NSW Water Sector Shared Technology Ecosystem Roadmap

Strategic Business Plan

FINAL VERSION

Adapted from WNSW BOARD APPROVED – MAY 2024

Appendix 4

July 2024

NSW GOVERNMENT Water | WaterNSW | NSW GOVERNMENT Natural Resources Access Regulator

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*The key purpose of the **Shared Technology Ecosystem Roadmap "Technology Roadmap"** is to reconfirm the need identified in the case for change (Problem Definition Stage), as well as identify and select a list of available and feasible options.*
*The **Technology Roadmap** usually follows the Problem Definition Stage of a Business Case. It is the primary document for a Gate 1 review (under the NSW Gateway Policy). It provides decision makers with an early indication of the preferred way forward for the investment and is used to seek approval to proceed with the development of a detailed business case*

For the purposes of this submission, the three agencies responsible for water management in NSW, under the auspices of the Water Administration Ministerial Corporation (WAMC), will collectively be referred to herein as the NSW Water Sector. Not to be confused with the broader NSW water sector, which may include other water authorities, utilities and agencies.

This section summarises the key messages of the strategic business case

Executive Summary

1

A connected vision starts with small steps …

This Technology Roadmap presents a summary view of the work and effort taken to date to lay strong foundations upon which we can build shared technology ecosystem solutions that deliver value to customers

In 2015, WaterNSW, and later (in 2017) the Natural Resources Access Regulator (NRAR) were separated from NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW) to each create its own entity. In doing this, each agency has been diligent in establishing its own capabilities to enable it to serve its customers.

However, the transition has also served to highlight a level of interconnection between the agencies that is inherent within their shared responsibilities. Processes that intersect across agencies impact customers. The unhappy result of these intersecting processes is that they create individual agency challenges at each 'hand over point', which are then magnified in the eyes of a customer who must transact with each agency as part of these processes.

Recognising the needs of our customers and staff, **three individual agencies have come together to go beyond remediating the issues, to fix the very root of the problems**.

The first part of the solution was to develop a shared technology ecosystem roadmap (described in the adjoining box). It first considered the Water Resource Management value chain, to create a common view of capability across the NSW Water Sector. These common areas became the focus of the technology roadmap.

Investigating the key customer and staff pain points across the NSW Water Sector, it became clear that data quality and completeness issues are prevalent, touching almost every theme. Data dependencies between the agencies have grown over time as the level of data sharing has increased.

Customers see limited components of their water data or experience delays in getting access to data requests. Staff across the NSW Water Sector employ numerous manual workarounds to source, cleanse and collate disparate data sources to meet evolving customer, business and regulatory reporting needs. The repeated and ongoing nature of these manual work arounds has created a range of operational inefficiencies across the NSW Water Sector as each agency works to meet its stakeholder needs.

A Technology Roadmap to bring together the shared technology ecosystem vision

Putting customers and our staff at the heart of our vision has been a critical driver for the technology roadmap.

And building upon existing investments has been core to our approach. We will leverage existing investments wherever possible to limit the cost impost on our customers and de-risk legacy applications where we must.

The technology roadmap took a shared technology ecosystem approach when considering the investment needed. Over 100 ideas across the NSW Water Sector were distilled into 37 potential initiatives, each of which was assigned to one of seven themes:

1. **Shared Data Management & Governance**
2. **Managing the shared technology ecosystem**
3. **Connected Customer Experience**
4. **Informed Communities**
5. **Integrated planning and process optimisation**
6. **Field Service Optimisation and Safety**
7. **Secure Infrastructure**

The 37 initiatives were then further analysed to assess deliverability in the next regulatory period, dependencies and levels of maturity required to realise the benefits. On this basis, a number of initiatives were deferred.

The remaining initiatives have been allocated across 15 delivery programs.

… and to be successful must go beyond the technology

We have considered how we, as a shared technology ecosystem, best work together to deliver on the vision and the benefits to our staff and our customers

To understand where the highest needs are, we considered how we could best leverage investments already made, with prudence and efficiency being central to our investment decisions. We have also carefully considered the areas of highest change impact to staff as the technology roadmap is delivered. It is a well-known fact that as part of any successful technology implementation, adequate stakeholder engagement is critical, across all areas of the operating model and this has been factored into our plans.

In planning out the Technology Roadmap. we must also acknowledge that this is the first time we are coming together as a shared technology ecosystem to work cohesively. This aspect adds yet another dimension impacting our ability to deliver on this collective vision.

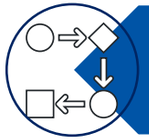
The Technology Roadmap has the power to change each agencies business shape in small but impactful ways, including its makeup and responsibilities.

We recognise the need to agree key elements before we submit our proposal to the regulator. Discussion at the front end, that is, ***defining what we want and the extent we can deliver on the transformation, is vital to delivering on both the sector needs and long-term value to our customers.***

To this end, core assumptions regarding how the technology roadmap will be delivered, together with the roles and responsibilities and joint governance arrangements will be drafted ahead of submitting our proposal to the regulator.

We have already considered how our Joint ICT and Data Services governance will be upgraded in order to sustainably deliver the technology roadmap.

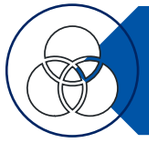
People:- both staff and customers across the NSW Water Sector are frequently frustrated by issues primarily related to accessing the right information at the right time. Lack of access and poor quality data creates friction between teams and across agencies that can hinder progress in other areas



Process:- a number of core processes span the NSW Water Sector, and each process affecting customers in a variety of ways that . Addressing these intersectional processes to make them seamless to customers is a priority

Technology:-Manual work arounds are widely used where technology gaps exist. SOCI compliance and privacy obligations continues to drive the need for legacy technology replacements across the NSW Water Sector.

Governance:- While each agency has its own governance arrangements over technology, data and risk management, it is clear that coordinated governance arrangements over the NSW Water Sector are required to drive efficiencies



Data:- poor data quality, availability, completeness and accessibility are a common refrain across the NSW Water Sector and represents a key challenge that must be addressed

Water

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Working together, we aligned our technology and customer vision across seven focus areas

Our shared technology ambition

Value and trust to our customers and communities drive our technology ambition to transform how we collaborate across the NSW Water Sector and collectively manage NSW's scarce water resource safely, fairly, and sustainably. By 2035, our workforce will use modern technology, open data assets, and a virtual shared technology ecosystem to make trusted insight-led decisions, have simplified automated processes, and provide connected digital customer experiences.

Elevating capabilities in seven focus areas

- 1. Shared data management and governance
- 2. Managing the shared technology ecosystem
- 3. Connected customer experience
- 4. Informed customers and community
- 5. Integrated planning and process optimisation
- 6. Field service optimisation and safety
- 7. Secure infrastructure

Delivered through 13 programs of work

- A Shared technology ecosystem data mgt and governance
- I Asset Lifecycle Management and Planning
- B Water market systems
- E Water insights portal
- J Communications network upgrade
- G Future workforce
- C Metering systems
- D Water compliance systems
- K Modern infrastructure and data centre
- F Integrated Business Planning and Automation
- M Geospatial Visualisation
- H Risk, Safety and compliance
- N Digital Waters Modelling
- O Digital Operations Support
- L Cybersecurity resilience

Delivering value aligned to our customer priorities and Organisational value drivers

- **Water Affordability and Security**
- **A single experience across the water sector & beyond**
- **Improved Responsiveness from Customer Interactions**
- **Informed customers and communities**
- **Systems and Data Resilience**

Reliability and trust | Cost efficiency | Reputation & sustainability | Risk management | Customer exp. & productivity | Strategic alignment

Recurrent Capex – Asset Renewals

Moved from Technology Roadmap to Operations. Digital to provide platform support only

Deferred

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We sought customer input to aid prioritisation of initiatives as we developed the portfolio of work

Customers were consulted to ensure alignment of their needs and preferences to our prioritisation and option selection. The relative prudence and efficiency of each program, and the options presented within them, was also assessed against the *WaterNSW Investment Strategy & Prioritisation Framework.* to determine the approach that gave best value for customers whilst meeting our regulatory and risk management obligations.

Options, outside the base case, included consideration of the timing of the proposed investment for each platform, that is inclusion in the FY26-FY30 Regulatory Period or later as well as the following:

- **Scope** – potential changes, removals or additions of parts of the defined scope of the program
- **Delivery** – consideration of different delivery models, e.g. partially outsourced, separate programs or joined up in-house delivery
- **Platform** – acquiring new SaaS (Software as a Service) or extending existing licenced software
- **Software type** – in-house developed versus off the shelf/package software
- **Customer versus Risk** – where customer preferences contradict better practice risk management

Inclusion in a later regulatory period enables us to defer the costs albeit also delays realising the benefits from the investment. Timing of the investment can also create, or be dependent on, flow-on impacts on other business transformation which may rely on delivery of a particular solution in another program of work. Options were also considered on the basis of:

A typical view of the options considered:	**As is – Base case** *'Don't transform'*	**Conservative scope** *'Transform enough'*	**Full scope** *'Transform a lot'*
Scope	Do not deliver initiatives or take action, maintain current state as the status quo	Deliver partial scope in 2025-30 with some delayed to 2030-35	Deliver full scope of initiatives to be delivered within the 2025-30 regulatory period
Risk Management	No change to risk management approach	Risk management improved but only partially	Accelerated adoption of better practice risk management with higher delivery risks
Delivery/platform	Initiatives are not delivered.	Lower strategic alignment with potentially material negative impact on other programs	Delivery and platform aligned to strategy
Investment	Potential increase in BAU costs due to deteriorating infrastructure, manual workarounds and externalities necessitating FTE increase	Costs stretched over two regulatory periods to reduce bill impact	Costs contained within 2025-30 period
Benefits	None	Partial benefits realised on completion of investment in 2025-30 period increasing to full realisation in 2030-35	Benefit realisation in 2025-30 period

We then explored three portfolio investment options …

	Option 1 Do Nothing: No new capability	Option 2 Do Enough*: Recommended approach	Option 3 Do a Lot : Expanded delivery scope
	Maintain current capability only All initiatives are deferred	Key Programs delivered as recommended Some initiatives are postponed FY26-30 These amounts include contingency.	All Initiatives are delivered in full by leveraging external capability
	Indicative cost above current BAU:	**Indicative cost range:**	**Indicative cost range:**
	$2.5m – $15m p.a.[1]	**$85.0m – $125.0 m[2]**	**$166.0m – $277m[3]**
Indicative funding source		**Current Portfolio est. $103.6m**	
1 NSW.DCCEEW – NPP Data Program	N/A	16.2m – 23.8m (19%)	8.2m - 13.6m
2 WAMC – NSW.DCCEEW /NRAR Services	N/A	9.4m – 13.8m (11%)	14.5m - 24.1m
3 WAMC – Customer Service & NSW Water Sector Data	N/A	21.5m – 31.6m (25%)	51.7m - 86.4m
4 Bulk Water RV/GS – Corporate & Assets	N/A	38.0m – 55.9m (45%)	91.7m - 153.0m

Notes:
[1] Scenario estimates have not assumed for headcount or indicative start / end dates changes
[2] Indicative cost ranges include estimated labour non-labour costs of $128.6m at -10% – +25%
[3] Indicative cost estimated from initial program

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… and selected the most prudent and efficient option for each program to drive the best outcome for customers

KEY: No alignment … Very high alignment

PROGRAMS

	Programs	VALUE DRIVERS: Reliability and trust	Cost efficiency	Reputation & sustainability	Risk management	Customer exp. & productivity	Strategic alignment	Investment Category	Prioritisation rank
E	Water Insights Portal	●	◕	●	◑	●	◕	Customer-driven Initiatives	High
A	Ecosystem data strategy, use cases and governance	●	◕	●	●	◕	●	Strategic Investments	High
K	Modern Infrastructure and Data Centre	●	◑	◕	●	○	●	Mandatory (Non-Discretionary)	High
L	Cybersecurity Resilience	●	●	◕	●	◑	◕	Mandatory (Non-Discretionary)	High
G	Future workforce	◔	◑	◕	◔	◔	◕	Strategic Investments	Medium
F	Integrated business planning and optimisation	◑	●	◑	◕	◕	◕	Strategic Investments	Medium
I	Asset lifecycle management and planning	●	●	◑	●	◕	●	Strategic Investments	Medium
C	Customer Metering Systems	○	◑	◕	○	●	◕	Customer-driven Initiatives	Medium
B	Water market systems	●	◕	◑	●	◑	●	Customer-driven Initiatives	Medium
H	Risk, Safety and Compliance	◕	◕	◕	●	○	●	Strategic Investments	Medium
J	Comms Network Upgrade	●	◑	◕	●	◕	●	Mandatory (Non-Discretionary)	Medium
O	Digital Operations Support	◕	●	◕	●	◕	●	Strategic Investments	Medium
M	Geospatial Visualisation	Deferred	◕	◕	●	◕	◕	Customer-driven Initiatives	Low
D	Water Compliance	◕	◑	◕	●	◑	●	Strategic Investments	Low
N	Digital Water modelling	Moved to Operations	◔	◑	●	◔	◕	Strategic Investments	Low

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The proposed investment builds on current foundations to drive increased NSW Water Sector efficiency and benefits

The focus of the next period is to build on technology investments made during the current period, to further improve fundamental capabilities required to meet operational and customer needs. Now, as part of a more collaborative shared technology ecosystem, we are coordinating our technology ambitions with DCCEEW and NRAR to collectively manage scarce water resource responsibly and sustainably. In line with the customer themes from the current period, the following 13 programs were identified, to be funded by both Government and Water Users:

	Planned Programs	FY26 – FY30 Direct Cost*	BCR per Treasury policy	BCR Total Economic Benefit	Strategic priority alignment
E	Water Insights Portal	$7.1m	N/A	171/100	Respected by customers
A	Ecosystem Data strategy, use cases and Governance	$8.66m	42/100	486/100	Delivering operational excellence
L	Cybersecurity Resilience	$3.0m	Mandatory	Mandatory	Delivering operational excellence
G	Future workforce	$2.5m	185/100	203/100	Developing our people
F	Integrated Business Planning and Automation	$5.0m	88/100	88/100	Delivering operational excellence
I	Asset Lifecycle Management & Planning	$16.0m	31/100	145/100	A sustainable future
C	Customer Metering Systems	$6.8m	146/100	189/100	Respected by customers
B	Water Market Systems	$22.2m	4/100	122/100	Respected by customers
H	Risk, Safety & Compliance	$2.5m	N/A	380/100	Working in partnership
J	Communications Network Upgrade	$17.9m	Mandatory	82/100	Delivering operational excellence
O	Digital Operations Support	$3.2m	N/A		Working in partnership
M	Geospatial Visualisation - DEFERRED	-	-	-	Not applicable
D	Water Compliance – NRAR cost	-	-	-	
		$94.86m			

* Estimates exclude baseline operational 'run' costs and non-core software subscriptions, calculated on a P50 basis
# Benefits calculated on a P50 basis
A –Additional $6.8m indirect DCCEEW and NRAR costs for whole of NSW Water Sector program.

D – NRAR lead program
M – DCCEEW lead program
K – Modern infrastructure and data centre not included in the above as it is Mandatory
N – Digital Waters modelling not included in the above not a Digital led program

And we know implementation costs will be incurred across the NSW Water Sector for specific projects

While WaterNSW will be responsible for technology delivery of certain programs within the shared technology ecosystem, DCCEEW and NRAR will provide business analysis, project management and project sponsor support for shared technology ecosystem projects

Reg CapEx view

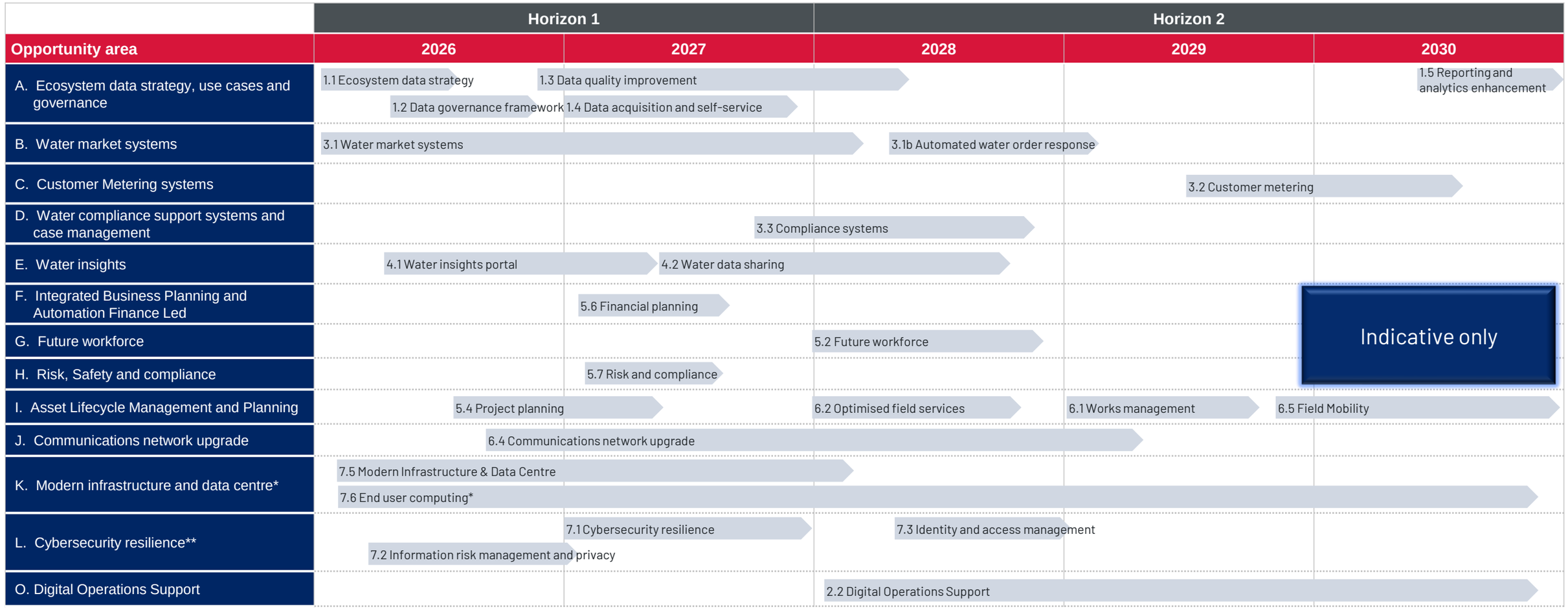
	FY26 – FY30										
		Organisation			Funding Submission (Reg CapEx)						
Planned Programs	TOTAL ($m)	WaterNSW ($m)	DCCEEW ($m)	NRAR ($m)	WAMC ($m)		Bulk Water ($m)		Total ($m)		
					OpEx	CapEx	OpEx	CapEx	OpEx	CapEx	Total
Water Insights Portal	$7.10	$7.10						$7.10	$0.00	$7.10	$7.10
Ecosystem Data strategy, use cases and Governance	$14.90	$8.66	$3.12	$3.12		$14.90			$0.00	$14.90	$14.90
Cybersecurity Resilience	$3.00	$3.00					$3.00		$3.00	$0.00	$3.00
Future workforce	$2.50	$2.50						$2.50	$0.00	$2.50	$2.50
Integrated Business Planning and Automation	$5.00	$5.00						$5.00	$0.00	$5.00	$5.00
Asset lifecycle management & planning	$16.00	$16.00						$16.00	$0.00	$16.00	$16.00
Customer Metering Systems	$6.80	$6.80				$6.80			$0.00	$6.80	$6.80
Water Market Systems	$22.20	$22.20				$22.20			$0.00	$22.20	$22.20
Risk, Safety & Compliance	$2.50	$2.50						$2.50	$0.00	$2.50	$2.50
Communications Network Upgrade	$17.90	$17.90						$17.90	$0.00	$17.90	$17.90
Digital Operations Support	$3.20	$3.20					$3.20		$3.20	$0.00	$3.20
Geospatial Visualisation - Deferred											
Water Compliance	$2.50			$2.50		$2.50				$2.50	$2.50
TOTAL	$103.60	$94.86	$3.12	$5.62	$0.00	$46.40	$6.20	$51.00	$6.20	$97.40	$103.60
Roadmap TOTAL					$46.40		$57.20		$103.60		
Modern infrastructure program*	$22.40	$22.40			-	-	-	-		$22.40	

*moved to WNSW ICT Renewals Program

* Estimates exclude baseline operational 'run' costs and non-core software subscriptions, calculated on a P50 basis

Should the WAMC CEO decision be to fund none or a portion of the proposed technology roadmap this table representation and the associated NABC's will need to be revisited and amended accordingly.

The programs selected are planned for prudent and efficient delivery over the five years of the next period



Notes:
* Includes 'Renewals program' to maintain technical currency of IT assets (laptops/ phones/ printer refreshes) for each business
** Includes non-discretionary baseline cyber risk treatment actions for the WaterNSW shared technology data ecosystem

Our target state seeks to mitigate risk across the shared technology ecosystem and deliver on achievable benefits

- Mitigating risk and delivering on benefits requires our people to be on the journey with us.
- Technological improvements can enable change across the NSW Water Sector and we need our people to be equipped to rise to that potential.
- Recognising we need to invest in our people to unlock value from our technology investments, we propose a coordinated change management effort across the NSW Water Sector to ensure staff are comfortable with the new processes and ways of working a technology enhancement brings.
- We know from experience the challenges that arise from an uncoordinated approach to delivering change management across an agency.
- Therefore, we have incorporated an effective change management capability into the investment funding requirements and appropriate levels of change management have also been factored into our delivery plan to drive benefits and mitigate risk

Mitigating Key Risks	Delivering a range of benefits
Replacing ageing technology that presents cyber, resource and market risks	NSW Water Sector able to service more customers more quickly through the consolidated WMS, lowering cost to serve
Improving data quality and completeness removes operational inefficiencies	Avoidance of time and effort involved in manually cleansing and collating data for reporting and insights purposes.
Taking a unified NSW Water Sector approach addresses the customer challenges presented by sector wide processes	The alignment of processes and consolidation of data and systems significantly improves efficiency
Improving the customer ability to self-serve improves productivity and avoids potential cost uplifts	Improved analytics of customer behaviour patterns, improves decision-making regarding customers across the sector
Sharing quality data across the NSW Water Sector enables improved productivity and avoidance of manual workarounds	A single source of truth reduces confusion and ensures a consistency in information delivered across the sector
By improving workforce planning and rostering, including route optimisation, it significantly enhances productivity	A holistic approach streamlines operations, and reduces cost to serve by monitoring and optimising diverse assets
As a Critical Infrastructure Provider, WNSW is meeting its obligations through continued uplift of cyber capabilities	The risk of cyber-attack is prudently and efficiently managed whilst ensuring compliance to the SOCI act

Even with careful planning, we know that every technology project presents risks to the shared technology ecosystem

We have carefully assessed the risks involved in delivering the portfolio of work presented and have adopted a prudent approach to managing these risks

The following key areas of risk to the delivery of our Technology Program have been identified. Our rigorous program and project delivery methodology will ensure that any new risks that arise during the period are identified, assessed and appropriately managed.

Delivery Risk	Description	Mitigation
Change in mindset	A clear and distinct mindset is required to move from programs of work focussed on, and run by, a single organisation, to a shared technology ecosystem wide program that involves and requires close collaboration between the WaterNSW, NSW.DCCEEW and NRAR. Failure to embed this new mindset in people, processes and strategies will result in inefficiencies, missed opportunities and increased cost of delivery	• Strong change management guided by external SMEs. • Executive sponsorship across the NSW Water Sector. • Program and ecosystem wide co-ordination and monitoring of progress, risks and issues
Duplication	Elements of the Digital Program that will benefit more than one agency will require participants to give up an element of control over their own systems and infrastructure, ensure decommissioning of legacy systems and co-ordinate labour sourcing. Retention of control and an inability/desire to “let go” will lead to duplication of effort in delivery, conflicting goals and activities, and a failure to achieve the efficiency goals of the program	• Program and shared technology ecosystem wide co-ordination and monitoring of progress, risks and issues • Clear plans for delivery and decommissioning
Conflicting requirements and priorities	Even while strong collaboration is being embraced, conflicting needs and priorities between agencies may cause delay and increased cost from duplication of effort and sub-optimal resource planning	• Executive led, cross sector steering group to identify and resolve conflicts
Policy and MoG changes	State Government policy changes such as non-urban metering policy and changes to the Machinery of Government can have a significant impact on the program due to its NSW Water Sector wide nature	• On-going liaison with Government for early identification of potential changes that may impact the program • Adopt an incremental delivery that is suitably flexible to respond to new legislative requirements

To manage shared technology ecosystem risk, an upgraded Joint ICT & Data Services governance capability will support delivery

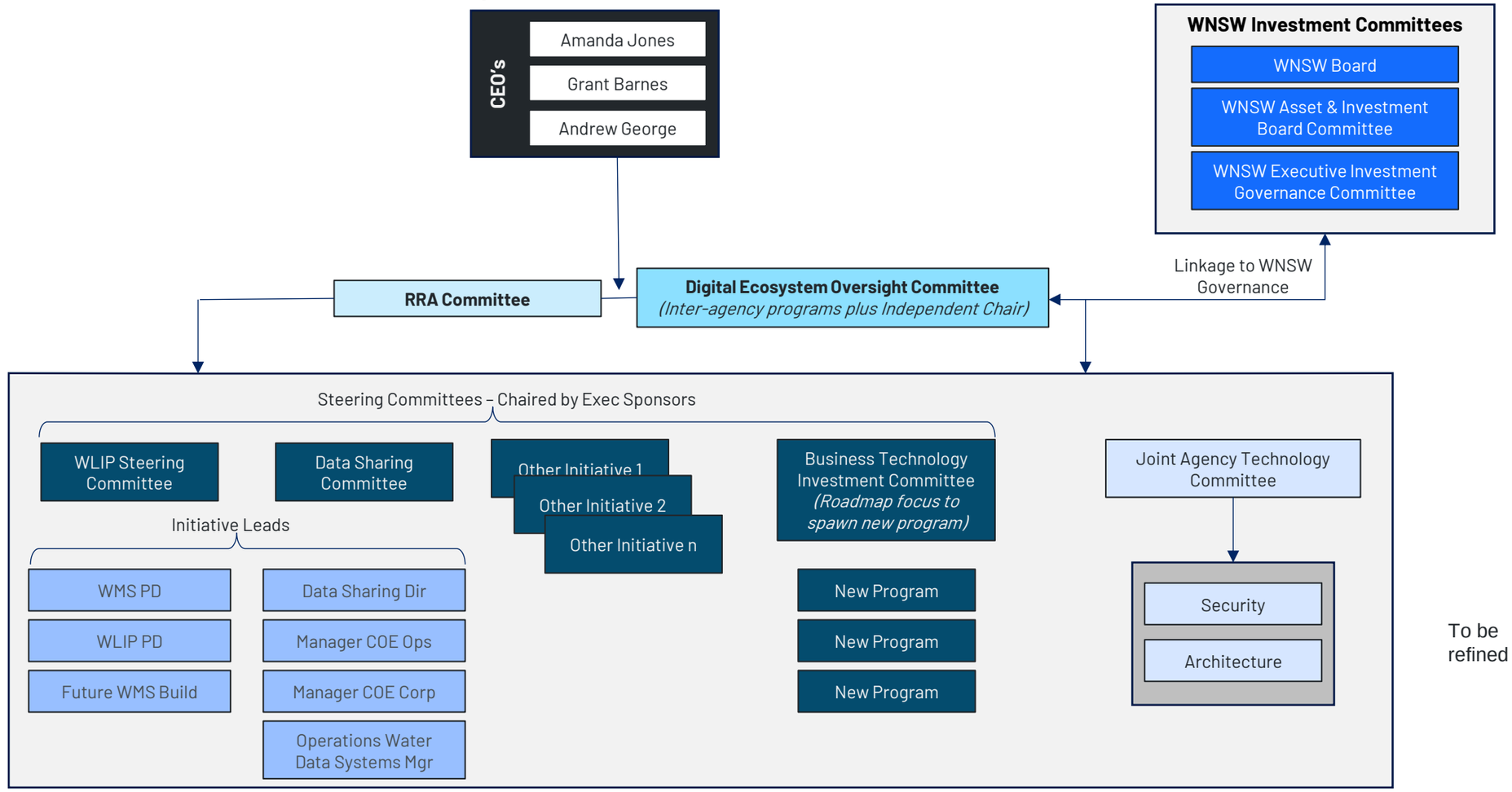
Setting up a sustainable delivery governance model

Key capabilities need to be set up well in the future to support a sustainable delivery model. These need to be formed with mature processes to ensure clear accountability and efficient function throughout the program.

Maintaining a sustainable delivery and governance model

Key delivery capabilities require continual alignment and mutual understanding or ability to carry out across the entities.

Proposed Governance Model



To be refined

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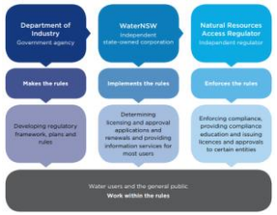
This section articulates the background, current situation and method for determining needs across the NSW Water Sector

Current State and Context

2

Since 2018 the NSW Water Sector has been focused on establishing three independent entities

Prior programs focused on establishment of three distinct and independent entities



Focus since 2018

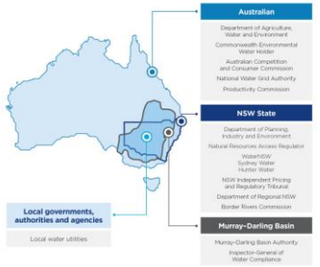
DPI-W → WaterNSW → NRAR

Since Water NSW's creation under the *Water NSW Act 2014*[1] and NRAR's subsequent launch in 2018 absorbing all compliance and enforcement of water regulation within NSW, the three entities, DCCEEW, WaterNSW, and NRAR have been on separate but closely linked journeys. While the partitioning of responsibilities for management of the NSW Water Sector between the three organisations has been successful, it has also created some challenges by:

- Inadvertently introducing operational inefficiencies,
- creating a disjointed customer experience, and
- generating fractured working relationships across the NSW Water Sector.

A number of integral business processes still span the three entities despite each organisation working towards establishing their own capabilities and infrastructure.

Future programs focused on increasing integration, transparency, and trust throughout the NSW Water Sector.



Focus moving forward

NSW.DCCEEW ↔ WaterNSW ↔ NRAR

Having successfully established three independent entities with distinct roles across the NSW Water Sector value chain, the focus is now shifting to how to drive the greatest value for customers. Putting customers at the forefront of their priorities, the three entities have developed a shared technology ambition and roadmap for increased sharing and customisation of business applications to drive greater transparency, customer experience, and operational efficiency across the NSW Water Sector.

A Shared Technology Ambition

Value and trust to our customers and communities drive our technology ambition to transform how we collaborate across the NSW Water Sector and collectively manage NSW's scarce water resource safely, fairly, and sustainably. By 2035, our workforce will use modern technology, open data assets, and a virtual shared technology ecosystem to make trusted insight-led decisions, have simplified automated processes, and provide connected digital customer experiences.

(1) and also the Water NSW Amendment (Staff Transfers Bill) 2016

Since the separation investment, strategic and innovation planning in technology has been fragmented & siloed

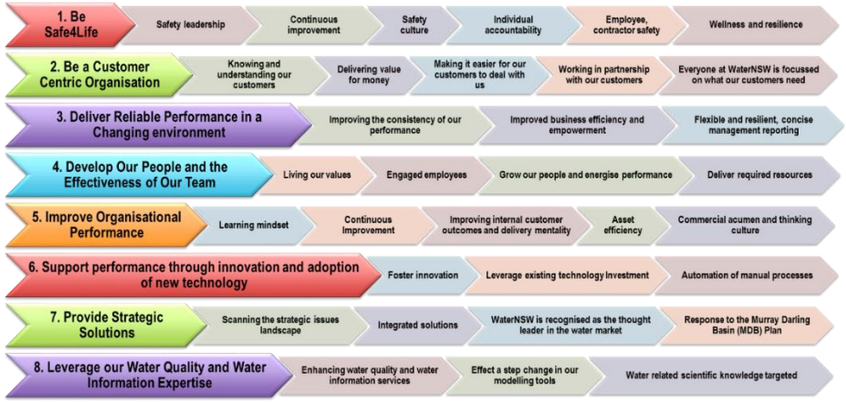
In 2019 Water NSW produced its own ICT Strategic Plan (2020-2029) outlining:

- The current Business Plan (2018-2021) recognised the need to both solidify WaterNSW's core performance and develop and improve our business through a balanced approach
- The ICT Strategic plan proposed the technology roadmap for 9 strategic programmes in addition to the 'Business As Usual' projects to support existing and future business demands
- The proposed total investment for the strategic programs over the 10 years (FY 20 to FY29) was estimated to be $206.4 million. The forecast revenue requirements exceeded previous IPART approved ICT funding ($10m per annum or $40.6m for Metro and Rural FY17-FY21)
- The approved investment reflected the actual business and ICT transformation demand – especially Operations Technology to collect accurate and real-time data, integration to portals and the Water Market Systems refresh (later renamed the WAVE Programs)

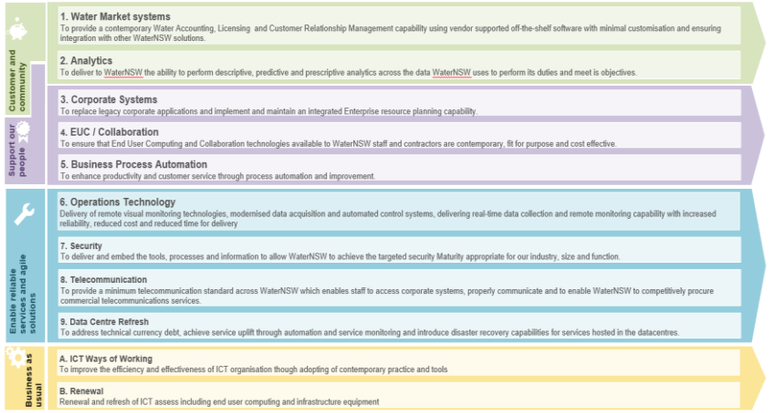
At the time, Joint ICT Strategic Planning was not carried out.

DCCEEW, WaterNSW and the NRAR have also responded to Australian Government led policy and data improvement developments, including a range of Murray Darling Basin Authority (MBDA)-led programs and projects in place to sustainably manage water in the Basin, such as the Hydrometric Network and Remote Sensing program

WaterNSW Business Plan (strategic priorities)



WaterNSW ICT Strategic Programs



As a result, water related data collection, infrastructure and capabilities came under close scrutiny

The Water Data Review 2020

The Minister for Water, Property and Housing, requested that the NSW Chief Scientist & Engineer review and advise on the adequacy of water-related data collections, infrastructure and capabilities to meet current and future requirements and manage associated risks.

The report in 2020 identified need for coordinated, data-driven and cross-agency approaches to effectively respond to water management and security challenges. It is prompted by the question: do we have the right data, of sufficient quality, and in usable form to make well-informed decisions

NSW GOVERNMENT | Chief Scientist & Engineer

Review of water-related data collections, data infrastructure and capabilities

July 2020

'The Sector needs' a comprehensive and integrated, open and transparent approach to deliver useable and high-quality water data, and expertise in its management'

<u>Key Recommendations</u>

1. The default position of all NSW water data, collected from both public and private sources, should be 'open data' that is publicly available and managed in accordance with the NSW Information Management Framework and relevant standards

2. A Water Data Custodian is appointed to ensure a 'whole of system' and integrated approach is taken to water data. This role should have a reporting line to the CEO Water to provide a degree of authority over data

3. Consistent with good practice, the roles of data collection and data analysis should, as far as reasonably possible, be functionally separated to ensure decision-making is as objective as possible.

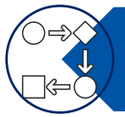
The current state has seen each agency deliver on capabilities to meet their individual agency needs

Background

Since 2018, each of the three agencies that make up the NSW Water Sector, have been on their own journey. In this environment and focussed on its own needs, WaterNSW has been steadily implementing modern technology platforms. These platforms lay core technology foundations that not only provide an initial capability uplift, they also enable future capability uplifts as business confidence and user expectations grow.

This siloed approach to technology investments which, whilst appearing prudent and efficient in the context of each individual agency, has created issues across the sector operating model:

People:- both staff and customers across the NSW Water Sector are frequently frustrated by issues primarily related to accessing the right information at the right time. Lack of access and poor quality data creates friction between teams and across agencies that can hinder progress in other areas



Process:- a number of core processes span the NSW Water Sector, and each process affecting customers in a variety of ways that . Addressing these intersectional **processes** to make them seamless to customers is a priority

Technology:-Manual work arounds are widely used where technology gaps exist. SOCI compliance and privacy obligations continues to drive the need for legacy **technology** replacements across the NSW Water Sector.

Governance:- While each agency has its own governance **arrangements** over technology, data and risk management, it is clear that coordinated governance arrangements over the NSW Water Sector are required to drive efficiencies

Data:- poor data quality, availability, completeness and **accessibility** are a common refrain across the NSW Water Sector and represents a key challenge that must be addressed

The issues arise because even though the agencies have separated, a number of integral business processes still span the three entities. Each of these processes has one or more customer impacts. Agencies have put in place a range of manual workarounds and introduced other measures in order to mitigate the perceived detriment to customers as far as possible.

The current state arrangements of each agency establishing their own capabilities and infrastructure has contributed to a range of inefficiencies, data gaps and quality issues which need to be addressed in the coming regulatory period.

The challenge

Data sits at the heart of many of the challenges being experienced across the NSW Water Sector. Inconsistencies in the way data is captured, such as system versus paper, standardised field entry versus free text have, to date limited the level of integration, even within WaterNSW, where the focus has been on establishing a base level of functionality across a suite of core applications. The nature of the data capture has also affected its quality, completeness and availability where lags in data entry continue to create issues.

•To ensure data can be used in regulatory reporting, management decision making and meeting customer needs, all agencies engage in regular, repeated *offline* data cleansing efforts.

•Cleaned data is not captured or adjusted in any data platform. As the data is used across the NSW Water Sector, and there are no data owners or data stewards at agency or sector level, the source of truth may be blurred. This contributes to the repetitive and duplicated cleansing effort across the NW Water Sector.

In fact, these limitations impact customers and staff across the NSW Water Sector in a variety of surprising ways.

The current state addresses individual agency needs but has created a range of challenges to customers

The challenge

- **Limitations on data sets creates confusion for customers and staff.** For example whole of NSW Water Sector issues, such as:

  1) WNSW issuing licence;
  2) DCCEEW setting conditions on the licence;
  3) Customer trying to understand which conditions apply to them;
  4) NRAR ensuring condition compliance

  all rely on various aspects of the same data sets (and are impacted by gaps, inaccuracies and poor quality data sets). This requires ongoing, additional time by all parties to resolve issues.
- **Poor data quality limits our automation opportunities**. Significant advances in technology now puts automation opportunities within financial reach, however poor data quality impedes any ability to efficiently leverage this type of technology.
- **Customers are impacted at almost every interaction they have** when interacting with any of the "intersectional" processes that connect across the three agencies. Customers have limited access or visibility to data that impacts them, limited ways to engage digitally because of these data shortfalls.
- **Lack of appropriate data, poor reporting and poor quality data affects Field Services** planners ability to effectively schedule work or optimise routes taken. In remote terrain this can have a range of impacts, not least, being additional time and resources taken for jobs that may have been avoided.
- **Hydrologists rely on clean and complete data sets**. Accessing quality information across the NSW Water Sector over the time periods required for forecasting, can be challenging.

To support investments to collect, curate and provide the data needed, upgrades are required to our Communications Network. This will support staff safety in remote terrain as well as enabling remote data capture on system via tough books, preventing length delays in on system data capture in an environment where paper forms are still prevalent.

Replacement of a suite of legacy core customer technologies is also becoming more urgent as these solutions form the foundation of the water market system in NSW. Managing customer and related water data is essential to the NSW Water Sector as a whole and uplifting these applications onto modern platforms also allows a whole of NSW Water Sector approach to be taken, to benefit us and our customers. It is clear that substantial data, process, technology and governance changes are needed. With no common change management model or framework, it is recognised this is a capability gap that also needs to be addressed across all programs of work..

And to ensure that we remain SOCI compliant and appropriately manage the cyber security and privacy risks inherent in legacy and bespoke systems, continued investment is required.

Working toward a connected NSW Water Sector

Having completed a Business Capability Model covering the connected and intersecting areas of the NSW Water Sector, it is clear that opportunities to benefit customers and staff exist. Each of the agencies across the NSW Water Sector have recognised and acknowledged this.

Recently we have aligned on an agreed vision and plan for technology that spans the sector, recognises the synergy between agencies and which will require high levels of collaboration in order to realise it. To meet these aligned goals, the NSW Water Sector will need to overcome challenges outlined.

While work has been done, working in partnership is key to avoid falling customer service levels

Since 2021 WaterNSW, DCCEEW, and NRAR have commenced working collaboratively to plan and deliver digital initiatives to deliver efficiencies

Whilst each organisation was on its own journey, the differing velocity of change created challenges. While many of our goals are similar, each organisation conducted its own strategic responses in relative isolation. More recently we have aligned on the value of joint planning and agreed an ambition and long-term plan for technology that recognises the synergy between agencies.
To meet these aligned goals, the NSW Water Sector will need to overcome challenges with adoption of new ways of working, by building on the technology investments already made.
The delivery will also require high levels of ICT governance and delivery collaboration in order to realise the respective business goals of the three organisations.

- **Trusted, reliable, accessible data for decision making -** A duplication of data across the shared technology ecosystem results in inefficiencies and requires tasks such as manual validation. This stems from a limited ability to share data and a lack of Information management processes This further impacts data quality and reliability for evidence-based decision-making and burden of proof.
- **Shared technology ecosystem visualisation and centralised, remote control to the field -** Today's capabilities don't enable the better practice management of water resources across various contexts, e.g.: first nations' cultural connection to water, flow, environment, storage and irrigation. There are trade-offs between the economic and environmental impacts of water management decisions that are not always considered.
- **Customer understanding through a single view of the customer, cases and licences -** While WNSW has recently invested in a capability to manage customer data and processes there remains no shared and complete view of customer data including contact details, location, cases, interactions and licences. This creates sector inefficiency through duplication of work and an inability to understand the full customer context to inform decisions.
- **A future ready, upskilled and connected workforce -** The competition for talent is fierce and the need for the workforce to upskill and adapt to an ever-changing technology landscape is like never before. This requires new ways to attract, retain, and upskill talent to be able to meet the needs of the organisation of the future.
- **Field & remote worker efficiency, tools and safety -** Field and remote workers often have limited connectivity when in the field at remote locations in order to do their job. When they do have connectivity, it is challenging to access contextual information for the job at hand. Schedule optimisation and routing of jobs is performed with only basic technology support.
- **Integrated and iterative planning and forecasting -** Planning and forecasting is disjointed between different time horizons with a limited feedback loop and integration especially between long/medium term planning and operations. Planning also occurs more on a static basis, rather than iteratively and dynamically.
- **Customers and community access, engagement and trust -** Customers and the community need to go to a variety of information sources with varying levels of information complexity to be informed about the NSW Water Sector. Customers and the community face challenges in accessing and understanding the data available to them and are often unaware of their rights and obligations in the NSW Water Sector.
- **Modern, safe and scalable IT infrastructure and cyber resilience -** Ageing IT infrastructure poses a risk of accumulating technical debt and inhibits the NSW Water Sector to deliver technology solutions. Enhancements are often required to ensure new solutions are fit for purpose. It is a priority strategy of the NSW government that all Departments adhere to the requirements set out by the NSW Cyber Security Policy.

We also heard from our customers asking us to: ***'make it easy.'*** Their key concerns are also our concerns

In order to meet the expectations we have heard from customers

Research suggests that those water organisations who best understand the needs of their customers and are then able to align their services and channels, will become the future industry leaders.

Customer insights reports highlighted seven indicative themes of **current customer needs** around water supply reliability, decision making transparency, water user experience and interactions with other jurisdictions and participants. These themes are summarised below and have been factored into our program planning:

1) **Understanding impacts of climate change on water**
   Community members, industry stakeholders and local councils are keenly aware of the potential impacts of climate change on water quality and supply. These concerns were strongly influenced by location – increasing salinity levels resonated most with coastal communities.

2) **Importance of groundwater management**
   Groundwater is a critical resource, with many regional NSW areas relying on it for water security. Hence, a clear policy to sustainably manage groundwater resources was identified as being of key importance.

3) **Importance of environmental water management**
   Better management of environmental water and surface water resources was identified as a key area of importance across our customer groups. Management also lacked the cultural insights needed to protect areas of significance for Aboriginal/First nations stakeholders.

4) **Assurance of ongoing water reliability and security**
   Sustainable water management was identified as a key area, with priorities including improving water reliability for regional and Aboriginal/First Nations communities, as well as action to address the impacts of climate change.

5) **Confidence in how decisions are made and enforced** Customer confidence and trust in how water resource management decisions are made were documented at mixed levels. Improved data sharing, more engagement and community consultation and on-the-ground visibility were found to promote confidence.

6) **Value for money and affordability**
   Customers were aware of costs associated with water management, monitoring and compliance. However, more work is required in Phase 2 to discover customer views on costs of services and value for money.

7) **Customer service, experience and stakeholder engagement**
   Customer views on service levels and experience could not be drawn from the documents reviewed for this report. Findings are primarily from surveys conducted by WaterNSW and NRAR and do not include DCCEEW. Further research is required to specifically test customers' satisfaction levels to identify gaps in services and experience.

WaterNSW has laid a strong foundation for improved operations and customer outcomes in the next period

Current period

As the leading ICT services provider, WaterNSW has been steadily laying the technology foundations that pave the way to a more efficient future with a focus on increasing trust from customers and the community. We know the themes below remain important to customers and the community and have helped inform the strategy, initiatives and investment plans for the next regulatory period and beyond.

Customer Themes from "voice of customer" are outlined below:

1. **Water Affordability and Security:** labour productivity and process efficiency within and across the shared technology ecosystem, to enable cost reduction an adopting the right technologies.
2. **A Single Experience Across the NSW Water Sector:** inform the NSW Water Sector once customer data and information is safely shared and joined-up services for a seamless customer experience, to streamline communication and boost customer efficiency.
3. **Improved Responsiveness from Customer Interactions:** simple and seamless service channels within and across the shared technology ecosystem, and digitised and dynamic account management including ordering, trading, account balances, and rules to better service experience and social license to use water.
4. **Informed Customers and Community:** easy access to information that is personalised, relevant and easily downloadable for analysis to meet transparency needs of both customers and the wider community.
5. **Systems and Data Resilience:** safe connections to remote workers, infrastructure growth to support future needs, and obligations and contemporary cyber security practices to meet privacy obligations and what is expected of a resilient digital utility.

Customer themes

1. **Water Affordability and Security**
2. **A single experience across the water sector**
3. **Improved responsiveness from Customer Interactions**
4. **Informed Customers and community**
5. **Systems and data resilience**

Current period achievements

- Field Service Mobility and Integrated central asset management hub; commercial performance management
- Better Surveillance; Drones trials, CCTV and seismic monitoring

- Decision support Dashboard for Water Operations
- Coordination of water data to allow better evaluation of catchment and water management plans and actions
- New IOT system enabling consolidation of multiple telemetry systems (including the metering system)

- Modernised and simplification of real time data management
- Water Market System deployment for better Work Approval processes and ongoing enhancement

- Improvements to the ePlanning process related to Water Licencing
- Improvements in transparency in model methods and making models and data publicly available
- Water Insights Portal deployment and ongoing enhancement

- Significant lift in cyber maturity and Data Centre refreshed
- Business applications migrated to cloud
- Prudent risk and compliance system investments

This section outlines the portfolio target state across the shared technology ecosystem. It summarises key benefits and the risk mitigation that the investment will bring.

Target State

3

Shared Technology Ambition

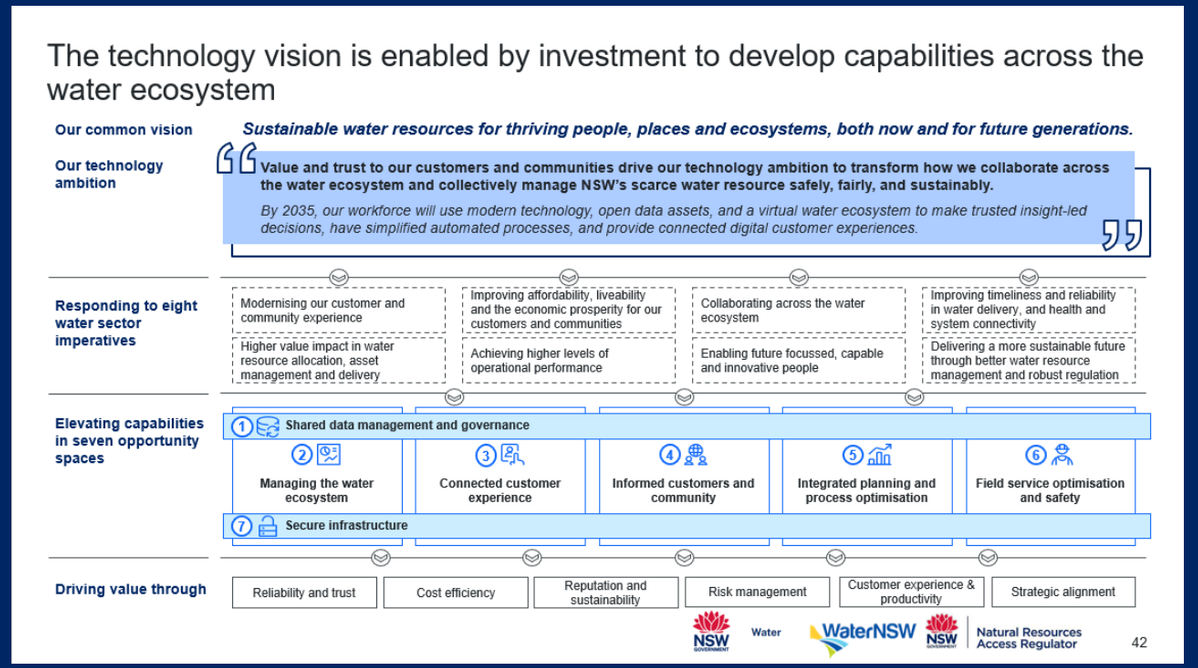
In June 2023, a shared technology ambition was set to 2035 for DCCEEW, WaterNSW and NRAR (the NSW Water Sector as covered by the roles and responsibilities agreement) that aligns to the NSW Water vision, complements each organisation's strategic objectives, considers each organisation's future technology aspirations and ultimately guides the development and prioritisation of future technology initiatives through the Technology Roadmap.

To fulfill the 2035 technology ambition and guide the technology initiatives, seven themes or opportunity spaces were co-developed with the three organisations to explore in detail.

The end-to-end visioning process examined the strategic context; horizon scan; technology objectives, principles and vision; and benefits, business changes and enablers.

Alongside in-depth internal and external analysis, numerous workshops were held with representation across over 150 staff from DCCEEW, WaterNSW and NRAR, and reviewing the repository of 1500+ documents, to consolidate findings into seven key opportunity spaces and singular joint technology ambition, which are supported by common design principles and value drivers.

To visualise how the outputs fit together, the Strategy on a Page (shown right) sets out the NSW DCCEEW Vision, technology ambition, common sector imperatives, opportunity spaces and value drivers.



Shared Technology Ecosystem Strategy on a Page (slide 42)

Technology Strategic Plan – Vision, Context, Opportunities *(This document)*

This document articulates the joint technology ambition, how it was developed and the opportunity spaces. For each opportunity space, it describes the outcomes and how ways of working will change.

Vision, Context, Opportunities *informs the* **Principles, Initiatives, Portfolio Roadmap**, *to produce and prioritise initiatives within the seven identified opportunity spaces.*

Technology Strategic Plan – Principles, Initiatives, Portfolio Roadmap *(Separate document)*

This document outlines the pathway of initiatives to achieve the shared technology ambition. It will inform the upcoming IPART funding application. Beyond this, it provides direction about collaboration across the shared technology ecosystem and key focus areas for ongoing future technology initiatives to continue to improve water service delivery to NSW through to 2035.

Our target state reflects the need to transform, and to collaborate wherever possible

The technology roadmap was designed to address underlying issues and core capability requirements first, allowing us to collectively focus on optimising those foundational investments through the FY26 to FY30 Regulatory Period

The scope of the technologies considered in this document includes capabilities associated with maintaining the existing corporate, enterprise and shared technology systems and networks and leveraging capability consistent with the Technology Roadmap to 2035, to facilitate efficient collaboration across the NSW Water Sector, meet service levels and improve services to minimise and manage costs to customers.

Reflecting on our drivers, a number of priorities were clear

- **Data access and insights** – employees need access to information so they can seamlessly collaborate across the shared technology ecosystem, driving communication and information sharing for better results for customers, regulators and stakeholders. Greater access to data is gained through investments in expanding on the existing data platform, enhancing network connectivity and enabling adequate data collection on system, whilst in the field.

  We know we must use data as a strategic asset, having ready access to trusted insights which can enhance decision-making at all levels across the NSW Water Sector. This visibility is important to allow consistent use of data across the NSW Water Sector and enables definition of a single source of truth for critical data. The creation of a central source of information for NSW Water Sector related data expands our capabilities to drive greater efficiency and effectiveness of business operations

- **Operational efficiency** - In addition to reducing the cost of delivery, there are opportunities for the shared technology ecosystem to improve the level and quality of services through dedicated improvements across data and data transparency to meet the increasing expectations of customers. Building upon existing technology to broaden capability and access and enabling greater connectivity of information systems, allows us to efficiently and effectively collaborate, better serve our customers while not increasing costs.

  Collection and analysis of customer and operational data, improved delivery of information to staff and customers and provision of modern, adaptable information systems, will combine to deliver improved operational effectiveness and manage the overall cost of delivering services to our customers.

- **Improved Cyber Security** – maintaining the privacy of customer data in an environment of ever increasing cyber threat posed to all organisations, it is prudent and necessary for us to maintain a strong cyber posture. Ongoing assessment of the threat landscape and the corresponding changes in regulatory obligations, require us to continually invest.

This investment plan includes 12 programs associated with the seven core themes to improve operations across the NSW Water Sector, outlined in the Strategic Plan:

1) Shared data management and governance
2) Managing the shared technology ecosystem
3) Connected customer experience
4) Informed customers and community
5) Integrated planning and process optimisation
6) Field Service optimisation and safety; and
7) Secure infrastructure.

In planning out the portfolio of work, we conducted an analysis our regulatory proposal, including 'bottom up' and 'top-down' adjustments to ensure consideration of dependencies, deliverability, benefits realisation and no duplication of costs.

The NSW Water Sector has ensured that costs are not duplicated between the defined programs of work. The 15 programs of work have been outlined on the following pages

And connecting customer insights with trends in digital innovation shows what's possible in the water sector

Advanced analytics

Advanced analytics enables companies to optimise water supply and availability through predictive analytics to perform activities such as demand forecasting and asset failure and performance detection.

Since 2015, Thames Water in the UK has adopted a smart utility approach. They have deployed over 1400 sensors which feed into their water analytics platform. Real-time dashboards show changing operational conditions such as customer demand and climate changes and operators are able to respond remotely. Their intelligence hub platform has amounted to an estimated $80 million in expenditure benefits from 2017-2022 alone.

Artificial intelligence & machine learning

AI algorithms are being utilised to optimise water distribution systems, reduce energy consumption, and improve supply efficiency.

Since 2015, a major water corporation in the UK has employed AI to process data captured every 15 minutes, from over 7,000 pressure and flow sensors. The AI's capability to identify pipe bursts and associated leaks quickly and accurately, soon after they occur, is highly beneficial. It's also marked by high true positives and low false alarm rates, enhancing its reliability.

Internet of Things (IoT)

IoT sensors are used for real-time monitoring of water quality, leakage and detection and WRM, providing valuable data for efficient decision-making.

Sydney Water has installed 9,000 devices across its wastewater network. The sensors detect blockages in wastewater pipes before they lead to discharge into customer properties and the environment. On average, the sensors detect 20 blockages in the gravity wastewater network per month, saving ~$400,000 in incident costs.

5G networking

5G technology presents opportunities for regional and rural water networks, such as remote assistance, enabling experts with specialised knowledge to address on-site issues digitally.

Queensland's state-owned water corporation has begun its transition into 5G, stating that: "the integration of 5G will improve the speed of information, allowing for easier accessibility and visibility of water data for Sunwater and its customers." It also enhances protection through networking slicing, encryption and edge computing.

Cloud

Cloud facilitates efficient data management, remote monitoring and control of water systems, collaboration, customer engagement via online platforms, and robust cybersecurity.

SA Water, a South Australian utility, uses Amazon Web Services' cloud for real-time water network monitoring, allowing it to efficiently manage and analyse data, control water systems remotely, and bolster cybersecurity measures. AWS's scalable and cost-effective cloud infrastructure is central to SA Water's smart network, which monitors the network in real-time, reducing leakage and operational costs.

Connected digital customer portal

A digital customer portal allows for water companies to improve customer experience, empower customers' to use data in their decision-making, and better collect customer data.

The Dubai Electricity and Water Authority's (DEWA) services are all delivered through its website and smartphone app, being the first digital utility, which has resulted in financial and environmental savings. This required digital integration between DEWA and over 30 public and private entities and adoption of all digital transactions.

Our Digital Programs have a wide impact on our stakeholders and community

Example Personas

Digital Program	Compliance Officer	Operational Manager	Customer	Farm Manager	CFO	Field Worker	Irrigator	Technology Manager
A. Ecosystem data strategy, use cases and governance	X	X	X	X	X	X	X	
B. Water market systems		X	X				X	
C. Customer metering systems	X		X			X	X	
D. Water compliance	X	X		X				
E. Water insights	X		X	X			X	
F. Integrated Business Planning and Automation		X			X			
G. Future workforce					X	X		
H. Risk, Safety and compliance				X	X			X
I. Asset Lifecycle Management and Planning		X			X	X		
J. Communications network upgrade		X				X		
K. Modern infrastructure and data centre								X
L. Cybersecurity resilience		X	X	X	X	X	X	X
O. Digital Operations Support	X	X				X		X

A future way of working – what our community and stakeholders say:

"As a compliance officer I need timely access to and understand the provenance and accuracy of the data I'm using in investigations. To do that well, we need to work together through shared data services across the NSW Water Sector"

- ✓ I can find and access data and meta-data quickly to identify potential breaches.
- ✓ External data from organisations, such as global hydrology, is integrated seamlessly into our systems allowing me to easily incorporate this into my data models.
- ✓ Our technology informs me when data is suspect or there has been a revision, enabling me to make better modelling decisions and make changes to existing models as necessary.
- ✓ I am confident that data is high quality and trustworthy, allowing me to focus on value add modelling activities rather than data cleansing and manipulation.
- ✓ Systems are integrated allowing me to easily use different platforms to analyse data and create models.
- ✓ Metadata and time series data is available, enabling me to better analyse and visualise data.
- ✓ Resources are shared internally and across the shared technology ecosystem to minimise duplication of effort.

"As an operational manager, with an enhanced model or digital twin, I will be able to apply detailed situational insights to various operational decisions"

- ✓ Systems provide a clear view of operational health and performance allowing me to optimise operational settings to minimise risk.
- ✓ Water monitoring systems are current, reliable and resilient allowing me to be confident in the data and make data-driven decisions.
- ✓ My effort is on further developing and analysing river models to achieve efficiency in water delivery rather than manipulating data.
- ✓ I am able to better prepare for weather events such as flood and droughts with a forward looking climate outlook integrated.
- ✓ I am informed of key operating decisions and objectives allowing me to optimise the release of water.
- ✓ Using predictive asset condition functionality in EAMS, we will service assets prior to failure but not overservice them.
- ✓ With greater visibility of outage opportunities, I can efficiently utilise them for maintenance where assets need to be taken out of service.

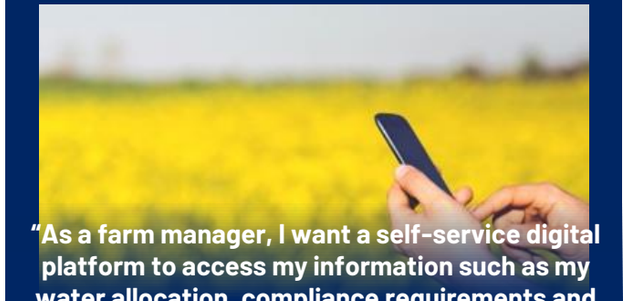
"We know who our customers are and how to contact them the way they like, so that we can keep them informed about what matters to them."

- ✓ There is a single view of our customers, ensuring consistency and simplicity across the shared technology ecosystem.
- ✓ I can view customer and community feedback in a single place, simplifying the process of improving customer engagement and ensuring customer needs are met.
- ✓ Customer information is complete and correct, enabling me to provide personalised, targeted information, quick decisions and responsive service.
- ✓ Data is readily accessible, allowing me to conduct suggestive analysis and provide insights to customers via dashboards.
- ✓ We only ask the customer once for information, and in the event of changes, there is an audit trail to provide visibility.

A future way of working – what our community and stakeholders say: (continued)

- ✓ I can access and update all my information, including personal details, water orders and status requests, from a single, user friendly, self-service platform.
- ✓ I understand the water regulations pertaining to my situation and my requirements and responsibilities making it easy for me to be compliant.
- ✓ I know where to go to seek support and more information, enabling me to feel connected and engaged with the water sector.
- ✓ I know how much water I have consumed and what I am being charged for
- ✓ I Understand the conditions of my licence – being allocated only the conditions that apply to my licence and it is clear what I am going to be assess on

- ✓ Dispatch and planning is optimised so that I take the best route to site, and only need to visit a site once and when necessary.
- ✓ Field technology is current and integrated with other necessary systems, maximising my productivity.
- ✓ I can use my phone and/or tablet to access and collect required site and customer information in real-time using a uniform and simplified data entry process to maximise field efficiency.
- ✓ I can request further information or support to guide me through my issue with the job.
- ✓ I am able to undertake training where I am based and able to access specific just-in-time training.
- ✓ There is standardised field training to ensure I feel confident and proficient in using our equipment and systems.



- ✓ I can access and update all my information, including personal details, water orders and status requests, from a single, user friendly, self-service platform.
- ✓ I have timely access to high quality, reliable information and models, such as flood and river data, via a single interface to aid my decision making.
- ✓ I understand the water regulations pertaining to my situation and my requirements and responsibilities making it easy for me to be compliant.
- ✓ I know where to go to seek support and more information, enabling me to feel connected and engaged with the water sector.
- ✓ As a member of the community, I trust our water is managed efficiently and fairly, and am confident my family always has access to safe water.
- ✓ As an environmentalist, I feel comfortable that the government is taking care of the water and the environment is in good health.

A future way of working – what our community and stakeholders say: (continued)

"As a water policy officer, I want a self-service digital platform to access state-wide and local information about water rights, allocation, use to update my water models so that I can make good policy decisions'

- ✓ I can access water monitoring and extraction information, excluding personal details, water orders and status requests, from a trusted, user friendly, self-service data platform.
- ✓ I have timely access to high quality, reliable information and input for my models.
- ✓ I know where to go to seek support and more information, enabling me to feel a connected and engaged worker with the water sector.
- ✓ As a member of the Government, I trust our water is managed efficiently and fairly, and am confident about my policy recommendations.
- ✓ I can consider trade-offs between different types of water users and feel comfortable that I am taking good care of the economy and the environment.

"As a technology manager, I need assurance that our digital and physical assets are secure and reliable, and that we are compliant with Government requirements."

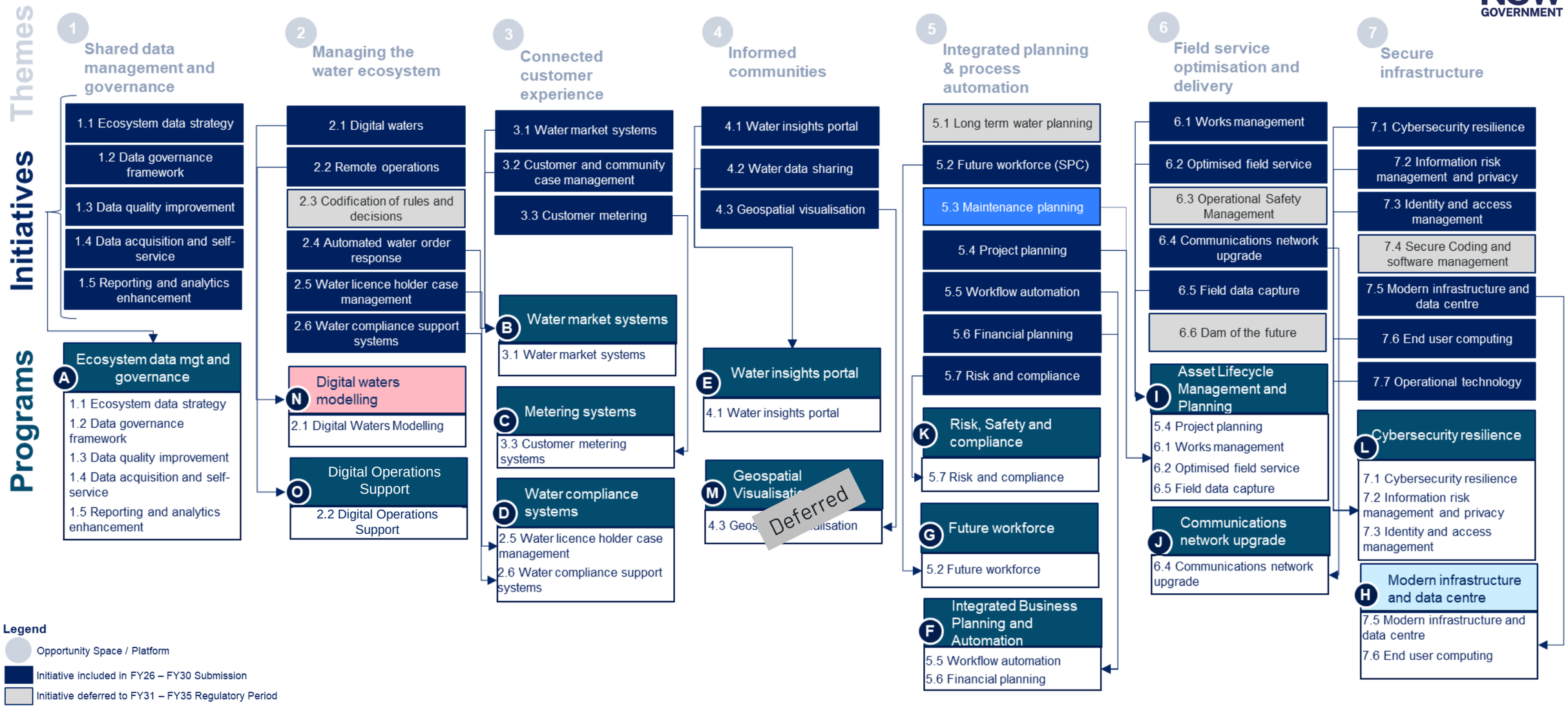
- ✓ We have secure and robust network capabilities to support applications and achieve digital transformation aspirations.
- ✓ We have developed and maintain an appropriate cyber programs that meet Government requirements.
- ✓ We use a cyber framework, such as the Essential 8, to ensure we are maintaining our cyber security capability, and have attained a recognised level of information security, such as ISO270001 standard.
- ✓ We have leading incident response processes in place so that we can effectively manage a cyber breach or attack.
- ✓ Employees are provided the necessary cyber security skills and training to be able to identify potential risks so that they can maintain the safety and security of assets.
- ✓ As a customer, I want assurance that my data, especially my personally identifiable information, is private and secure.

"As a CFO, I want to have an investment plan prioritised, so that we can achieve our strategy."

- ✓ With an integrated planning tool, I am able to partner and engage with the business better.
- ✓ We are able to be more agile with our decision making in strategic planning by being able to rapidly model various scenarios which will also allow us to be better prepared to change in times of disruption and uncertainty.
- ✓ We have greater confidence in projections and capital plans, and ability to achieve them.
- ✓ Our capital and resources is allocated to the highest value and most important areas to achieve our strategic priorities.
- ✓ We have a common definition of value and related value drivers with linkages between targets and actions toward our strategic priorities.
- ✓ We have a forward looking mindset and are focussed on value creation.

Portfolio introduction

Technology Roadmap progression: Platform to Program



… and selected the most prudent and efficient option for each program to drive the best outcome for customers

KEY: No alignment … Very high alignment

PROGRAMS

		VALUE DRIVERS: Reliability and trust	Cost efficiency	Reputation & sustainability	Risk management	Customer exp. & productivity	Strategic alignment	Investment Category	Prioritisation rank
E	Water Insights Portal	●	◕	●	◑	●	◕	Customer-driven Initiatives	High
A	Ecosystem data strategy, use cases and governance	●	◕	●	●	◕	●	Strategic Investments	High
K	Modern Infrastructure and Data Centre	●	◑	◕	●	○	●	Mandatory (Non-Discretionary)	High
L	Cybersecurity Resilience	●	●	◕	●	◑	◕	Mandatory (Non-Discretionary)	High
G	Future workforce	◔	◑	◕	◔	◔	◕	Strategic Investments	Medium
F	Integrated business planning and optimisation	◑	●	◑	◕	◕	◕	Strategic Investments	Medium
I	Asset lifecycle management and planning	●	●	◑	●	◕	●	Strategic Investments	Medium
C	Customer Metering Systems	○	◑	◕	○	●	◕	Customer-driven Initiatives	Medium
B	Water market systems	●	◕	◑	●	◑	●	Customer-driven Initiatives	Medium
H	Risk, Safety and Compliance	◕	◕	◕	●	○	●	Strategic Investments	Medium
J	Comms Network Upgrade	●	◑	◕	●	◕	●	Mandatory (Non-Discretionary)	Medium
O	Digital Operations Support	◕	●	◕	●	◕	●	Strategic Investments	Medium
M	Geospatial Visualisation	Deferred	◕	◕	●	◕	◕	Customer-driven Initiatives	Low
D	Water Compliance	◕	◑	◕	●	◑	●	Strategic Investments	Low
N	Digital Water modelling	Moved to Operations	◔	◑	●	◔	◕	Strategic Investments	Low

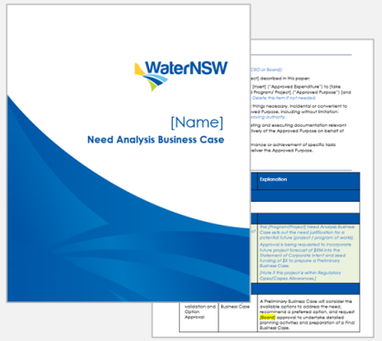
Water | Natural Resources Access Regulator

Basis of Preparation of the NABCs

NABC's have been prepared at the Opportunity Space / Platform level.
The list below describes the inclusions and exclusions to the Portfolio budget.

- Water NSW worked with an external consultancy to develop a full scope Technology Roadmap including rough order of magnitude costings. This was used as the "Do a Lot" expanded delivery scope.
- Consultation with the business, DCCEEW and NRAR stakeholders resulted in a prioritised list of initiatives that were individually costed to P50[1] level and grouped into a set of 12 delivery programs across the shared technology ecosystem (the preferred "Do Enough" option).
- Costs are for external costs (hardware, consultancies etc) and Digital staff resources only. Business resources are not included.
- Initial P50 cost modelling includes an approximate high-level view of FTE effort required.
- Projected net/incremental increases in software licensing and FTE support are not part of the direct project costs.
- All projects are treated as 100% capital expenditure for regulatory purposes, regardless of the internal financial accounting treatment, for consistency with prior periods and to better manage the potential impact on customer bills.

[1] P50 – 50% chance of actual costs being on or under the estimate.



	#	Section		NABC Template Section
A. NABC	1	Executive Summary	1.1	Recommendation
			1.2	Approval Context
			1.3	Summary of this Proposal
			1.4	Financial Sub-Delegation
	2	Needs Analysis	2.1	Current State / Case for Change
			2.2	Future State / Scope
			2.3	Benefit / Improvement
			2.4	Relationship to Other Projects and Programs
	3	Potential / Identified Options	3.1	Potential / Identified Options
	4	Product Roadmap	4.1	5-year plan
	5	Risks and Assumptions	5.1	Other Considerations and Risks
	6	Procurement Plan	6.1	Procurement and Tender Evaluation Plan
	7	Next Steps	7.1	Next Steps
	8	Endorsement	8.1	Endorsement and Approvals
B. Platform Arch.	9	Platform Architecture	9.1	Current State
			9.2	Future State Options
			9.3	Future State
C. Finances	10	Financials	10.1	Project Budget / Cost Estimation (p50)
			10.2	Benefits Estimation
			10.3	Cost / Benefit Analysis

Proposed program capital expenditure for regulatory period FY2026 – FY2030 (WNSW Only)

Digital Program ($0.0m)	FY26	FY27	FY28	FY29	FY30	Reg Period TOTAL
A. Ecosystem data strategy, use cases and governance	$2.00	$3.00	$2.90	$0.70	$0	**$8.60**
B. Water market systems	$6.10	$6.40	$6.30	$3.40	$0	**$22.20**
C. Customer metering systems	$2.70	$2.80	$1.10	$0.20		**$6.80**
D. Water compliance						
E. Water insights	$1.70	$1.70	$1.90	$1.50	$0.30	**$7.10**
F. Integrated Business Planning and Automation	$1.20	$3.30	$0.50			**$5.00**
G. Future workforce	$1.30	$1.20				**$2.50**
H. Risk, Safety and compliance	$2.50					**$2.50**
I. Asset Lifecycle Management and Planning	$1.50	$6.00	$6.40	$1.10	$1.00	**$16.00**
J. Communications network upgrade	$3.10	$4.30	$4.50	$3.50	$2.50	**$17.90**
L. Cybersecurity resilience	$1.10	$0.60	$0.60	$0.50	$0.20	**$3.00**
M. Geospatial Visualisation						
O. Digital Operations Support			$1.10	$1.10	$1.00	**$3.20**
TOTAL	**$23.20**	**$29.30**	**$25.30**	**$12.00**	**$5.00**	**$94.80**
Renewal Capex	**$4.3m**	**$3.5m**	**$5.1m**	**$4.1m**	**$6.7m**	**$23.7m**

Currently excludes DCCEEW and NRAR SME and project support costs (see following slide for total values)
Chart indicates total quantum of estimated spend excluding contingency

Water

Natural Resources Access Regulator

Proposed program capital expenditure for regulatory period FY2026 – FY2030 (Incl DCCEEW & NRAR)

Digital Program ($0.0m)	FY26	FY27	FY28	FY29	FY30	Reg Period TOTAL
A. Ecosystem data strategy, use cases and governance	$3.30	$4.20	$4.20	$2.40	$0.80	**$14.90**
B. Water market systems	$5.10	$5.40	$5.30	$5.10	$1.30	**$22.20**
C. Customer metering systems	$2.70	$2.80	$1.10	$0.20		**$6.80**
D. Water compliance	$2.50					**$2.50**
E. Water insights	$1.70	$1.70	$1.90	$1.50	$0.30	**$7.10**
F. Integrated Business Planning and Automation	$1.20	$3.30	$0.50			**$5.00**
G. Future workforce	$1.30	$1.20				**$2.50**
H. Risk, Safety and compliance	$2.50					**$2.50**
I. Asset Lifecycle Management and Planning	$1.50	$6.00	$6.40	$1.10	$1.00	**$16.00**
J. Communications network upgrade	$3.10	$4.30	$4.50	$3.50	$2.50	**$17.90**
L. Cybersecurity resilience	$1.10	$0.60	$0.60	$0.50	$0.20	**$3.00**
M. Geospatial Visualisation	DEFERRED					**$0.00**
O. Digital Operations Support			$1.10	$1.10	$1.00	**$3.20**
TOTAL	**$26.00**	**$29.50**	**$25.60**	**$15.40**	**$7.10**	**$103.60**
Renewal Capex	**$4.3m**	**$3.5m**	**$5.1m**	**$4.1m**	**$6.7m**	**$23.7m**

Chart indicates total quantum of estimate spend excluding contingency

Business stakeholders helped inform the priorities across each of the three horizons described below

Horizon 1 (FY26 – FY27)

Focus on establishing foundational technology capabilities for the future and end-to-end process improvements with value delivered on data, security and stability.

Align and stabilise

Lay the data foundations required for the future. Set the direction for data strategy, governance and quality to enable outcomes for data sharing

Consolidate disparate systems and shift focus to strategic connected platforms (e.g. water markets, metaverse trials and data warehouse)

Set future horizons up for success by integrating planning practices across the shared technology ecosystem. Align on the frameworks for cyber security, resilience and information privacy

Horizon 2 (FY28 to FY30)

Building on our technology foundations to deliver enhanced value through customer and people led technology initiatives, utilising the strategic enablement offered by integrated data and platforms.

Simplify and standardise

Simplify data landscape and enable self-service capabilities for decision support and analytics

Personalised and standardised management and implement fit for purpose solutions to manage customers and employee journeys

Upgrade and replace end user devices and operational technology. Digitise and optimise works management and field services

Horizon 3 (FY31-FY36)

Scaling and enabling new growth propositions through extensive cloud adoption, front-to-back automation, contemporary water services, and advanced analytics. Enablement of horizon three is highly dependent on our ability to successfully deliver horizon one and two outcomes

Grow and elevate

Focus on advanced capabilities such as automation, advanced simulations and geospatial visualisation across various communities

Modernise legacy infrastructure and data centres. Ensure they are scalable to future needs

Continue to elevate digital capabilities through large programs of work such as Digital Waters and Dam of the Future

This section outlines portfolio's level of strategic alignment to business and technology strategies across the NSW Water Sector

Strategic Alignment

4

A prioritisation framework was used in June 2023 to help make informed decisions about sequencing the portfolio of initiatives

01 ASSESS

Value and complexity/risk of each initiative

Each initiative is scored using a scale of 0 to 5 and a score for value and risk/complexity is calculated using pre-defined criteria weightings.

The considerations when scoring for prioritisation include:

- **Value**: The estimated overall value the initiative is expected to deliver or provide
- **Risk/complexity**: The estimated level of complexity to deliver the initiative and the degree of associated risks.

Prioritisation criteria from the ICT Digital Assurance framework* published by Department of Customer Service has been adapted to the 2x2 prioritisation matrix

02 ORGANISE

initiatives on prioritisation matrix based on calculated scores

There are four segments in the matrix and these are:

- **Quick Wins** (high value/low effort): Provide significant value with relatively low effort and should be prioritised to be completed first.
- **Major Initiative** (high value/high effort): These initiatives are high-priority due to their high value, but require more effort. They should be prioritised with careful consideration and planning as they are likely to have a longer duration, and more risks.
- **Fill Ins** (low value/low effort): These initiatives provide limited value but require minimal effort and should be deprioritised to be completed later.
- **Thankless Tasks** (low value/high effort): These have the lowest priority given they require substantial effort and provide low value. These should be deprioritised to be reconsidered later.

03 SEQUENCE

Initiatives based on results

The initiatives are then sequenced using the results of the prioritisation exercise by focusing on the high-value quadrants and allocating resources accordingly. The prioritisation framework and matrix is a tool to support informed decision-making when balancing resources and risk during initiative planning.

Together with consideration of dependencies, this helps ensure a focus on initiatives that provide the highest value and supports the development of an achievable technology roadmap.

*Reference: https://www.digital.nsw.gov.au/policy/ict-assurance

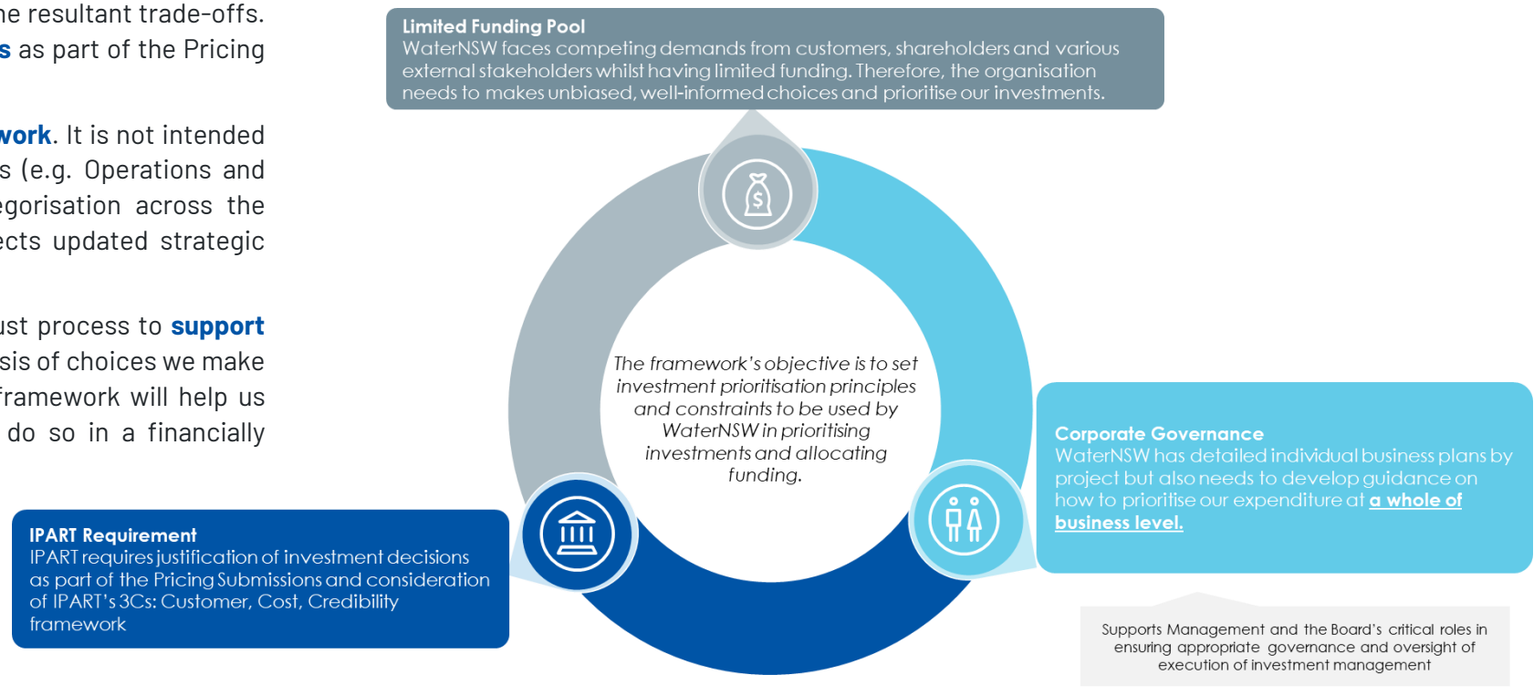
An example of the prioritisation criteria and weightings that have been developed for the shared technology ecosystem

Category	Criteria[1]	Description	Weighting[1]
IT Value 50%	Strategic alignment	The extent to which the project aligns with the strategic objectives and priorities.	30%
	Economic viability	Project is expected to produce a net economic benefit by improving economic growth and productivity	25%
	Desirability/social impact	The extent to which the project generates positive impact for customers and/or internal users	15%
	Financial benefit	The degree of financial benefit the initiative will provide (e.g. revenue, cost savings, cost avoidance, disposals)	15%
	Non-financial benefit	The degree of non-financial benefit the initiative will provide (e.g. improved customer experience, productivity gains, improved safety)	15%
IT Risk/ Complexity 50%	Government priority	The level and timing of project or program priority, where it has been mandated or is a direct enabler of a mandated priority project.	15%
	Interface complexity	The extent to which the project or program's success will depend on the management of complex dependencies, projects or services, and interdependencies with other projects and services. The extent to which the project impacts on the success of the program or other project.	10%
	Sourcing complexity	The extent to which a project or program requires, sophisticated, customised or complex procurement methods (non-traditional), thereby increasing the need for a careful assessment and management of risk.	10%
	Agency capability and capacity	The extent to which the sponsor agency has demonstrated capability (skills and experience), or can access through recruitment or procurement the required capability in the development and / or delivery of the type of project or program proposed and/or its delivery strategy.	15%
	Technical complexity	The extent to which a project or program requires new or unproven technology, customised technology, or complex or lengthy integration with other solutions, thereby increasing the need for a careful assessment and management of risk.	15%
	Cybersecurity	The extent to which a compromise of this product could result in an impact to services, loss of confidence in government (reputational, trust) or personal safety. The degree to which an attack against this product would impact significant state-wide infrastructure, and An identification of the classification level or volume of data traversing this product (to assess impact of a cyberattack).	10%
	Change complexity	Sensitivity to the degree of business change required for the success of the project. The degree of criticality of services impacted by the project such as front-line services to citizens. The risk or perception of risk to service delivery, security and privacy or similar issues that may impact change management aspects.	25%

1. Department of Customer Service (January 2021), *ICT Digital Assurance Framework – Appendix A Project profile/risk criteria, criteria scores and weightings* (pg. 33-36)

Rationale for the Investment framework

- There are various external stakeholders and political factors that influence the investment need for WaterNSW. Some of the major external challenges and opportunities already identified which require a strategic investment approach include security of supply, flood mitigation, pricing regulation, aging infrastructure as well as increasing demands on investments driven by regulatory and legislative requirements regarding safety, compliance and risk management,
- In light of the demands for investment (opex and capex) and limited funding available, we must make choices as an organisation. We recognise that where we invest must be aligned to strategy and expectations of IPART and other key stakeholders, including Treasury, our customers and the community.
- These **choices require trade-offs,** and we have an opportunity to lift our maturity with respect to how we approach investment decisions and the resultant trade-offs. Further, **IPART requires justification of investment decisions** as part of the Pricing Submissions.
- This document presents an **Investment Prioritisation Framework**. It is not intended to replace existing processes undertaken by specific teams (e.g. Operations and Digital), but rather bring alignment of principles and categorisation across the organisation. Further, it will be refreshed to ensure it reflects updated strategic objectives and their priority.
- The Investment Prioritisation Framework helps create a robust process to **support investment decision making** and bring transparency to the basis of choices we make as an organisation as requested by IPART. Ultimately, this framework will help us execute our strategy, deliver to our key stakeholders and do so in a financially disciplined and responsible manner.



The framework sought input from technical and business users to help make decisions about sequencing initiatives

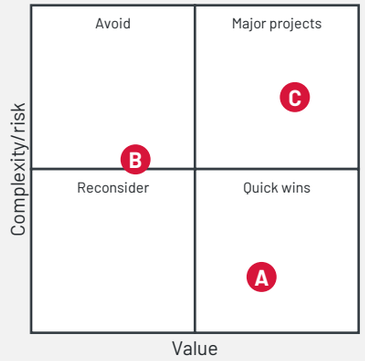
1 ASSESS VALUE AND COMPLEXITY/RISK OF EACH INITIATIVE

	Value			Complexity/risk			Calculated Score	
Initiative name	Criteria 1 (25%)	Criteria 2 (40%)	Criteria 3 (35%)	Criteria 1 (30%)	Criteria 2 (45%)	Criteria 3 (25%)	Value	Complexity and Risk
Initiative A	5	3	3	1	3	1	3.5	1.9
Initiative B	1	1	3	2	3	3	1.7	2.7
Initiative C	5	5	2	3	5	2	4.0	3.7

1a A score between 0 to 5 is entered for each criteria and initiative.

1b A score is calculated for value and complexity/risk based on the defined weightings for each criteria.

2 ORGANISE INITIATIVES ON PRIORITISATION MATRIX



The initiative is organised onto a 2x2 matrix using the calculated scores to understand its relative priority to other initiatives.

3 SEQUENCE INTIATIVES BASED ON RESULTS

List of prioritised initiatives

Quick wins
- Initiative A
- [...]

Major projects
- Initiative C
- [...]

3a A list of prioritised initiatives is produced based on the results of the prioritisation exercise.

3b The prioritised initiatives are sequenced across a technology roadmap with consideration for project duration and resource allocation.

And aligned to the WaterNSW Investment Strategy and Prioritisation criteria

Investment Prioritisation Framework brings consistency to decision making based on four distinct investment categories for organisation wide investment decision making

Category	**Mandatory (Non-Discretionary)**	**Customer-driven Initiatives**	**Non-controllable**	**Strategic Investments**
Definition	▪ Investments that must be undertaken due to legal, contractual or regulatory requirements. ▪ By definition, these investments are compliance driven or arise from our IT Asset Management System ▪ While mandatory, prioritisation is still required to determine sequencing and assess timing of delivery.	▪ Projects mutually agreed between WNSW and customers and water partners. ▪ Investments in this category will be assessed and prioritised to enable determination of order of delivery in the context of funding availability. ▪ Regulated vs. non-regulated revenue generating to be included.	▪ Generally inflexible operational expenditures required to keep the business running. • Usually Not Applied to Digital Uplift Programs	▪ Other strategic investments that are important to WaterNSW's execution of strategy and delivery of customer and community outcomes. ▪ Such projects are not mandatory or specifically requested by customers.
Examples of projects	▪ Environmental compliance systems ▪ Cyber Security & IT licencing ▪ Regulatory obligations impacting systems ▪ Asset renewals/ maintenance – core end user computing refresh ▪ Pre-existing contractual obligations (e.g. ongoing IT SaaS licencing)	▪ Dedicated infrastructure ▪ Technological functionality to Water Insights ▪ Grant Programs supported by NSW or Commonwealth Govt funding.	▪ Insurance, Land tax, Electricity, Fuel, Telecommunications	▪ Asset Renewal – opportunity ▪ Strategic Digital initiatives ▪ ESG initiatives
Choices for optimisation	▪ Sequencing ▪ Timing of delivery ▪ Cost efficiency	▪ Sequencing ▪ Timing of delivery ▪ Cost efficiency ▪ Regulated vs. unregulated mix	▪ Sequencing ▪ Timing of delivery ▪ Cost efficiency ▪ Regulated vs. unregulated mix	▪ Sequencing ▪ Timing of delivery ▪ Cost efficiency ▪ Strategic alignment

Regardless of categorisation, all projects need to comply with our Risk Appetite Statements and need to be reviewed to ensure the investment is as **effective** and **efficient** as possible

This section summarises each program's preferred option together with cost and benefits and funding source (with explanation of funding sources across the NSW Water Sector)

Summary of Programs

5

Summary of Programs

Programs – Data, Customer and Communities

Identifier	Description of this project	Drivers
A Ecosystem data strategy, use cases and governance	To develop and implement a shared technology ecosystem data strategy and governance framework that will include policies and procedures to ensure data availability, integrity, and security of data throughout its lifecycle across the relevant agencies. Specific activities will be conducted to improve the quality of existing and future data across the NSW Water Sector. Reporting and analysis tools will be enhanced to improve decision making and enable greater insight into the business.	Data assets are not currently leveraged across the NSW Water Sector. There is a missed opportunity to make informed, aligned decisions. Data quality and integrity is low, with unnecessary effort spent on data cleansing and rework. Data operating model, governance and shared data platforms are not in place to enable data sharing.
B Water market systems	Water market systems (WMS) provide a single digital experience in a preferred channel enabling customers to transact with the NSW Water Sector. Through the online portal, customers will be able to view their licences and entitlements, manage their orders, pay bills, respond to requests for information and report issues and risks.	Multiple customer portals and front doors exist, creating a fragmented experience for the customer. This leads to inefficiencies, reduced levels of compliance and community frustration.
C Customer metering systems	Customer metering involves measuring and monitoring water consumption by customers. The end-to-end installation of water meters allow the shared technology ecosystem to acquire data concerning a customer's water usage and generate accurate billing.	Current legacy systems are struggling to adapt to unexpected complexity introduced from both the NUMR (Non-Urban Metering Reform) and FPH (Flood Plain Harvesting) regulations. Customers have limited access to their own metering data.
D Water compliance	Leveraging incremental new technologies along with programmatic interfacing of data from partner systems to provide enhanced discovery, refinement and analysis of data with processing support for AI, machine learning and other data science use cases for better business insights and decision-making. i.e. move from transactional to predictive regulation.	Systems work in isolation, with little system integration, entirely reliant on data from partner agencies Multiple mandatory manual steps resulting in redundant tasks and inefficiencies
E Water insights	To implement a personalised digital platform for customers and the community to view water data, regulations, and decisions made by the water sector. Greater data sharing across the NSW Water Sector including both government agencies and external partners.	The increased audience for the current Water Insights Portal are unable to efficiently access the data they need. Current complex process for accessing historical and current/real-time data

Programs – Corporate, Asset and Enterprise ICT

Identifier	Description of this project	Drivers
F Integrated Business Planning and Automation	Improvements in financial planning GRC and contracts management will enable better management of and holistic reporting on operational and capital expenses across the shared technology ecosystem, improved risk, safety and compliance.	Intensive manual effort is required monthly, across the business to support budgeting and forecasting. The lack of an enterprise contracts management solution, means that contract management processes are inconsistent across the business and drives manual work arounds to manage contract compliance.
G Future workforce	Implementation of strategic workforce systems and processes for planning, Gap identification between the current skills baseline and the future skills and roles needed in the water sector.	Needs output from P5
H Risk, Safety and compliance	The uplift of risk and compliance practices, procedures and tooling across the shared technology ecosystem will involve implementing a fit for purpose risk monitoring tool across the organisation to proactively measure compliance, enhancing reporting capability against compliance levels and leveraging automation to monitor and respond to risks in real-time.	
I Asset Lifecycle Management and Planning	Enhanced works management systems and processes to enable better planning, implementation and monitoring of physical infrastructure projects and activities. AI based workload planning and scheduling based on skills, location, vehicle and equipment to allocate the right team member or crew to the job or group of jobs, including route optimisation. Uplifts to the capabilities that enable field workers to capture data when completing work as part work order and hazard management.	Lack of integration between multiple assets management systems as well as gaps in the information flow impede work order generation, scheduling, and the efficient dispatch of human (and non-human) resources, leading to significant manual effort and inefficient job allocation. Limited connectivity of mobile solutions leading to manual work arounds and inefficient practices.
J Communications network upgrade	Upgrade of communications network (Fibre, 5G, etc.) to support better communications and technology in the field. This would include improving network infrastructure and upgrading connectivity technologies.	Often poor and inconsistent communications to remote dams/ offices; Retirement of 3G network;
K Modern infrastructure and data centre	Covers the ongoing renewal of data centre infrastructure to maintain service delivery, disaster recovery capability, and support added capabilities related to data, automation and remote access.	Hardware coming out of vendor support; increased data volume needs from the business; greater resilience need under SOCI etc.
L Cybersecurity resilience	A program of continuous improvement in the organisation's cyber security resilience in the presence of an increasing cyber threat environment. Enhanced identity and access management, cyber monitoring and reporting, supported by uplifts in information risk management policies and procedures.	Ever increasing cyber threat environment requiring continuous improvement and enhancement of cyber security maturity. SOCI legislation.
O Digital Operations Support	Examine the feasibility of remote visual monitoring technologies and automated control systems, delivering remote operational capability with increased security, reliability, reduced cost and operational risks.	WaterNSW is seen as a technical leader in relation to supporting water system control and operations.

Individual programs

A Shared Data Ecosystem Management & Governance

Program description

Over the past five years, WaterNSW has spent significant effort in building its own foundational data platform and capability utilising an enterprise cloud platform. Going forward it is recognised, across the NSW Water Sector, that there is an increasing need for the three entities to share a single, consistent and high-quality data-set through controlled and secure use of modern analytical tools.

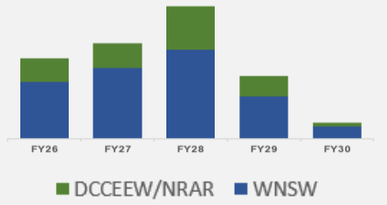
This program will establish a NSW Water Sector wide enterprise data platform with supporting standards, governance and data sets. To ensure that the current constraints and limitations regarding access to data are addressed, a data council will govern information sharing, align standards and agree what data can be shared and under what circumstances. The following components form the program of work:

- **Data Strategy** – defines the shared direction and capabilities for data to deliver use cases across all other programs.
- **Data Governance Framework** – a single data council with data sharing models and protocols.
- **Data Platform and Data Self-Service** – a shared data platform with all required data sets seamlessly integrated across the shared technology ecosystem addressing majority of data use cases.
- **Data Quality Improvement** – data quality is improved for all data sets across the shared technology ecosystem without need to repetitively cleanse data offline.
- **Reporting & Analytics Enhancement** –to be delivered late in the FY26 – FY30 period and carrying over slightly into the following period, it includes advanced analytics and tooling enabled (includes geospatial, AI and machine learning capabilities)

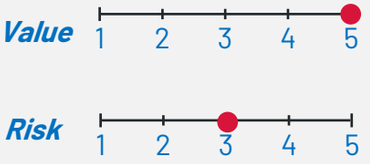
Program Owner	Water	WaterNSW	Natural Resources Access Regulator
	CKO (P)	EM D	Dir ISI

Forecast (FY26-FY30)

WNSW Program Cost	$8.6m
Ecosystem Cost	$6.2m



Priority



Strategic Investments

Benefits

- Providing high quality data to meet meeting regulatory reporting and compliance requirements
- Greater operational efficiencies in WaterNSW, DCCEEW and NRAR enabled by better quality, re-usable data that does not need cleansing
- Avoided costs associated with an increase in the number of staff needed to meet growing customer data demands, as a higher quality data set enables a greater number of customers to be served.
- Avoided increase in the number of staff and/or contract labour required to continue addressing data cleansing activities during times heightened demand (i.e. weather events)
- Reduced risk and complexity for customers through a better understanding of their statutory and contractual obligations.

Risks

- The complexity of data sets across the agencies will require significant collaboration to agree objectives, ownership and access protocols.
- The shift needed to move to a data-driven culture will require significant change management effort.
- Ingrained manual processes and ways of working may continue outside of the new processes and infrastructure so restricting the potential benefits to be gained.
- This program is fundamental to the successful delivery of a majority of the other Digital Programs being proposed and therefore its timely and rigorous delivery is essential.

B Water Market Systems

Program description

Customers currently have a very disjointed and inconsistent experience when interacting with the water market. They have to access multiple portals and systems which are not integrated with each other and require different accounts/sign on details. Systems lack self-service capabilities with some systems only being used to submit information with no ability to view/edit information from the customer's user interface.

This program aims to deliver a single digital experience enabling employees and customers to transact with the NSW Water Sector using their preferred channel in an efficient matter. An enhanced Customer Portal will enable a number of self-service capabilities and features for all (individual, business and government) water users including the ability to:

- Manage customer's personal or business details and attestations to ensure completeness and accuracy.
- Manage approvals and licenses online and view applications and receiving information on assessment and determination of applications.
- Enable consent management, consent transactions and handling of assigned cases in accordance with agreed protocols.
- Manage conditions for reporting, floodplain management and editing conditions post-approvals.
- Enable data extraction to perform reporting on compliance or reporting as needed.

Program Owner	Water	WaterNSW	Natural Resources Access Regulator
	COO	EM CS	Dir ISI

Forecast (FY26-FY30)

WNSW Program Cost $22.2m

Priority

Value 1 2 3 4 5

Risk 1 2 3 4 5

Customer-driven Initiatives

Benefits

- Avoiding, in part, the projected increase in the number of FTEs required to meet the growing customer data demands although data constraints will continue to exist.
- Some reduction in the risk and complexity for customers needing to access multiple systems to perform similar capabilities and cross reference multiple sources of information, risking error.
- Some reduction in the time spent by customers and WaterNSW staff in accessing water market information and data through the customer portal.

Risks

- With multiple sources of truth for customer data still in use, inefficiencies in management of data and in responding to customer enquiries will likely continue.
- Duplicated functionality may lead to inaccurate ad inconsistent data and therefore erroneous decision making.

C Customer Metering Systems

Program description

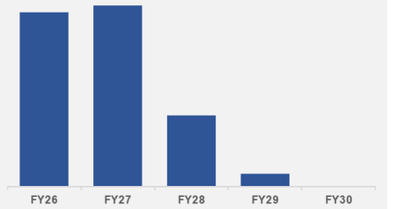
The current systems that are used for managing metering have restricted functionality, are old, expensive to manage and maintain and not easily updated or changed to meet changes in regulatory policy or advances in technology. They are not fit for the purpose for which they are used. As a result of this there are complicated and lengthy processes which cause frustration to customer and increase the costs to agencies to manage especially when manual work arounds are required. Currently customers have very limited self-service capability in relation to their own water usage and rely heavily on a range of agents/DQPs to provide related services. Meter registration, meter monitoring and water usage capture are inefficient, error prone and often result in inaccurate or incomplete information. This impacts water use management, asset maintenance and licence compliance monitoring and increases costs for all stakeholders.
This program aims to enable customers to manage their water meters through a centralised portal for installation/replacement, usage tracking, faulty metering reporting, maintenance and recording and reporting. This meter data enables accurate customer water accounts, billing and reporting to agencies who make critical decisions based on this data. It will also empower the customer to better understand their water usage patterns to support their decision making and improve the efficiency of their water usage. As part of the metering systems program, future state features include:

- *View water meter usage data on a more frequent basis.*
- *Submit meter usage readings if required.*
- *Undertake their own apportioning of water usage across multiple licences.*
- *Maintain their metering obligations, ensuring repairs or faulty meters are reported.*
- *Capturing notifications of hardware tampering in LIDs and meters.*
- *Customer notifications of their usage throughout the year.*

Program Owner		
NSW Water	WaterNSW	NSW Natural Resources Access Regulator
✘	EM CS	Dir ISI

Forecast (FY26-FY30)

WNSW Program Cost $6.8m



Priority

Value 1 2 3 4 5

Risk 1 2 3 4 5

Customer-driven Initiatives

Benefits

- Improved reporting on regulatory and compliance requirements within the time frames required from access to higher quality metering data
- Customers are able to better manage their own usage and ensure compliance with relevant legislation and licence conditions
- Reduced time for NRAR staff investigating potential non-compliance by having access to better and more timely meter and water data.
- Reduce overall costs in meter data management

Risks

- Customers can't interpret the new and potentially voluminous data correctly and make decisions that result in licence breaches.
- Technology becomes too old and potential failure as there is no upgrade path
- Lack of skilled resources to maintain old technology
- Regulatory changes may be impeded as the technology cant support
- Increase in costs due to manual work arounds required

D Water Compliance

Program description

This program is specific to NRAR and is part of their E3 (Educate, Enable & Enforce) program.

The objective of the E3 (Educate, Enable & Enforce) program is to support the role of NRAR as the compliance and enforcement authority, drive priorities and set NRAR up to respond to opportunities to accelerate regulation in the sector by:

- Sourcing advanced technologies, to collect and analyse information, compile evidence, conduct investigations, and manage the legal process.
- Ensuring the end-to-end regulation process supports NRAR's legal requirements.
- Streamlining the way information is managed to comply with NSW Government Information Management Policy, and
- Encouraging innovation in the delivery and development of compliance services

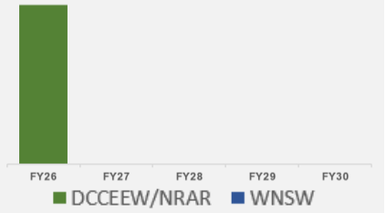
Phase 1 is underway and will be completed in this regulatory period.

The future phases of the E3 Program are looking to build onto the new WCMS (phase 1) platform by leveraging incremental new technologies along with programmatic interfacing of data from partner systems to provide enhanced discovery, refinement and analysis of data with processing support for AI, machine learning and other data science use cases for better business insights and decision-making – Said another way, moving from transactional to predictive regulation.

Program Owner	NSW Water	WaterNSW	NSW Natural Resources Access Regulator
	✖	EM D	Dir ISI

Forecast (FY26-FY30)

WNSW Program Cost	$0m
Ecosystem Cost	$2.5m



Priority

Value 1 2 3 4 5

Risk 1 2 3 4 5

Strategic Investments

Benefits

- Enable low or no-touch experience using NRAR's own and third-party data holdings.
- Unlock the value of NRAR information holdings to serve regulatory and stakeholder needs.
- Increase NRAR's ability to effectively use unstructured data and social media feeds.
- Increase NRAR's use of and integration with third-party data sources.
- Establish a data platform to undertake exploratory analysis and intelligence investigations.
- Provide federated search capabilities across important NRAR data holdings.
- Have the means to integrate NRAR's work with water users and stakeholders in the community.

Risks

- Cyber Risks and out of date tech stack
- Productively issues as current systems and tools do not adequately support NRAR's evolving compliance needs.
- Long term supportability & security risk for the current case management system.
- Ad-hoc and manual processes, compounded by poor integration of legacy systems, impact effectiveness.

E Water Insights Portal

Program description

A new Water Insights interactive web portal will empower customers and improving public confidence in how water is shared and managed and act as an educational resource to promote water-conscious behaviour in the community. It will include functionality for customers to create a login to receive alerts, customise views and visualisations to their needs and personalise their communication preferences.

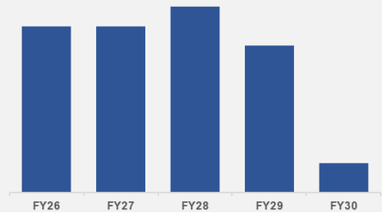
Water data made publicly available to customers and the community will include:

- Monitoring of water levels – both across NSW, ACT and in neighbouring states
- Water balances, flow and quality at farm through to regional scale
- Environmental, water and shared technology ecosystem health as a result of water for the environment.
- Publishing reports and analytics including water trends and insights
- Educational resources and links to further information and documentation for detailed reading and referencing

Program Owner	Water	WaterNSW	Natural Resources Access Regulator
	CKO	EM O (P)	Dir ISI

Forecast (FY26-FY30)

WNSW Program Cost $7.1m



Priority

Value 1 2 3 4 5

Risk 1 2 3 4 5

Customer-driven Initiatives

Benefits

- Community engagement: The water insights portal will enable engagement with the community through the display of insightful water trends and news. Improvements to allow for greater personalisation will allow community members to access the information they need, when they need it, and so increase the level of trust the NSW community has in WaterNSW.
- Community information & education: The Water Insights portal will educate the community by providing the latest water information and by making complex regulation and legislation changes more accessible.
- Customer notification: Personalised alerts will add value to customers, enabling them to choose the information they want to be updated on and how they want it to be communicated to them.

Risks

- A high level of collaboration across the NSW Water Sector is required to provide public data related to each organisation on a unified platform. An aligned agreement is required on the data and information to be made available on the portal.
- Data confidentiality and privacy needs to be considered to ensure personal or sensitive data is not included in the portal.
- Information displayed needs to be accurate and data integrity is a key consideration.
- Change management is required to improve perception of what is available and provided.

F Integrated Business Planning and Automation

Program description

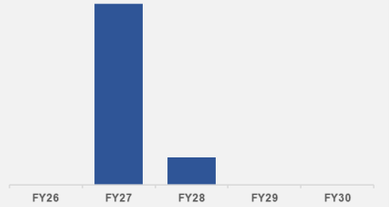
The individual initiatives making up this program of work are:

- Financial Planning – the upgrade of the financial planning, budgeting and forecasting tool. It will also include integration to key systems such as Planning solutions in Operations, HR and contemporary time sheet solution to pre-populate information to support the budgeting and planning process, but also to support the allocation calculations and feed data back to the ERP to ensure consistent in financial data sets. The intention is to reduce and wherever possible remove, reliance on spreadsheets.
- Contract Management – implement (or upgrade existing) an enterprise-wide contract management solution. This will assist standardise the contract management approach across WNSW Enterprise and implement a fit for purpose contract management solution.

Program Owner			
	Water	WaterNSW	Natural Resources Access Regulator
	✗	EM FLR	✗

Forecast (FY26-FY30)

WNSW Program Cost $5m



Priority

Value 1 2 3 4 5

Risk 1 2 3 4 5

Strategic Investments

Benefits

- Reduced risk of human error and higher data quality from automation of key processes.
- Productivity uplift to shift effort away from manual tasks
- Evidence-based billing and grant management through captured timesheet data
- Integrated applications allowing consistent data capture and reduced reliance on spreadsheets
- Automated reporting reduces manual efforts
- Consistent processes reduces risks by creating better adherence

Risks

- Ingrained manual processes and ways of working may continue outside of the new processes and infrastructure so restricting the potential benefits to be gained.
- Self service capabilities present data confidentiality and privacy needs to be during design and implementation
- Automation of processes can lead to removal of human decision making and the flexibility to react to unplanned circumstances.
- Lack of maturity in future state processes, governance and architecture may impact quality of the future state design

G Future Workforce

Program description

To address the current challenges experienced by the Safety People and Culture (SPC) team across Human Capital Management (HCM) across people, process and technology, the Program includes the optimisation of the future water workforce through more strategic workforce planning, talent management, training and upskilling and the implementation of a contemporary and integrated HCM solution. The bulk of the solution will be delivered in this regulatory period, with some capability being delivered in the FY26 to FY31 regulatory period.

Workforce planning by SPC teams will develop a detailed capability matrix, baselining the current workforce skills and defining the future skills and roles needed in the water sector. A strategic workforce plan will be developed to document the talent to be attracted, developed and retained across the organisation. This will include:

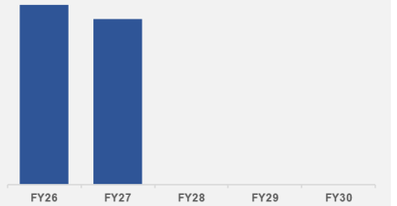
- Talent acquisition strategies, and
- Learning and development strategies to upskill the existing workforce.

To support these new capabilities, a contemporary and integrated HCM (Human Capital Management) and EHS (Environment, Health & Safety) system will be selected and implemented to meet the functional and technical requirements of the organisation

Program Owner			
	Water	WaterNSW	Natural Resources Access Regulator
	✗	EM SPC	✗

Forecast (FY26-FY30)

WNSW Program Cost $2.5m
(+ $1.3m in current period)



Priority

Value 1 2 3 4 5

Risk 1 2 3 4 5

Strategic Investments

Benefits

- Reduction in the cost and complexity of ongoing maintenance of the SPC application portfolio through use of a modern, scalable, and simplified technology platform.
- Improved Employee Experience: By upskilling and training existing employees they are equipped with new skills and capabilities to explore and expand into new roles and maintain in-demand skills in the market.
- Productivity improvements through increased automation and integration resulting in higher operational efficiency that allows SPC to focus on strategic, valued-adding activities.
- Improved efficiency of HCM services across the organisation through streamlined processes and increased automation and integration
- Increased self service capabilities, allowing users to address their needs at a time that suits them
- Reduced risk of human error and higher data quality from automation of key processes.

Risks

- Poor change management leads to a workforce that doesn't accept the new ways of working, hangs on to old practices and fails to deliver on planned efficiencies.
- Limited availability of required skills in the market prevent required talent attraction and put pressure on in-house upskilling efforts.
- Self service capabilities present data confidentiality and privacy needs to be during design and implementation
- Automation of processes can lead to removal of human decision making and the flexibility to react to unplanned circumstances.
- Lack of maturity in future state processes, governance and architecture may impact quality of the future state design

H Risk, Safety and Compliance

Program description

The current Risk Assurance & Compliance System is largely used for incident logging and tracking, safety hazards recording, and actions logging and tracking for specific areas of the business. It is not used as a GRC tool, leaving many stakeholders relying on spreadsheets to manage their risk and compliance obligations. To improve the Governance, Risk and Compliance capability across the organisation, this program involves implementing a fit for purpose risk and control monitoring tool to proactively measure compliance thereby enhancing reporting capability against compliance levels and leveraging automation to monitor and respond to risks in real-time.

The solution must also include a Safety module to ensure WNSW can maintain and where needed enhance its safety risk and efficiency capabilities

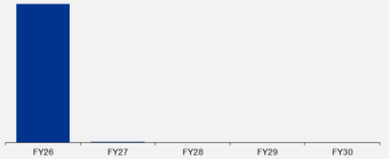
A "Risk Hub" will provide a holistic view of risks by integrating information (such as automated activity monitoring) and data across all levels of the business utilising an interactive, cloud-based technology solution for real-time risk management. This will help leaders make insightful risk-based decisions to enhance business performance and provide peace of mind.

Integration will be prioritised for systems presenting the highest need for risk and compliance monitoring (such as customer payment portals) and increased over time and into the FY31 – FY35 regulatory period

Program Owner			
	NSW Water	WaterNSW	NSW Natural Resources Access Regulator
	✗	EM FLR	✗

Forecast (FY26-FY30)

WNSW Program Cost $2.5m



Priority

Value 1 2 3 4 5

Risk 1 2 3 4 5

Strategic Investments

Benefits

- Avoiding the potentially high cost of remediation through more timely detection of increased risks.
- Higher levels of compliance from an uplift in the maturity of compliance tools and practices.
- Greater efficiency in the organisation wide management of risks through automation of reporting and timely data collection and monitoring.

Risks

- The complex integration requirements of a real-time risk monitoring tool may lead to inaccurate analysis and interpretation of risk data.
- Compliance obligations and judgemental assessments are challenging to codify (e.g. NRC audit of implementation of a WSP, adherence to dam safety regulations, adherence to an operating licence) which may lead to some being missed.

I Asset Lifecycle Management & Planning

Program description

Heavy reliance on bespoke and paper-based methods for Asset Program Management and asset related data collection makes it difficult to maintain accurate records and respond promptly to changing conditions. Asset maintenance planners are hindered by incomplete and disparate data sets which must be collated manually, which then affects scheduling quality. Coordinating and manually consolidating data from an increasing workforce means further exacerbation of the difficulties in ensuring data accuracy and timely responses in the dynamic shared technology ecosystem.

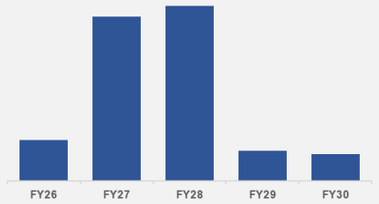
This program includes the following initiatives:

- **Field Mobility** – this entails deploying tablets that are equipped with an integrated safety, field services and CRM solution to enhance efficiency and safety in field operations and improve customer communication and relationships.
- **Integrated Operations Planning Solution** – this will utilise asset maintenance and replacement scheduling analysis from the Optimised Field Service solution together with a detailed understanding of staff skills and availability to implement an optimised and automated asset maintenance program (i.e., which assets get maintained, when and by whom).
- **Asset Program Management –** The Integrated Portfolio Controls Solution IPCS is intended to equip the planning team with a tool for defining program objectives, scoping, and budgeting that will flow through to the delivery team while being elaborated on at each stage gate. A planning and scheduling tool with capability enables the creation of robust schedule, allocation resources and setting up dependencies within the program

Program Owner	Water	WaterNSW	Natural Resources Access Regulator
	✗	EM O	✗

Forecast (FY26-FY30)

WNSW Program Cost $16.0m



Priority

Value 1 2 3 4 5

Risk 1 2 3 4 5

Strategic Investments

Benefits

- A fit-for-purpose Field Mobility solution would allow field information to be recorded in a structured way on a single platform, minimising duplicate efforts and improving data accuracy and consistency.
- Strong connectivity allows field staff to communicate accurate data and information and to have access to near real-time updates. This reduces the likelihood of errors, increases data quality and streamlines decision-making.
- Ability to forecast, plan and schedule resources including human and non-human, parts and contractors
- An automated asset maintenance program will reduce downtime, improve operational safety, and optimise field resource allocation. In-day changes to schedules will be automatically updated to maintain efficiency and productivity

Risks

- A potential reluctance by field staff to adopt new technology and ways of working may result in manual workarounds being maintained thereby limiting the efficiencies to be gained.
- Reliance on new communications infrastructure could lead to a reduction in the skills and knowledge required to operate 'offline' increasing the costs of any future break/outage in communications.

J Communications Network Upgrade

Program description

In remote environments like dams, limited cellular network coverage impedes WaterNSW's operational processes. Field maintenance officers in these areas rely upon on-site connectivity, which often suffers from insufficient bandwidth. They collect data offline on mobile IoT devices while anticipating that they will connect to the cellular network and sync with the server upon returning to their primary base, such as the Warragamba Dam office. This process frequently results in delays in information recording and data synchronisation. The lag in accessing and updating field-based data impedes the timely execution of maintenance activities, which is essential for ensuring the efficiency and safety of field operations.

A poor communication network is especially critical in regional and remote areas as it can have a significant impact on the safety of field staff.

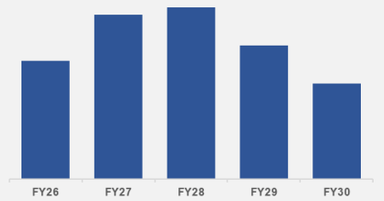
This program includes upgrading the existing communications network to support better communications and technology in the field. This would include improving network infrastructure and upgrading connectivity technologies through use of optical fibre, 5G and satellite communications. It would enable the integration of sensors and IoT devices, remote monitoring and control and improved data management and analytics capabilities.

The program builds upon the Future State (Digital Network Architecture WaterNSW) initiative.

Program Owner	Water	WaterNSW	Natural Resources Access Regulator
	✗	EM D	✗

Forecast (FY26-FY30)

WNSW Program Cost $17.9m



Priority

Value 1 2 3 4 5

Risk 1 2 3 4 5

Mandatory (Non-Discretionary)

Benefits

- Increased productivity of field staff as they are able to access systems and information in a timely manner when working in the field.
- Improved safety as it facilitates faster response to emergencies as well as being able to communicate with personnel in remote locations.
- Reduces risks associated with working in remote locations and being unable to contact other personnel.

Risks

- The increased communication footprint also increases the network's vulnerability to outside physical and cyber attack.
- The additional complexity of integration, compatibility and interoperability between multiple communication channels and backend systems may cause inconsistencies and an increased risk of breakdown.

K Renewals - Modern Infrastructure and Data Centre

Program description

This initiative covers the ongoing renewal and replacement of our end user computing and data centre infrastructure. This is required to maintain service delivery, disaster recovery capability, and support any additional capabilities required for other programs such as those related to data, automation and remote access.

Within the data centre environment, this will involve consideration of:

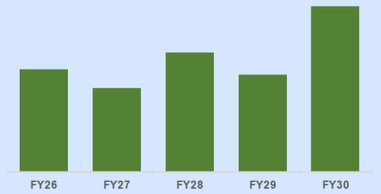
- Upgrade, replacement or retirement of physical infrastructure components such as servers, network devices, storage systems
- Virtualisation of servers, storage, applications, etc. to optimise efficiency and security
- Upgrade of security measures such as physical security, network segmentation, encryption, etc.
- Automation of workflows (scheduling, monitoring, etc.)
- Review of cloud workloads and data centre requirements.

The financial estimates include the end user computing renewals program is to be executed in line with a defined asset management lifecycle where policies are set around replacement and disposal of aging hardware fleets. Devices included within this plan include: Desktops and laptops, mobile and tablet devices, peripherals such as monitors, keyboards, etc., conferencing and communications equipment, printing and scanning devices, and office network devices.

Program Owner			
	NSW Water	WaterNSW	NSW Natural Resources Access Regulator
	✗	EM D	✗

Forecast (FY26-FY30)

WNSW Program Cost $22.4m



Priority

Value 1 2 3 4 5

Risk 1 2 3 4 5

Mandatory (Non-Discretionary)

Benefits

- Efficient management of infrastructure components could lead to better use of investment and lower operational costs.
- Retiring legacy and ageing assets results in cost savings of duplicated equipment.
- Upgrading the data centre minimises risk of system outages by ensuring infrastructure is running efficiently.
- Workforce is equipped with the devices based on their needs and role responsibilities (e.g. mobility).

Risks

- The increased communication footprint also increases the network's vulnerability to outside physical and cyber attack.
- The additional complexity of integration, compatibility and interoperability between multiple communication channels and backend systems may cause inconsistencies and an increased risk of breakdown.

L Cybersecurity Resilience

Program description

This initiative covers the ongoing renewal and upgrade of our cybersecurity measures to combat the ever-increasing cyber threat landscape to enable the secure delivery of a number of other programs. The program has three aspects to it:

Resilience

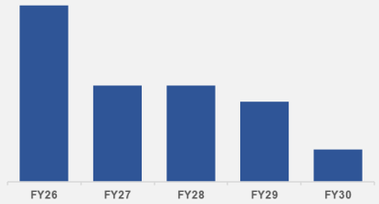
Information Risk Mgt & Privacy

Identity & Access Management

Program Owner	Water	WaterNSW	Natural Resources Access Regulator
	✘	EM D	✘

Forecast (FY26-FY30)

WNSW Program Cost $3.0m



Priority

Value 1 2 3 4 5

Risk 1 2 3 4 5

Mandatory (Non-Discretionary)

Benefits

- A strong security posture, leads to stronger ability to mitigate against potential threats, avoiding financial losses from fines, legal action and remediation.

Some information has been redacted due to the sensitive nature of this area. Further information will be available during as requested.

M Geospatial visualisation

NSW GOVERNMENT

DEFERRED

Program description

This initiative involves extending the agency's commitment to promote visibility of the NSW Water Sector topography through visual information and enable features to be exposed to communities via their GIS portals or NSW Government spatial tools. Geospatial information can include flood zones, dam/river levels, hydrolines and other environmental maps to allow analysis and visualisation in the shared technology ecosystem.

Different datasets will be overlayed on a map to visualise different graphical elements and layers as customer needs evolve. Models will be made available via an online portal to enable users to interact with the model, extract information and allow them to model different scenarios.

Key features of future Water focused public products (akin to Google Earth / Maps) will include:

- Initiatives and projects, modelling data and earth observation products such as irrigated areas and waterbodies.
- Near Real-time Data: Integration of near real-time data, which could include stream gauging, dam levels, weather models, remote earth observations.
- The ability to leverage advanced analytics tooling to aid in predicting water resource trends, environmental condition, and location based statistics for example
- Mobile Access: Compatibility with mobile devices / field professionals; and.
- Security Measures to safeguard sensitive water data.

Program Owner	NSW GOVERNMENT Water	WaterNSW	NSW GOVERNMENT Natural Resources Access Regulator
	CKO	EM O	✗

Forecast (FY26-FY30)

WNSW Program Cost	$0.0m
Ecosystem Cost	$1.7m

Priority

Value 1 2 3 4 5

Risk 1 2 3 4 5

Customer-driven Initiatives

Benefits

- This initiative involves extending the agency's commitment to open and accessible data
- Inefficient areas of usage and issues can be intervened through geospatial modelling.
- Financial resources and investment can be better allocated by understanding demand patterns and water availability to drive asset decisions.
- Environmental risks can be better assessed in relation to incidents and natural disasters. Better visualisation for safety requirements

Risks

- Customers have a desire to look at maps and spatial data, as reflected in the Matthews report. Without enhanced geospatial data capabilities, these needs are unable to be fulfilled.
- Not sharing spatial information and georeferenced information mean that customers seek this out individually from each organisation separately. User experience and data access is diminished.
- Limited interoperability between datasets of geocoded data making sharing between agencies difficult and creating compliance risks for water licencing information
- Risk of investing in multiple systems, increasing costs and introducing further architectural complexity, rather than focusing on Insights.

0 Digital Operations Support

Program description

The Program will provide uplift to the existing Operational Technology and Application Platforms required to deliver Continuous Improvements creating a stable platform. The work continues to drive towards to a unified SCADA, expansion of emerging CCTV (Remote Visual Monitoring) technologies as well as leveraging integration of existing platforms to drive efficient processes and meet modern standards, functionality and user interactions including water data, dam and weir surveillance and other data.

Leveraging secured Internet of Things (IoT) for asset and environmental monitoring couples with the codification and digitisation of water delivery decisions, the program will also determine processes for documenting the depth and breadth of decision-making across. This includes water decisions and water sharing plan rules and conditions. Creating a digital set of rules, guidelines and parameters across water demand, water supply, the augmented river operator will be able to streamline the management of water delivery to ensure compliance.

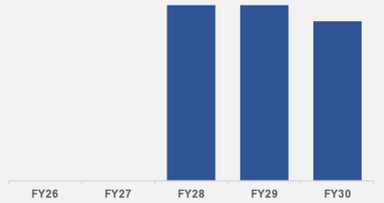
The near real-time monitoring and optimisation of water delivery in extreme weather events will also support resource and environmental sustainability by reducing operational water losses and improve staff performance in incidents.

It would also provide to communities' up-to-date information on water quality, flood warning levels, etc. to enable detection of threat to life scenarios and ultimately to deliver water when an where it matters.

Program Owner	Water	WaterNSW	Natural Resources Access Regulator
	✗	EM O	✗

Forecast (FY26-FY30)

WNSW Program Cost $3.2m



Priority

Value 1 2 3 4 5

Risk 1 2 3 4 5

Strategic Investments

Benefits

- Financial Benefit – Cost savings: Reduced reliance on individual workers performing works in the field with automated devices collecting information.
- Non-Financial Benefit (Risk) – Safety: Improved safety by reducing the need for operators to work onsite in hazardous environments and remote locations.
- Non-Financial Benefit (Risk) – Risk Reduction: Increased reliability of operations as monitoring is proactively managed in real-time.

Risks

- Expanding operations and the critical nature of water services causes vulnerability to cybersecurity threats and malicious attacks including data breaches and disruption of opens. Robust cybersecurity measures will be required to mitigate the risks that may arise.
- Expanding operations and the critical nature of water services causes vulnerability to aging platforms. Continuous improvements and control ensure robust expandable platforms
- Natural events may impact risk of system loss. Considerations for backups is required to mitigate against this.
- Reduction in onsite requirements for operators could put critical safety systems at risk.

Appendices

6

Appendix A

Glossary

Glossary of Terms

#	Term	Definition
.1	NABC	Needs Analysis Business Case outlines the investment case for a project or program of work. It describes the need and desired target state, and evaluates the benefits, costs and risk of the alternative options
2	IBM Planning Analytics	Business performance management software with planning, forecasting and reporting features used for financial planning
3	BAU	Business As Usual
4	Capex	Capital expenditure
5	CEO	Chief Executive Officer
6	CIMS	Consolidated Information Management Software
7	CPI	Consumer Price Index
8	DCCEEW NSW / DPE-W	DCCEEW NSW or the NSW Department of Climate Change, Energy, the Environment and Water, formerly Department of Planning and Environment - Water
9	ERP	Enterprise Resource Planning
10	ESG	Environmental, Social, and Governance
11	EUX	End-User Experience, which includes End User Computer hardware and non-core third party software licences
12	FY	Financial Year

Glossary of Terms continued

#	Term	Definition
13	GS	Greater Sydney
14	HR	Human Resources
15	ICT	Information and Communication Technologies
16	IGC	Investment Governance Committee
17	IPART	Independent Pricing and Regulatory Tribunal
18	MVP	Minimum Viable Product
19	RRA	Roles and Responsibilities Arrangement
20	NRAR	Natural Resources Access Regulator
21	NSW	New South Wales
22	RV	Rural Valleys
23	SCADA	Supervisory Control and Data Acquisition
24	WAMC	Water Administration Ministerial Corporation
25	WAVE Program	Water Added Value Environment Program

End of document