valve for maintenance, backflow prevention to prevent water from the offtake entering the supply pipeline, blank flange at the downstream end of the offtake for customer connection and safe access to the offtakes.

The flow meter and actuated valve will be connected to the control system via telemetry to enable measurements and records of the flow supplied through each offtake, operational control of the actuated valves and sending instrument and control signals to the SCADA system. Controls and instrumentation will be powered via small scale solar connections.

Control and Operation

Control and operation of the pipeline and bulk water storage is be as follows:

- The pump stations will operate at a set point flow rate input to maintain a target volume in the bulk water storage. The volume in the bulk water storage will be determined by measuring the water level in each cell of the bulk water storage;
- The set point flow rate and hours of operation each day will be adjusted by the control system or operators and vary by time of the year and seasonal demand outlooks. This will be done to minimise energy use (kWh/ML) and to optimise power tariff structure ($/kWh);
- The number of cells for bulk water storage in operation will be configured in winter to minimise evaporation and mixing/aeration requirements by planning ahead, with the bulk water storage to be filled just before the coming peak season;
- Inflow to the system will equal the outflow to the bulk water storage and avoid starting and stopping of pumps during an operational period; and
- In the event of a pump faulting and switching to the standby pump, the interruption in flow rate will be managed by the other pump stations responding by resetting flow set points until the standby pump is up to speed and the original flow set point will be resumed.

Energy use optimisation

The approach to energy management is to minimise the cost of the pumping regime at all times without compromising the water delivery requirement. As such the system has been configured to minimise the whole of life costs of supplying water to Broken Hill. This has been achieved through the adoption of a lower peak flow delivery capacity in the downstream section to the bulk water storage.

The bulk water storage has then been sized to provide adequate storage to meet the critical demand requirement of 30.9ML per day across the 4 month peak season. The downstream section, which comprises only approximately 20km of supply pipeline from the bulk water storage to Broken Hill, has been sized to meet the peak daily design flow of 37.4ML per day.

The expected electricity time-of-use network tariff structure is set out in the table below.

Table 53 - Time of Use Tariffs

Period	**Start Time**	**Stop Time**	**Available Hours**	**Days**
Peak	7 am	9 am	2	Weekdays
Shoulder	9 am	5 pm	8	Weekdays
Peak	5 pm	8 pm	3	Weekdays
Shoulder	8 pm	10 pm	2	Weekdays
Off-Peak	10 pm	Midnight	2	Weekdays
Off-Peak	Midnight	7 am	7	Weekdays
Off-Peak	Midnight Friday	Midnight Sunday	48	Weekends

* Sourced from the table 5 of the Design Report Tender Document No:IA1547000-M-SP 'Control Philosophy Date 17 July 2017. Appendix A.

The system comprises of four pump stations, with each pump set having varying process and energy requirements. The total energy requirement for the whole system is estimated to be in order of 4500 kVa (4050 kW using a power factor of 0.9) for the pump stations.

Essential Water operates the Mica Street water treatment plant during off-peak time periods such that all town storages are at their maximum level at 7am. The storages reduce during the day due to demand and are refilled again during off-peak hours. With warmer weather, the water treatment plant begins to operate in the peak and shoulder periods and is required to run continuously during heat wave conditions.

The bulk water storage reservoir provides for approximately 19 days requirement for Broken Hill based on peak daily demand. Water distribution post Mica Street storage is a function of consumer demand and will be controlled by Essential Water.

The general control philosophy for the River Murray water extraction and transfer system and bulk water storage transfer will be to maintain capacity of the bulk reservoir and to maximise transfer of water to Mica Street storage during off-peak hours.

The requirement for a least cost operation will be an overarching requirement for the control functionality of the individual pump stations.

Pipeline completion

The pipeline was competed and became operational on 5 April 2019.

Figure 27 - Machine laying pipe

Appendix E – Legislative and regulatory framework

Overview

This section sets out the primary legislative and regulatory framework for the construction and ongoing operation of the pipeline and the services to be delivered by the pipeline.

Our structure and purpose

The *Water NSW Act 2014* (NSW) (WaterNSW Act) came into effect on 1 January 2015, thereby creating WaterNSW as a statutory state owned corporation under that Act.

WaterNSW further increased its scope on 1 July 2016 when the *Water NSW Amendment (Staff Transfers) Act 2016* took effect to facilitate the transfer of employees of the then Department of Primary Industries - Water to WaterNSW. This enabled WaterNSW to carry out delegated functions[67] of the Water Administration Ministerial Corporation ("**WAMC**") in relation to water delivery, customer transactional dealings, in-field services and resource management for groundwater, regulated and non-regulated surface water.

The objectives and functions of WaterNSW were refined to reflect and consolidate the functions of the SCA and State Water Corporation into a single entity. The principle objectives of WaterNSW subject to this pricing proposal are as set out in section 6(1) of the Water NSW Act 2014 as follows:

a) *to capture, store and release water in an efficient, effective, safe and financially responsible manner, and*

b) *to supply water in compliance with appropriate standards of quality, and*

c) *to ensure that declared catchment areas and water management works in such areas are managed and protected so as to promote water quality, the protection of public health and public safety, and the protection of the environment, and*

d) *to provide for the planning, design, modelling and construction of water storages and other water management works, and*

e) *to maintain and operate the works of Water NSW efficiently and economically and in accordance with sound commercial principles.*

The other objectives of WaterNSW, set out in section 6(2) of the WaterNSW Act are of equal importance but are not as important as the principal objectives of WaterNSW. They are:

a) *to be a successful business and, to that end:*
(i) to operate at least as efficiently as any comparable business, and
(ii) to maximise the net worth of the State's investment in Water NSW,

b) *to exhibit a sense of social responsibility by having regard to the interests of the community in which it operates,*

c) *to exhibit a sense of responsibility towards regional development and decentralisation in the way in which it operates,*

d) *where its activities affect the environment, to conduct its operations in compliance with the principles of ecologically sustainable development contained in section 6 (2) of the Protection of the Environment Administration Act 1991.*

The Water NSW Act continues the separate operating licences of State Water Corporation ("**SWC**") and the Sydney Catchment Authority ("**SCA**") with their respective focus on water supply to regional and rural areas and the management and protection of the Sydney catchment. The operating licence for WaterNSW is discussed below.

We are subject to a range of legislative instruments that cover our water operations and other matters. In the section below, we describe the obligations that have the greatest impact on

Construction notifications

To enable construction of the pipeline, the notifications set out in Table 53 below were required. These were provided to the relevant authorities.

[67] The delegations are contained in Schedule A of the WaterNSW Operating Licence 2017-2022.

our operating and capital expenditure requirements.

Our Operating Licence

WaterNSW operates in accordance with its operating licence granted under section 11 of the WaterNSW Act. The term of the current operating licence is 1 July 2017 to 30 June 2022. The operating licence authorises WaterNSW, within its Area of Operations (the whole of the State of NSW):

a) to capture and store water and to release water:
i) to persons entitled to take the water, including release to regional towns; and
ii) for any other lawful purpose, including the release of environmental water;

b) to supply water to Sydney Water;

c) to supply water to water supply authorities and to local councils or county councils prescribed by the Regulations;

d) to supply water to persons referred to in section 7(1)(d) of the Water NSW Act;

e) to supply water to other persons and bodies, but under terms and conditions that prevent the person or body concerned from supplying the water for consumption by others within the State unless the person or body is authorised to do so by or under an Act;

f) to construct, maintain and operate Water Management Works (including providing or constructing systems or services for supplying water);

g) to protect and enhance the quality and quantity of water in Declared Catchment Areas;

h) to manage and protect Declared Catchment Areas and Water Management Works vested in or under the control of Water NSW that are used within or for the purposes of such areas;

i) to undertake research on catchments generally, and in particular on the health of Declared Catchment Areas; and

j) to undertake an educative role within the community.

Table 54 - Notifications

Reference	**Requirements**	**Agency**
S199 of Fisheries management Act	Notification for Dredging and Reclamation Works	DPI Fisheries
Clause 16 State Environmental Planning Policy (Infrastructure) 2007	Notification of development comprising a fixed or floating structure in or over navigable waters	RMS
Clause 13 State Environmental Planning Policy (Infrastructure) 2007	Notification for Impacts on Council related Infrastructure or Services	Broken Hill City & Wentworth Shire Councils
Clause 14 State Environmental Planning Policy (Infrastructure) 2007	Notification on developments with impacts on local heritage	Broken Hill City & Wentworth Shire Councils
Clause 15 State Environmental Planning Policy (Infrastructure) 2007	Notification of development with impacts on flood liable land	Broken Hill City & Wentworth Shire Councils
Clause 45 of the Electricity Supply Act 1995	Notification of electricity works	Broken Hill City & Wentworth Shire Councils

Environmental Approvals

Review of Environmental Factors

WaterNSW is a public authority and is the determining authority as defined in the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act). The pipeline project satisfies the definition of an activity under the EP&A Act, and as such WaterNSW was required to assess and consider the environmental

impacts of the pipeline project before proceeding to construction.

A review of *State Environmental Planning Policy (State and Regional Development) 2011* (NSW) concluded that the pipeline project did not trigger the State significant infrastructure provisions and therefore did not require development consent. As development consent was not required, the project had to be assessed under Part 5 of the EP&A Act. WaterNSW engaged Public Works Advisory NSW Water Solutions (PWA) to assess, to the fullest extent possible, all matters likely to impact on the environment arising from the project.

Pipeline REF

Figure 28 - Pipe strung at the southern end of the pipeline route

PWA prepared a Review of Environmental Factors Report (REF) in accordance with sections 111 and 112 of the EP&A Act and clause 228 of the *Environmental Planning and Assessment Regulation 2000* and concluded that:

- The project is not likely to have a significant impact on the environment and therefore an Environmental Impact Statement is not required;
- The project is not likely to significantly affect threatened species, populations, ecological communities, or critical habitat. Therefore, a Species Impact Statement was not required; and
- The project is not likely to affect any Commonwealth land, is not being carried out on Commonwealth land, or significantly affect any Matters of National Environmental Significance.

subject to implementation of measures to avoid, minimise or manage environmental impacts listed in the REF.

In preparing the REF, PWA engaged a number of sub-consultants and consulted with key stakeholder and regulatory agencies. Led by PWA, a number of extensive onsite surveys and workshops were held to assist in developing:

- Flora and Fauna Assessments
- Aboriginal Cultural Heritage Access Assessments
- Traffic & Transport Assessments
- Noise Impact Assessments
- Historical Heritage Assessments
- Social Impact Assessments
- Wind Rose Data
- Land Tenure Details
- Geology Maps
- Archaeological Sensitivity Maps.

Pump site and construction REF

Site selection was a process commenced by NSW Public Works, prior to WaterNSW having responsibility for delivery of the project. NSW Public Works selected four initial sites along the route. Then in July 2017, during the tender process, the tenderers were asked to nominate their preferred locations for pump stations. These were then rationalised by WaterNSW, taking into account comments from Wentworth and Broken Hill Councils and to ensure ongoing competitive innovation from the tenderers. Noting the REF requirements, this resulted in one additional location being added to the original four.

Surveys of these five locations commenced on 29 August 2017 and Review Environmental Factors under *the Environmental Planning and Assessment Act 1979* (NSW) was determined on 25 October 2017. The JHJV required four of the five sites and the final approvals for those four sites were received in December 2017.

The JHJV requested additional sites along the pipeline route for construction purposes requiring addenda to the REF. These addenda were approved by the date of the pricing proposal.

Compliance

In the tender process, each of the proponents were required to develop a Construction Environmental Management Plan (CEMP) based upon the mitigation measures developed under the draft REF and regulators' approvals. The CEMP forms part of the D&C contract. This was then confirmed once the final REF was approved.

At a practical level on site, WaterNSW's site environmental representative and other site personnel make routine inspections and highlight issues of concern to the contractor in relation to the mitigation measures in the REF and CEMP. Where necessary these items are then raised with senior management to be dealt with contractually.

WaterNSW developed an actions and issues register and completed the first (southern) half of an audit inspection on 8 March 2018 to highlight any potential non-conformances and opportunities for improvement. The second, northern, half of the audit was completed on 22 and 23 May 2018.

Figure 29 - Water truck

Aboriginal Cultural Heritage

Overview

The EP&A Act establishes the framework for cultural heritage values to be formally assessed and requires that environmental impacts, including those relating to heritage items are considered prior to land development.

Part 6 of the *National Parks & Wildlife Act 1974* (NSW) (NPW Act) provides specific protection for Aboriginal objects and declared Aboriginal places by establishing offences of harm. It was determined that the project is not a low impact activity, as defined by the NPW Regulations, as there was a high risk that it would, directly or indirectly, harm an Aboriginal object, or a declared Aboriginal place. Therefore, under the NPW Act, it was necessary to apply to the Office of Environment and Heritage (OEH) for an Aboriginal Heritage Impact Permit (AHIP).

The AHIP is a legal document that grants WaterNSW permission to harm Aboriginal objects or declared Aboriginal places, and sets out any conditions that WaterNSW must comply with. Each AHIP is required to be undertaken in accordance with several regulations and guidelines:

- Aboriginal cultural heritage consultation requirements for proponents 2010 (ACHCRs) (NSW Department of Environment, Climate Change and Water (DECCW), 2010a);
- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW, 2010b);
- Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (DECCW, 2010c);
- Guide to Investigating, assessing and reporting on Aboriginal cultural heritage in NSW (NSW Office of Environment and Heritage (OEH), 2011);
- Applying for an Aboriginal Heritage Impact Permit: Guide for applicants (OEH 2011); and
- The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance (Australia ICOMOS, 2013).

OEH requires each AHIP to include:

- A summary of Aboriginal consultation undertaken (this was an intensive process that took approximately 8 months to complete);
- A background literature review of relevant past archaeological assessments and heritage registers;
- A review of the environmental context;
- An archaeological predictive model & sampling strategy;
- An aboriginal heritage survey (surface sampling strategy);
- if required, subsurface test excavation (subsurface sampling strategy;
- An assessment of the significance of any identified Aboriginal objects, places or cultural values;
- An assessment of any potential impacts to the Aboriginal objects, places or cultural values; and

- Recommendations for management and mitigation measures.

AHIP Application Process

WaterNSW was required to undertake an Aboriginal Cultural Heritage Assessment (ACHA) to inform the Review of Environmental Factors and the requirements for the AHIPs.

To facilitate a timely start to construction works, the AHIP applications to manage and mitigate harm to Aboriginal objects for construction of the pipeline were submitted in four stages. The table below describes each stage and the date of approval of each AHIP application.

Table 55 - AHIP application by stage

Stage	**Description**	**Date Approved by OEH**
1	Broken Hill to Pine Creek	4/12/17
2A	Wentworth to Anabranch	22/12/17
2B	Anabranch to Coombah	12/02/18
2C	Coombah to Pine Creek	22/3/18

To comply with the obligations under Part 6 of the NPW Act, it was necessary for each AHIP application, for WaterNSW to:

- Prepare a draft a Cultural Heritage Assessment Report (CHAR);
- Provide the draft CHAR to Registered Aboriginal Parties (RAP) for a 28 day review;
- Provide the draft CHAR to OEH;
- Following feedback from RAP and OEH, finalise the CHAR and AHIP application and submit to OEH; and
- Await assessment of the AHIP by OEH.

In preparing the AHIPs, WaterNSW undertook several layers of detailed analysis and proposed a range of mitigation strategies which were accepted by OEH in order to minimise harm.

Mitigation Strategies & AHIP Conditions

The AHIPs granted by OEH under section 90 of the NPW Act contain a number of conditions which WaterNSW must comply with relating to:

- Conditions 6-8 concerning Aboriginal objects which must not be harmed;
- Conditions 9-10 regarding movement of Aboriginal objects;
- Conditions 11-16 relating to test/salvage excavations and dating;
- Conditions 19-23 – storage and relocation of salvaged Aboriginal objects; and
- Conditions 25-36 notification and reporting obligations.

In summary, the AHIPs conditions require WaterNSW to:

- Salvage a representative sample of Aboriginal objects from sites of moderate or higher significance;
- Collect dating samples from viable hearths;
- Collect a representative sample of dates from Aboriginal sites within the moderate to very high archaeological sensitivity areas;
- Reduce knowledge gaps and improve regional understanding of the subsurface archaeological resource by undertaking subsurface archaeological salvage in a representative sample of sites of moderate significance in moderate to very high subsurface archaeological sensitive landforms and landscapes;
- Include a protocol for the management of unexpected finds, including but not limited to stone artefact sites, hearths, culturally modified trees, shell, burials;
- Include a protocol for the discovery and management of human remains, including stop work provisions and notification protocols;
- Include a protocol for managing gender-specific cultural values; and
- Include an adaptive management framework to manage the discovery of any Aboriginal sites and values of high regional significance (such as Pleistocene aged sites).

To comply with the AHIP conditions, WaterNSW has pursued general management strategies with regard to both direct impacts (e.g. surface disturbance) and indirect impacts to Aboriginal sites (e.g. increased erosion, unintentional increase in traffic). Avoidance of known sites/high risk areas during pipeline development is ongoing through the detailed design phase.

Mitigation strategies for unavoidable impacts include:

- Salvage excavation and landscape characterisation of a sample of areas within the moderate to very high subsurface archaeological sensitivity;
- Sub-surface salvage;

- Salvage surface collection in surface high risk layers; and
- Unmitigated harm in low and low-moderate risk layers.

Given the compressed timeframe and potential need to work at night, WaterNSW elected to undertake a salvage program instead of ongoing monitoring which would have been unsafe in front of machinery.

Water Access Licensing

Under the D&C contract, the contractor is responsible for obtaining the water required for the construction and commissioning of the pipeline. This can occur either by obtaining their own Water Access Licence (WAL) and water entitlement or obtaining a zero WAL and purchasing a temporary water allocation from the trade market.

WaterNSW will not obtain a WAL for continued pipeline operations. WaterNSW will enter into agreements with Essential Water and customers of the offtakes for the transportation of their water from the River Murray through the pipeline. These agreements will prioritise Essential Water's requirements above the offtake customers to secure the drinking water requirements of Broken Hill, see section 6.3.2 above.

Essential Water currently have a WAL for water from the Darling River and a works approval to extract that water from the Darling River. Essential Water are working with Department of Industry - Water to terminate their current Darling River WAL and to obtain a Local Water Utility WAL for the River Murray.

Each offtake customer will be required to obtain their own WAL for water from the River Murray.

Water Supply Work Approval

WaterNSW has applied to the Department of Industry – Water for a Water Supply Works Approval under the WM Act to extract water from the River Murray. Each customer's WAL will be linked to WaterNSW's Water Supply Works Approval for the pipeline.

Land Access

The area traversed by the pipeline comprises land with the following tenure:

- Private/freehold land - including land owned by Councils and other Statutory Corporations;
- Western Lands Division (WLD) land - perpetual leasehold land;
- Crown land - including unmade roads, water crossings and reserves
- Public land - including land vested in Councils or public authorities, such as road authorities and road reserves
- Native title; and
- Aboriginal land (granted under NSW Aboriginal land rights legislation).

Land Access and Acquisition Process

The process of dealing with land access, lease and interest acquisition involves four key stages:

- Pre-construction surveys and investigations (consent/notice to enter land);
- Construction - construction leases including property management plans, either negotiated (preferred) or obtained through compulsory process;
- Easement/permanent interest acquisition - acquisition agreements or compulsory acquisition and lodgement forms; and
- Creation of land interests in the SPV.

WaterNSW engaged a third party property agent to co-ordinate and manage the land access and acquisition process with private /freehold land holders and WLD.

Cadastre Issues

During the pre-construction surveys and investigations, it was noted that the existing cadastre along the sections of the Silver City Highway road reserve were not accurate. At some locations (due to errors in historic cadastral boundary creation) the road reserve is not aligned with the cadastre boundaries.

WaterNSW engaged a third party to rectify the cadastre issues as accurate cadastre information are required for the creation and registration of easements and to inform with confidence the ownership and land lease areas required by WaterNSW.

Construction Leases

Construction lease payments have been structured as follows[68]:

- Offer to Lease Payment: an incentive payment to the lessor of a set fee payable within 30 days after WaterNSW has signed the lease; and
- Rental payment: allocation of a rental amount per km over the entire length of the pipeline.

The construction leases contain the following:

- Property Management Plan: set outs property-specific items such as preferred access ways, existing buildings and equipment on the land, and proposed mitigation measures to be carried out by WaterNSW to minimise the impact that the construction works will have on the land, including the leased area; and
- Remediation: the leases require WaterNSW to remediate the leased area before the expiry of the 2 year lease term. Where WaterNSW is not able to complete its remediation activities in that time frame, WaterNSW may call for a remediation lease of a further 2 year period.

Permanent Tenure

WaterNSW has statutory rights under the WaterNSW Act to access the pipeline for maintenance (amongst other things) once it has been constructed. However, WaterNSW intends to either acquire easements for the pipeline or purchase the land, so that its rights are registered on title.

WaterNSW can compulsorily acquire easements or the land for the pipeline under the WaterNSW Act, but would prefer to enter into agreements for the purchase or the grant of easements. These agreements (appending the associated valuations) will be negotiated with landholders after the pipeline has been constructed.

In the event WaterNSW is required to acquire the land or an easement compulsorily, WaterNSW will pay any necessary compensation to the landowner in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW).

Public/Crown land

Licences were obtained on behalf of WaterNSW for both the investigation works and the construction works from Department of Industry - Crown Lands under section 34A *Crown Lands Act 1989* (NSW) in relation to Public/Crown Land.

A permanent licence to access the pipeline for maintenance (amongst other things) once it has been constructed will be required from the Department of Industry - Crown Lands.

Native Title

The *Native Title Act 1993* (Cth) (NT Act) sets up processes to determine where native title exists, how future activities impacting upon native title may be undertaken, and to provide compensation where native title is impaired or extinguished. The NT Act gives Indigenous Australians who hold native title rights and interests or who have made a native title claim, the right to be consulted and, in some cases, to participate in decisions about activities proposed to be undertaken on the land.

The area between Wentworth and Broken Hill is subject to a determined native title claim which recognises the Barkandji people as the traditional owners of land. Native title has been extinguished over most of the project land, however native title rights apply to certain land at and around Broken Hill, east of Wentworth, most of the River Murray and its shore, and to some land between Menindee and Wentworth.

Irrespective of whether native title rights and interests have been recognised as 'exclusive' or 'non-exclusive', the Barkandji native title holders have rights and interests that need to be addressed and managed using appropriate 'future act' processes under the Act.

As the land is Public/Crown Land, the Department of Industry – Crown Lands has issued to the Barkandji people a Notice under section 24KA of the NT Act. Section 24KA of the NT Act applies to the construction, operation, use, maintenance and repair of water pipelines (and transmission lines) that are operated for the general public.

Section 24KA of the Act does not apply to the establishment of large above ground infrastructure such as pumping stations. However, all project lands affected by native title will not have large above ground infrastructure established on them.

[68] WaterNSW engaged two independent valuers to assist with valuations when entering into construction leases and negotiations for leases for permanent land assets such as the pump station and bulk water storage sites with landowners. Following completion of construction, these valuers will prepare the valuations for the pipeline easements.

The "non-extinguishment principle" applies to any acts done in reliance on section 24KA. This means that the activities conducted in accordance with section 24KA will not extinguish any native title rights that exist in the affected area.

The Barkandji People will be entitled to compensation for the effect that the pipeline construction activities has on their native title rights and interests. Calculating what, if any, compensation will need to be paid will take into account the fact that the 'non-extinguishment principle' applies to acts under section 24KA of the Act.

Aboriginal Land Rights Land

Two parcels of land near Wentworth are subject to an undetermined Aboriginal Land Rights Claim by the Dareton people. WaterNSW has obtained agreement from the Dareton Land Council to access the land for the purposes of constructing, operating, maintaining and repairing the pipeline.

Direction Requirements

Introduction

As set out in section 1.1 above, the Minister issued two directions to WaterNSW under section 20P of the SOC Act, the Pipeline Direction and the Construction Direction. The project to construct and then operate and maintain the pipeline as described in this pricing proposal is to ensure compliance with the Pipeline Direction.

Section 7.8.2 below provides further detail on compliance with the timing aspect of the Pipeline Direction while section 7.8.3 and section 7.8.4 below provide further details on compliance with the Construction Direction.

Timing

The Pipeline Direction directs the Board of WaterNSW to use best endeavours to make the pipeline operational by December 2018, and notwithstanding this, ensure that the pipeline is fully operational before all surface water and the Lake Menindee groundwater source available to the Broken Hill community are depleted.

Meeting this timeframe underpinned many aspects of WaterNSW's approach to the design of the RFT, the contractual negotiations and the JHJV's tender response and design. In particular:

- The D&C contract includes the milestone of "Ready for Water". It is defined as the point at which the pipeline is able to be operated safely to deliver 8 ML of water per 24-hour period.[69] The contractual target date for Ready For Water is December 2018 (prior to the commissioning date of April 2019). The supply of water after the Ready for Water milestone has been reached but before practical completion of the pipeline are called the Early Water Services. Early Water Services will be called in the event there is no alternative water source for supply to the Broken Hill township; and
- In order to maximise the possibility of achieving the Ready for Water target date:
    - During the RFT phase of the project, WaterNSW ordered 50km of pipe from Steel Mains Pty Ltd with mechanical parameters that could be used by all four tenderers (e.g. 762 diameter, 6mm thick grade, 300MPa strength grade steel). This order was then novated to the JHJV upon contract award
    - WaterNSW divided the length of the pipeline into four sections in order to obtain AHIPs. This enabled construction to proceed concurrent to obtaining AHIPs for the most difficult sections (see section 7.4 above);
- Under the D&C contract the Independent Verifier (IV) needs to determine whether the contractor can achieve the Ready for Water Sunset Date - which is the date that is 180 days after the date for Ready for Water. This can be done anytime from six months after contract award. If the IV determines the contractor is not able to achieve the Ready for Water Sunset Date then they can instruct the contractor to accelerate at its own cost. WaterNSW has planned two rigorous "look forward" tests to ascertain confidence levels

[69] ***Ready for Water*** is achieved when, as a minimum, each of the following is completed and verified to the satisfaction of the Independent Verifier with respect to both the pipeline and assets to be transferred to Essential Water:

(a) the works are able to be operated safely:
manually; and
using temporary power and communications;

(b) all hydrotesting of the works has been completed and passed;

(c) the elements of the works comprising bulk storage, surge and tanks have been hydrotested and passed;

(d) the contractor has demonstrated to WaterNSW's satisfaction that 8mL water in 24 hours can be pumped and delivered to the Broken Hill Delivery Point safely and in accordance with applicable legislative requirements and approvals; and

(e) the contractor has met all other requirements for the achievement of Ready for Water as set out in the D&C specification documents or WaterNSW's project requirements.

to achieve the required date and these tests are scheduled for April and June 2018. The results of these tests will be forwarded to the IV for information as well as used by WaterNSW to determine any other rectification action.

Australian Steel

The Construction Direction directs the Board of WaterNSW to ensure that Australian rolled steel is substantially used in the construction of the pipeline, regardless of where the pipe in manufactured.

WaterNSW incorporated this requirement into the RFT as a major design feature, see sections 5.1 and 5.2 above. The design adopted by the JHJV satisfies this requirement by using:

- Polyethylene pipe for the first 8.75km between the river intake and first pumping station (to accommodate the river crossing and ground conditions); and
- Australian rolled steel for the balance of the 270km pipeline.

The Australian rolled steel has been manufactured by Blue Scope Steel in Port Kembla, totaling approximately 28,000 tonnes of hot rolled core. The steel has then been manufactured into pipe by Steel mains from two manufacturing plants – one in Perth and one in Melbourne. The pipe is then transported in economical load sizes from the factories as it is completed:

- Pipe manufactured in Perth is transported by rail to Broken Hill and then by truck to a pipe laydown area or directly to the to where the pipe will be laid (the Right of Way);
- Pipe manufactured in Melbourne is transported by truck to a pipe laydown area or directly to the Right of Way.

Figure 30 - Picture of pipe during stringing process

Job requirements

The Construction Direction directs the Board of WaterNSW to ensure that the minimum targets set in the NSW Infrastructure Skills Legacy Program are met for the construction of the pipeline, in consultation with the Department of Industry to the extent possible given the remote location of the project and with relevant targets negotiated through the tender process.

The D&C contract requires the minimum targets to be met.[70]

The minimum targets as agreed with the Department of Industry are as follows:

- Total Full Time Equivalent (FTE) of "learning workers" (defined as trainees and workers who need to update their qualifications to meet the needs of the infrastructure project) for the project equivalent to 20 per cent of the total labour force until the project is 90 per cent complete;
- Apprentices comprising 20 per cent of all trades positions, being the equivalent of one apprentice to every four tradespeople;
- Double the number of women in non-traditional pathways in the general construction and civil construction sectors, so women are employed in at least 2 per cent of trade-related work and with a clearly defined strategy to increase the number of women employed in those roles throughout the life of the infrastructure project;
- Annual growth in Aboriginal and Torres Strait Islander people in both trade positions and non-trade positions in general construction and civil construction consistent

[70] Sections 11.3.3 and 11.3.20 of Appendix B of Schedule 4 (*Output Specification*) of the D&C contract requires the Australian Industry Participation Plan and the Training and Apprenticeship Plan (both D&C Management Plans under the Contract) to address how the contractor shall meet its targets to align with the Infrastructure Skills Legacy Program. Clause 34 of the D&C Contract requires the contractor to ensure Approved D&C Management Plans are implemented and complied with.

with the NSW Government's Aboriginal Participation in Construction Policy;

- 8 per cent of the total project workforce aged less than 25 years; and
- Strategies to ensure projects employ and train people from the local region.

JHJV report on their progress in meeting the minimum targets to the Department of Industry on a monthly basis. The April 2018 report showed the JHJV had met the learning workers, women in not traditional pathways, Aboriginal and Torres Strait Islander, workforce aged less than 25 years and people employed from the local region targets.

Appendix F – Proposed risk management framework

WaterNSW faces a variety of risks in providing regulated services. This appendix provides more information about our approach to risk management, and our framework for managing and allocating risks with the regulatory package.

Approach to risk management

Our approach to analysing risks over the 2022 Determination period draws on WaterNSW's broader risk management framework.

Our approach involves:

1. Identifying and describing risks to our costs and revenue.
2. Identifying the cause of each risk, including whether it is systematic or non-systematic in nature, and its likely impact on our business and customers.
3. Determining whether a cost allowance, rate of return or other regulatory mechanism that shared risks would most efficiently address each risk.
4. Ensuring there is no double-counting.

In applying these principles, we have considered the nature of key risks (i.e. does it impact costs or revenues), driver or cause of key risks (i.e. is it systematic or business specific risk), options to address these risks (i.e. allocating risk to the business and/or allocation to customers) and whether IPART's standard regulatory framework provides compensation for these risks to extent they are allocated to the utility (i.e. cost allowances for business specific risk, return on capital for systematic risk etc.).

Each of these steps is discussed further below.

Identifying and describing risks

WaterNSW has a corporate risk management framework in place that identifies and describes risks to which we are exposed, and we record them in a risk register. We identified the risks that affect our costs and/or revenues related to this determination. These are the most important risks that need to be managed and allocated within the regulatory framework.

Identifying the cause of each risk and its likely impact

We categorised the cause of risks as either systematic or business-specific risks.

- **Systematic risks** that arise from our exposure to overall economic conditions, including changes to interest rates and exchange rates.
- **Business-specific risks** that affect our costs and/or revenue and include, for example, operational issues that result in the pipeline being unable to deliver water, movements in energy prices, new regulatory obligations, water losses and sales varying from forecast levels.

We also assessed the potential magnitude of risks on our business and customers, the controls we have in place to manage risks, and any residual risk (i.e. after controls) that remains. Based on this assessment we decided whether we should accept, treat or share the risk (or some combination of these):

- Accepting a risk means the level of residual risk is acceptable, or that the costs of taking further action would exceed the benefits.
- Treating a risk means we need to take further action to reduce its likelihood and/or consequence to a level acceptable to the WaterNSW Board and our customers.
- Sharing a risk means that it would be most efficient for another party to take it on (e.g. through insurance with a third party or with customers) and in some instances we may decide to avoid activities altogether that would expose us to unacceptable risk.

Determining the appropriate way to address each risk

In determining the most appropriate approach, we have drawn on principles including allocating risks to the party best-placed to manage them, impacts on regulatory certainty, creating appropriate incentives for WaterNSW and considering administrative costs. This is consistent with approaches IPART has previously taken in determining risk allocation.[71]

[71] See IPART, Review of regulated retail tariffs and charges for electricity 2010-2013 – Final Report, March 2010, p52.

The approaches available to address risks within the regulatory framework include cost allowances, the rate of return and regulatory mechanisms.

- **Rate of return**: we propose to be compensated for bearing systematic risk through the rate of return. Details on the rate of return is provided in Section 10.
- **Cost allowances**: where we decided to treat or accept a risk, in most cases we propose a cost allowance to efficiently manage (or continue to manage) the risk, including complying with our licence conditions. Details of our proposed cost allowances are contained in Sections 5 and 6.
- **Cost allowance (insurance):** where we decided to transfer a risk and an insurer is best placed to manage this, we propose a cost allowance for an efficient level and scope of insurance coverage. Details of our proposed cost allowance for insurance is provided in Section 6.
- **Cost-reflective tariff structures:** for risks that demand for our services varies from forecast, we are proposing cost-reflective tariff structures as outlined in Section 15.
- **Negotiated agreements:** for risks including that Essential Water is unable to accept water, imposing additional costs on WaterNSW. Details on negotiated agreements are provided in Sections 5.1 and 15.5.
- **Cost pass through mechanism**: for uninsurable risks and unforeseen regulatory or taxation changes we are proposing to share these risks with customers through a cost pass through mechanism. Details on this mechanism are provided in Section 5.5.
- **Benchmark electricity network and wholesale true-up mechanism**: we are proposing to share with customers the risks associated with movements in energy costs that are beyond WaterNSW's reasonable control through an end of period true-up mechanism of movements in network and wholesale components of the benchmark electricity price. Details on this mechanism are provided Appendix G.

Ensuring there is no double-counting

As a last step, we check and confirm that we are only compensated once for bearing or managing risks. Importantly, WaterNSW is not compensated for risks that are shared with customers.

Summary of risk management and allocation framework

Based on the steps above, Figure 31 below outlines our proposed risk management and allocation framework.

Figure 31 - Proposed risk management and allocation framework for 2022 Determination

Action	Category	Compensation for risk or risk allocation/sharing mechanism	Risk examples	Cost or revenue risk?	Risk allocation
Treat/accept risk	Systematic risk	Rate of return / WACC	Risks that cannot be eliminated through diversification e.g. macroeconomic factors	Cost	Business
	Business-specific risk	Cost allowance (to meet good industry practice –complying w/ licence conditions)	Staff safety in relation to operating and maintenance, breach of licence, equipment failure; energy efficiency (e.g. energy use per ML)	Both	Business
Share risk	Business-specific risk	Cost reflective tariff structures	Water demand/pumping volume risk	Both	Customers
		Negotiated agreements (cost recovery of additional services)	Essential Water unable to accept water	Both	Shared
		Cost allowance (insurance)	Natural disasters, major asset failure	Both	Business (via insurers)
		Cost pass through	Insurance cap/credit/coverage event regulatory & service standards/tax changes	Cost	Customer
		Cost pass through or end period true up	Movements in annual energy prices	Cost	Shared

The framework groups the identified action for each risk (treat, accept or transfer), whether it is systematic of business-specific and how we propose to be compensated for managing or bearing the risk, or the mechanism for transferring it. We also summarise whether the risk affects our costs and/or revenues and whether it is allocated to WaterNSW, our customers or is shared.

The Periodic review of wholesale electricity cost allowance and the cost pass-through of network and other uncontrollable market charges is discussed in Appendix G.

Cost pass through mechanism

We propose that a pass-through mechanism apply for the 2022 Determination period that specifies the following pass through events:

- A regulatory change event;
- A service standard event;
- A tax change event;
- An insurance coverage event (noting that this addresses costs beyond the insurance cap and beyond the reasonably available insurance cover);
- An insurer's credit risk event;
- A natural disaster event; and
- A terrorism event.

Process and mechanism for passing through efficient costs (or savings) associated with eligible pass through events

It is proposed that the process would involve:

1. An eligible event occurring that results in a material increase (**Positive Change Event)** or decrease in costs (**Negative Change Event**) of providing WaterNSW's water transportation services (**Pass Through Water Services**)
2. WaterNSW applying to IPART (or IPART initiating) and substantiating the increase (or decrease) in costs of providing the water transportation services (**Eligible Pass Through Amount)**
3. IPART reviewing the WaterNSW application to determine the efficient increase or decrease in costs to be passed through to customers (**Approved Pass Through Amount)**
4. IPART notifying WaterNSW (and stakeholders) of the decision and the prices to apply in each remaining year of the regulatory period within which the eligible event occurs.

Box 1 sets out definitions that will be required to specify the process and mechanism for passing through efficient costs (or savings) associated with eligible pass through events. These have been developed in line with the following regulatory principles:

- Ensuring the trigger event is clearly defined and can be identified in any cost pass through application
- Requiring WaterNSW to substantiate the efficient increase (or decrease) in costs associated the eligible events (within a reasonable timeframe, say 90 business days, following the event), including actions taken to reduce the magnitude of any increase in costs
- Ensuring IPART (and potentially stakeholders) have sufficient time to review, consult on and assess the proposal (say no more than 120 business days) to ensure that only material (e.g. 0.25% of annual regulated revenue) increases (or decreases) in the efficient costs associated with the event are passed through to customers
- Allowing prices to be updated, following IPART's decision, within a reasonable timeframe (or ensures WaterNSW is not worse off for any delays) to allow WaterNSW to continue to invest, operate and maintain a water transportation service
- Where possible, drawing from other regulatory precedents, including in Australia.

We would welcome engagement with Essential Water, IPART and other stakeholders in developing the process and mechanism for passing through efficient costs (or savings) associated with eligible pass through events. This would include the items discussed in Box 1, as well as specification of other matters such as:

- Information provision requirements on WaterNSW as part of any pass through application
- The timeframe and decision-making process – including matters to be considered by IPART in determining the efficient increase (or decrease) associated with the event are passed through to customers[72] – and reporting requirements on IPART in making a decision on any pass through application

[72] One of the matters for IPART's consideration may be the implications for efficient costs of WaterNSW's decisions and actions, including whether (in the case of a Positive Change Event) WaterNSW has failed to take any action that could reasonably be taken to reduce the magnitude of the Eligible Pass Through Amount.

- The price control formula that would include mechanisms to update prices to account for the proposed cost pass through mechanism.

Box 1: Other definitions necessary for refining the process and mechanism for passing through efficient costs (or savings) associated with eligible pass through events

We have developed definitions that will be required to specify the process and mechanism for passing through efficient costs (or savings) associated with eligible pass through events.

These definitions include:

- **Approved Pass Through Amount** means the amount which the Tribunal determines should be passed through to customers in respect of that Positive Change Event or Negative Change Event
- **Eligible Pass Through Amount** means in respect of a Positive Change Event or Negative Change Event the increase (or decrease) in costs in the provision of Pass Through Water Services that WaterNSW has incurred since 1 July 2022 and is likely to incur until the end of the Regulatory Control Period as a result of that Positive Change Event or Negative Change Event.
- **Materially** means 0.25% of regulated revenue for the year in which the event occurs with the threshold defined on a per event basis
- **Negative Change Event** means a General Pass Through Event which entails WaterNSW incurring Materially lower costs in providing Pass Through Water Services than it would have incurred but for that event.
- **Pass Through Water Services** means the water transportation services provided by WaterNSW.
- **Positive Change Event** means a General Pass Through Event which entails WaterNSW incurring Materially higher costs in providing Pass Through Water Services than it would have incurred but for that event.
- **Relevant Tax** means any Tax payable by WaterNSW other than:
  - income tax and capital gains tax;
  - stamp duty, financial institutions duty and bank accounts debits tax;
  - penalties, charges, fees and interest on late payments, or deficiencies in payments, relating to any Tax; or
  - any Tax that replaces or is the equivalent of or similar to any of the Taxes referred to in sub-clauses (a) to (c) (including any State equivalent tax), and also includes any fee payable by WaterNSW in respect of a Licence.

Definitions of pass through events

We have developed definitions of the eligible events that we propose be included in a pass-through mechanism to apply for the 2022 Determination period. Where possible, these events have been defined consistent with other regulatory determinations that apply to infrastructure services in Australia.

Regulatory change event

A regulatory change event occurs when a change that is made to a regulatory obligation that is imposed on WaterNSW, e.g. by the Commonwealth or State Government, that materially changes WaterNSW's costs (increasing or reducing WaterNSW's costs). Examples could be the imposition of more stringent cyber security compliance requirements or a levy (e.g. a new Dam Safety Levy).

Events that change the standards or nature of WaterNSW's Pass Through Water Services are addressed separately, by the service standard event defined below.

The regulatory change event definition below is based on the definition on the national energy market regulations (including the National Electricity Rules).

Box 2: Definition: Regulatory change event

A change in a regulatory obligation or requirement that:

(a) falls within no other category of pass through event; and

(b) occurs during the 2022 Determination period; and

(c) substantially affects the manner in which WaterNSW is required to provide Pass Through Water Services; and

(d) materially increases or materially decreases the costs of providing those services.

Service standard event

A service standard event relates specifically to changes in WaterNSW's Pass Through Water Services, including changes to the minimum standard of service, scope of services, or way services provided. The service standard event may occur as a result of a change to legislation, administrative act or a decision e.g. government. An example of a service standard event could be a change to the nature of the water transportation services provided by WaterNSW.

The service standard event definition below is based on the definition on the national energy market regulations (including the National Electricity Rules).

Box 3: Definition: Service standard event

A legislative or administrative act or decision that:

(a) has the effect of:

  (i) imposing minimum standards on WaterNSW in respect of the provision of Pass Through Water Services that are different from the minimum standards imposed on WaterNSW in respect of the provision of Pass Through Water Services immediately prior to that event;

  (ii) substantially altering the nature or scope of the services that, immediately prior to that event, collectively comprise the Pass Through Water Services; or

  (iii) substantially varying the manner in which WaterNSW is required to undertake any activity forming part of the Pass Through Water Services; and

(b) results in WaterNSW incurring Materially higher or Materially lower costs in providing Pass Through Water Services than it would have incurred but for that event, but does not include:

  (i) the making of the 2022 Determination period

  (ii) any other category of pass through event.

Tax change event

A tax change event relates to changes to relevant taxes, as defined in Box 4 that have a material impact on WaterNSW's costs.

The tax change event definition below is based on the definition on the national energy market regulations (including the National Electricity Rules).

Box 4: Definition: Tax change event

A tax change event occurs if:

(a) any of the following occurs during the course of the 2022 Determination period:
  (i) a change in (or a change in the application or official interpretation of) a Relevant Tax, in the rate of a relevant tax, or the way in which a Relevant Tax is calculated;
  (ii) the removal of a Relevant Tax; or
  (iii) the imposition of a Relevant Tax, and
  (b) results in WaterNSW incurring Materially higher or Materially lower costs in providing Pass Through Water Services than it would have incurred but for that event.

Insurance coverage event

An insurance coverage event addresses the risk of incurring liability losses that exceed WaterNSW's insurance coverage. The insurance coverage event addresses costs that are incurred above WaterNSW's insurance policy limit (an insurance cap event) or beyond the limits of WaterNSW's coverage (an insurance coverage event).

The second element of the insurance coverage event addresses changed circumstances in the insurance market that are beyond WaterNSW's control, but mean that it is no longer possible to take out an insurance policy or set of insurance policies at all, or on reasonable commercial terms. This second arm of the coverage event has been included in cost pass through mechanisms for energy network businesses in the national energy markets. This is in recognition that there have been changing conditions in insurance markets that have made previously available insurance more expensive and difficult to procure.

A particular concern for energy networks were the adverse changes in the bushfire insurance market following bushfire events in Australia and overseas. Similar adverse changes may be seen in relation to cyclone and flood insurance in Australia.

The insurance coverage event definition below is based on the definition on the national energy market regulations (including the National Electricity Rules).

Box 5: Definition: Insurance coverage event

An insurance coverage event occurs if:

1. WaterNSW:
   a) makes a claim or claims and receives the benefit of a payment or payments under a relevant insurance policy or set of insurance policies; or
   b) would have been able to make a claim or claims under a relevant insurance policy or set of insurance policies but for changed circumstances; and
2. WaterNSW incurs costs:
   a) beyond a relevant policy limit for that policy or set of insurance policies; or
   b) that are unrecoverable under that policy or set of insurance policies due to changed circumstances; and
3. The costs referred to in paragraph 2 above materially increase the costs to WaterNSW in providing Pass Through Water Services.

For the purposes of this insurance coverage event:

'changed circumstances' means movements in the relevant insurance liability market that are beyond the control of WaterNSW, where those movements mean that it is no longer possible for WaterNSW to take out an insurance policy or set of insurance policies at all or on reasonable commercial terms that include some or all of the costs referred to in paragraph 2 above within the scope of that insurance policy or set of insurance policies.

'costs' means the costs that would have been recovered under the insurance policy or set of insurance policies had:

i. the limit not been exhausted; or
ii. those costs not been unrecoverable due to changed circumstances.

A relevant insurance policy or set of insurance policies is an insurance policy or set of insurance policies held during the regulatory control period or a previous regulatory control period in which WaterNSW was regulated; and

WaterNSW will be deemed to have made a claim on a relevant insurance policy or set of insurance policies if the claim is made by a related party of WaterNSW in relation to any aspect of WaterNSW's Pass Through Water Services; and

WaterNSW will be deemed to have been able to make a claim on a relevant insurance policy or set of

insurance policies if, but for changed circumstances, the claim could have been made by a related party of WaterNSW in relation to any aspect of WaterNSW's assets or business.

Note for the avoidance of doubt, in assessing an insurance coverage event, the Tribunal will have regard to:

i. the relevant insurance policy or set of insurance policies for the event
ii. the level of insurance that an efficient and prudent business would obtain, or would have sought to obtain, in respect of the event;
iii. any information provided by WaterNSW to the Tribunal about WaterNSW's actions and processes; and
iv. any guidance published by the Tribunal on matters the Tribunal will likely have regard to in assessing any insurance coverage event that occurs.

Insurer credit risk event

This is an event where costs are incurred as a result of an insurer becoming insolvent.

The Insurer credit risk event definition below is based on the definition on the national energy market regulations (including the National Electricity Rules).

Box 6: Definition: Insurer credit risk event

An insurer credit risk event occurs if an insurer of WaterNSW becomes insolvent, and as a result, in respect of an existing or potential claim for a risk that was insured by the insolvent insurer, WaterNSW:

(a) is subject to a higher or lower claim limit or a higher or lower deductible than would have otherwise applied under the insolvent insurer's policy; or
(b) incurs additional costs associated with funding an insurance claim, which would otherwise have been covered by the insolvent insurer.

Note: in assessing an insurer credit risk event pass through application, the Tribunal will have regard to, amongst other things:

i. WaterNSW's attempts to mitigate and prevent the event from occurring by reviewing and considering the insurer's track record, size, credit rating and reputation; and
ii. in the event that a claim would have been covered by the insolvent insurer's policy, whether WaterNSW had reasonable opportunity to insure the risk with a different provider.

Natural disaster event

The cost impact of a natural disaster can be significant. Potential natural disasters that could cause significant property damage include, but are not limited to earthquakes, storms and floods. WaterNSW's insurance cover provides a level of protection against property damage caused by natural disasters. However, the cost impact of a natural disaster could materially exceed the coverage provided by these policies.

The natural disaster event is complementary to the insurance coverage event specified above, addressing the unexpected, material costs that an insurance policy would not ordinarily cover.

The relative infrequency and material financial costs of a natural disaster creates significant practical challenges for self-insuring such events. A pass through mechanism provides a more appropriate arrangement for managing the cost impacts in the event that a natural disaster event occurs and causes a material increase in costs. We consider that managing costs through a nominated pass through event is in the long-term interest of consumers.

Any pass through amount claimed in a pass through application for a natural disaster event would be net of any insurance payout made to WaterNSW and any amounts recovered through

an insurance coverage event pass through application.

The natural disaster event definition below is based on the definition on the national energy market regulations (including the National Electricity Rules).

Box 7: Definition: Natural disaster event

Natural disaster event means any natural disaster including but not limited to cyclone, fire, flood or earthquake that occurs during the 2022 Determination period that changes the costs to WaterNSW in respect of the provision of Pass Through Water Services, provided the cyclone, fire, flood, earthquake or other event was:

(a) a consequence of an act or omission that was necessary for the service provider to comply with a regulatory obligation or requirement or with an applicable regulatory instrument; or

(b) not a consequence of any other act or omission of the service provider.

Note: In assessing a natural disaster event pass through application, the Tribunal will have regard to, amongst other things:

i whether WaterNSW has insurance against the event;

ii the level of insurance that an efficient and prudent business would obtain in respect of the event.

Terrorism event

As with a natural disaster event, a terrorism event may impost cost that materially exceed the limits of prudent insurance policies.

Any pass through amount claimed in a pass through application for a terrorism event would be net of any insurance payout made to WaterNSW and any amounts recovered through an insurance coverage event pass through application.

The terrorism event definition below is based on the definition on the national energy market regulations (including the National Electricity Rules).

Box 8: Definition: Terrorism event

Terrorism event means an act (including, but not limited to, the use of force or violence or the threat of force or violence) of any person or group of persons (whether acting alone or on behalf of or in connection with any organisation or government), which:

(a) from its nature or context is done for, or in connection with, political, religious, ideological, ethnic or similar purposes or reasons (including the intention to influence or intimidate any government and/or put the public, or any section of the public, in fear); and

(b) changes the costs to WaterNSW in providing Pass Through Water Services.

Note: In assessing a terrorism event pass through application, the Tribunal will have regard to, amongst other things:

i. whether WaterNSW has insurance against the event;

ii. the level of insurance that an efficient and prudent business would obtain in respect of the event; and

iii. whether a declaration has been made by a relevant government authority that a terrorism event has occurred.

Appendix G – Forecast electricity costs

The cost of electricity represents a significant portion of the variable cost of providing transportation services.

We have proposed a forecast of the benchmark electricity price and electricity cost to generate the revenue requirement to IPART, our customers and stakeholders over the term of the proposed determination (the electricity forecast for the 2022 Determination period is shown in Table 55 below).

This forecast reflects information available today, but the cost of electricity is also highly uncertain given that key components of electricity prices are determined by dynamic market forces, or independent regulators and/or market authorities.

To manage this forecast price risk - which WaterNSW cannot practically manage itself - WaterNSW is proposing changes to the pricing formulae to enable an end of period true-up for movements in the network and wholesale components of the benchmark electricity price over the 2022 Determination period.

Table 56 - Electricity costs

Electricity costs ($2021-22)						
$'000	**2022-23**	**2023-24**	**2024-25**	**2025-26**	**2026-27**	**Total**
Wholesale	612	624	622	621	619	**3,098**
Renewable	203	181	178	175	172	**908**
Market fees and ancillary services	12	12	12	12	12	**62**
Network charges	644	643	641	639	637	**3,204**
Retail operating costs and margin	91	91	90	90	90	**452**
Total electricity costs	**1,563**	**1,551**	**1,544**	**1,537**	**1,530**	**7,724**

* Based on Essential Water's forecast volumes extracted of 5,531ML p.a., plus losses at the bulk supply facility of 435ML p.a., plus usage by offtake customers of 3ML p.a.

Forecast electricity prices

We engaged Frontier Economics to provide us with forecast prices for the five-year period of the determination.

Frontier Economics used a cost build up approach to estimate the likely cost of electricity the pipeline will incur during the projection period 2022-23 to 2026-27. The Frontier Economics methodology estimates retail electricity costs as follows:

- Wholesale electricity costs for the assumed demand profile ("**WEC**")
- Costs of complying with state and federal government policies, including the Renewable Energy Target ("**RET**")
- The costs associated with the New South Wales Energy Savings Scheme ("**ESS**")
- National Electricity Market ("**NEM**") fees, ancillary services charges and costs of meeting prudential requirements
- Energy losses incurred during the transmission and distribution of electricity to customers;
- Network costs (including the Climate Change Fund Levy);
- Retail margin; and
- Retail operating cost.

Details of how Frontier Economics has forecast electricity costs are detailed below.

Wholesale electricity costs

Frontier Economics has used wholesale futures contracts to estimate the expected wholesale component of retailer prices the pipeline may face. Futures contract are publicly traded on the ASX, and are available for 2022-23 and 2023-24 (as of the time of writing this report). Frontier Economics has then assumed that future contract prices remain constant in real terms for the period to 2026-27.

As discussed in Section 5.5, WaterNSW proposes that an end of period true-up mechanism is introduced for movements in the wholesale component of the electricity

benchmark price over the 2022 Determination period (similar to IPART's cost of debt true-up mechanism – see Section 10.3).

Renewable energy policy cost

The Large-scale Renewable Energy Target ("**LRET**") and the Small-scale Renewable Energy Scheme ("**SRES**") place obligations on electricity retailers to obtain and surrender renewable certificates.

Costs associated with the LRET and the SRES have been estimated using the latest price information from Mercari, and renewable energy percentages published by the Clean Energy Regulator ("**CER**").

To estimate the costs to retailers of complying with both the LRET and SRES, Frontier Economics used the following elements:

- Historical Large-scale Generation Certificate ("**LGC**") forward market prices from Mercari[73] for 2023 to 2024;
- Frontier Economics' projected LGC prices for 2025 to 2027;
- Mandated LRET targets for 2023 to 2027;
- The Renewable Power Percentage ("**RPP**") as published by the CER for 2021;
- Estimated RPP values for 2023 to 2027;
- The binding Small-scale Technology Percentage ("**STP**") for 2021 under the SRES as published by the CER;
- Non-binding STP values for 2022 and 2023 and Frontier Economics' projected values for 2024 to 2027; and
- CER's fixed clearing house price for 2023 to 2027 for Small-scale Technology Certificates ("**STC**") of $40/MWh.

NSW Energy Savings Scheme

The NSW ESS places an obligation on electricity retailers to obtain and surrender Energy Savings Certificates ("**ESC**"), which represent energy savings. Liability under the scheme is set as a legislated fixed percentage of electricity sales for which ESCs need to be surrendered in each calendar year.

Frontier Economics estimated the certificate cost based on the price and volumes traded in the forward market for these certificates. Going forward it is assumed that the cost of purchasing certificates under the scheme will remain constant in real terms.

Other electricity costs

Market fees and ancillary service costs are estimated based on data and policy documents published by the Australian Energy Market Operator ("**AEMO**").

Prudential costs, required both by AEMO and to meet prudential requirements to engage in hedging, take into account:

- The AEMO assessed maximum credit limit ("**MCL**");
- The future risk-weighted pool price;
- Participant specific risk adjustment factors;
- AEMO published volatility factors;
- Futures market prudential obligation factors, including:
  - The price scanning range ("**PSR**");
  - The intra month spread charge; and
  - The spot isolation rate.

Energy losses

The estimated electricity costs resulting from the methodology described above are referenced to the New South Wales Regional Reference Node (RRN). These estimates are then adjusted for transmission and distribution losses. Distribution Loss Factors ("**DLF**") for the Essential Energy zone and electricity consumption weighted average Marginal Loss Factors ("**MLF**") for transmission losses for the Red Cliffs and Broken Hill connection points[74], were applied to the wholesale electricity cost estimates to incorporate losses.

The MLFs and DLFs used in the calculations were based on the final 2020-21 MLFs and DLFs published by AEMO on 11 December 2020.

Network costs

Australian electricity networks, whether transmission or distribution, are considered to be natural monopolies and, as such, are subject to economic regulation by the AER.

Given its location in regional New South Wales, the pipeline is located within TransGrid's transmission network and Essential Energy's distribution network.

On March 2021, Essential Energy submitted an annual pricing proposal to the AER for the period 1 July 2021 to 30 June 2022, pending a decision by the AER (at the time of writing this submission). For the purposes of this analysis Frontier Economics assumed that the AER would

[73] See http://lgc.mercari.com.au/

[74] This point is proximate to Wentworth.

accept Essential Energy's pricing proposal as submitted.

The Essential Energy tariff categories are specified in the Essential Energy Pricing Proposal and the Annual Pricing Proposals.[75] From bills provided by WaterNSW, it was determined that the pumping stations are on the high voltage time of use monthly demand tariff (tariff code: BHND3AO).

In time, Essential Energy will make a regulatory submission to the AER for revenue to be earned beyond 1 July 2024. The revenue the AER ultimately determines to be appropriate will be recovered through new tariffs. Those tariffs are likely to reflect the current tariffs, but changes are possible.

Frontier Economics made the placeholder assumption that future network tariffs will grow in line with inflation or, in other words, that they remain constant in real terms over the projection period from 2021-22 to 2026-27.

As discussed in Section 5.5, in contrast to IPART's previous approach of 'setting and forgetting' the network component of the electricity cost allowance, we are proposing a mechanism to provide an end of period true-up for movements in the network component of the electricity benchmark price over the 2022 Determination period.

This is to ensure prices reflect network charges determined by the AER and levied by Essential Water on WaterNSW in respect of Use of System Services, consistent with the IPART's SDP 2017 Determination which provides for a pass through of network charges.

Retail margin

The retail margin compensates electricity retailers for the risks that retailers take in supplying customers with electricity.

Frontier Economics' analysis of regulatory allowances for the retail margin, including decisions by the QCA, the ICRC, OTTER and IPART, suggests a retail margin of 5.7 per cent between 2021-22 and 2026-27 in New South Wales.

Retail operating costs compensate electricity retailers for their internal costs of operating their business. Given that retail operating costs account for a very small proportion of total retail prices for large customers, we have not included a separate allowance for retail operating costs.

The cost of electricity is dependent on the volumes of water pumped to meet Essential Water's actual demand. We have based our electricity cost forecasts on the volumes forecast by Essential Water at the bulk water extraction point. To the extent that actual volumes differ from forecast volumes, there will be a cost variation.

To manage this revenue risk, WaterNSW has proposed variable usage charges that are calculated to recover the marginal cost of electricity. These proposed usage charges are discussed in Section 14. The cost variations arising from volumes forecasts that differ from the base case forecast by plus / minus 10% and 20% are provided in Table 57 below.

Table 57 - Electricity cost sensitivity based on volumes varying by 10% and 20%

Electricity costs ($2021-22)						
$'000	**2022-23**	**2023-24**	**2024-25**	**2025-26**	**2026-27**	**Total ****
Electricity costs (-20% usage)	1,316	1,306	1,300	1,294	1,289	6,504
Electricity costs (-10% usage)	1,439	1,428	1,422	1,416	1,409	7,113
Electricity costs – Base Case	**1,563**	**1,551**	**1,544**	**1,537**	**1,530**	**7,724**
Electricity costs (+10% usage)	1,687	1,674	1,666	1,658	1,651	8,335
Electricity costs (+20% usage)	1,810	1,796	1,788	1,780	1,771	8,944

* Calculated by flexing pumping volumes in each financial year from the base case forecast (5,531ML p.a. on average for Essential Water plus 435ML p.a. of evaporative losses plus 3ML p.a. for offtake customers).

**Totals may not add due to rounding

[75] https://www.aer.gov.au/system/files/AER%20approved%20-%20Essential%20Energy%202017-18%20Annual%20Pricing%20Proposal%20-%20Prices%20Report%20-%205%20May%202017.pdf

As illustrated above, a 10% change in volumes results in an approximate $611,000 or 8%, change in the forecast cost of electricity over the 2022 Determination period. A 20% change in volumes results in an approximate $1,221,000 or 16%, change in the forecast cost of electricity over the 2022 Determination period.

Accounting for movements in the benchmark electricity price over the 2022 Determination period

WaterNSW is proposing changes to the pricing formulae to enable an end of period true-up for movements in the network and wholesale component of the electricity benchmark price over the 2022 Determination period (similar to IPART's cost of debt true-up mechanism – see Section 10.3).

In updating the energy cost allowance, we are not proposing to update the energy use profile, rather this would be 'locked in' for the 2022 Determination period. Instead, we are proposing the benchmark price is updated or escalated to reflect movements in network and wholesale costs.

We have considered a range of potential options to give effect to this proposal drawing on regulatory precedence from across Australia, including IPART's other water and energy decisions. We have also been minded to ensure the proposed mechanisms:

- Retain incentives for WaterNSW to procure and use electricity as efficiently as possible;
- Result in WaterNSW's prices reflecting the costs that would be incurred by a prudent and efficient benchmark entity in providing these services over the 2022 Determination period; and
- Can be applied simply and mechanically without a need for IPART to exercise discretion through the 2022 Determination period by referring to the relevant published charges.

We recognise that IPART may have a preference for specific options to give effect to this proposal and we would seek to work with IPART to identify a transparent and workable solution.

Calculating movements in wholesale component of electricity costs

The proposed mechanism to track or calculate movements in the wholesale component of the electricity benchmark price over the 2022 Determination is as set out as follows:

Formula 1 – Calculating movements in the wholesale component of the benchmark electricity price

$$WEC_2 = \frac{ASX_2}{ASX_1} \times WEC_1$$

Where:

- **WEC_2** is the wholesale electricity cost component of the benchmark price for the *second* year of the 2022 Determination period
- **WEC_1** is the wholesale electricity cost component of the benchmark price for the *first* year of the 2022 Determination period
- **ASX_2** is the price of a baseload financial year strip for NSW for the *second* year of the regulatory period, average over a defined period (for instance, for x days prior to the annual review)
- **ASX_1** is the price of a baseload financial year strip for NSW for the *first* year of the regulatory period, average over a defined period (for instance, for x days prior to the determination)

This movement would be compared annually to the forecast wholesale component of the benchmark electricity price included in the 2022 Determination period. This movement could then be applied to the energy use profile to calculate the true up amount for each year in the determination period.

Accounting for movement in the network charge component of electricity costs

We propose changes in the network component of the benchmark electricity price are updated with reference to actual network charges over the 2022 Determination period.

We have not proposed a formula for this update recognising the many components of network charges. We propose the true-up amount account for movements in all of the network components of the benchmark electricity price including:

- Actual network prices; and
- The actual maximum demand for the maximum demand ($/MVA) charge.

As noted above, in calculating these movements we propose holding constant the assumed

energy use profile for the variable ($/MWh) network charge.

This ensures WaterNSW faces strong incentives to pump efficiently, while recognising the important influence of maximum demand charges on our electricity cost allowance. Importantly, this is consistent with the electricity pass-through arrangements for SDP.

Appendix H – Impact of COVID-19 for the economy, water utilities and WaterNSW

This appendix sets out WaterNSW's views on the potential impacts of COVID-19 for the economy, water utilities and WaterNSW as may apply during the 2022 Determination period.

1. Introduction

Australia has not been through a crisis of the magnitude of COVID-19 for generations. Governments locally and around the world have been scrambling. Policy responses are sometimes confused and contradictory, and leaders are under immense pressure to respond. A broadly consistent policy response to reducing the spread of the virus has seen the enforcement of a degree of lockdown of the population.

These measures have created challenges for the global economy. While last year, we expected to see the sharpest recession Australia has seen since the Great Depression of the 1930s[76] the growth in the economy's size over the last six months is the strongest ever recorded since comparable statistics were first put together more than six decades ago.[77]

While the economy seems to be getting back on track, there is still considerable uncertainty around several key factors:

- The impact of emergency government assistance falling away;
- The speed and efficacy of the vaccine roll-out;
- The-opening of international borders; and
- The possibility of future mutations of the COVID-19 virus.

This means there is still significant uncertainty as to how long a full and sustained recovery will take.

Utilities, including the water sector, are not immune to such wide-scale disruptions. Our preliminary analysis at the start of lockdown protocols being put in place in 2020, suggested the short-term impact on the utilities sector will not be as harsh as in other sectors of the economy.

However, we noted that the severity of impact on utilities may be delayed. For example, in 2020 Deloitte Access Economics (DAE) estimated the utilities sector output will begin to decline in FY2021 and continue through FY2022.

This compares to what DAE expected in other industries, such as accommodation and food services, where it expected to see a sharp drop in FY2020 and a recovery by FY2022. At this stage DAE still sees considerable uncertainties around a full recovery in the utilities sectors in part due to persistent lower population levels.

There is clearly great uncertainty as to what impact COVID-19 will have on water utilities. The following sections review the underlying uncertainty the pandemic has created and assesses:

- The latest macroeconomic indicators and forecasts;
- The implications the trends in macroeconomic indicators have for current framework IPART uses to regulate the water sector; and
- The likely impacts on the revenue and expenditure drivers for regulated water utilities in the short term (within the 2021 calendar year) and medium term (within the next five years), and the implications for WaterNSW.

2. Macroeconomic impacts – key indicators and trends

Australia's recovery from last year's lockdown has been remarkable. During 2020, real national income has increased by 1.4% - above average of the decade preceding the pandemic. However, as emergency government assistance continues to fall away, DAE expects that growth will gradually slow down and there remains significant uncertainty around the efficacy of the vaccine roll-out, monetary policy and wages growth.

In Australia, the key recent impacts on production and employment are as follows:

- In late March 2021, Deloitte Access Economics forecast Gross Domestic Product (GDP) would increase by 1.1% in FY2021 and 4.1% in FY2022 in real terms; however this growth is forecast to decline in succeeding years;[78]

[76] Deloitte Access Economics, March 2021, Business Outlook
[77] Deloitte Access Economics
[78] Deloitte Access Economics, March 2021, Business Outlook, p. 54.

- In the utility sector, output declined by 1.8% in FY2020 and 0.4% in FY2021 and is only forecast to start increasing by 1.8% in FY2022;[79]
- The unemployment rate is forecast to be 6.3% in FY2021, an increase from 5.6% in FY2020. This is expected to slowly recede to 5.3% by FY2023;[80] and
- Australia's population growth is expected to fall from 1.5% in FY2020 to 0.4% in FY2021 and 0.5% in FY2023. [81]

Australian prices and financial markets are responding:

- Inflation is expected to continue to remain at record lows, with headline CPI forecast at 1.3% in FY2021 and only a small decrease in following years. [82]
- The Reserve Bank of Australia (RBA) has reaffirmed its setting for the cash rate at 0.1% - the lowest in 3 decades.[83]
- The Australian dollar has recovered from last year's 18-year low, with the US exchange rate at US$0.57 per AUD$1 on 16 March FY2020. The Australian dollar is recovering and is expected to trade at US$0.751 per AUD$1 in FY2022 [84]

It is uncertain if the speed of the current economic recovery can be maintained and DAE still believes that there is considerable uncertainty around the medium-term economic outlook.

3. Implications for IPART's regulatory framework

Economic conditions in general have improved compared to last year, but we are still experiencing and are expected to experience low inflation rates well into the future. At the same time, there is some uncertainty about output in the utilities sector. These changes in macroeconomic indicators resulting from the pandemic have implications for the regulatory framework that IPART uses to determine water business revenues and prices. In particular:

- The estimated rate of inflation used in the cost of capital and forecast prices and expenditures; and
- Efficiency adjustments, both 'catch-up efficiencies' and 'continuing' efficiencies, in which the concept of a 'frontier company' is used as a benchmark for water businesses' efficient expenditure.

3.1 Inflation impacts on real returns

In determining cashflows for regulated water utilities, IPART uses the standard approach adopted by regulators in other sectors in Australia and in the UK of applying a real rate of return to an indexed regulatory asset base (RAB).

IPART's latest estimate used to derive the real rate of return for utilities, is 2.2% which is higher than IPART's forecast of expected inflation of 2.1% as at 31 July 2020.[85] This is counterintuitive given that actual headline inflation was 1.3% in FY2020[86] and forecast inflation is 1.3% for FY2021 and 1.4% for FY2022[87]

As discussed in the CEG report on WACC, inflation and financeability (provided as part of our response to the Greater Sydney Draft Determination in 2020), the difference between actual inflation rates and the current rate of expected inflation used by IPART has already been highlighted as creating a financeability risk for water businesses. This is because over-estimated inflation rates will result in an under-estimated real WACC, resulting in real returns that are lower than expected.

The analysis conducted by IPART already highlights the issues this creates for cash flow risk in its own assessment of the funds from operations (FFO) over debt ratio,[88] which tests whether we have generated sufficient free cash flow to repay our debts – payments which are based on nominal interest payments.

The expected low inflation rates resulting from the global pandemic will only serve to exacerbate the cash flow risk and financeability issues already identified. This further highlights the need for IPART to revise its approach to estimating the expected inflation rate, as the impact on financeability will be much greater, the lower the

[79] Deloitte Access Economics, March 2021, Business Outlook, p. 92.
[80] Deloitte Access Economics, March 2021, *Business Outlook*, p. 138
[81] Deloitte Access Economics, March 2021, Business Outlook, p. 138.
[82] Deloitte Access Economics, March 2021, Business Outlook, p. 103.
[83] RBA, *Minutes of the Monetary policy Meeting of the Reserve Bank Board, 2 March 2021*.
[84] Deloitte Access Economics, March 2021, Business Outlook, *p. 114*
[85] IPART, WACC biannual update, February 2021.
[86] Deloitte Access Economics, March 2021, Business Outlook, *p. 103.*
[87] Deloitte Access Economics, March 2021, Business Outlook, p. 8.
[88] IPART, *March 2020, Draft Report: Review of prices for WaterNSW Rural Valleys*, p.84

expected inflation rate is compared to IPART's most recent 2.2% estimate.[89]

We note our proposal for IPART to adopt the AER's recent decision on forecasting inflation that is based on IPART's standard approach with a 'glidepath' to the mid-point of the RBA's target inflation range by the end of the regulatory period.

In particular, the AER notes that it considers that its final position addresses some immediate problems highlighted in stakeholder submissions, but that it will be enduring because it is capable of responding to changing economic circumstances. The problems highlighted by stakeholders in their submissions are consistent with the issues WaterNSW is facing in the low inflation environment under a real rate of return regulatory framework. [90]

The AER's recent change in the methodology to estimate expected inflation signals that regulators are taking the impact of low inflation on the financeability of networks regulated under a real rate of return framework seriously and that they are actively making changes to address financeability concerns by making changes to the regulatory framework.

Finally, we note that the RBA indicated just recently that it still sees uncertainties around when inflation will move back to within its own target range. In particular, it noted that that wages growth had remained low, at 1.4 per cent over the year to the December 2020 quarter and that a that a materially lower unemployment rate would be needed to generate wages growth in excess of 3 per cent, which in turn would be required to ensure inflation was sustainably in the 2 to 3 per cent target range.[91]

3.2 Achieving efficiency improvements in an economic downturn

The 'frontier company' approach that IPART's consultants, Atkins and Cardno, have applied assumes that there will be ongoing productivity improvements in the operation of the business over time. The productivity improvements are predicated on underlying growth and improvements in the economy that should flow through to the sector.

The economic slowdown experienced during 2020 with a 0.2% contraction in FY2020 and a forecast growth of 1.1%% for FY2021 and 4.1% for FY2022, brings into question whether the frontier company approach is a valid or applicable in the current environment.[92] As noted above, while the current economic recovery is strong, we note that there are considerable uncertainties around whether this will be sustained . This uncertainty coupled with the effects of last year's slowdown will challenge our ability to achieve efficiency targets based on long term productivity movements of the economy as a whole as applied by IPART in other determinations (e.g. the IPART 2021 Draft Determination for WaterNSW rural bulk water services).

Efficiency improvements at the productivity frontier are underscored by the assumption that efficiency can be achieved through increased scale or technological change. With a slow-down in new connections growth, economies of scale will be difficult to attain. Similarly, investment in technological improvements are likely to be stifled in a time of economic downturn.

In addition, this new operating environment is likely to impact our productivity as:

- Social distancing protocols result in slower manufacturing plant operations, this may require expenditure on larger operating space to keep employees adequately separated while keeping operations timely; and
- Our employees transition to (or from) working from home.

There have been technology constraints as the capacity of the virtual private network in place prior to the lockdown had to be increased to support the volume of people now having to be online and working out of office.

There are risks to productivity as efficiency enhancing IT programs may be delayed to the extent there are any constraints in supply on ICT capacity with increased demand being placed on the resources across the State.

4. Expenditure drivers

The range of economic disruptions and government policies will have a mixed and uncertain effect on both water supply needs and the cost to deliver those needs. In particular:

[89] The expected inflation rate in IPART's draft decision is based the RBA's November 2020 Statement on Monetary Policy and IPART released a financial market update on 25 February 2021 which puts the expected inflation rate 10 basis points higher than in its draft decision. We understand that IPART has used the RBA's February 2021 Statement on Monetary Policy in its latest update.

[90] AER, *Final position, regulatory treatment of inflation*, December 2020, p 6.

[91] RBA, *Minutes of the Monetary Policy Meeting of the Reserve Bank Board*, 2 March 2021.

[92] OECD, *Economic Outlook, interim report*, March 2021, *p. 4*

- Changes in water usage behaviour and growth in new water connections in the future;
- New operational requirements on businesses, which may be moderated by downwards pressure on labour and electricity costs; and
- The expected timing of major infrastructure projects and the cost of engineering, procurement and construction (EPC) and imported materials.

4.1 Water demand

4.1.1 Short term

The key consideration in the short-term is how structural and behavioural changes will impact existing water consumption.

As people continue to work and live from home under lockdown measures, residential water demand is likely to increase, as seen in other utility sectors such as electricity.[93] This may be slightly moderated by migrants having returned to their overseas home and a general slowdown in population growth.

Small and medium enterprise (SME) water demand is likely to have declined as trading was halted and businesses now having to re-establish their operations, particularly in non-essential services such as hospitality and entertainment.

It is unknown how commercial and industrial (C&I) water demand will change as some trading is picking-up.

4.1.2 Medium term

In addition to behavioural changes on water usage, we must consider how changes in growth will impact future connections and increased water consumption.

It is uncertain how last year's lock-down protocols and isolation have impacted water demand; it is possible that the short-term impacts on water usage will continue well into the medium term.

Last year's economic downturn may result in slower growth in new connections, particularly if immigration (a major source of Australia's population growth) does not pick back up and lower population growth rates continue into the future.

However, it is still currently expected that construction of major developments and infrastructure will continue as planned, in particular the investment in Western Sydney and the Aerotropolis. This is in line with the New South Wales Government's commitment to continue to deliver its infrastructure pipeline.[94]

4.2 Operating expenditure

4.2.1 Short term

New operational requirements

This new operating environment has brought on new expectations of businesses such as more frequent and rigorous cleaning of workplaces. In addition, working out of office has required investment in improved information and communication technology (ICT) such as greater virtual private network (VPN) capacity. This is in addition to maintaining office building costs.

The unemployment rate reached its peak in July 2020 with a rate of 7.5%. This has now declined to 5.8% in February 2021[95], but average weekly earnings growth of less than inflation is expected to occur well into FY2024.[96] This means that payment difficulties may create issues for WaterNSW.

4.2.2 Medium term

New operational requirements

It is likely that some of the short-term disruptions considered above could continue well into the medium term. Even as health concerns ease, certain requirements like improved ICT may continue to be pertinent, as working from home becomes the 'new normal' and businesses look to prepare in case of future office disruptions.

We will also need to consider how we're protected as we navigate these new risks, including changes to workplace safety and workplace interruptions. It is likely that we will require insurance extensions if we wish to be protected from the impacts of the next pandemic.[97]

Supply of resources

[93] Residential electricity demand increased 14% following the lock-down measures in the Jemena distribution zone. Source: Energy Networks Australia, 16 April 2020, *Commercial down v residential up: COVID-19's electricity impact.*

[94] Dominic Perrotet, NSW Government Treasurer, *Letter to the construction and engineering sectors of NSW*.

[95] Australian Bureau of Statistics, *Labour Force, Australia*, 18 March 2021.

[96] Deloitte Access Economics, March 2021, Business Outlook, p. 96.

[97] Foez Dewan from McCabe Curwood, 17 March 2020, *Will my Business Insurance cover me for the impact of COVID-19?*

It is likely that some proportion of businesses will never recover from last year's shutdown period, despite Government support payments and wage subsidies.

It is therefore likely that the short-term impacts considered above will continue into the medium term. Unemployed workers may be able to transition to low skilled jobs, such as cleaning, relatively quickly. However, it will take time before unemployed labour can transition to skilled areas, such as IT. Overall, higher unemployment is likely to prevail to some degree,[98] putting downwards pressure on labour costs as employment contracts are refreshed in the coming years.

If more businesses continue to fail over the medium-term, there is however the risk of market concentration of suppliers, which may put additional upwards pressure on our prices.

In addition, grid electricity prices may decline if gas prices remain low, more renewable energy enters the market[99] and demand continues to be subdued.[100]

4.3 Capital expenditure

Timing

Despite the potential slowdown in new growth areas as result of declining population growth, the NSW Government's commitment to deliver major developments and infrastructure means we are still expected to undertake capital expenditure related to Government projects, such as the three major dam projects in our rural valleys.

As highlighted by the NSW Treasurer, continuing capital investments where possible will be vital to supporting the local economy during the economic downturn.

Cost

We are uncertain how the cost of planned capital investments will be impacted.

As mentioned above, local businesses are likely to experience reduced demand from the private sector, this includes businesses in engineering, procurement and construction (EPC). This could lead to lower EPC costs as businesses compete for fewer clients in the short term, potentially followed by higher prices due to greater market concentration following business closures in the medium term.

5. Summary of COVID-19 impacts

The rapid changes in macroeconomic indicators that the world experienced last year has impacted water utilities and is now posing unique challenges for the regulatory framework that IPART operates. In particular, the medium -term impacts of last year's lockdowns on the economy and the water sector are still unclear.

We already face significant risk to our financeability over the 2022 Determination period as a result of the disconnect between IPART's assumed expected inflation rate and actual inflation. This issue is likely to be worse given the expected lower levels of inflation now prevailing. Further, it is questionable whether the efficient frontier used by the reviewer is still applicable given the downturn currently being experienced in the economy. We have seen our input costs increasing in a number of areas, and there are also potential declines to productivity as our workforce adapts to new working arrangements

Meanwhile, the impact of COVID-19 on water demand remains uncertain, with behavioural changes and economic growth factors yet to be revealed in actual consumption. Australia's transition to a post-COVID world is increasingly unclear with concerns around the supply, efficacy and safety of vaccines creating a significant risk to economic recovery. As we have noted, accurately forecasting demand and costs in the current environment for the upcoming 2022 Determination period presents considerable challenges.

Overall, we urge IPART to take these unprecedented levels of uncertainty into account in preparing its Draft and Final Determinations. We believe this provides further support for our proposal for IPART to introduce additional mechanisms to manage risk in the regulatory framework, including:

- Addressing inflation forecasting risk by adopting our proposed glidepath approach to inflation forecasting; and
- Accepting WaterNSW's proposed efficiency adjustments applied to controllable expenditure.

[98] Deloitte Access Economics, March 2020, *Business Outlook*.

[99] Gas prices are closely linked to oil prices which are currently at all-time lows (reaching negative prices on 21 April). It is unknown when and to what extent oil prices will be able to recover.

[100] Note that electricity prices are not expected to reduce in the short term as retailers and large energy users are often entered into hedged contracts and a delay is expected as retailers refresh their contracts with revised price forecasts.

Appendix I – Tax Advice

Ernst & Young [redacted] [redacted]

Mr Joseph Pizzinga
Chief Financial Officer
WaterNSW
[redacted]

12 April 2019

WaterNSW – Application of corporate tax rate

Dear Joseph

You have requested our views in relation:

- to the application of the reduced corporate tax rate to WaterNSW's wholly-owned subsidiary, WaterNSW Infrastructure Pty Ltd under the *Income Tax Rates Act 1986* ("**ITRA 1986**"); and
- the Independent Pricing and Regulatory Tribunal of NSW ("**IPART**") view on the reduced corporate tax rate applying to WaterNSW Infrastructure Pty Limited on the assumption that it is a separate business to, and not part of, the WaterNSW's tax consolidated group.

We understand this letter may form part of WaterNSW's submission to IPART in response to IPART's draft report ("**the Report**") on the prices WaterNSW can charge for water transportation services provided by the Murray River to Broken Hill Pipeline ("**the Pipeline**").

Conclusion

- The tax rate applicable to the Pipeline, as part of the WaterNSW tax consolidated group, is 30%.
- The Pipeline is not entitled to the reduced corporate tax rate applicable to base rate entities, whether the Pipeline is part of the WaterNSW tax consolidated group or taxed as a separate entity.
- IPART's conclusion that the reduced corporate tax rate would apply if the Pipeline was assumed to be a separate business to the WaterNSW tax consolidated group is incorrect. If the Pipeline was a separate business, the tax law requires the determination of the aggregated turnover (a key factor in eligibility as a base rate entity) to include the turnover of connected entities. As WaterNSW is a connected entity, the Pipeline would not qualify as a base rate entity.

Background

- WaterNSW incorporated a subsidiary company, WaterNSW Infrastructure Pty Ltd (alternately referred to as a Special Purpose Vehicle or "**SPV**") on 5 November 2018.
- Pursuant to section 703-50 of the *Income Tax Assessment Act, 1997* ("**ITAA 1997**"), WaterNSW, as head company, formed a tax consolidated group with the SPV as a subsidiary member, effective 5 November 2018.

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- WaterNSW intends to transfer the Pipeline assets to the SPV. The SPV will operate and maintain the Pipeline on behalf of WaterNSW.
- In its draft decision at Item 6.3 "Allowance for tax", IPART has treated the Pipeline as a separate business to WaterNSW and, as a result, applied the reduced corporate tax rate of 27.5%[1], applicable to "base rate entities", in the calculation of the determination on pricing for water transportation services provided by the Pipeline.

Analysis

Our views on whether the SPV can access the reduced corporate tax rate are provided below.

- From the 2017/18 income year, the reduced 27.5% corporate tax rate applies to companies that are "**base rate entities**", pursuant to section 23(2)(a) of the ITRA 1986.
- Section 23AA of the ITRA 1986 provides an entity is a "**base rate entity**" for a year of income if:
  - no more than 80% of its assessable income for the year of income is base rate entity passive income; and
  - its "**aggregated turnover**" for the year of income is less than $50 million.
- Section 328-115 of the ITAA 1997 defines "**aggregated turnover**" as the sum of the company's annual turnover and the annual turnover of any entity *connected with* the company or that is affiliated with the company.
- Section 328-125 of the ITAA 1997 provides an entity is connected with another entity if:
  - Either entity controls the other entity, or
  - Both entities are controlled by the same third entity.
- The *direct control test* in section 328-125(2)(a) is based on a "**control percentage**" of at least 40%. Under this general test, an entity (A) controls another entity (B) if A or its affiliates, or A together with its affiliates *own*, or have the right to acquire ownership of, interests in B that between them carry the right to receive at least 40% of any distribution of income or capital by B. The test is therefore based on legal ownership of an interest in an entity.
- On this basis, WaterNSW directly controls the SPV as it owns 100% of the interests in the SPV. Therefore, the SPV is connected with WaterNSW.
- The sum of WaterNSW and the SPV's annual turnover will exceed the $50m aggregated turnover threshold. As a result, the SPV is not a base rate entity and therefore will not be eligible to access the reduced corporate tax rate of 27.5%, whether it is part of the WaterNSW tax consolidated group or a separate entity.
- A corporate tax rate of 30% will therefore apply to the SPV under income tax law, even if considered a separate taxpayer to WaterNSW.

[1] 27.5% base rate for the 2019 and 2020 year, dropping to 26% in 2021 and 25% in 2020.

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If you have any questions regarding this letter, please contact [redacted] or me on [redacted]

Yours sincerely

[redacted]

Colin Jones
Partner

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