13 December 2023

WaterNSW Systems and Process Review

Independent Pricing and Regulatory Tribunal

Final report

EXPERTS WITH IMPACT™

FTI CONSULTING

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Executive Summary

Overview of key findings

FTI notes that WaterNSW has invested significant resources into improving key business systems and processes with the result that FTI considers that these systems and processes are now at a standard consistent with expectations for an equivalent type of water utility approaching a mid-level of system maturity.

However, there are several areas for improvement, some of which WaterNSW may want to focus on to provide a robust basis for preparing its investment plans and associated expenditure forecasts for its 2024 pricing submission to IPART. These include:

- Completing all confirmed critical asset class strategies ahead of finalising asset management and investment plans (p. 8)
- Completing the transition to systematic application of the new Estimating Manual – Capital Works, to ensure cost estimation and capital program budget allowances are appropriate and robust (p. 9)
- Harmonising the representation of asset risk in its asset management system to provide a more consistent representation of asset capability risk profiles across each service area (p. 10).

With these improvements completed, it will also be important for WaterNSW to ensure the investment governance systems and processes now developed are applied systematically for development of all investment plans and expenditure forecasts that will underpin its pricing proposal. In this context, a key ongoing improvement focus should be on strongly embedding consistent and systematic application of each component of the overall framework across all areas of asset and capital planning and project development and delivery within the organisation.

As this work continues to progress, there would also be an opportunity following its pricing proposal submission for WaterNSW to:

- Undertake a broader process mapping exercise to review alignment and process effectiveness across all elements of the framework (p. 10)
- Ensure all framework and process documentation is up to date (p. 10).

Background

Ahead of the 2025 price determination for WaterNSW (and others), IPART sees merit in using pre-reviews of processes and systems to verify that a business has effective systems,

processes, data and long-term planning in place. Accordingly, FTI Consulting was engaged by IPART in September 2023 to undertake a review of WaterNSW's key business systems and processes that contribute to its:

- decision making on capital and operating expenditure
- forecasts of its capital works program
- asset and service performance.

The objective of the engagement was to review the appropriateness and maturity of WaterNSW's key business systems and processes. IPART will use this information as part of its assessment of WaterNSW's pricing proposal, and to make decisions on the prices that should apply from 1 July 2025.

Approach to the study

Our review involved extensive engagement with WaterNSW and analysis of relevant documentation provided by WaterNSW (see the record of documents shared by WaterNSW in Appendix 4).

To gauge the efficacy of WaterNSW's various frameworks, business processes and systems, this report has undertaken a number of case studies. These case studies have sought to provide a more complete view of the historical effectiveness of the processes that WaterNSW have implemented.

These case studies sought to trace how decision-making processes and data have been applied in practice (based on completed projects) and inform a view of whether these systems and processes are supportive of accurate expenditure forecasts. The case studies looked at projects that fall under business-as-usual (BAU) and non-BAU operating expenditure (opex) and capital expenditure (capex) respectively, including:

- WAVE Major Project Case Study (major capex and opex study)
- Warragamba Pipeline Corridor Capex Program Case Study (minor capex case study)
- 2024 Budget process (BAU opex case study).

Key findings

Based on our review, WaterNSW's systems and processes appear to be appropriate and fit for purpose, and consistent with expectations for a utility organisation such as WaterNSW. The frameworks and processes are also generally supported by well-developed, and relevant and comprehensive guidelines and templates to ensure consistent application and usage.

WaterNSW's overarching investment government framework is structured around the following elements:

- financial governance and investment decision making oversight
- corporate risk management
- asset management and planning
- dam safety risk management
- investment prioritisation and business plan and budgeting processes
- cost estimation processes
- project management processes.

Each of these elements is discussed below.

Financial governance and investment decision making oversight

WaterNSW's overall investment governance framework provides the overarching governance for approval of investment programs and subsequent implementation of those programs and approval, monitoring and review processes for managing the associated investment expenditures. The two key Board committees that assist the Board in overseeing investment and expenditure programs are the Asset & Investment committee and the Sustainability & Service Delivery committee. These committees are supported by formal Board approved charters that clearly outline the above accountabilities and, based on our review, are found to be appropriate and fit for purpose.

Corporate risk management

The approach to corporate risk management outlined, and the supporting documentation sighted in our review, are consistent with good practice as would be expected for a utility business such as WaterNSW. We do note that WaterNSW is continuing to progress further improvements to this risk management framework, including revisions to the risk appetite statement that will better tailor the articulation of acceptable risk profile to different risk categories across the organisation.

From our review, WaterNSW's corporate risk management framework appears comprehensive and includes all key elements that would be expected of an equivalent water utility, including:

- framework and processes that align with international risk management standards and NSW Treasury requirements
- adoption of a corporate risk appetite statement that, based on our experience with other comparable Australian water utilities, appears appropriate in both content and level of detail.

The application of risk assessment and risk management processes used in the development of WaterNSW's asset class strategies, and hence with the subsequent development of prioritised work programs to manage asset capability risks, appear to align well with the overall corporate framework.

Asset Management and Planning

Our review suggests that, while there now appears to be an adequate overall asset management framework and supporting systems in place, WaterNSW is still in the process of effectively applying these across its entire asset base, particularly through developing and finalising a full suite of asset class strategies to best inform capital and maintenance planning processes. Ideally, all required asset class strategies should be completed ahead of finalising asset management plans and associated capital investment and maintenance expenditure plans. As such, this is an urgent area of focus for WaterNSW in preparing for its next pricing submission. WaterNSW has advised us that it has already prioritised and completed its most significant asset class strategies and has a plan in place to ensure that there is an appropriate level of focus and priority for completing the roll out of asset class strategies and progressing further development and maturity of its asset management plans.

Dam safety risk management

Based on our review and the supporting documents and presentations sighted, WaterNSW's management of the assessment and related investment and approval processes relating to management of dam safety appear to be appropriate and fit for purpose for a utility managing a significant portfolio of large dams.

Investment prioritisation and business plan and budgeting processes

The investment prioritisation framework appears appropriate and fit for purpose for an organisation such as WaterNSW and, in our view, its adoption to help guide investment prioritisation as part of the broader annual business planning and budget development process will further strengthen these processes.

In relation to the broader business plan and budgeting processes, these have been considered as part of the BAU opex budget development case study, which highlighted that WaterNSW's budgeting process is based on in-depth analysis of variances compared to the previous period. That is, most of the effort in questioning expenditure requests is applied to areas seeking a material increase in funding. We note that this process step is relevant to non-salary and wages items. For salary and wages related items, the headcount is obtained by review of each individual position and review of the organisation charts.

This approach is consistent with other similar water businesses in Australia noting that there are likely to be opportunities for WaterNSW to challenge the status quo budget outcomes on a

periodic basis i.e. undertake detailed activity/line item review to assess against current needs and identify scope for efficiency improvements. For a mature organisation like WaterNSW, with a relatively stable asset base and long operational history, we would not expect this to be undertaken every year but incorporating such a process on a periodic basis would improve budgeting processes in the long run.

Cost estimation processes

This framework appears appropriate and fit for purpose, including deterministic and risk-based approaches, alternative approaches for estimating P50 and P90 estimates, and consideration of appropriate contingencies. This framework, tailored for projects over a range of levels of complexity and type, appear appropriate and consistent with expectations for an organisation such as WaterNSW.

An important improvement initiative being introduced by WaterNSW is the transitioning to a new Estimating Manual – Capital Works, of which a draft was sighted as part of our review. This manual provides guidance for the application of the cost estimating framework and, once implementation of a final version is in place, should assist more systematic and consistent application of the cost estimating framework across WaterNSW.

Project management processes

WaterNSW's project management processes cover management of the implementation of projects to deliver the outcomes from its investment programs, which are the key outputs of the Investment Prioritisation and Business Plan and Budgeting Processes. The project management processes work in alignment and connection with the Financial Governance and Investment Decision Making processes.

From our review, these examples provide evidence that appropriate supporting procedures, processes, tools and templates are in place to properly support consistent and systematic implementation of WaterNSW's project management frameworks.

Case studies

The case studies showed that the subject investment projects and programs have been progressed appropriately and in alignment with WaterNSW's investment governance frameworks and processes, including the relevant applicable business case and expenditure approval requirements and financial delegations. This provides some level of confidence that the framework and component systems and processes are being appropriately applied by WaterNSW in practice.

Overall view on the maturity and appropriateness of WaterNSW's systems and business processes

In our view, WaterNSW's overall investment planning, delivery and expenditure approval governance framework and associated processes have now been developed to a reasonable and fit for purpose state, consistent with expectations for an equivalent type of water utility approaching a mid-level of system maturity. It is apparent that there has been significant focus on developing and refining each of the key components within this overall framework, with ongoing improvements still occurring and expected to be ongoing. We consider that the existing framework and supporting systems and processes provide a good base for further improvement.

Key observations for IPART

Our review has highlighted some potential opportunities for ongoing improvement focus. These potential improvements are in addition to completing all confirmed critical asset class strategies and the transition to systematic application of the new Estimating Manual – Capital Works.

Up to date documentation

It would be useful to check the revision status of all documents (frameworks and processes) to ensure all are up to date, consistent and compliant with document control review requirements (under WaterNSW's corporate management control systems).

Process mapping exercise to review alignment and process effectiveness of individual elements of investment governance framework

Given that each of the separate elements of the overall investment governance framework have undergone significant development and updating as part of WaterNSW's ongoing improvement processes since its establishment in January 2015, there would be value in undertaking a broader process mapping check exercise to review alignment and process effectiveness across all elements. This would assist in ensuring that any drift in alignment between the separate (although linked) elements that has occurred can be corrected, further enhancing the robustness of the governance framework and its consistent, systematic and efficient application across WaterNSW.

Harmonise the representation of asset risk

We noted from our review that the Annual Board report on Asset Performance & Health uses a different representation of asset risk (i.e., "Asset Health" expressed as a percentage of remaining asset life, adjusted for the assessed criticality of the asset and for long-life assets)

compared to the risk classifications of asset service capability applied as part of the asset management system.

It may be worth considering whether it would be better to align all the reported asset risk assessments for consistency and better transparency and to give greater confidence in understanding of asset capability across each area. This could then better support and demonstrate to the Board and Executive Team how actions and associated expenditures are prioritised based on robust and appropriate risk assessments that can be confidently compared across all assets and facilities within each of WaterNSW's funded regions.

We also noted from our review that asset performance reporting to the Board contained in the Asset Performance and Health Report focuses on observed failures/incidents/near misses to provide insight into asset capability.

It may be worth considering whether, in order to provide additional context and understanding, it would be of value to provide a formal risk assessment of likelihood and consequence of failure for assets and a clear mapping of predicted (or estimated) asset capability risk (failure and criticality) to the Board and its Asset & Investment Committee. This would then be useful for linking to asset management plans and associated opex and capex programs designed specifically to address these risks.

1. Introduction

FTI Consulting was retained by IPART to review the appropriateness and maturity of WaterNSW's key business systems and processes related to expenditure and investments.

WaterNSW is a state-owned corporation established under the Water NSW Act 2014. It is granted an operating licence by the Minister for Water, Housing and Homelessness with the licence subject to five yearly review by the Independent Pricing and Regulatory Tribunal ('IPART'). WaterNSW is responsible for supplying the state's bulk water needs, operating the state's river systems and the bulk water supply system for Greater Sydney and providing services to its customers with respect to licensing and approvals, water allocation trades, water licence trades and water resource information.

In fulfilling these duties, WaterNSW delivers:

- bulk water services to the Greater Sydney area
- rural bulk water services to water access licence holders across NSW (primarily irrigators and towns)
- water planning and management services it delivers on behalf of the Water Administration Ministerial Corporation (WAMC).

IPART regulates the prices and performance of several NSW water businesses delivering monopoly services. Its aim is to hold water businesses accountable in a way that delivers good short-, medium-, and long-term customer outcomes. IPART seeks to ensure customers pay only what water businesses need to efficiently deliver the services that their customers want. In setting prices for these monopoly services, IPART seeks to replicate the pressures and incentives of competition to drive efficiency gains.

IPART's regulatory framework focuses on customers, costs, and credibility – the '3Cs'.[1] Key features of the 3Cs framework include:

- Broadening the focus of IPART pricing reviews to enable water businesses to promote customer value, cost efficiency and credibility over the short- and long-term.
- Tailoring IPART's assessments based on how well each business promotes customer expectations, providing more flexibility for the business to deliver for customers.
- Rewarding businesses for delivering customer value while keeping them accountable for meeting customer commitments.

[1] IPART Water Regulation Handbook, July 2023:
https://www.ipart.nsw.gov.au/sites/default/files/cm9_documents/Handbook-Water-regulation-July-2023-V2.PDF

1.1. Background to the review

IPART is scheduled to next commence a review of WaterNSW's proposal for customer prices for the period 2025-2030 in September 2024. This price review will involve an assessment of efficient costs.

IPART sees merit in using pre-reviews of processes and systems to verify that a business has effective systems, processes, data and long-term planning in place. Accordingly, FTI Consulting was engaged by IPART in September 2023 to undertake a review of WaterNSW's key business systems and processes that contribute to its:

- decision making on capital and operating expenditure
- forecasts of its capital works program
- asset and service performance.

The objective of the engagement was to review the appropriateness and maturity of WaterNSW's key business systems and processes. IPART will use this information as part of its assessment of WaterNSW's pricing proposal, and to make decisions on the prices that should apply from 1 July 2025. Such reviews can facilitate more streamlined expenditure reviews during the price determination process.

2. Approach to the study

This report is the result of a targeted and strategic review of the appropriateness and maturity of WaterNSW's key business systems and processes, particularly those which contribute to WaterNSW's development of its capital and operational planning.

In completing this review, we have sought to obtain insights across the following areas:

- Whether the types of key business systems WaterNSW uses in planning, delivering, and maintaining its assets are appropriate for the business and its operating environment.
- The relative maturity of WaterNSW's decision-making processes, including how it collects and uses appropriate customer, asset performance, risk and other information to inform its investment decisions.
- Whether WaterNSW appropriately considers the following investment drivers in its long-term investment planning processes:
  - water supply needs, including adapting to climate change and ensuring resilient water supply
  - changing community expectations or regulatory requirements for performance standards and environmental outcomes
  - management of ageing assets.
- Whether WaterNSW's key systems and processes are likely to generate reasonable:
  - business operational performance
  - expenditure forecasts and customer outcomes.
- The robustness of systems for linking asset management decisions with current and future levels of service and performance requirements, including customer preferences, service standards and environmental outcomes.
- The way in which WaterNSW manages the risks associated with asset failure or underperformance.

2.1. Engagement with WaterNSW

Our review of WaterNSW's key business frameworks, systems and processes that govern its investment decisions and related expenditure approval and monitoring processes was based on:

- Relevant documentation provided by WaterNSW (see the record of documents shared by WaterNSW included in Appendix 4).
- 6 October 2023 online workshop with WaterNSW staff covering:
  - Investment governance frameworks and

  - Business as usual operating budget development case study
- 9 October 2023 online workshop with WaterNSW staff covering:
  - WAVE major project case study
- 13 October 2023 online workshop with WaterNSW staff covering:
  - Asset planning, asset management and dam safety management frameworks and
  - Warragamba Pipeline Corridor capex program case study.

2.2. Case studies

To gauge the efficacy of WaterNSW's various frameworks, business processes and systems, this report has undertaken a number of case studies. These case studies have sought to provide a more complete view of the historical effectiveness of the processes that WaterNSW have implemented.

When selecting case studies, our review was seeking to gain insight as to how WaterNSW has applied their investment and governance frameworks and therefore, insight into their appropriateness and fitness for purpose. These case studies sought to trace how decision making processes and data have been applied in practice (based on completed projects) and provide insight into whether these systems and processes are supportive of accurate expenditure forecasts. We developed case studies on business-as-usual (BAU) and non-BAU operating expenditure (opex) and capital expenditure, as follows:

- WAVE Major Project Case Study (major capex and opex study)
- Warragamba Pipeline Corridor Capex Program Case Study (minor capex case study)
- 2024 Budget process (BAU opex case study)

Each case study and associated findings are described in detail in the appendices to this report.

In summary, the case studies showed that the subject investment projects and programs have been progressed appropriately and in alignment with WaterNSW's investment governance frameworks and processes, including the relevant applicable business case and expenditure approval requirements and financial delegations. This provides some level of confidence that the framework and component systems and processes are being appropriately applied by WaterNSW. It is important to note, however, that this assessment is based only on the presentations and supporting documentation (including business cases and expenditure approvals) provided for these specific case studies. While it does not necessarily follow that all other (unreviewed) projects would have demonstrated the same outcome, the case studies

show that the framework has been used consistently by WaterNSW for the projects considered.

3. Overview of WaterNSW governance framework and system processes

3.1. Context and Background

The Water NSW Act (2014) was passed by the NSW Parliament to establish WaterNSW, by merging the State Water Corporation ('State Water') and the former Sydney Catchment Authority ('SCA'). From 1 January 2015 State Water continued, albeit with a new name of WaterNSW ('WaterNSW'), while the SCA was abolished and its' operations (including assets, rights and liabilities) were transferred to WaterNSW. In addition to this, on 1 July 2016, WaterNSW was conferred functions previously performed by the Department of Primary Industries – Water ('DPI Water').

This bringing together of three agencies represented a large change management process to appropriately harmonise their respective governance framework and system processes.

Consolidating the previously existing investment governance frameworks, systems and processes from three organisations into the merged WaterNSW entity was a significant challenge. In this context, it is apparent from our review that WaterNSW has placed substantial focus and effort on adapting and updating these processes and systems and working towards the application of a systematic and consistent approach across all elements and areas of its business operations.

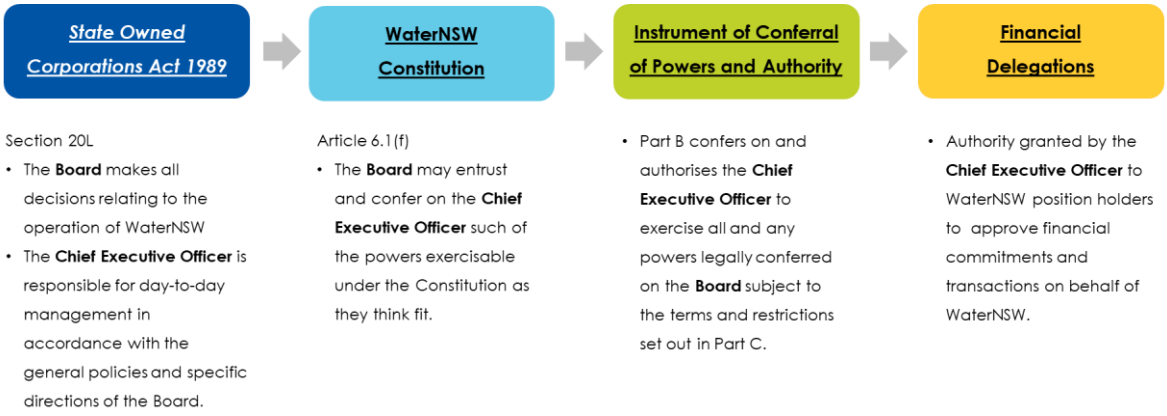
Our review suggests that good progress has been made in establishing a robust, systematic and consistent governance framework, whilst also acknowledging that this is an evolving process and that the investment governance frameworks, systems and processes will continue to mature and their consistent application across the organisation will continue to improve as the organistion gains experience with the application of these frameworks.

3.2. WaterNSW Legal Structure

Figure 3-1 sets out schematically how WaterNSW's legal structure supports conferral and delegation of powers for decision making and entering into financial commitments. Under section 20L of the *State Owned Corporations Act 1989*, the Board is responsible for all decisions relating to the operation of WaterNSW. The Directors, acting as a Board, are required to set the overall policy, strategy and direction of WaterNSW. Under WaterNSW's Constitution and Instrument of Conferral of Powers and Authority, the Board can confer all and any of its powers upon the Chief Executive Officer (CEO), subject to certain restrictions. The WaterNSW

Board's powers, functions and approach to conducting business (including establishment of Board Committees) are set out in the Board Charter (27 June 2023 version sighted for this review).

Figure 3-1: Delegation framework for WaterNSW



The CEO is responsible for day-to-day management in accordance with the general policies and specific directions of the Board and is also able to grant financial delegations to WaterNSW position holders to approve financial commitments and transactions on behalf of WaterNSW. Such delegations specify:

- The position holders (rather than individual people) to which each delegation of authority is conferred.
- The types of transactions that can be approved and a dollar limit on the authority.

Further sub-delegation is allowed in accordance with WaterNSW's governance framework.

The powers and authority conferred on the CEO by the Board (including financial delegations) are formally set out in the Instrument of Conferral of Powers to the CEO (version dated 15 December 2022 was sighted for this review). Delegations from the CEO to other positions within WaterNSW are formally set out in detail in the CEO approved Financial Delegations (June 2023 version sighted for this review).

3.3. Overall Investment Governance Framework

Figure 3-2 provides a schematic summary of WaterNSW's overall investment governance framework. The processes and systems within this framework guide the development of all

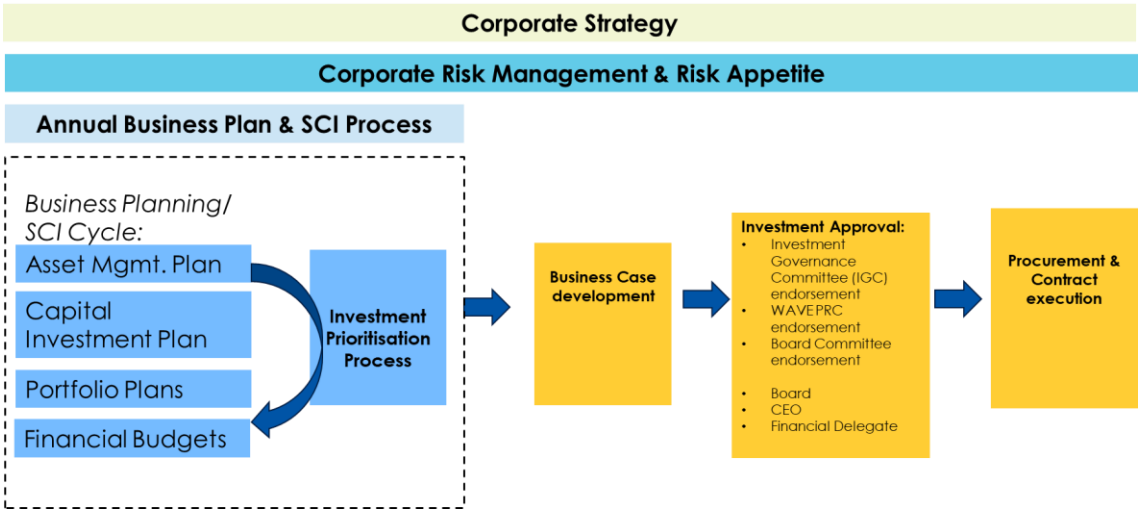
investment plans, associated operational and capital budgeting, financial approval processes and management and implementation of associated expenditures.

The key overarching drivers of WaterNSW's operations and its associated investment initiatives and programs are underpinned by:

- WaterNSW's Corporate Strategy – sets out corporate objectives over a five year outlook and the following (current) key strategic priorities:
    - Delivering operational excellence
    - Building a sustainable future
    - Developing people and capabilities
    - Working together in partnership
    - Being respected by customers and the communities served.
- WaterNSW's Statement of Corporate Intent (SCI) – a key corporate guiding document that sets out the agreed Government and stakeholder expectations, including:
    - Services provided and areas of operation
    - Corporate Strategy overview and key strategic priorities and related initiatives
    - Statement of expectations
    - Corporate performance targets.

The SCI is reviewed and updated each financial year and is signed off by the Chair of WaterNSW's Board, the WaterNSW CEO, and the State Government through the Treasurer and the Minister for Finance and Employee Relations. This is a key document and commitment by WaterNSW to the NSW Government, key stakeholders, customers and the community that sets the foundation for its service provision and related requirements and, hence, drivers for investment initiatives and expenditures.

Figure 3-2 Framework map of WaterNSW's investment governance systems processes



Guided by the direction, requirements and level of service and asset capability needs of these overarching drivers, the annual business planning and budgeting process (which includes annual review of the SCI) is supported by critical investment planning processes including:

- Asset planning and asset management processes (identifying risk-based investment needs and priorities) – including dam safety risk management systems and processes.
- Capital (including renewals as well as other asset capability, regulatory and stakeholder and changing customer service need drivers) and maintenance (operating expenditure) investment planning and development of associated investment portfolio plans to support implementation of asset management plans.
- Investment prioritisation process (risk based).
- Financial budgeting.

Key financial governance and project management frameworks and processes then guide the transition of this investment, financial and budget planning into the implementation phase. This includes:

- Business case development to establish the need and case for investment.
- Investment (including business case) approval (as per WaterNSW's financial delegations).
- Management of projects through the various business case and expenditure approvals processes and through to implementation and post implementation review.

- Procurement, contract execution and project/program and outcome delivery.

In addition, key supporting systems and processes for implementation include:

- WaterNSW's corporate risk management framework and associated risk appetite. This supports and informs analysis, assessments and decision making in relation to:
    - asset service criticality and capability
    - investment prioritisation
    - business case approvals
    - project management and procurement.
- Project cost estimation framework – providing a systematic and consistent approach to cost estimation to support financial planning and budget development.
- Board and Executive Leadership Team governance arrangements.

We reviewed each of these components based on the documents and information provided by WaterNSW as discussed in the following sections.

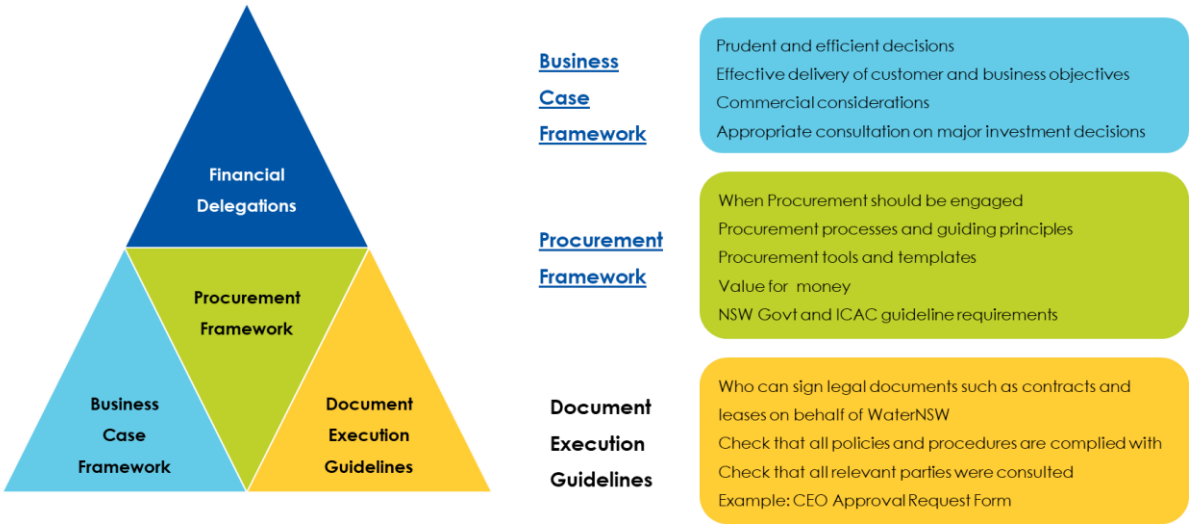
3.4. Financial Governance and Investment Decision Making Oversight

WaterNSW's overall investment governance framework is outlined schematically in Figure 3-3. This framework provides the overarching governance for approval of investment programs and subsequent implementation of those programs and approval, monitoring and review processes for managing the associated investment expenditures. The WaterNSW financial delegations (as outlined above) sits across, and enables, the following key interrelated components of the framework:

- Business Case Framework:
    - Provides an appropriate and fit for purpose framework for preparing and managing WaterNSW business cases, including links to standard templates for all business case types.
- Procurement Framework:
    - Provides an appropriate and fit for purpose framework for guiding WaterNSW procurement of goods and services, to support investment and project/program implementation.
- Supporting guidelines and templates:

- Including guidance to ensure consistent application of financial and investment frameworks and governance requirements.

Figure 3-3: Outline of WaterNSW's investment governance framework



The two key Board committees that assist the Board in overseeing investment and expenditure programs are the:

- Asset & Investment Committee, which oversees:
  - capital expenditure proposals and allocations of budgets and funds for investments
  - asset performance and capability and asset management for WaterNSW
  - asset security and safety
  - investment and delivery of programs
  - digital strategy and associated investment
  - risk and assurance for asset management and dam safety
  - non-core business investment activities.
- Sustainability & Service Delivery Committee, which oversees:
  - Environment, Social & Governance (ESG) Strategy and implementation
  - customer and community engagement, satisfaction and value

- customer and community service performance
- water quality and land management activities and obligations
- regulatory and legislative compliance obligations
- risk and assurance for service provision and related obligations, including:
  - water quality management system and related frameworks
  - operating licence obligations
  - catchment and land management obligations and flood management plans.

These committees are supported by formal Board approved charters that clearly outline the above accountabilities and, based on our review, are found to be appropriate and fit for purpose.[2]

The WaterNSW Executive Leadership Team also supports the Board in ensuring proper oversight of financial governance and investment decision making across WaterNSW through the executive committees outlined and summarised in Figure 3-4.

Figure 3-4 WaterNSW's Executive Committees supporting oversight of governance and approvals processes

Investment Governance Committee (IGC)	Executive Leadership Team (ELT) Meetings

• Operates as per the IGC charter provided
• Review and endorse investment proposals prior to CEO/Board approval
• Members are the following Executive Leaders:
  • CEO
  • Exec Mgr Operations
  • Exec Mgr Digital
  • Exec Mgr Finance, Legal & Risk
  • Exec Mgr Strategy & Performance
	• Endorse the Proposed SCI/ Business Plan and the Final SCI/ Business Plan prior to submission to the Board
	• Review and endorse the annual budget
	• Review key Board Committee agenda items or items with key judgements prior to submission to Board Committee
	• Endorse Risk Appetite Statements (RAS) prior to approval by Board

[2] Information on Board committees and their respective charters is available at: https://www.waternsw.com.au/about-us/our-business/corporate-governance.

3.5. Corporate Risk Management

Figure 3-5 outlines the key components of WaterNSW's risk management framework. This framework guides a systematic and consistent approach to assessing risks at multiple levels within the organisation, including for assessing asset capability and as a basis for investment prioritisation.

Figure 3-5 Outline of the key components of WaterNSW's risk management framework

Risk Management Policy	Articulates WaterNSW's objective of risk management, and an intent to build and embed a positive risk management culture.
Risk Appetite Statement *(Currently under revision)*	WaterNSW is partnering with Protecht Group to develop the Risk Assessment Framework and Risk Appetite Statement. The RAS will: • convey the degree of risk that WaterNSW is prepared to accept in pursuit of its strategic objectives and business plan whilst considering the interests of its stakeholders • describe the process for integrating the risk appetite and tolerances into the enterprise risk management and management frameworks • detail the process for monitoring compliance with each risk tolerance and for taking appropriate action if it is breached • determine the timing and process for review of the risk appetite and risk tolerances.
Risk Management Procedure	Outlines how WaterNSW will align and demonstrate the risk policy intent, including steps to identify and manage risks in a consistent manner across the business.
Risk Management Tools	Tools that reflect current operating context and industry practice to ensure risks are managed within the tolerable level such as ALARP test and Risk Matrix.
Corporate Risk Management Plan (CRMP)	Details the risks to the achievement of the strategic, financial and operational objectives of WaterNSW. This includes the risk profile, results of risk assessments, Key Risk Indicators (KRIs) and Treatment Action Plans (TAPs) to manage risks to an acceptable level.
Risk Profile	A point in time summary of the risk ratings and status of risk events which have a significant impact on objectives as detailed in the Corporate Risk Management Plan for oversight and monitoring.

As advised by WaterNSW:

"WaterNSW's Risk Management Framework provides a basis for consistently managing risk to support the achievement of the organisation's strategic, financial, and operational objectives. The framework aligns to ISO 31000:2018 Risk Management and NSW Treasury Policy TPP20-08 Internal Audit and Risk Management.

Quarterly reassessments of the Risk Profile are undertaken, taking into consideration the following:

- *changes in internal and external environments, including emerging risks;*
- *for risks considered to be As Low as Reasonably Practicable (ALARP), whether there are additional practical measures available to better manage the risk;*
- *for risks considered to be non-ALARP, the status of Treatment Action Plans (TAPs); and*
- *trending of Key Risk Indicators (KRIs).*

Identified amendments to the Risk Profile are reported to the Board Audit and Risk Committee quarterly."

The approach outlined and the supporting documentation sighted in our review are consistent with good practice as would be expected for a utility business such as WaterNSW. We do note that WaterNSW is continuing to progress further improvements to this risk management framework, including revisions of the risk appetite statement that will better tailor the articulation of acceptable risk profile to different risk categories across the organisation.

In summary, from our review, WaterNSW's corporate risk management framework appears comprehensive and includes all key elements that would be expected of an equivalent water utility, including:

- framework and processes that align with international risk management standards and NSW Treasury requirements
- adoption of a corporate risk appetite statement that, based on our experience with other comparable Australian water utilities, appears appropriate in both content and level of detail.

The application of risk assessment and risk management processes used in the development of WaterNSW's asset class strategies, and hence with the subsequent development of prioritised work programs to manage asset capability risks, appear to align well with the overall corporate framework.

3.6. Asset Management and Planning

In our view, WaterNSW's overall investment planning, delivery and expenditure approval governance framework and associated processes have now been developed to a reasonable and fit for purpose state, consistent with expectations for an equivalent type of water utility approaching a mid-level of system maturity. It is apparent that there has been significant focus on developing and refining each of the key components within this overall framework, with ongoing improvements still occurring and expected to be ongoing. We consider that the

existing framework and supporting systems and processes provide a good base for further improvement.

A key improvement focus is on more strongly embedding consistent and systematic application of each component within the overall framework across all areas of asset and capital planning and project development and delivery within the organisation. As this work continues to progress, there is also an opportunity to undertake a broader process mapping exercise to review alignment and process effectiveness across all elements of the framework. This would provide an important basis for identifying and highlighting any remaining gaps and new improvement opportunities for progressing WaterNSW's systems and processes to higher levels of maturity.

A particular area of ongoing improvement has been in development and application of WaterNSW's asset planning and management and capital planning systems. The overall framework and systems now in place appear to address key, previously identified, gaps, including:

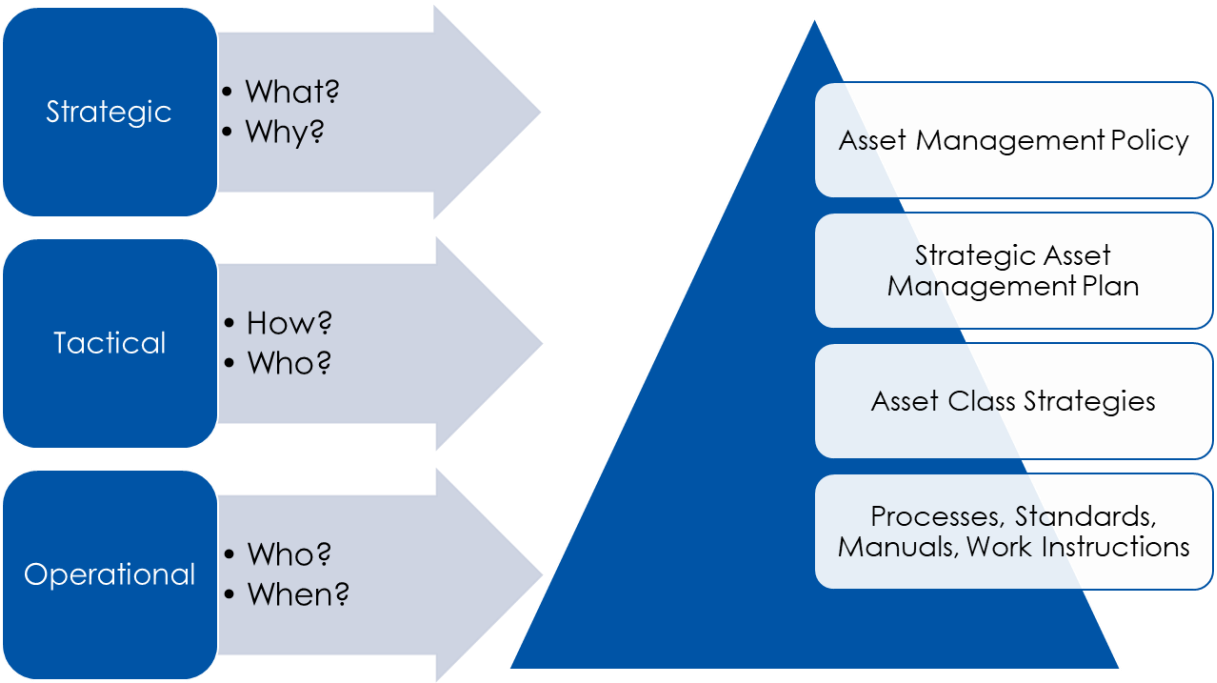
- linkage between service level performance and customer expectations and asset capability needs (particularly through ongoing development of asset class strategies that feed into both capital planning and maintenance planning processes)
- more systematic and structured application of risk assessment in developing asset class strategies and associated work programs, supporting better prioritisation processes within and across asset class strategies
- expansion of the development of asset class strategies across a broader range of WaterNSW's asset base
- initiating development of individual asset management plans for specific separate service areas (Valleys) to better refine the asset management focus in each area.

Our review suggests that, although there now appear to be an adequate overall asset management framework and supporting systems in place, WaterNSW is still in the process of effectively applying these across its entire asset base, particularly through developing and finalising a full suite of asset class strategies to best inform capital and maintenance planning processes. As noted below, a full suite of asset class strategies is still under development. Ideally, all required asset class strategies should be completed ahead of finalising asset management plans and associated capital investment and maintenance expenditure plans. As such, this is an urgent area of focus for WaterNSW in preparing for its next pricing submission. WaterNSW has advised us that it has already prioritised and completed its most significant asset class strategies and has a plan in place to ensure that there is an appropriate level of focus and priority for completing the roll out of asset class strategies and progressing further development and maturity of its asset management plans.

Figure 3-6 provides a high-level schematic overview of WaterNSW's asset management system. Based on information provided by WaterNSW further to discussions at the workshop held on 13 October 2023, the asset management system:

- has been certified to the requirements of ISO ISO55001: 2014 since 2017 – as part of our review, we have sighted the latest certificate of compliance, dated January 2023 and valid for 3 years
- follows a structured and systematic life cycle approach
- applies to all physical assets owned and operated by WaterNSW
- is specifically linked to specifying how WaterNSW delivers appropriate levels of service.

Figure 3-6 Overview of WaterNSW's asset management system structure



Key elements of this framework with supporting documentation sighted as part of our review, include:

- Overarching Asset Management Policy
    - sets out the policy framework and key objectives and focus for asset management for the organisation

  - the policy appears appropriate and fit for purpose, with strong quality management system focus and alignment with ISO 55001: 2014
  - the policy is also well aligned with the WaterNSW Strategic Plan and focus areas (in particular, Delivering Operational Excellence and related key strategic initiatives for 2024).

- Supporting Strategic Asset Management Plan
  - outlines the strategic framework WaterNSW uses to undertake asset management for all its physical assets
  - includes a high-level inventory of the assets managed
  - emphasises operating licence requirement for the AMS to be consistent with (and WaterNSW corporate objective to maintain certification with) ISO 55001: 2014
  - links well to the Asset Management Policy and highlights that the Policy should be reviewed 3 yearly and is approved by the Board
  - appears to provide an appropriate overall framework that also links well with other components of the asset management system
  - delivery of the Strategic Asset Management Plan is supported by the capital Investment Strategy, which:
    - guides capital investment planning decisions, by establishing the objectives, priorities and specific funding requirements to achieve the strategic intent set out in the Strategic Asset Management Plan
    - defines how the capital program is formulated and designed, including key influencing factors and constraints
    - informs development of the annual (10 year outlook) Capital Investment Plan.

- Asset Class Strategies
  - these provide direction as to how assets within a class should be managed throughout their lifecycle to optimise the balance of risk, performance and cost combinations (Capex and Opex)
  - supported by an Asset Class Procedure (sighted as part of our review)
    - this sets out an appropriate and fit for purpose framework and guidance for developing the asset class strategies

        - provides the context of how these asset class strategies feed into, and inform, development of asset investment planning - with both of these components supporting development of Asset Management Plans and associated Maintenance Plans (and supporting Opex forecasts and budgets) and Capital Plans (and capex forecasts and budgets).
    - sample Asset Class Strategies for Bridges and for Fishways (as a working draft) have been provided and sighted as part of our review – these appear to be appropriate and fit for purpose, including utilisation of risk assessments consistent with the corporate risk framework and classification of assets within each category according to service capability risk and identification of associated required management actions.

The Asset Class Strategies are applied across the entire asset class portfolio, independent of geographical asset boundaries. They are intended to take account of:

- stakeholder, regulatory and community requirements
- level of service needs
- asset class profiles
- risk management considerations, including:
    - failure modes
    - current condition assessments, deficiencies and trends
    - maintenance approaches and availability of spares
    - redundancy requirements.

Asset class strategies inform development of supporting opex and capex plans for inclusion in the Asset Management Plan. The Asset Management Plan comprises the following components:

- Asset Class Strategies
- WaterNSW Enterprise Asset Management System (EAMS)
- WaterNSW's asset renewals planning tool (PowerPlan).

Together, these inform the Development of the Annual Capital Investment Plan (CIP) (10 year outlook). This in turn informs:

- expenditure and budgeting processes (capex and opex)

- pricing determination submissions and supporting investment forecasts and documentation.

The Asset Management Framework is also supported by WaterNSW's Asset Planning Process, as outlined in the Asset Planning Manual (V04 dated July 2022), which also sets out high level roles and responsibilities for the asset planning process. This process is used to develop and manage the plans used by WaterNSW to coordinate future capital works on assets to maintain, the right asset capability, within an acceptable risk profile, at the lowest possible life cycle cost.

At a high level, the process comprises:

- review of asset risk and performance issues
- financial review of alternative options
- assessment of potential opportunities.

Key aspects of the associated asset investment planning and decision making processes cover:

- review of asset risk and performance
- risk assessment and quantification – in accordance with the WaterNSW risk management framework
- opportunity assessment
- financial assessment
- asset class strategies
- options assessment and evaluation.

Key drivers of the investment programs include:

- maintaining asset capability (renewals), addressing:
    - asset risk
    - asset health (condition)
    - remediation needs
- enhancing capacity, including:
    - augmentation
    - establishing new capability
- regulatory compliance, including:
    - dam safety management needs

- environmental
- health and safety requirements (incorporated in the Maintain Capability program).

Prioritisation processes to ensure well targeted investment programs that can be delivered within available capacity to finance include:

- assessment against facility and object criticality factor
- assessment of physical condition (including consideration of service potential), utilising updated asset condition data loaded into and then sourced through the EAMS
- comparative risk ranking assessments
- a series of prioritisation workshop and stakeholder engagement and planning processes, led by the accountable asset portfolio owner, to refine program packages.

Development of maintenance programs and associated operating budgets focuses on:

- routine maintenance (including business as usual) programs, which are based on work schedules captured in the EAMS, supported by historical maintenance program hours and costs
- corrective maintenance - informed by historic capture of work orders and costs (with overlaid consideration of any other capital investment needs and drivers).

Our review has also noted an active program of asset management system improvement initiatives, with:

- an Asset Management System Improvement Action Register (detailing and tracking progress on asset management improvement actions)
- an Asset Management System RACS Actions Register.

These initiatives provide evidence of systematic capture and tracking of implementation of key asset management improvement initiatives, as would be expected for a utility organisation such as WaterNSW.

Key areas for improvement noted during our review include:

- Asset Class Strategy (ACS) Development

  WaterNSW provided a summary listing of current critical asset classes across WaterNSW's overall asset portfolio, including program and progress on developing asset class strategies. This provides good evidence of systematic categorisation of critical asset classes that appears appropriate for the nature of WaterNSW's asset portfolio. Progress in

prioritised development of ACSs is outlined in the summary, noting that there are 37 asset classes identified (also noting, however, that this is subject to further review) - with 16 confirmed current ACSs already established and developed (subject to periodic review) and 7 new ACSs now proposed for progressing and in various states of development. We note that 28 ACSs are currently proposed, although the exact final number developed will be confirmed following further review. Development of ACSs for the remaining confirmed critical asset classes will be progressed in the future, according to prioritised needs and subject to further review and potential consolidation of the critical asset class listing.

Further refinement of ACS formats and content is also being progressed as new ones are developed (eg. Fishways) and existing ones are revised.

- Transitioning from cross-portfolio to refined-portfolio Capital Investment Strategies.
- Development of a valley-based Asset Management Plan (AMP) is underway with a view to moving away from a cross organisation AMP.
- Refinements are being made to asset prioritisation and criticality assessments, with improved supporting procedure and tools developed to better link benefits with WaterNSW strategic priorities.

3.7. Dam Safety Risk Management

WaterNSW manages 41 large dams across NSW, including key dams within the greater Sydney metropolitan water supply system. The related dam safety management obligations are driven by:

- *NSW Dams Safety Act 2015*
- *NSW Dams Safety Regulation 2019*
- WHS legislation
- Key business management systems:
    - AS ISO 55001 2014 – Asset Management (also covering business operational obligations relating to maintenance of certification)
    - AS ISO 9001 2015 – Quality Management Systems
    - AS ISO 31001 2018 – Risk Management
    - AS ISO 19600 2015 - Compliance Management Systems.

These obligations must also be managed within prudent and efficient funding constraints consistent with customer and stakeholder expectations and the economic regulatory overview of IPART. WaterNSW meets these obligations through its Dam Safety Management System and supporting instructions, procedures, standards and guidelines. The system utilises the following key components:

- risk management process that embeds:
    - identification of Dam Safety Risk
    - analysis of Dam Safety Risk
    - identification of viable controls for Dam Safety Risk
    - monitoring and review of Dam Safety Risk
- evaluation of Dam Safety Risk against defined Safety Thresholds
- So Far as is Reasonably Practicable (SFAIRP) Assessment
- development of appropriate Risk Management Plans to address gaps against identified minimum risk safety thresholds and SFAIRP requirements
- operational risk assessment.

These assessments are undertaken with guidance from the following Australian Council on Large Dams (ANCOLD) Risk Assessment Guidelines:

- National - ANCOLD (2022) Risk Assessment
- National - ANCOLD (2012) Consequence Assessment guidelines

as well as from the NSW State Dam Safety regulator's methodologies.

The approach used by WaterNSW is underpinned by:

- ANCOLD and NSW State Regulatory methodologies
- evaluation using industry accepted criteria
- activity specific methodologies, guidelines and practice as appropriate (e.g. fuse plugs, piping etc).

Societal risk ratings (using the required industry standard likelihood of failure plotted against number of fatalities) are developed and used to inform dam portfolio risk assessments and more detailed comprehensive risk assessments (as carried out for Warragamba Dam, given its systematic importance). Dam safety management has been a particular focus for improvements for WaterNSW since the amalgamation of the management of its statewide

portfolio of dams, with portfolio risk assessments now completed for all of its dams. These portfolio and comprehensive risk assessments are appropriately reported to the WaterNSW Executive and Board and relevant Board committees, as well as to the NSW Dam Safety regulator (Dam Safety NSW).

This process is further supported by a well structured WaterNSW governance oversight, which includes:

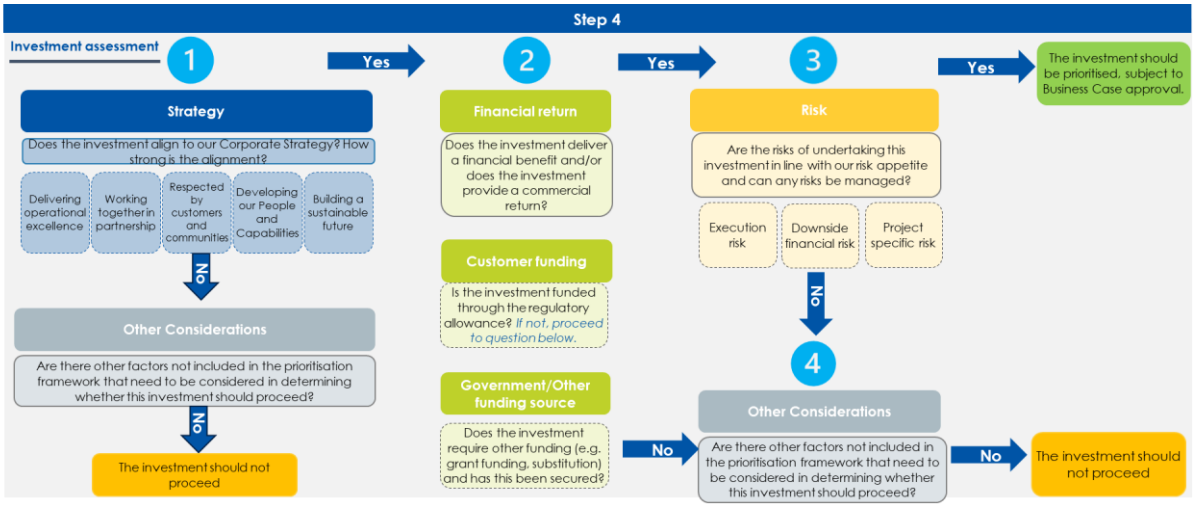
- a Dam Safety Technical Assessment Group (DSTAG), which includes external independent expertise and meets on a quarterly basis – with oversight of the overall dam portfolio risk assessment process and outcomes
- an additional Dams Expert Review Panel (DERP) specifically for the Warragamba comprehensive risk assessment project
- a specific program governance and steering group for the Warragamba comprehensive risk assessment project
- independent hydrology peer review team for the Warragamba comprehensive risk assessment project.

Based on our review and the supporting documents and presentations sighted, WaterNSW's management of the assessment and related investment and approval processes relating to management of dam safety appear to be appropriate and fit for purpose for a utility managing a significant portfolio of large dams.

3.8. Investment Prioritisation and Business Plan and Budgeting Processes

Figure 3-7 provides a summary of the framework and processes used by WaterNSW to prioritise competing investment needs that emerge from the annual asset management and planning and broader business planning and budget development processes. This framework (as set out in greater detail in the Draft Investment Strategy and Prioritisation Framework provided for review by WaterNSW) has been developed to guide prioritisation assessments of potential investments (programs and projects) in a more systematic and consistent manner across the WaterNSW business. It includes consideration of risk as part of prioritisation process, consistent with the organisation's broader risk assessment framework, and competing needs within each funded area of service.

Figure 3-7 Overview of WaterNSW's investment prioritisation framework and processes



The approach used also focuses on:

- aligning prioritised investment with specific elements associated with WaterNSW's corporate strategic goals
- assessment against key organisational constraints that must not be breached, including:
    - specified and agreed customer price outcomes
    - agreed capital structure and dividend expectations
    - maintaining positive net profit after tax (NPAT) as a key outcome required by NSW Treasury and ability to pay forecasted dividends to NSW Treasury
    - financial requirements (including investment grade credit rating constraints) as per WaterNSW's requirements as a State-Owned Corporation
    - relevant deliverability constraints (considering factors such as: risk, likelihood of achieving intended benefits, cost exposures, and market supply factors)
    - State Government policy and Statement of Expectations requirements
    - operating within the organisation's defined risk appetite
    - delivering within allowances approved in a Price Determination period
    - any other relevant constraints that may be determined and agreed based on the outcomes of customer and stakeholder consultation.

The draft framework appears appropriate and fit for purpose for an organisation such as WaterNSW and, in our view, its adoption to help guide investment prioritisation as part of the

broader annual business planning and budget development process will further strengthen these processes.

In relation to the broader business plan and budgeting processes, these have been considered as part of the Business as Usual Operating Budget Development Case Study outlined in Appendix 3.

This case study highlighted that WaterNSW's budgeting process is based on indepth analysis of variances compared to the previous period. That is, the majority of effort in questioning expenditure requests is applied to areas seeking a material increase in funding.

This approach is consistent with other similar water businesses in Australia noting that there are likely to be opportunites for WaterNSW to challenge the status quo budget outcomes on a periodic basis i.e. undertake detailed activity/line item review to assess against current needs and identify scope for efficiency improvements. For a mature organisation like WaterNSW, with a relatively stable asset base and long operational history, we would not expect this to be undertaken every year but incorporating such a process on a periodic basis would improve budgeting processes in the long run.

Based on the case study and above discussion, the overall process appears to be appropriate and fit for purpose for a utility organisation such as WaterNSW.

3.9. Cost Estimation Processes

The cost estimation processes used by WaterNSW to develop project and program cost forecasts and associated expenditure profiles are set out in the WaterNSW Estimating Framework (Version 5, 30 April 2019). Based on our review, this framework which considers complexity, etc. to ensure the approach taken is tailored appropriately to need, is suitable for supporting cost estimation approaches to be used for range of WaterNSW project types. Further, our view is that the framework appears appropriate and fit for purpose, providing a systematic basis for achieving consistent cost estimation for the full range of projects and investment forecasts.

Consistent with this framework:

- WaterNSW's cost estimating function sits within the Project Delivery Framework
- WaterNSW's cost estimates can be developed using deterministic and/or probabilistic processes, as appropriate based on project type and need
- base engineering estimates are used to inform these processes

- estimation considers both planned (using quantity of rates approach) and unplanned (using consequence and likelihood weightings) risks
- estimates are aligned with defined desirable levels of estimate accuracy at each Project Development Framework stage (i.e. appropriate for particular approval stage/business case stage).

From our review, and based on our experience with cost estimation practices within similar Australian water utilities, noting that:

- good industry practice includes the use of risk based cost estimation approaches that are tailored to the size and complexity of projects
- budgeting processes are based on P50 estimates and therefore incorporate reasonable risk allowances, without conservatively inflating cost estimates (as would be associated with adopting P90 estimates for budgeting)
- base cost estimates used as input to the risk based cost estimation approaches and for smaller project cost estimation within program allocations are informed by a combination of consultant estimators and review of historical costs from completed works
- overhead cost rates applied to estimates are consistent with those typically applied by similar water utilities.

This framework appears appropriate and fit for purpose, including deterministic and risk based approaches, alternative approaches for estimating P50 and P90 estimates, and consideration of appropriate contingencies. This framework, tailored for projects over a range of levels of complexity and type, appear appropriate and consistent with expectations for an organisation such as WaterNSW.

An important improvement initiative being introduced by WaterNSW is the transitioning to a new Estimating Manual – Capital Works, of which a draft was sighted as part of our review. This manual provides guidance for the application of the cost estimating framework and, once implementation of a final version is in place, should assist more systematic and consistent application of the cost estimating framework across WaterNSW.

3.10. Project Management Processes

WaterNSW's project management processes cover management of the implementation of projects to deliver the outcomes from its investment programs, which are the key outputs of the Investment Prioritisation and Business Plan and Budgeting Processes outlined in Section

3.8. The project management processes work in alignment and connection with the Financial Governance and Investment Decision Making processes outlined in Section 3.4.

Figure 3-8 provides a schematic mapping of the key frameworks and processes that, together, comprise the project management systems used by WaterNSW to deliver its projects. Each of these key elements is briefly outlined below.

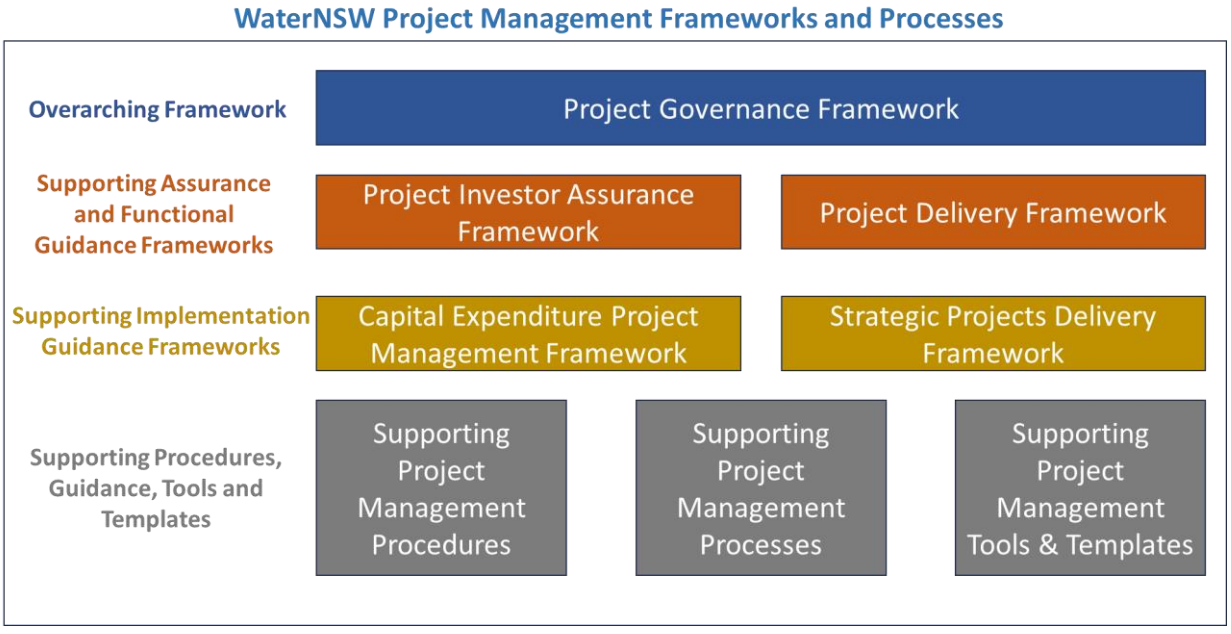
3.10.1. Project Governance Framework (PGF)

This framework provides the overall guidance and support for project implementation and delivery and sets ultimate authority processes for passing the project gateways set out in the supporting Project Delivery Framework (PDF). The framework also sets out the specific governance structure for projects at three levels:

- corporate management
- project/program level
- Program Management Office (PMO).

Based on our review, this framework provides an appropriate guiding structure that appears to align well with other connected processes (such as set out in the PDF and the Capital Expenditure Project Management Framework).

Figure 3-8 Mapping of WaterNSW's project management and delivery frameworks and processes



WaterNSW has also advised us that an Interim Governance Framework has now been developed to provide greater clarity and efficiency in decision making across the asset renewals program. This framework has now superseded the PGF for the renewals program.

3.10.2. Project Investor Assurance Framework

The Project Investor Assurance Framework (PIAF) provides a formal framework for WaterNSW assurance requirements that must be followed to ensure projects are delivered on time and within budget, whilst delivering required outcomes.
The PIAF applies to all WaterNSW projects required to utilise the PDF (includes, inter alia, all asset, capital and Information and Communication Technology (ICT) projects). It works alongside the PDF and under, and consistent with, the overall governance requirements set out in the PGF. It sets out key principles and assurance arrangements/requirements, including:

- gateway review, pre-gateway checks and health checks for projects (as appropriate, based on level of complexity/risk assessments)
- application of best practice in project governance and delivery
- deep dive reviews requested by relevant project sponsor or executive manager.

3.10.3. Project Delivery Framework

The Project Delivery Framework (PDF) provides a functional guide that describes the project implementation and delivery process. It operates in alignment with and under the PGF and alongside the PIAF.

Based on our review, the PIAF and PDF, working together, provide an appropriate basis for project management activities to deliver projects. They outline processes for classifying project type and complexity linked to specific project lifecycle processes that must be followed for the full range of project complexity (generally aligning well with PGF).

Our review has noted, however, that there appears to be a more mature/recent version of the project complexity assessment process contained in the version of the PIAF we reviewed, with five tiers of project complexity compared to three tiers for the version of the PDF we reviewed. This discrepancy should be addressed through updating the PDF document to align with the latest project complexity tier categories.

3.10.4. Capital Expenditure Project Management Framework

The Capital Expenditure Project Management Framework outlines guidance for project teams managing capital projects, including links to key process templates (e.g., business case templates) and sets out roles and accountabilities, including of the PMO. Overall, this appears to provide appropriate guidance and templates.

3.10.5. Strategic Project Delivery Framework

The Strategic Project Delivery Framework guides implementation and delivery of strategic projects linked directly to key corporate strategic outcomes - generally not involving delivery of physical assets (i.e. non capex). From our review, this framework appears appropriate and fit for purpose for delivery of strategic projects, and generally well aligned to other related WaterNSW project delivery processes and frameworks.

3.10.6. Supporting Procedures, Processes, Tools and Templates

As part of our review, we sighted the following documents as examples of WaterNSW's supporting procedures, processes, tools and templates to assist with achieving a systematic and consistent approach to project management:

- Post Project Review Procedure, which sets out the required procedure for reviewing completed projects
- Medium Project Management Plan Template
- Project Handover Process - Non-Build Deliverables Guidelines, which sets out the required process for hand over of drawings, plans, asset information, etc. for completed capital projects.

From our review, these examples provide evidence that appropriate supporting procedures, processes, tools and templates are in place to properly support consistent and systematic implementation of WaterNSW's project management frameworks.

4. Key observations for IPART

Our review has focused on the following key framework, process and system elements applied by WaterNSW to manage its investment planning and delivery and associated expenditure approvals and governance (as outlined in some detail in section 3):

- context and WaterNSW's legal structure and associated governance requirements
- WaterNSW's overall investment governance framework
- financial governance and investment decision making oversight
- corporate risk management
- asset management and planning
- dam safety risk management
- investment prioritisation and business plan and budgeting processes
- cost estimation processes
- project management processes.

In summary, based on our investment governance review as outlined in section 3, these systems and processes appear to be appropriate and fit for purpose, and consistent with expectations for a utility organisation such as WaterNSW. This view is based on our assessment that:

- the overall framework and associated financial governance and investment decision making oversight:
    - include all key elements we would expect to see for an equivalent Australian water utility
    - appropriately link with WaterNSW's overall legal and governance framework and with clearly defined Board and organisational Financial Delegations
    - provide for a consistent and systematic approach across the organisation.
- corporate risk management:
    - provides a framework and processes that align well with international risk management standard and NSW Treasury requirements

  - includes a corporate risk appetite statement that, based on our experience with other comparable Australian water utilities, appear appropriate in both content and level of detail.

- asset management and planning – framework and processes in place that are consistent, based on our experience with other equivalent Australian water utilities, with expectations relating to:
  - being underpinned by an appropriate overarching asset management policy
  - appropriately structured supporting systems that include development of asset class strategies that incorporate risk-based assessment of asset capability, level of service needs that inform prioritised work and investment programs
  - Board, Executive and management level oversight
  - overall framework and systems that are certified to the requirements of the applicable international asset management standard.
- dam safety risk management planning – framework and processes in place that are consistent, based on our experience with other equivalent Australian water utilities, with expectations relating to:
  - Dam Safety Management System is in place that utilises an appropriate risk assessment and management approach for defining dam portfolio risks and necessary risk treatment actions
  - appropriate evaluation of dam safety risk against defined safety thresholds as well as against a "So Far as is Reasonably Practicable Assessment" (SFAIRP) to determine risk treatment (and associated upgrade investment) needs that inform development of Risk Management Plans
  - an approach that is consistent with the applicable Australian National Council on Large Dams and NSW State Regulatory guidelines and methodologies
  - appropriate monitoring and review processes for dam safety risk (including appropriate Executive and Board level oversight and reporting).
- investment prioritisation and business plan and budgeting processes – an approach that is consistent, based on our experience with other equivalent Australian water utilities, with expectations relating to:
  - alignment with WaterNSW corporate strategic goals

- appropriate consideration of key investment expenditure constraints, including agreed customer pricing outcomes, specified shareholder and organisational financial target boundaries, relevant applicable policy (including Government) and WaterNSW's Statement of Expectations requirements
- alignment with the organisation's defined risk appetite, as assessed through application of an approach consistent with the corporate risk management framework.

- cost estimation processes – an approach that is consistent, based on our experience with other equivalent Australian water utilities, with expectations relating to:
  - the use of risk-based cost estimation approaches that are tailored to the size and complexity of projects, aligned with good current industry practice
  - utilising P50 cost estimates as the basis for budgeting where risk cost estimates are used (excluding conservative risk estimates that would otherwise be associated with alternative estimates)
  - base cost estimate and overhead cost processes that are appropriate, informed by a combination of consultant estimators and review of historical costs from completed works, and are consistent with those typically applied by similar water utilities
- project management processes – an approach that is consistent, based on our experience with other equivalent Australian water utilities, with expectations relating to:
  - an overarching framework that is well aligned with the broader WaterNSW financial governance and financial delegation frameworks and systems and that is consistent with the elements we would expect to see
  - appropriate tailoring of approval processes to different levels of project complexity and risk, accompanied by a structured process for assessing and defining project complexity and risk
  - an appropriate set of project approval gates, with appropriate linkage to approval delegations, including:
    - preliminary approvals to assist with preliminary scoping and investigation work (Need Analysis Business Case step)
    - subsequent approval gates including:
      - preliminary business case

- final business case

- appropriate monitoring, reporting and review processes, including oversight from appropriate Executive and Board Committees
- existence of a suite of supporting procedures, tools and templates to guide consistent application of the framework and systems to projects across the organisation.

Our review has highlighted that WaterNSW has put significant focus into consolidating and developing these processes. As noted in section 3, this is an evolving process and, although substantial improvements have been made, and the current status of the relevant systems and processes are fit for purpose, there is still scope for further improvements to be made by WaterNSW.

We note that very good progress appears to have been made to this point in time, in particular relating to the level of development of the many Individual components that make up the overall framework, with a clear focus on identifying opportunities for further improvements. The frameworks and processes are also generally supported by well-developed, relevant and comprehensive guidelines and templates to ensure consistent application and usage.

Our review has also considered examples of how WaterNSW has applied the investment and governance frameworks (to provide further insight into their appropriateness and fitness for purpose) through the following three investment program case studies:

- WAVE Major Project Case Study (major capex and opex study)
- Warragamba Pipeline Corridor Capex Program Case Study (minor capex case study)
- 2024 Budget process (BAU opex case study)

These case studies and associated conclusions are outlined in Appendices 1, 2 and 3 respectively. In summary, the case studies showed that the subject investment projects and programs have been progressed appropriately and in alignment with WaterNSW's investment governance frameworks and processes, including the relevant applicable business case and expenditure approval requirements and financial delegations. This provides some level of confidence that the framework and component systems and processes are being appropriately applied by WaterNSW.

It is important to note, however, that this assessment is based only on the presentations and supporting documentation (including business cases and expenditure approvals) provided for these specific case studies. While it does not necessarily follow that all other (unreviewed) projects would have demonstrated the same outcome, the case studies show that the framework has been used by WaterNSW consistently for the projects considered.

It is important to note that our review has focused on the appropriateness of the investment governance frameworks, systems and processes themselves, and not on whether any of the projects or programs within WaterNSW's investment program portfolios are justified, prudent and efficient. We have therefore not formed any view on whether these investment portfolios are justified, prudent or efficient.

In this context, our review has highlighted some suggested opportunities for ongoing improvement, as detailed below.

Up to date documentation

- It would be useful to check the revision status of all documents (frameworks and processes) to ensure all are up to date, consistent and compliant with document control review requirements (under WaterNSW's corporate management control systems).
- As part of such a review, it would also be useful to undertake proofread edits of all documents to correct inconsistencies and typos/grammatical inconsistencies - to ensure all documents and the overall frameworks are further enhanced as a trusted and well aligned set that are robust and prepared with detailed oversight.

Process mapping exercise to review alignment and effectiveness of individual elements of investment governance framework

- Given that each of the separate elements of the overall investment governance framework have undergone significant development and updating as part of WaterNSW's ongoing improvement processes since its establishment in January 2015, there would be value in undertaking a broader process mapping exercise to review alignment and process effectiveness across all elements. This would assist in ensuring that any drift in alignment between the separate (although linked) elements that has occurred can be corrected, further enhancing the robustness of the governance framework and its consistent, systematic and efficient application across WaterNSW's investment and associated budgeting and expenditure activities.
- Although our view is that there would be value in undertaking such an exercise, it would be expected that it would require significant resource effort and focus across the organisation. As such, given that WaterNSW will need to focus on developing its 2024 regulatory pricing submission to IPART over the coming 12 months, it would be prudent to defer any such process mapping review exercise until after the 2024 pricing submission process has been completed.

Harmonise the representation of asset risk

- We noted from our review that the Annual Board report on Asset Performance & Health uses a different representation of asset risk (i.e. "Asset Health" expressed as a percentage of remaining asset life, adjusted for the assessed criticality of the asset and for long-life assets) compared to the risk classifications of asset service capability applied as part of the asset management system.
- It may be worth considering whether it would be better to align all the reported asset risk assessments for consistency and better transparency and to give greater confidence in understanding of asset capability across each area. This could then better support and demonstrate to the Board and Executive Team how actions and associated expenditures are prioritised based on robust and appropriate risk assessments that can be confidently compared across all assets and facilities within each of WaterNSW's funded regions.
- We also noted from our review that asset performance reporting to the Board contained in the Asset Performance and Health Report focuses on observed failures/incidents/near misses to provide insight into asset capability. This provides important context with respect to observed performance and is therefore well justified and provides excellent insight.
- It may be worth considering whether it would be of value to provide a formal risk assessment of likelihood and consequence of failure for assets and a clear mapping of predicted (or estimated) asset capability risk (failure and criticality) to the Board and its Asset & Investment Committee. This would be useful for linking to asset management plans and associated opex and capex programs designed specifically to address these risks. This could also be extended to show how the risk profiles would change into the future in response to implementing the actions in these plans. Once the actions have been completed, ongoing asset management risk assessment processes would then also provide confirmation (or otherwise) that the risks have been addressed appropriately.

Asset class strategies

- WaterNSW is still in the process of effectively applying the asset class strategies across its entire asset base, and ideally all required asset class strategies should be completed ahead of finalising asset management plans and associated capital investment and maintenance expenditure plans. As such, this is an urgent area of focus for WaterNSW in preparing for its next pricing submission.

Transition to new Estimating Manual – Capital Works

The transition to a new Estimating Manual – Capital Works is an An important improvement initiative being introduced by WaterNSW. The final version should be implemented promptly, as it will assist more systematic and consistent application of the cost estimating framework across WaterNSW.

Appendix 1: WAVE Major Project Case Study (major capex and opex study)

WaterNSW's WAVE Portfolio project has been selected as a case study to review the application of the organisation's investment governance systems and processes to major expenditure programs. This project is significant in size and scope and incorporates both major capital expenditure and major operating expenditure components.

Our high-level review of this case study shows that, overall, the WAVE Portfolio project program has been progressed appropriately and in alignment with WaterNSW's investment governance frameworks and processes, including the relevant applicable business case and expenditure approval requirements and financial delegations.

Project Overview

The WAVE Portfolio comprises three key program streams to update cross organisation systems and processes, supporting information technology systems and capability to better support customer and stakeholder identified needs for a robust, digitised environment for customer transactions and real time provision of water management information. This program is intended to provide real outcomes upon completion relating to delivery of key data and information management and customer and market system processes, as well as a strong foundation for further development into the future. The three program streams are:

- Customer and Water Markets Program
- Water Delivery and Visualisation Program
- Water Data Program.

The project was initiated in January 2019, following an audit and review process that identified areas of material risks due to lack of appropriate integration of systems and numerous manual processes required to move data between systems. The existing operational and customer management processes were supported by aging and disparate, legacy systems, often with limited available software and system support. Key issues identified included:

- difficult and costly to maintain the systems
- lack of lack appropriate support documentation.
- unsuitability to keep pace with rapidly evolving stakeholder, customer and regulatory data and information needs
- unacceptable usability issues associated with outdated and complex structures and lack of flexibility to adapt to newer needs.

Increased customer, stakeholder and regulator expectations and requirements relating to access to information that is centrally maintained and operated by WaterNSW requires updated information management systems, with information shared in a more a controlled and automated system-to-system manner, without requirement for manual intervention and interface portals. These systems also needed to be designed to enable changes to existing demarcation lines between WaterNSW and other agencies with which information is shared, both presently and into the future. In addition, WaterNSW was maintaining five separate Supervisory Control and Data Acquisition (SCADA) and Telemetry systems, inherited from the pre-merger organisations. These systems included legacy technologies with limited supportability and reliability and data transmission efficiency issues.

Overview of Investment Approval Processes

The WAVE Portfolio project has been progressed from January 2019 under the following set of project and expenditure approvals:

- Need Analysis Business Case (Board approved January 2019):
    - Total approved capital expenditure: $1.6M.
    - Preliminary work progressed to allow identification and confirmation of project needs, focusing on establishing the required future state and assessment of gaps compared to the current state.
    - Worked with an external services provider across the relevant business units and personnel to document needs, requirements, scope and business case.
    - Incorporated lessons from previous unsuccessful Enterprise Resource Planning (ERP) system upgrade project, including adoption of an agile project approach with an incremental delivery strategy to better allow evolution of project scope and requirements in a tightly managed manner (rather than trying to define the entire project scope with poor information at the beginning).
- Final Business Case (Board approved 27 May 2020):
    - Total approved Totex: $44.0M, representing ($39.9M Capex; $4.1M Opex).
    - Supported by outcomes of the preliminary work progressed under the Need Analysis Business Case approval, including:
        - detailed options assessment work and report
        - market assessment
        - assessment of the capacity of the proposed WAVE solutions to accommodate potential future changes in operating environment and system needs
        - detailed full business case report.

- External Service Provider Contact Approval and Budget Increase (Board approved 29 July 2020):
    - Total approved expenditure envelope: $52.1M. Of which $48.0M Capex [including $8.1M contingency]; and $4.1M Opex.
    - Approval for appointment of the external system integration services provider (Wipro).
    - Incorporating an additional $8.1M contingency provision taking account of more detailed project development (need and scope) work undertaken with the preferred vendor Wipro, relating to:
        - finalisation and extension of the delivery period to better address change management and integration needs
        - better definition of complexity and scope
        - offset by savings to be realised through transitioning support of the systems under development to the WaterNSW internal support team during the development phases (rather than having Wipro provide this service).
- WAVE Budget Variation Approval (Board approved 29 July 2020):
    - Overall program budget increase of $3.69M (including contingency) to the previously Board approved Totex expenditure envelope.
    - Total approved Totex expenditure envelope: $55.79M.
    - Based on the outcomes of a WaterNSW critical path review of the program and detailed cost estimates for successful completion of the required remaining works for completion of the WAVE program.

An important point to highlight is the market engagement process that WaterNSW undertook as part of the work preliminary work program (under the Need Analysis Business Case) that informed the procurement and delivery strategy for the project. This guided the selection process for a preferred vendor/supplier:

- expression of Interest released 22/2/2019
- 18 potential suppliers selected for invitation to submit a response to a formal Request for Proposal (issued 13/5/2019)
- 6 selected from the Request for Proposal stage to participate in a competitive dialogue process (conducted 12-30/8/2019)
- from which the preferred supplier was selected
- commercial and forecast details finalised for input to the final business case for Board approval (which included approval to engage the selected preferred vendor).

These Board approvals also provide for delegation to the CEO to approve individual expenditure components to progress works based on quarterly incremental work packages for each of the three work streams (using the WaterNSW Approval to Spend (ATS) approval process and associated documentation. The above Board approval and associated CEO ATS approval processes are consistent with the WaterNSW investment governance frameworks and processes outlined in Section 3 of this report. Under the WaterNSW Financial Delegations, the CEO is also able to delegate approval authority to other positions within WaterNSW as appropriate (in the case of the WAVE Portfolio, this has been done for some components, with authority to approve specific ATS components delegated to the Chief Information Officer). From our review, these delegations appear appropriate and consistent with the overriding Financial Delegations.

As part of our review, we have also sighted multiple examples of ATS approvals as well as a summary tabulation of all ATSs provided for the WAVE program (to 18 Oct 2023). The ATSs for each increment for each of the three program streams appear to be listed in detail (and assumed to be complete), showing:

- Total ATSs as authorised in the overarching Board approval for the WAVE Program expenditure is within the total Board approved amount.
- Each ATS increment amount is generally within range of the $1.5M indicative typical ATS amount flagged in the original Board Final Business Case approval (the major exception being for the groundwater monitoring devices at $2.63M - noting that this was sighted by the CEO through the approval to delegate the award of the associated contract to the CIO).

Once again, from our review, the application of the ATS process to the WAVE program appears consistent with all overarching investment governance frameworks and processes and with WaterNSW's Financial Delegations.

One suggested potential area for improvement, in relation to the series of expenditure approval documents sighted in our review, would be for each budget variation approval for projects involving both major capital and operating expenditure components to:

- More clearly highlight in a tabular summary what the separate amounts previously approved for Capex and Opex are and how both components are affected by the proposed budget variation.
- The actual expenditures to date for both the Capex and Opex components compared to previously approved allowances.

- Forecast Capex and Opex components (including expenditures to date) compared to the revised Capex and Opex allowances (including any budget variations requested).

This would provide greater clarity regarding how both Capex and Opex components are tracking on major projects and better support understanding of the context surrounding any proposed budget variations.

Overview of Governance and Monitoring Processes

In addition to the standard governance oversight processes used by WaterNSW in Section 3.4 of this report (which, based on our review of documentation provided by WaterNSW, appear to have been appropriately applied to the WAVE Portfolio work program), WaterNSW requested the establishment of a specific WAVE Program Review Committee (PRC). This PRC was therefore established to:

- Oversee planning, development and delivery of the WAVE program.
- Provide strategic capability and relevant industry expertise to support management in delivering the WAVE program.

Figure 4-1 outlines the structure and membership of the WAVE PRC.

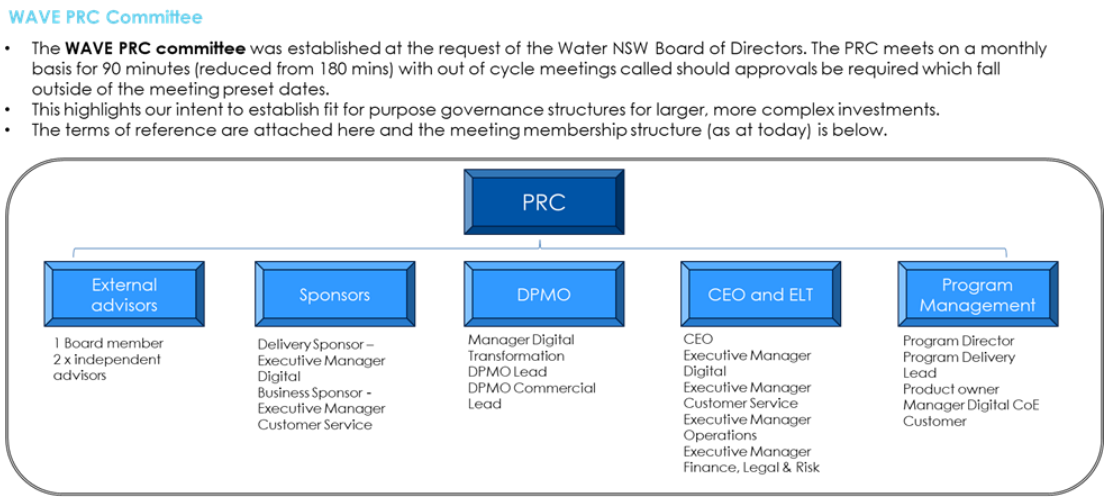
The PRC also:

- Tracks progress of the overall program and each component against schedule
- Tracks performance in meeting key quality measures in delivery of functional outcomes for system features
- Oversees tracking and reporting on program risks through the program risk register.

The WaterNSW CEO chairs the PRC and represents and reports to the Board on the WAVE program, to support the Board in exercising its overall governance functions for the program. The PRC meeting minutes are also provided to the full Board to complement ongoing updates on the program. The PRC's purpose and role are clearly set out in the formal PRC Terms of Reference, sighted for our review.

These additional governance processes, and their application as evidenced by associated documentation provided by WaterNSW that we have reviewed, appear appropriate for a program of work of this nature.

Figure 4-1 Structure and membership of the WAVE Program Review Committee



Program Progress and Outcomes to Date.

The Water Data and Water Delivery and Visualisation Programs are now complete, with remaining work on the Customer and Water Markets Program expected to be complete by the end of the 2023/24 Financial Year. As noted above, expenditures have tracked within approved amounts at all stages of the program, with approved budget variations now in place to cover forecast remaining expenditure on the final program component.

Overall, delivery of functional outcomes has been good, although there have been some user acceptance issues. These are complex and typically relate to some degree of mismatch between pre-conceived end user expectations (in the operational areas affected) and the delivered products. In our experience with similar projects in large water utilities, this is not unusual. These issues are currently being worked through by the WAVE project team with the WaterNSW user teams involved, with the expectation being that satisfactory solutions can be reached. WaterNSW has advised that, in light of this and broader experience through delivery of the WAVE works programs, some targeted improvements are now being implemented to better address existing user concerns as well as how user perspectives can be better incorporated into future programs. These include:

- Enhanced change management processes embedded into projects from the early stages, with clearer defined and agreed accountabilities for the user recipient teams (overseen by a Project Sponsor who has accountability for those teams)
- Increased ownership and involvement from the recipient teams through project teams formally structured to address these needs.

- Change management accountabilities transferred to the organisational group that contains the recipient teams, to better build end user ownership and up-front investment in project development and for resolution of user issues.

Appendix 2: Warragamba Pipeline Corridor Capex Program Case Study (Minor capex case study)

WaterNSW's Warragamba Pipeline Corridor Renewal Tranche 1 Capex Program has been selected as a case study to review the application of the organisation's investment governance systems and processes to major renewals expenditure programs that included a range of multiple minor- and some potentially larger capital projects. This program is significant in size and scope and was therefore selected as being appropriate to provide a representative example for review.

Our high-level review of this case study shows that, overall, the Warragamba Pipeline Corridor Renewal Tranche 1 Capex Program has been progressed appropriately and in alignment with WaterNSW's investment governance frameworks and processes, including the applicable supporting Master Plan document and WaterNSW Maintain Capability Program renewals expenditure approval requirements and financial delegations.

Program Overview

Warragamba Pipeline Corridor Renewal Tranche 1 capex program is focused on a structured program of renewals to ensure the ongoing reliable, safe and efficient operation of the pipelines. This is essential for WaterNSW to continue meeting its service delivery obligations under its Operating Licence, noting particularly that these pipeline assets are an integral component of the Warragamba water supply system, providing 80% of Sydney's water supply needs.

Through the existing service life of the pipeline and corridor assets, extensive defects had developed with the pipeline structure, drainage and embankment systems, resulting in:

- increased risks to safety of maintenance staff
- increase in major reactive rectification works.
- unacceptable risk to pipeline structural integrity, reliability and security of water transfer:
    - leaking expansion joints, scour valves and air valves
    - settlement of pipeline sills causing overstressed sections of pipe
    - deterioration of coating resulting in Pipeline Corrosion
    - internal lining cracks.

In this context, the overall objectives of this program are to:

- quantify defects.

- develop risk-based restoration program (noting the Master Plan includes an asset management plan)
- commence restoration works in accordance with asset management plan to achieve an asset life of a further 50 years.

A Master Plan was developed for the Warragamba Water Supply Corridor and Pipeline as the basis for prudent and efficient management of the pipeline and its corridor, whilst ensuring the required levels of service are maintained into the future. The Master Plan ranked proposed works to address identified asset risks in consideration of an appropriate failure mode analysis. This assessment was aligned with WaterNSW's risk ranking system (consistent with the overarching risk management framework), with the highest risk work elements being prioritised for inclusion in the program of works. The Tranche 1 Work Package includes prioritised works to address the above risks and to deliver the following key outcomes:

- pipelines and corridor restored to a good condition
- greater security and reliability of water supply
- reduced risks of a non-compliance with WaterNSW's Operating Licence and Water Supply Agreement with Sydney Water
- achieve a further 50 years' operating life for the assets.

The program is well linked to WaterNSW's key corporate strategic priorities and service level requirements.

Overview of Investment Approval Processes

The approval and governance processes used for initiating and progressing the program, along with the investment program development and program implementation processes, are well aligned with:

- the applicable financial governance and investment decision making oversight frameworks and processes summarised in Section 3.4 of this report
- the project management processes outlined in Section 3.10 of this report.

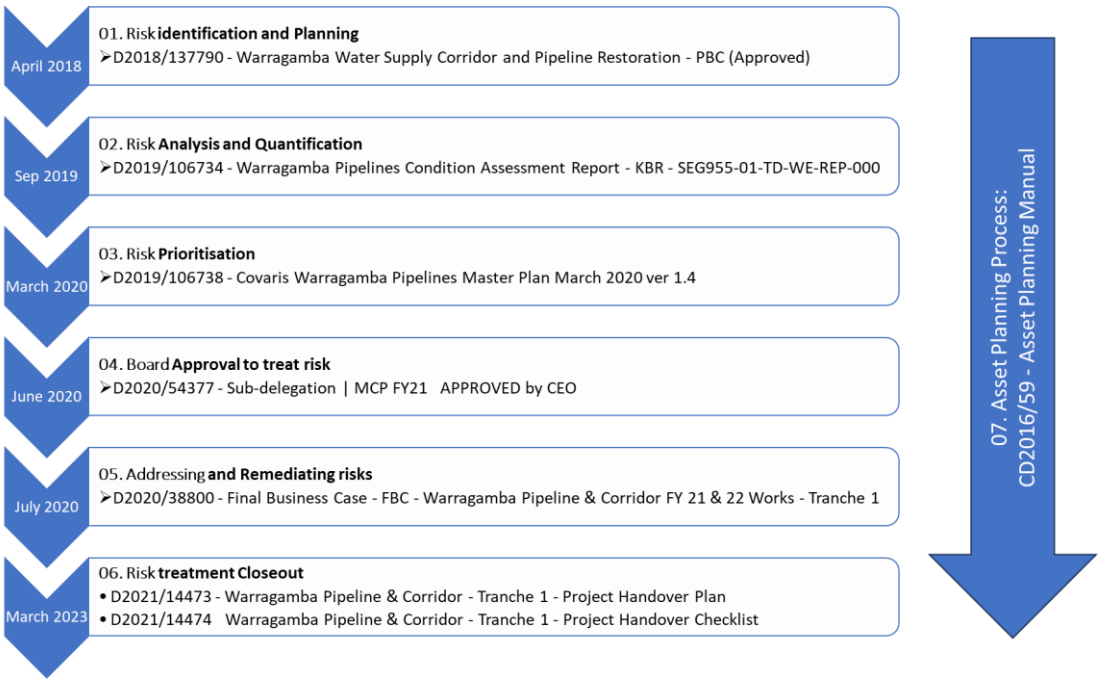
The key overarching approval beneath which this program sits is the Board approval of the Maintain Capability Program of renewal works across WaterNSW's asset portfolio. The Tranche 1 works program ($27.682M over the 2021-2023 period) was included as a specified allocation under the overall $98.751M allowance for the 2021-2023 period approved by the WaterNSW Board for the Maintain Capability Program on 27 May 2020. This Board approval also includes delegation to the CEO for further sub-approvals of the program expenditures detailed in the supporting Board paper (including the Warragamba Pipeline Tranche 1 works program).

Under the umbrella of this Board level approval of the program allocation, all associated business cases and project changes for each individual item delivered within the program were presented to and assessed by the management level Asset Quality Committee and Portfolio Governance Committee. The key approval gates followed included:

- completion of Initiation Phase
    - Approved Preliminary Business Case
- completion of Planning Phase
    - With approved project change requests as variations occurred
    - Approved Final Business Case
- completion of Execution Phase – Tranche 1 Works
    - With approved Project change requests as variations occurred
    - Provision of documentation of work as executed drawings
- completion of Completion Phase – Tranche 1 Works, including:
    - Project Handover Plan
    - Project Handover Checklist.

Figure 4-2 provides an overall summary of the key governance approval stages used.

Figure 4-2 Schematic outline of planning and approvals process used for the Warragamba Pipeline Corridor Renewal Program Tranche 1



Implementation of the program was overseen through monthly reporting on Capital performance against WaterNSW's Capital Investment Plan and reporting on project performance to the Asset Advisory Group.

The processes used for developing the asset capability needs assessments, Master Plan for addressing these needs and the associated renewal works and investment program are well aligned with:

- The corporate risk management processes outlined in Section 3.5 of this report
- The asset management and planning processes outlined in Section 3.6 of this report
- The cost estimation processes referred to in Section 3.9 of this report.

The asset service capability risk assessment process used to develop the program involved:

- Risk identification, including:
    - An extensive condition assessment as part of the planning phase for the program
    - Identification of key risks/threats to the Warragamba Pipeline integrity and operation from the condition assessment outcomes.
- Risk quantification and development of the asset risk profile, noting that:
    - 32 general risks were identified and assessed, comprising:
        - Nine high risks,
        - 18 medium risks
        - Five low risks.
- Risk prioritisation, utilising the condition data, the risk assessment and failure modes effects analysis to develop a risk prioritised Asset Management Plan, which included:
    - Recommendations for capital and maintenance works
    - Cost estimates for the recommended actions
    - A cost benefit analysis
    - Works packaging and scheduling.

Cost estimation and budget development for the program renewal works were developed using a bottom-up methodology for each work item. This was based on assessing available information from site visits, aerial and topographical surveys, consultant reports and the WaterNSW asset register. Estimated quantities were determined by engineers undertaking the condition assessments, with the commodity and labour rates applied to these assessments sourced from consultant estimators. These estimates were also reviewed against historical costs from recently undertaken corrective works.

- The following overhead costs were then applied to these estimates:
    - Project Management (10%)

- Contractor margins and overheads (15%)
- Mobilisation and site establishment (1%)
- Insurance and securities (1%)
- Detailed design works (10%)

A cost escalation of 3% per annum was applied to the base project cost estimates to enable budgets to be extended over the two year period of the program, and a contingency of 15% was also applied at the overall program level.

Based on our previous experience with similar renewals programs, this cost estimation process appears appropriate and fit for purpose.

Program Progress and Outcomes to Date

WaterNSW has advised that the Tranche 1 program has been successful in delivering the targeted outcomes within the overall approved business case budget and Board approved allocation for the program (with some individual project elements delivered above their specific budget allowances, and others below – balancing out across the overall program). In particular:

- Pipelines and corridor restored to a good condition. This outcome was achieved in the selected locations by:
  - Renewal and resetting of pipeline rocker bearing supports in their correct positions
  - Installation of pipeline stabiliser rods and renewal of scour valves
  - Repacking of expansion joints and refurbishing manhole covers to improve pipeline structural reliability.

- Greater security and reliability of water supply. As a result of restoring the pipeline to a good condition in the selected locations, the risk of interruption to Water Supply due to the pipe damage has been reduced consistent with the Tranche 1 program objectives.

- Reduced risks of a non-compliance with WaterNSW's Operating Licence and Water Supply Agreement with Sydney Water. As a result of restoring the pipeline to a good condition in the selected locations, risk of non-compliance with WaterNSW related service and supply obligations has been reduced consistent with the Tranche 1 program objectives.

- Achieve a further 50 years' operating life for the assets. Works completed have been assessed as consistent with extending the assets' operating life by 50 years

WaterNSW is now progressing a post project review of the Tranche 1 program of works, with a close out workshop held on 2 November 2022 and a Post Project Review Report being finalised (we have sighted a draft provided by WaterNSW).

Appendix 3: 2024 Budget process (BAU opex case study)

The case study selected to review WaterNSW's business as usual, operating expenditure was their 2024 financial year Budget process. WaterNSW's budget process covers the range from initial planning through to approval and monitoring plans for the annual budget.

WaterNSW's decision making process regarding expenditure decisions incorporates annual budgeting processes and budgeting preparation. The budgeting process commences in August each year with business units developing draft 10-year budgets for opex and capex based on achieving their contribution to WaterNSW's Corporate Objectives and legislative/compliance obligations. The budgets are also based on ensuring that WaterNSW meets its obligations under the WaterNSW Operating Licence. First-round opex and capex reviews are refined following testing and review by the Executive Team, the Shareholder and ultimately the Board. A summary of the budget process undertaken by WaterNSW is provided in *Table 1* below.

Table 1: WaterNSW's Description of Annual Budget Process

Step 1	Step 2	Step 3	Step 4
Set guiding principles for the business. To occur as part of the annual Business Plan and Financial Plan process. E.g. – WaterNSW's strategic priorities and strategic direction To be led by Strategy and Performance	**Investment plans are developed 'bottom up'** Expenditure is categorised into the following categories: • Mandatory • Customer driven • Non Controllable • Strategic investments Categorisation is tested by management.	**Develop and define WaterNSW's financial constraints**: • Possible expenditure vs regulatory allowances • Financial profitability • Credit rating outcome Determine a 'top down' funding envelope for	**All discretionary investments are assessed through WaterNSW's investment prioritisation process.**

		expenditure at the organisation level.	
Step 5	**Step 6**	**Step 7**	**Step 8**
Review of each of WaterNSW Portfolio's proposed budgets (Dec-Feb) ELT Workshop and review of Capital Investment Plan (Feb).	**Portfolio plans are reviewed and feedback is incorporated into plans (Dec – Mar)** NSW Treasury (NSWT) submissions are made in line with NSWT timetable.	**Proposed Business Plan and Statement of Corporate Intent** (including opex and capex targets at Portfolio level) are presented at ELT meeting and endorsed by ELT for inclusion in WaterNSW's NSW Treasury submission (Mar or Apr) The Proposed Business Plan and SCI are considered / approved by the Board.	**Final Business Plan and SCI** (including opex and capex targets at Portfolio level) are presented at ELT meeting and endorsed by ELT for inclusion in WaterNSW's NSW Treasury submission (May or June) Final opex and capex targets per Portfolio are approved by the ELT (May). The Final Business Plan and SCI are approved by the Board.

Budgeting focussed on marginal changes.

When FTI reviewed the FY24 Budget Presentation for Operations made to WaterNSW's CEO, it was apparent that the budget process encourages the Executive Leadership Team to assess the marginal changes being proposed in the budget cycle. This relies on the underlying drivers of expenditure being somewhat accurate in the first instance. In this context it is useful to note that WaterNSW are a relatively mature organisation who would not stand to gain much from continuous zero-based budgeting. The focus on the marginal changes is in accordance with most fit for purpose budget processes. It may be advantageous for WaterNSW to periodically undertake activity-based expenditure reviews to ensure inefficient programs aren't automatically funded.

Work force BAU expenditure

The work force comprises 70% of total BAU expenditure. As such, it is important that this is closely managed to ensure efficient use of resources.

WaterNSW indicated that in developing the budget from the bottom up, each Business Unit manager is responsible to work with WaterNSW's HR Business Partners and Finance Business Partners to propose their work force plan. This is categorised into BAU and strategic/incremental requirements.

WaterNSW institutes an annual remuneration review and short term incentive payments are reviewed by Board Committee – Safety, People & Culture and approved by the Board. All out of cycle salary changes must be accompanied by:

- a business case
- how the expenditure will be funded
- approval by Executive Leader and Executive Leader, Safety People & Culture.

This process appears to be fit for purpose to avoid unplanned expansion of work force expenditure, helping WaterNSW to guard against salary over-runs.

There are features that are reported to be unique to the 2024 budget which are discussed in greater detail below.

Non work force BAU expenditure

Non workforce BAU expenditure relates to core activities such as: asset maintenance, water monitoring, water quality, customer service and other BAU expenditure (such as IT software/licences & IT hardware, insurance, land tax, property costs, legal fees, materials, electricity, staff training, travel).

WaterNSW indicated that during the budget process, this expenditure is tested for reasonableness and to ensure it reflects BAU conditions rather than incremental factors.

This expenditure is then monitored monthly through the review of actuals & forecast expenditure by Senior Leaders and Executive Leaders within WaterNSW. Finance Business Partners present financial reporting to Senior/Exec Leaders monthly, providing commentary of variances to budget.

Budgeting for non-controllable events

WaterNSW do not set forecasts for non controllable events (e.g. floods) in their budgeting process. The reasoning provided is that allowing for these uncertain events requires increased expenditure forecasts though the regulatory revenue determination purposes.

Instead, when a non-controllable event occurs, WaterNSW initially seeks to re-prioritise expenditure from other business areas where possible, balancing any associated risks this re-prioritisation may cause. Should a re-prioritisation of expenditure not be possible, WaterNSW will absorb the additional costs of the event. Further, should these additional non-controllable costs be significant, such that WaterNSW is unable to re-prioritise or absorb them, they will work with the economic regulator (IPART) to determine whether the additional non-controllable costs can be recovered through their regulatory pricing process.

By not carrying these overhead forecasts for non-controllable costs, and only seeking to recover them when unable to re-prioritise or absorb them, customers are not forced to pay increased prices to cover for potential events, and the onus is on WaterNSW to manage the risk of non-controllable events.

In FTI Consulting's experience, this is consistent with good practice in the water industry and broadly aligns with good regulatory principles, that those who are most able to manage their risks should do so.

Note on additional positions in the 2024 budget

The 2024 budget saw the addition of approximately 150 positions, or 17% growth from a staffing strength of around 900 to 1,150. From our consultations, it is understood this rapid year on year increase in positions within WaterNSW is predominantly to allow for an internal redeployment of staff, as opposed to a large growth across the organisation.

It is our understanding that the creation of new positions will mostly allow migration of staff into new positions, before the positions previously occupied are closed. This is supported by insight gained in consultations that WaterNSW is expected to carry a vacancy rate across their positions of approximately 10% in 2024.

WaterNSW's practice of requiring a recruitment approval from the relevant Executive Leader and the Executive Leader, Safter, People & Culture to justify the business need for a position when re-advertising it will help to guard against over-resourcing in positions across the organisation. This is especially important when considering the work force represents approximately 70% of WaterNSW's opex.

These changes are to enable WaterNSW to shift from its previous functional alignment of positions to a greater strategic alignment as part of the overall transformation of WaterNSW. As it was explained in our consultations, these changes will also decrease overlaps of roles that presently may exist.

In terms of major changes to staffing, each segment of WaterNSW's portfolio is scrutinised by the executive team, who focus on proposed changes to headcount. For salary and wages related items, the headcount is obtained by review of each individual position and review

of the organisation charts. This process empowers the executive team to provide their reasoning as part of the approval process, prior to the CEO and Board review and approvals, which are required to sign off on the operating budget.

Appendix 4: Record of documents shared by WaterNSW as part of this review

A.1.1. Corporate Strategy Documents

Document Shared	Description
Item XX.X - Strategic Initiatives FY23 year-end assessment.docx	Annual report to Board outlining performance assessment on implementation of key strategic initiatives
WaterNSW Board meeting - 30 May 2023 - Proposed Strategic Initiatives FY24 - Item 4.3 Final.docx	Report to Board seeking approval for nominated strategic initiatives for next financial year.
WaterNSW_Corporate-Strategy-brochure-2022 (1) (1).pdf	Summary of WaterNSW Corporate Strategy highlighting key strategic objectives and supporting initiatives
WaterNSW-Statement-of-Corporate-Intent-2022-23.pdf	Key corporate guiding document that sets agreed Government and shareholder expectations of WaterNSW including: - Services and area of operation - Corporate Strategy overview and key strategic priorities and initiatives - Statement of Expectations - Corporate performance targets

A.1.2.Investment Governance Documents

Document Shared	Description
WaterNSW Investment governance and decision-making framework.pdf	Sets out WaterNSW investment governance framework and decision making processes that supported the 2020-2024 regulate pricing submission for services to Greater Sydney
WaterNSW Governance Map v2.pptx	Presentation used at 6 October workshop session - outlines WaterNSW investment governance framework and processes (including investment plan development, prioritisation and approvals as well as expenditure approvals processes)
Investment Strategy and Prioritisation Framework - Draft.pptx	Framework developed to guide prioritisation assessments of potential investments (programs and projects)
Fraud & Corruption Prevention Policy.DOCX	WaterNSW policy statement and commitment to preventing fraud and corruption
Fraud & Corruption Prevention Framework.DOCX	Fraud and corruption prevention assurance framework
Fraud & Corruption Prevention Procedure.DOCX	Supporting procedure and guidance for implementing the fraud and corruption prevention framework consistent with the intent of the overarching policy
Procurement Framework.DOCX	Framework guiding Water NSW procurement of goods and services
Risk Management Policy.DOCX	WaterNSW policy statement and commitment to embedding and maintaining a positive risk management culture throughout the business and its activities
Risk Management Procedure (1).DOCX	Supporting risk management procedure

Document Shared	Description
Corporate Risk Profile Summary FY2021-2022 - 30 June 2022.PPTX	Corporate risk profile summary for WaterNSW dated 30 June 2022
CD2019-204 Project Investor Assurance Framework (PIAF) FC review.docx	Formal framework (PIAF) for WaterNSW assurance requirements that must be followed to ensure projects are delivered on time and within budget whilst delivering required outcomes.

A.1.3.Key Stakeholder Relationships and Agreements Documents

Document Shared	Description
Memorandum-of-Understanding-between-WaterNSW-and-NSW-Health-Executed-24-Dec-2021.PDF	Memorandum of Understanding (MoU) providing framework for cooperative working relationship between WaterNSW and NSW Health
NSW-Water-MO-4-October-2022.pdf	MoU providing framework for cooperative working relationship between WaterNSW and NSW EPA
roles-and-responsibilities-agreement.pdf	Agreement providing framework for cooperative working relationship between WaterNSW, NSW Department of Planning, Industry and Environment, NSW Natural Resources Access Regulator and NSW Water Administration Ministerial Corporation
roles-and-responsibilities-schedule.pdf	Schedule to above agreement outlining roles and responsibilities
schedule-2.pdf	Schedule to above agreement outlining g process for Request for Quote between parties to the agreement
schedule-4.pdf	Schedule to above agreement outlining template service terms and conditions between the parties to the agreement

A.1.4. Financial Governance Documents

Document Shared	Description
Financial Delegations - WaterNSW (55).DOCX	Formally outlines WaterNSW financial delegations
Business Case Framework (BCF) (21).DOCX	Framework for preparing and managing WaterNSW business cases including links to templates for all business case types.
2023-24 SCI and Business Plan Guidelines - November 2022.pdf	Guidelines and expectations for developing Statements of Corporate Intent and Business Plans for NSW State Owned Corporations
Investment Governance Committee 1 pager FINAL.pptx	Sets out purpose and scope of WaterNSW Investment Governance Committee
Instrument of Conferral of Powers to the Chief Executive Officer - 15 December 2022 (1).PDF	Formally outlines conferral of powers and authority (including financial delegations) from the WaterNSW Board to the CEO.

A.1.5.Board and Board Committee Documents

Document Shared	Description
CD2020-79v3-Board-Charter.pdf	Charter outlining powers, functions and approach for conducting business for WaterNSW Board - including establishment of Board Committees
Asset-and-Investment-Committee-Charter.pdf	Charter outlining purpose, role and process for Board Asset & Investment Committee
Charter-Board-Committee-on-Sustainability-and-Service-Delivery-Committee-Approved-Board-meeti.pdf	Charter outlining purpose, role and process for Board Sustainability and Service Delivery Committee

A.1.6.Asset Management System Documents

Document Shared	Description
Slide Pack - Asset Planning, Dam Safety Risk Management and Warragamba Pipeline Case Study (1).pdf	Slide pack used for WaterNSW presentation at 13 Oct 2023 workshop on asset planning and management systems, dam safety management and the capex program case study
202223 WaterNSW Capital Expenditure Project Management Framework .pdf	Outlines guidance for projects teams managing projects, including links to key process templates (eg. business case templates) and sets out roles and accountabilities, including the PMO.
Asset Class Strategy Procedure.DOC	Sets out purpose for and requirements of asset class strategies to provide "direction as to how assets within a class should be managed throughout their lifecycle to optimise the balance of risk, performance and cost combinations (Capex and Opex)".
Asset Management Policy.DOCX	Sets out the policy framework and key objectives and focus for asset management for the organisation
Asset Planning Manual.DOCX	Copy of WaterNSW Asset Planning Manual (V04 dated July 2022) - provides a high level outline of WaterNSW Asset Planning processes and roles and responsibilities.
Board Committee on Asset and Investment - 2 May 2023 - Maintain Capability Program - Item 3.1 ATT.DOCX	Program level Board approval for WaterNSW's overall programs of work in Financial Year 2024 to maintain asset service capability across its asset base for all service areas, covering opex and capex and including a 3 year period outlook to the 2026 Financial Year.

Document Shared	Description
Board Committee on Assets - 23 November 2022 - Asset Performance and Health Report - Item 7.3.DOCM	Annual report to Board outlining asset capability risk across WaterNSW asset portfolios
Board Committee on Assets - 23 November 2022 - Asset Performance and Health Report - Item 7.3 ATT.DOCX	Attachment to annual asset capability risk report to Board outlining detailed summaries of asset capability risk profiles across WaterNSW asset portfolios
Strategic Asset Management Plan.DOCX	Outlines the strategic framework WaterNSW uses to undertake asset management for all its physical assets and includes a high level inventory of the assets managed. Emphasises operating licence requirement for the AMS to be consistent with (and WaterNSW corporate objective to maintain certification with) ISO 55001: 2014. Links to the AM Policy and highlights that the Policy should be reviewed 3 yearly and is approved by the Board.
Strategic Project Delivery Framework (1).DOCX	Guides implementation and delivery of strategic projects linked directly to key corporate strategic outcomes - generally not involving delivery of physical assets (ie. non capex).
WNSW-BDG-AS-001 Bridges Asset Class Strategy.DOCX	Example asset class strategy for Bridges
Attachments 4 & 6_MoU & Guiding Principles.PDF	Documentation relating to special project and asset transfer arrangements between WaterNSW and Water Infrastructure NSW for projects of State significance relevant to WaterNSW

Document Shared	Description
Attachment 5_Service Agreement WaterNSW-WINSNW - Executed.PDF	Documentation relating to special project and asset transfer arrangements between WaterNSW and Water Infrastructure NSW for projects of State significance relevant to WaterNSW
Attachment 7 Board approved ownership principles 20220525.pdf	Documentation relating to special project and asset transfer arrangements between WaterNSW and Water Infrastructure NSW for projects of State significance relevant to WaterNSW
Attachment 8 Working together leadership pack - FINAL.pdf	Documentation relating to special project and asset transfer arrangements between WaterNSW and Water Infrastructure NSW for projects of State significance relevant to WaterNSW
Attachment 9_Program Alliance Agreement - dated 01.02.2023_Redacted.PDF	Documentation relating to special project and asset transfer arrangements between WaterNSW and Water Infrastructure NSW for projects of State significance relevant to WaterNSW
Attachment 10_Delivery Deed - Alliance (New Dungowan Dam and Pipeline and Wyangala Dam Wall Raising Projects) - Signed.PDF	Documentation relating to special project and asset transfer arrangements between WaterNSW and Water Infrastructure NSW for projects of State significance relevant to WaterNSW
Attachment 11_Delivery Deed - Non-Alliance (Wilcannia Weir Replacement Project).PDF	Documentation relating to special project and asset transfer arrangements between WaterNSW and Water Infrastructure NSW for projects of State significance relevant to WaterNSW
Medium Project Management Plan Template.DOCX	Template medium project management plan

Document Shared	Description
Post Project Review Procedure.DOCX	Procedure for reviewing completed projects
Project Delivery Framework (PDF) User Guide.DOCX	Functional guide that describes the project implementation and delivery process - operates in alignment with and under the Project Governance Framework
Project Governance Framework.DOCX	Functional guide and support tool for project implementation and delivery and sets ultimate authority processes for passing the project gateways set out in the PDF. Also sets out the governance structure for projects at 3 levels (corporate management, project/program level and PMO).
Project Handover Process - Non-Build Deliverables Guidelines.DOCX	Process for hand over of drawings, plans, asset information, etc. for completed capital projects
_WaterNSW Asset Management System Summary.pptx	Summary of key asset management system elements
Asset Management System Improvement Action Register .xlsx	Register detailing and monitoring progress on asset management improvement actions
Board Committee on Assets - 23 November 2022 - Annual System Health Check Dam Safety - Item 8.3.pdf	Annual status report to the Board Committee on Assets regarding WaterNSW's Dam Safety Management System
Board Committee on Assets - 23 November 2022 - Annual System Health Check Asset Management System.pdf	Annual status and effectiveness report to the Board Committee on Assets regarding WaterNSW's Dam Safety Management System

Document Shared	Description
DRAFT WaterNSW Asset Managment System Surveillance Audit Report - Sep 2023.pdf	Independent external report on audit of implementation of asset management systems
ISO55001 2014 WaterNSW AMS Certificate 2023-2026.PDF	Certificate of compliance of asset management system with requirements of ISO55001: 2014 - dated January 2023 and valid for 3 years
WaterNSW Asset Management System Recertification Audit Report – Nov 2022 .PDF	Independent external report on audit of compliance of asset management systems with ISO55001: 2014 - supporting certification.
Improvement Works - Revised Criticality Procedure (Draft).pdf	WaterNSW procedure for assessing and assigning criticality ratings to assets
Improvement Works - Revised Prioritisation Procedure (Draft).pdf	Procedure for systematic approach to prioritisation of capital projects for investment funding
Improvement Works - Revised Prioritisation Tool Template (Draft).xlsx	Spreadsheet based template tool for undertaking capital project prioritisation consistent with the prioritisation procedures.
Improvement Works - Asset Class Strategy - Fishways (working draft).docx	Working draft of asset class strategy under development for fishways assets.
Improvement Works - Valley AMP - Lachlan (Working Draft).docx	Working draft of asset management plan for the Lachlan Valley
A_DRAFT_WaterNSW Estimating Manual Rev1.docx	Cost estimation manual to guide application of the cost estimating framework
Asset Class Strategy Scope.xlsx	Summary of current list of critical asset classes across WaterNSW's overall asset portfolio, including program and progress on developing asset class strategies.

Document Shared	Description
Board Committee on Assets - 23 November 2022 - Dam Safety Risk Management Update - Item 8.4.DOCM	Copy of November 2022 report to the Board Committee on Assets regarding the status of WaterNSW's dam safety risk profile across its dams portfolio, including relevant risk management programs and actions
Copy of D2017 58363 Asset Management System RACS Actions Register .XLSX	Asset management improvement initiative actions register
D2022 58593 WNSW Estimating Framework v5 (200513).PDF	Cost estimation framework for supporting cost estimation approaches to be used for range of WaterNSW project types (considering complexity, etc. to ensure approach is tailored appropriately to need)
D2023 20840 Annual WaterNSW Dams Safety Standards Exceptions Report March 2023.PDF	Copy of summary overview report on dam safety across its dams portfolio to Dam Safety NSW

A.1.7.Information & Communications Technology (ICT) and WAVE Project Program Documents

Document Shared	Description
Agile Delivery Framework.DOCX	Framework and guide for applying an Agile delivery methodology for conducting projects within WaterNSW to deliver business value through adaptive solutions. Covers processes, governance, and technology tools to be used.
WaterNSW Board meeting - 29 August 2023 - Agenda Item x.x WAVE Budget Variation (1).docx	Board approval for WAVE project overall budget increase of $3.69M over original May 2020 Board approved total expenditure (for 29 August 2023 Board meeting)
3.1 WAVE WMS Program - Delivery ATS Co-Browse - August 2023.docx	The WAVE WMS Program Delivery ATS (Approval to Spend) for the Co-Browse feature – submitted to the WAVE PRC for review and endorsement of recommendation to the CEO to approve expenditure of $27,287 for the Co-Browse Pega implementation team costs (including 20% contingency) at its August 2023 meeting
3.01 WAVE PRC Meeting - 29 Sep 2023 - WAVE Commercial and Performance Report .pptx	Example of periodic performance report on all elements of WAVE project implementation
3.1 WAVE WMS Program - Delivery ATS Water Supply Works Assessment and IDAS Summary.docx	Example ATS for PRC (Program Review Committee) endorsement for CEO expenditure approval of Water Market Systems stream to deliver specific feature within upcoming quarter

Document Shared	Description
3.2 WAVE WMS Program - Delivery ATS Data Migration .docx	Example ATS for PRC endorsement for CEO expenditure approval of Water Market Systems stream to deliver specific feature within upcoming quarter
3.3 WAVE WMS Program - Delivery ATS Data Co-Existence.docx	Example ATS for PRC endorsement for CEO expenditure approval of Water Market Systems stream to deliver specific feature within upcoming quarter
3.4 WAVE WMS Program - Solutioning ATS Amendments.docx	Example ATS for PRC endorsement for CEO expenditure approval of Water Market Systems stream to deliver specific feature within upcoming quarter
BCF Training Pack.pptx	Business Case Framework training pack for WAVE team members
D2021 126245 Attachment 7 WAVE Business Case - Imported from SharePoint.docx	27 May 2020 Board paper for approval of WAVE business case and associated expenditure ($44M)
D2022-062729 2022-04-24 WIPRO WAVE Rebaselined MSOW 2 fully executed (2).pdf	Commercial agreement for engagement of contractor Wipro for service fees to deliver agreed scope of works for the WAVE project
Water Delivery Business Case Extracts.pptx	Summary extracts of business case for water ordering and trading processes WAVE features (including benefits classifications and assessments, and estimated resource and budget requirements to delivery the required functionality)

Document Shared	Description
Water Monitoring Business Case Extracts.pptx	Summary extracts of business case for water monitoring processes WAVE features (including current and desired future states and associated benefits, and estimated resource and budget requirements to delivery the required functionality)
WAVE Business Case Executive Summary.pptx	Summary of overall WAVE project business case (including benefits associated with processes targeted within the overall project scope, and estimated resource and budget requirements to delivery the required functionality - dated February 2019)
01 - WAVE Business Case V2.0 - for submission to Board and PRC on 210520.docx	Final business case document submitted to May PRC meeting for endorsement to go to 27 May 2023 WaterNSW Board meeting for approval
2020 WAVE Business Case_APPENDIX 1 - Business Process Analysis.pptx	Summary presentation of WAVE project process analysis and benefits articulation
2020 NSW WAVE Business Case_APPENDIX 6 - Future Proof Assessment of Solution.docx	Assessment of the capacity of the proposed WAVE solutions to accommodate potential future changes in operating environment and system needs

Document Shared	Description
2020 WaterNSW WAVE Business Case_APPENDIX 2 - Options Analysis.pptx	"Summary of options assessment undertaken for the WAVE business case, including 4 alternative options: - Base case - maintain current state and capabilities (do nothing) - Update and replace existing software systems, but using existing business processes - Update operational technology and analytical systems and processes, but no water market system and associated customer service and process streamlining - Full transformation of system and processes including water market systems (higher complexity and risk, overall assessment was that, on balance, this is the preferred option"
WaterNSW WAVE Business Case_APPENDIX 5 - What the market told us.docx	Summary of market engagement process that informed the procurement and delivery strategy for the project and guided the selection process for a preferred vendor/supplier (EOI released 22/2/2019, 18 selected for invitation to submit a response to a formal Request for Proposal (issued 13/5/2019), of which 6 selected to participate in a competitive dialogue process (conducted 12-30/8/2019), from which the preferred supplier was selected - then commercial and forecast details finalised for input to the final business case for Board approval (which included approval to engage the selected preferred vendor)

Document Shared	Description
Wave Program Review Committee Terms of Reference.pdf	Formally documented Terms of Reference that outline the role of the WAVE Program Review Committee (PRC) and how it functions.
3.4 D20220-69903 Approval to Spend (ATS) - WAVE Project Management Uplift - Imported from SharePoint.DOCX	Formal approval to spend for WAVE Program governance and project management and assurance improvements (15/7/2022)
4.2 Gate 5 Report WaterNSW Water Data Program V1.0.docx	Gate 5 (pre-commissioning) review report for WAVE program water data stream (Nov 2022)
2021-12-06 WAVE - Gate 5 Report Final V1.0.pdf	Gate 5 (pre-commissioning) review report for WAVE program integrated business systems feature (Nov 2021)
External Assurance Material for Investment review (12pm meeting).msg	Email outlining external review processes applied to the WAVE program
UPDATED - WAVE Assurance Plan - 23.02.2021.pdf	Assurance review schedule for Wipro (vendor) milestone payment stages
WaterNSW - WAVE - Deep Dive Report - Final V1.0.pdf	Copy of external independent review conducted on WAVE program by NSW Department of Customer Service
WaterNSW WAVE Program Gateway 1 3a 4a Review Report v0.12 (002).docx	NSW Government gateway review of strategic business case, procurement and tendering approach & evaluation for WAVE program
WaterNSW WAVE Program Gateway 4b Review Report V1 0_FINAL.pdf	Gate 4 tender evaluation) review report for WAVE program integrated business systems feature (Apr 2020)
WaterNSW_PIR Report_FINAL.pdf	Wipro post implementation review of (failed) release 1 of the WAVE WMS (water markets system)

Document Shared	Description
Commercial and Contract Overview.pptx	Outline of the delivery model used to manage and track the WAVE program
3.2 WAVE Payment Approval Process 23-10-20 FINAL V1.1 Item 3.2.docx	Payment approval process used for processing quarterly invoices for scope delivered for the WAVE program
3.2 WAVE Risk Contingency Drawdown Framework Item 3.2.docx	Framework and process for obtaining CEO approval to draw down held contingency (as per existing Board expenditure approval and delegations to the CEO) for additional scope of work not previously included in the Master Statement of Work.
2022-11-05 CEO briefing note - Approval to award contract to EWS for Groundwater IoT devices.docx	Example of formal approval for CEO to delegate award of contract for WAVE groundwater monitoring devices to the CIO
2023-10-17 WAVE Program - Summary of ATS.xlsx	Summary tabulation of all Approvals to Spend provided for the WAVE program to date (18 Oct 2023)

A.1.8. Operating Budget Case Study Documents

Document Shared	Description
FY24 Budget CEO Presentation - Operations May 2023 Pre-read.pptx	Supporting information for the Opex BaU case study
WaterNSW Budget Process Overview.pptx	Overview of WaterNSW annual budget development process
WaterNSW Executive Team Meeting - FY24 Budget.pdf	Presentation slides for WaterNSW Executive Leadership Workshop to review and endorse the 2024 Financial Year Budget
WaterNSW Executive Team Meeting - January 2023 - Capital Investment Plan.pptx	January 2023 presentation to Executive Leadership Team on capex performance for the 2023 Financial Year and draft capital investment plan for the 2024 Financial Year
WaterNSW Board meeting - 27 June 2023 - Final SCI and Business Plan & Final Capital Investment Plan - Item 5.1 & ATT1.DOCX	27 June 2023 Board paper for approval of 2024 Financial Year Statement of Corporate Intent and Business Plan, as well the associated capital investment plan and capital and operating budgets

A.1.9.Warragamba Pipeline Corridor Capex Program Case Study Documents

Document Shared	Description
0b. Warragamba Pipeline Trance 1 Renewal.docx	Summary document outlining the key components of the Warragamba Pipeline Renewals Tranche 1 Case Study
3 Risk Prioritisaiton - D2019106738 - Covaris Warragamba Pipelines Master Plan March 2020 ver 1.4.PDF	Comprehensive Masterplan developed to guide renewals and investment program for the Warragamba Water Supply Corridor and Pipeline
4. Board approval to treat risk - D202054377 - Sub-delegation MCP FY21 APPROVED by CEO.PDF	Board approval of the Maintain Capability Program, within which includes setting an allocation for the Warragamba Pipeline program - delegated to the CEO for further sub-approvals of program expenditures
0a. Warragamba Pipeline Renewal tranche 1 summary .pptx	Summary of asset planning process that supports development of the renewal program
6c. Risk treatment Closeout - D202318470 - Work Packages 1 & 2 - Post Project Review Report.DOCX	Project handover / closeout documentation as part of the deliverables at the completion of delivery of the works under the program (Tranche 1)

A.1.10. Dam Safety Management Documents

Document Shared	Description
Cover Summary - Warragamba Comprehensive Risk Assessment and Risk management Activities.docx	Summary of key comprehensive risk assessment activities for Warragamba Dam
01. Approval Pack - Warragamba Comprehensive Risk Assessment - Nov 2019.PDF	All in One Business Case approval for Warragamba CRA - total $3.4M capex Board approval and delegation to CEO
02. D2020 89540 - ATS - Warragamba Dam Foundation Drain Restoration Project (Stage 1).pdf	Approval to Spend for proposed cleaning/restoration works for Warragamba Dam internal drains
03. D2021 50908 - Warragamba Dam – Development of Short-term Risk Reduction Controls.pdf	Expenditure approval to develop short term risk reduction controls for Warragamba Dam
04. Board Committee on Assets - 17 May 2021 - Warragamba Dam CRA Preliminary Results - Item 3.pdf	17 May 2021 paper to Board Assets Committee reporting preliminary results and risk mitigation strategy for Warragamba CRA
05. Dams Safety NSW Board - 22 June 2021 - Warragamba Dam CRA Preliminary Results_Final.pdf	Presentation to Dam Safety NSW on outcomes of preliminary dam safety risk assessment for Warragamba Dam and scope and objectives for proposed CRA (2019)
06. Warragamba CRA - DSTAG Project Summary Aug 2021.docx	Project summary report to Dam Safety Technical Advisory Group (DSTAG) on Warragamba Dam CRA project
07. Board Committee on Assets - 18 August 2021 - Warragamba Dam Comprehensive Risk Assessment - Final Results - Item 3.pdf	Report to Board Committee on Assets of Warragamba CRA outcomes
08. WARRAGAMBA DAM CRA Final Report to Sponsor 30092021 Final.pdf	Expert Review Panel Report to Executive GM Operations (accountable Sponsor) on Warragamba CRA

Document Shared	Description
09. D2021 59409 - ATS - Warragamba Dam – Dam Safety Instrumentation Review.pdf	Associated and supporting additional dam safety risk assessment documentation for Warragamba Dam CRA process
10. BCA Paper - Warragamba Dam Risk Management Plan Concept Design (Stage 1) - Nov 2021.pdf	Associated and supporting additional dam safety risk assessment documentation for Warragamba Dam CRA process
11. WaterNSW - Warragamba Dam CRA Report - Cover Letter - 17 Nov 2021.pdf	Associated and supporting additional dam safety risk assessment documentation for Warragamba Dam CRA process
12. WaterNSW - DSTAG Report On Meeting 2022-01 - Final - 4 April 2022.pdf	Associated and supporting additional dam safety risk assessment documentation for Warragamba Dam CRA process
13. WaterNSW - DSTAG Report On Meeting No 2022-02 - Final - 25 Aug 2022.pdf	Associated and supporting additional dam safety risk assessment documentation for Warragamba Dam CRA process
14. D2021 83160 - ATS - **Warragamba** Dam – Alert Trigger Level Analysis.pdf	Associated and supporting additional dam safety risk assessment documentation for Warragamba Dam
15. D2022 35575 - Approval Pack - **Warragamba** and Prospect Dams Short Term RCM Instrument PBC.pdf	Associated and supporting additional dam safety risk assessment documentation for Warragamba and Prospect Dams
16. D2022 74548 Approval Pack - Warragamba and Prospect Dams Short Term Risk Control Automated Survey - AIOBC.xlsx.PDF	Associated and supporting additional dam safety risk assessment documentation for Warragamba and Prospect Dams
17. D2023 22175 - AIOBC - Upper Nepean Dams and Warragamba Auxiliary Spillway Drains Restoration.pdf	Associated and supporting additional dam safety risk assessment documentation for Warragamba and Upper Nepean Dams
18. Board Committee on Assets - 23 November 2022 - Dam Safety Risk Management Update - Item 8.pdf	Update to Board Assets Committee on dam safety risk assessments and outcomes (and risk profiles) across the WaterNSW dams portfolio

Document Shared	Description
19. Board Committee on Asset and Investment - 15 March 2023 - Warragamba Dam Safety Upgrade - Progress Update - Item 3.pdf	Update to Board Committee on Assets and Investments on Warragamba Dam Safety upgrade progress

Glossary

Term	Definition
ACS	Asset Class Strategy
ALARP	As Low as Reasonably Practicable
AMP	Asset Management Plan
AMS	Asset Management System
ANCOLD	Australian Council on Large Dams
ATS	Approval to Spend
BAU	Business as usual
CAPEX	Capital expenditure
CIP	Capital Investment Plan
DERP	Dams Expert Review Panel
DPI Water	Department of Primary Industries - Water
DSTAG	Dam Safety Technical Assessment Group
DSTAG	Dam Safety Technical Advisory Group
EAMS	Enterprise Asset Management System
ERP	Enterprise Resource Planning
ESG	Environment, Social & Governance
IPART	Independent Pricing and Regulatory Tribunal
NPAT	positive net profit after tax
OPEX	Operating expenditure
PDF	Project Delivery Framework
PGF	Project Governance Framework
PIAF	Project Investor Assurance Framework
PMO	Program Management Office
PRC	Program Review Committee
SCA	Sydney Catchment Authority
SCADA	Supervisory Control and Data Acquisition
SCI	Statement of Corporate Intent
SFAIRP	So Far as is Reasonably Practicable
TAPs	Treatment Action Plans
TOTEX	Total expenditure
WAMC	Water Administration Ministerial Corporation
WAVE	Water Added Value Environment

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