Department of Climate Change, Energy,
the Environment and Water

NSW GOVERNMENT

NSW Water Quality Governance Roadmap

Pathways to improve water quality outcomes across the state

June 2024

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Acknowledgement of Country

The Department of Climate Change, Energy, the Environment and Water acknowledges that it stands on Aboriginal land. We acknowledge the Traditional Custodians of the land and we show our respect for Elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

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Taking action on water quality

The NSW Government has an objective to improve river, floodplain and aquifer ecosystem health and system connectivity, which is reflected in the NSW Water Strategy (2021). Good governance, that is enduring, statewide and focused on water quality outcomes is needed to help achieve this objective. The Water Quality Governance Roadmap outlines how the NSW Government is, and will continue to, deliver improvements to water quality governance to achieve strategic and coordinated monitoring and management of water quality.

Water quality governance in NSW is complex, with duplication, inefficiencies, and gaps. Water quality priorities and objectives in NSW are set through legislation, other statutory instruments, strategies, plans, and programs. These are administered by a range of government agencies, statutory authorities, other water managers and their partners across all levels of government through shared arrangements. There are over 50 legislative instruments that contribute to guiding water quality management in NSW, including around 33 acts, 11 regulations, and over 12 other types of statutory instruments (for example, water sharing plans, operating licences for major water utilities and local environmental plans). An overview of the key legislation guiding water quality management in NSW is in Appendix A.

Roles and responsibilities mapping for water quality in NSW illustrates that water quality as a function is not the sole responsibility of any one agency or organisation. The analysis undertaken as part of the development of this roadmap found that over 30 agencies or organisations have either direct or indirect water quality functions. An overview of their water quality roles and responsibilities is in Appendix B.

Water quality responsibilities vary in scope, and in formality for water quality managers in NSW. Agencies and organisations may lead programs, develop policy, undertake compliance or regulatory functions and/or provide funding or assistance to community-based organisations and landholders. While there is some level of cohesion and collaboration across agencies, for the most part, water quality functions are being delivered separately and are often driven by funding sources and compliance requirements. Some agencies have limited statutory authority and lack consistent resourcing to support their water quality functions in an ongoing way.

The large number of agencies and organisations involved in water quality monitoring and management, and the breadth of roles from legislative responsibilities to program-based responsibilities, leads to confusion, uncertainty, gaps and duplication in effort. The uncertainty has proven problematic in some instances when there are water quality events. It can be difficult for relevant agencies to ensure a well-coordinated and timely response, and for the wider community to understand and find information about what action is being undertaken, and by which agency or agencies.

What is the state of play for NSW?

The NSW Government conducted research and analysis into the existing management of water quality across NSW to better understand the challenges and opportunities for improvement. The research focused on better understanding:

- the regulatory framework and policy context
- current roles and responsibilities
- existing programs
- governance frameworks that support the above.

Consultation with 81 key stakeholders from 18 different agencies was undertaken, along with an extensive desktop review of relevant legislation, policies, strategies and roles of water quality managers. Analysis of water quality governance against the Organisation for Economic Cooperation and Development (OECD) Water Governance Indicator Framework helped to identify the current shortcomings and opportunities for improvement.

The research found that the current governance arrangements have impacted the effectiveness and efficiency of water quality management and monitoring. It is challenging to identify consistent and cohesive water quality priorities that are supported by clear implementation arrangements between agencies. In addition, the challenge to effectively collect and share water quality information between agencies and decision-makers for both incident response, and as an indicator of broader catchment health, makes it difficult to proactively manage water quality issues in a timely manner.

The research identified the need for appropriately resourced integrated catchment management to drive improvements in water quality outcomes. Undertaking water quality management activities and policies on a catchment scale provides the best opportunity to apply the National Water Quality Management Strategy, and encompass the catchment planning process. This ensures greater alignment with local community values and goals, accountability for implementation, and opportunities for learning through adaptive management.

> The National Water Quality Management Strategy provides a national framework for improving water quality in Australia's waterways. The main policy objective of the strategy is to achieve sustainable use of the nation's water resources by protecting and enhancing their quality, while maintaining economic and social development. The National Water Quality Management Strategy has been adopted by the NSW Government to manage the quality of waterways in NSW and protect water resources.

Improving water quality governance

Water quality governance could be improved by increasing the effectiveness and integration of water, land and other natural resources planning and management through:

- clarifying the roles and responsibilities of agencies who manage water quality and improving coordination between these agencies
- enhancing policy cohesion and the effectiveness of regulatory frameworks
- better integrating land use planning and water management
- implementing catchment-scale planning and management
- clarifying roles and responsibilities in water quality monitoring and improving the efficacy of data management (including the way data is collected, stored, published and used).

What does good water governance look like?

Governance is broader than just roles and responsibilities. The OECD Principles on Water Governance covers 12 principles for efficient, effective and inclusive governance for better water outcomes. The Water Quality Governance Roadmap uses several of the principles to drive enhanced water quality governance, including:

- the clear allocation and distinguishment of roles and responsibilities
- monitoring and managing water quality at the appropriate scales
- encouraging policy cohesion
- production of timely, relevant and comparable water quality data to guide and improve planning, management and decision-making.

Data and information – a key principle of good governance

The research found that water quality monitoring programs in NSW are generally developed in response to a specific driver and in isolation. There are challenges in storing, sharing and reporting on data which make it increasingly difficult to understand water quality at a state level. It is also difficult for stakeholders to understand where there may be complementary programs or data.

The research and analysis also found that more visibility could be given to government and the wider community as to which organisations collect and hold water quality data, where this information is stored, and how it is collected, shared and published. Without this, water quality data is not used, cumulative impacts are not identified, and there is duplication of monitoring efforts. There was also an identified need for more guidance to specify what good data looks like and to inform what data to collect, store and manage.

The Water Quality Governance Roadmap

The Water Quality Governance Roadmap (the roadmap) identifies a suite of initiatives to support continual improvement and broader reforms to water quality governance. The roadmap recognises the challenges of shared management of water quality across NSW, and presents the pathway for better integrating the management of land, water and other natural resources in NSW to improve water quality management. The roadmap also outlines the pathway for process improvements to data management to increase transparency and visibility, and for more coordinated monitoring efforts of water quality to ensure appropriate and timely management decisions.

The roadmap promotes improved application of the National Water Quality Management Strategy, ensuring greater alignment with local community values and goals and accountability in the delivery of outcomes.

Pathways forward

The NSW Government is progressing two key pathways for improving water quality outcomes across NSW (Figure 1):

- Better integrating management of land, water and natural resources.
- Improving water quality data management and monitoring.

Figure 1. Water Quality Governance Roadmap pathways

Better integrating management of land, water and natural resources

Land, water and natural resources management and planning is coordinated at appropriate scales for better water quality outcomes. This is known as 'integrated catchment management'.

Improving water quality data management and monitoring

Water quality monitoring and data better informs land, water and natural resource planning and management decisions and actions.

Better integrating management of land, water and natural resources

Enhancing roles and responsibilities, the policy context and governance to improve water quality outcomes

There is currently no overarching, statewide framework that governs catchment management and water quality outcomes, and no holistic view of water quality management across NSW.

Planning and management occur at various scales, often driven by opportunities such as funding availability, and can be informed by various, often disconnected and sometimes duplicative, policies, instruments and priorities.

Some major water quality events can be a symptom of policy and governance fragmentation. Current policy approaches do not consider catchments as integrated systems, where upstream impacts, including land use and development, water extraction and pollution, can impact downstream water quality.

A key finding of the NSW Office of the Chief Scientist and Engineer's Independent review into the 2023 fish deaths in the Darling–Baaka River at Menindee (2023 review into fish deaths at Menindee) was that a root cause of the decline in the Darling–Baaka River's health, and consequent fish deaths, was a failure in policy implementation due to water policy focusing largely on water volume and not water quality.

Major water quality events led to improved catchment management in the Greater Sydney drinking water catchment

The 1998 Sydney water crisis where Sydney's drinking water supply was contaminated by cryptosporidium and giardia is another example of a crisis event resulting from a disconnected approach to managing land use and water within a catchment. Following the crisis, the NSW Government commissioned the Sydney Water Inquiry into the contamination of Sydney's water supply. The inquiry found that there was poor coordination in decision-making by the large number of agencies involved in managing the catchment, that there was no clear understanding of catchment health, and a lack of consistency in land use planning across the catchment.

The Sydney Catchment Authority was created in 1999 to protect and manage the Sydney drinking water catchment. The Sydney Catchment Authority's role is now the remit of WaterNSW, following the merger of Sydney Catchment Authority with the State Water Corporation in 2015. This has enabled the ongoing protection and enhancement of water quality and catchment health for the protection of public health and public safety.

Opportunities to take an integrated catchment management-focused approach in other parts of the state need to be further explored.

Integrated catchment management is needed

To address the complexity of the existing fragmentation of water quality management in NSW, the NSW Government is transitioning towards a more integrated catchment management approach. There is a need to establish a statewide integrated catchment management framework, which recognises the interconnectedness between waterways and land use, at a catchment scale. Without integrated catchment management, there remains a high risk of major water quality events occurring across NSW into the future, especially when overlaid with the predicted impacts of climate change, such as higher temperatures and more extreme drought conditions and duration.

What is integrated catchment management?

Integrated catchment management is an approach to coordinating the management of land use, water and other natural resources across a catchment to improve ecosystem outcomes. This involves integrating policy frameworks across land use planning, water planning, biodiversity, and other natural resources, which all influence water quality and water availability in a catchment. Catchments are recognised as interdependent systems where waterways are managed as whole entities in their planning and management. A whole of system approach allows for the assessment of cumulative impacts of land use on water resources to inform effective management, with recognition that upstream impacts influence downstream waterway health.

When managed as an integrated catchment, water quality is better protected, as cumulative impacts from land use and management, and water use can be considered more holistically at the appropriate scale. Integrated catchment management means there is a regulatory framework that both defines the clear boundaries of the catchment, provides authority to protect and plan for the catchment, and considers land use and management. For example, if the quality of water is managed as it enters and moves through the catchment, this reduces treatment requirements for drinking water. Integrated catchment management uses a multi-barrier approach to progressively reduce the risks to water quality as it moves through the catchment to the reservoir, through to treatment and distribution.

Why integrated catchment management is important

Integrated catchment management is critical to achieve connected, healthy waterways that can more effectively provide water for the environment, communities, agriculture, industry, cultural purposes and recreation. The value of adopting an integrated catchment management approach has been recognised in various strategies, reports and analyses, including the NSW Productivity Commission White Paper 2021 and more recently work undertaken as part of the NSW Water Strategy (2021).

Taking a catchment-scale view helps to consider the cumulative impacts of land use and water management across an area to protect waterway health. The lack of a state government framework for integrated catchment management has led to piecemeal responses outside of an organised government policy framework, which lacks enforceability and resourcing.

Existing management arrangements create a disconnected approach to managing NSW's waterways. For example:

- The coastal zone and marine estate are managed under different legislative, policy and administration arrangements. This can create an estuary-focused policy framework for river systems, which does not consider water quality impacts from land uses occurring outside of the coastal zone, such as upstream urban development, mining and agriculture, despite those impacting downstream water quality.
- Councils across a catchment may have different land use planning controls applying to the same waterway, causing inconsistency in approach for protecting river corridors and waterway health.
- Planning policies and instruments at the state level, including State Environmental Planning Policies, can have a limited focus applying only to a few regulated catchments, creating a planning policy divide with the rest of NSW's catchments. For example, the Biodiversity and Conservation State Environmental Planning Policy provides development controls to protect the Sydney drinking water catchment but does not apply to any other catchment across NSW.

A move to integrated catchment management would bring together priorities within regional water strategies, water sharing plans, water resource plans, natural resource management plans, regional and district plans, local strategic planning statements, state environmental planning policies, local environment plans, development control plans and coastal management programs.

The approach will also result in more effective management of water quality, in particular, improved management of diffuse source water pollution, with coordinated emphasis on land use planning, development controls, landholder engagement and incentives.

Stakeholders interviewed as part of the development of this roadmap cited a catchment-level approach as being the most effective way to produce positive water quality outcomes based on integrated planning of water use, land use and other natural resource management to achieve the water quality objectives desired by the local community. However, no single agency currently has the authority, capacity, and resources to undertake catchment scale planning, drive coordinated engagement with diverse stakeholders to accurately consider a broad range of community values for water quality, as well as the regulatory powers to mandate and enforce water quality considerations.

The transition to integrated catchment management is underway

There are various initiatives already underway and planned (Figure 2) to enhance the effectiveness and cohesion of agency roles and responsibilities, the regulatory and policy context, and the governance to support more effective water quality management on catchment scales. These initiatives seek to deliver improved practices and collaboration between the different managers of water quality, more effective compliance to ensure the protection of the ecosystem, and increased clarity for communities about responsibilities and accountabilities.

The initiatives reflected in this roadmap focus on governance arrangements for improved water quality outcomes, and will contribute towards transitioning to integrated catchment management (Figure 3). Improving water quality governance is an iterative process, and we are continually learning. Experience and learnings from the initiatives underway, which include the piloting of various governance models and approaches, will inform future approaches and decision-making for water quality governance in NSW.

There are also projects and programs outside of what is reflected in this roadmap that are contributing to better-integrated catchment management for NSW, with a broader lens than governance.

Figure 2. Overview of governance initiatives focusing on integrated catchment management on a time scale

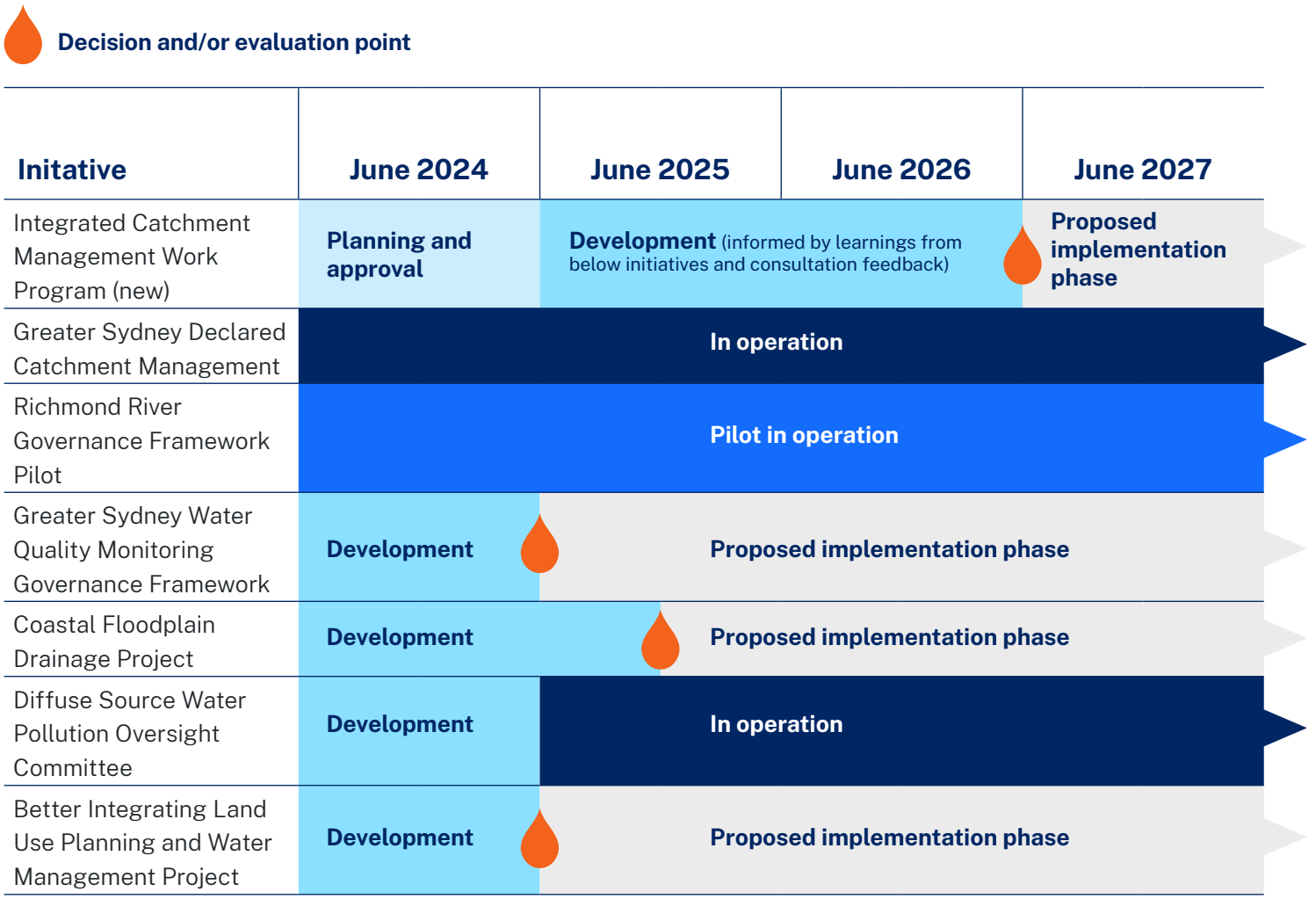


Figure 3. What the initiatives focusing on integrated catchment management (ICM) are achieving

What we're doing now

Integrated Catchment Management Work Program

Exploring ways to manage water quality more cohesively across the state.

The NSW Government is investing $1.7 million over 2 years in the Integrated Catchment Management Work Program (Work Program) to develop a reform package for a new, enhanced integrated catchment management framework and governance model.

The Work Program will propose critical reforms to drive improved water quality and river system health outcomes at a catchment scale, and deliver sustained focus on:

- improving water quality and catchment management with clearer accountabilities and reduced duplication between agencies
- better connecting land use planning and water management to improve water quality considerations within planning instruments
- addressing the divergence in focus of water quality across the catchment management disciplines; land use planning, water planning and natural resource management
- addressing the divergence in focus on water quality across geographical scale; inland/coastal/groundwater.

To accelerate the delivery of the Work Program, the NSW Government completed a review into the regulatory settings of water legislation and its impact on riverine catchment health – the Darling–Baaka Regulatory Review. This review, together with learnings from existing NSW water quality governance initiatives and interjurisdictional approaches, will inform the options analysis and assessment of catchment planning and governance models.

The Work Program will be led by the Water Group in the Department of Climate Change, Energy, the Environment and Water (the department) in close consultation with key agencies involved with land use planning, water planning and natural resource management in NSW including the department's Biodiversity, Conservation and Science Group, NSW EPA, Local Land Services, DPI Fisheries and Agriculture, Department of Planning, and Housing and Infrastructure – Planning, NSW Health, NSW state owned corporations and local water utilities. Development will also involve extensive consultation with a variety of stakeholders.

Key reform options will be confirmed by 30 June 2026, with additional funding and resources needed to implement actions to deliver the preferred reform option(s) in the future.

The Work Program will examine governance arrangements to better integrate Aboriginal knowledge and leadership into water quality management. The Work Program will also seek to improve water quality governance for more enduring protection of the important cultural and spiritual values of our water resources.

Figure 4 steps out the key elements of the Work Program which will inform the development of a preferred governance model for the NSW Government to transition to adopt a more integrated catchment management approach at the end of the 2-year duration.

Figure 4. Integrated Catchment Management Work Program approach

Greater Sydney Declared Catchment Management

Catchment management approach in place for the Greater Sydney Declared Catchment

WaterNSW works closely with partner agencies and regulators such as the NSW National Parks and Wildlife Service (NPWS), NSW Environment Protection Authority (EPA), Local Land Services, NSW Health, NSW Rural Fire Service, local councils and private landowners to implement an integrated catchment management approach in the Greater Sydney Declared Catchment. The catchment management approach for the Greater Sydney drinking water catchment is reflected in the Source Water Projection Strategy. The key objectives of the strategy are to:

- improve the urban water practices within the catchment, ensuring all new developments have a neutral or beneficial effect on water quality (development in the Sydney catchment area is regulated by State Environmental Planning Policy) and that councils and major developments are committed to source water protection
- increase regenerative agriculture, driving change by supporting landholders to design and improve farming practices, actively manage weeds, pest and bushfire risk, and to enforce catchment protection laws to reduce unauthorised activities in Special Areas and pollution incidents in the catchment.

Research plays a key role in WaterNSW's management of the Sydney catchment. WaterNSW's science and research program has significantly increased scientific knowledge of the risks impacting the catchment and continues to support the development of targeted mitigation strategies.

Richmond River Governance Framework Pilot

Piloting a committee-based approach to better managing water quality in the Richmond River catchment

The Biodiversity Conservation and Science Group (BCS Group) in the NSW Department of Climate Change, Energy, the Environment and Water has been leading work in the governance space within the Richmond River catchment since 2018, after governance was identified as a fundamental issue to be addressed for better estuary health in the Coastal Zone Management Plan for the Richmond River Estuary (2011). While several governance models were considered, the majority of key stakeholders preferred a collaborative committee approach. This approach is being developed and trialed for the Richmond River catchment to coordinate management, reduce diffuse source pollution and improve waterway health.

Funded through the Marine Estate Management Strategy (2018-2028) and an action in the Far North Coast Regional Water Strategy (2023), this new governance framework is supporting a collaborative partnership forum that includes a wide range of stakeholders and organisations in the Richmond River catchment. A steering committee representing all major stakeholders in the catchment has been established to support the broader group's work on improving catchment health. The collaborative partnership will continue to regularly bring together these stakeholders to improve communication and coordination of natural resource management activities across the catchment.

Greater Sydney Water Quality Monitoring Governance Framework

Exploring ways to better manage water quality in Greater Sydney's waterways

The BCS Group and Water Group, together with Sydney Water, are leading the development of a new governance framework to improve water quality outcomes for Greater Sydney's waterways. During the preparation of the Greater Sydney Water Strategy, it became apparent that there was an opportunity to improve the governance of water quality and river health monitoring in the Greater Sydney region. An action was included in the Greater Sydney Water Strategy Implementation Plan 2022–2025 to scope a water quality and river health monitoring governance framework for Greater Sydney's waterways, including assessment of existing data in relation to water quality objectives.

A project is currently underway to prepare recommendations, drawing on stakeholder consultation, and is due to be completed in 2024.

Coastal Floodplain Drainage Project

Improving the regulatory framework for coastal floodplain drainage

The Coastal Floodplain Drainage Project aims to improve the regulatory framework and water quality impacts associated with coastal floodplain drainage. The project commenced in 2019 and is one of several Marine Estate Management Strategy (2018-2028) projects aiming to deliver healthy coastal habitats with sustainable use and development. The objectives of this project are to improve the regulatory framework for coastal agricultural drainage works and activities by:

- addressing the complexity, time and costs associated with the approvals process
- reducing the impact of these works and activities on downstream water quality, aquatic ecosystems, communities and industries.

The project's focus is NSW coastal floodplains with extensive agricultural drainage systems, including the Tweed, Richmond, Clarence, Macleay, Hastings, Manning and Shoalhaven rivers.

The Water Group is leading an interagency working group with representatives from the BCS Group, the Department of Planning, Housing and Infrastructure – Planning and Crown Lands, and the Department of Primary Industries – Fisheries (DPI Fisheries).

Diffuse Source Water Pollution Oversight Committee

Improving the management of diffuse source water pollution across the state

Land use activities and management can place pressure on water quality and waterway health outcomes through diffuse sources of water pollution. The regulation of land use activities to account for direct and cumulative impacts on water quality is often based on historical arrangements and responsibilities for monitoring, management and regulation are dispersed across several agencies and levels of government.

Funded through the Marine Estate Management Strategy (2018-2028) and also an action in the NSW Water Strategy (2021), the BCS Group is leading a project to develop a new governance framework to improve the coordination and focus on diffuse source water pollution management across NSW.

The new governance arrangements have a state-wide focus and will improve the coordination of NSW Government agencies involved in managing diffuse source water pollution and will be in place from 1 July 2024.

Better Integrating Land Use Planning and Water Management Project

Improving the integration of land use decisions and water management

The Water Group is leading a project to better understand opportunities to improve and align land use and water planning. The Better Integrating Land Use Planning and Water Management Project is delivering on a commitment in the NSW Water Strategy (2021) to identify a suite of proposed planning policy reforms by July 2024 to better consider the impacts of development on water quality and improve waterway health.

The broader objectives of the project include:

- understanding links and gaps between land use planning and water management
- ensuring that policy, legislation, regulation and advisory functions pertain to development impacts on water catchments
- creating an environment where key land use decisions are supported by water information
- supporting water-related climate and ecosystem resilience through the planning system.

Using information from consultation and a review of existing policy and planning pathways, the project will identify areas of reform and improvement to land use planning, water resource planning, water utility planning, and coastal and marine estate management. The research conducted to date identified that waterway governance is fragmented and that an integrated catchment management approach would enable the improved planning and management of NSW's waterways.

Risk-based Framework for Considering Waterway Health in Strategic Land-use Planning Decisions

A commitment out of the NSW Water Strategy (2021) is to support the ongoing implementation of the Risk-based Framework for Considering Waterway Health in Strategic Land-use Planning Decisions. The framework was developed by the BCS Group and the NSW EPA in 2017. The framework presents a structured approach that decision-makers, such as councils and environmental regulators, can use to help manage the impact of land-use activities on the health of waterways in NSW.

What we will do later

Implementing the change needed to manage water quality more cohesively in NSW

As mentioned above, the Integrated Catchment Management Work Program is developing an enhanced catchment management governance model and associated reform program to transition to the new statewide integrated catchment management framework.

Following NSW Government endorsement of the preferred model and reform package, the implementation timeframe and rollout of the reform package will be determined.

Improving water quality data management and monitoring

Improving the way we collect and share water quality data and monitor water quality across the state

Data and information on water quality is collected in NSW for a variety of purposes including for drinking water, recreational use, environmental water, and estuary health, along with monitoring of pollution for stormwater and wastewater discharge. Water quality data is collected by several agencies and industries across NSW. Data is collected from numerous automated, and in some cases, telemetered gauging stations, plus manual sampling programs for both routine and event sampling.

Water quality data is collected, stored and used by a range of state government agencies as well as councils. However, greater visibility among agencies and transparency with the wider community is needed as to which organisations hold water quality data, the type of data held, how complete and accurate the data is and where to access the data. There is also no centralised guidance to specify what good water quality data looks like in relation to NSW's data sharing platforms, to inform what data to collect, store and manage. There are also different approaches and tools used for publication, interpretation and communication of water quality data.

Considerable challenges in relation to water quality data include:

- collecting appropriate and timely quality information for decision making
- being able to source readily available water quality data that is fit for purpose
- having a centralised location to store water quality data
- the lack of a holistic view of water quality for the state
- challenges with the existing surface and groundwater networks and how this might be improved through infrastructure and program enhancement.

The inability to effectively capture and share water quality data and information between agencies and decision-makers for both incident response, as an indicator of broader catchment health and for longer-term planning/management decisions makes it difficult to proactively manage water quality issues in an appropriate manner.

The roadmap recognises that while water quality data systems exist, there are opportunities to improve the efficiency and effectiveness of water quality information collection, sharing and use. This includes improving monitoring arrangements to align monitoring programs and fill gaps in data, and improving the data we collect (including quality assurance processes) and how we store, access, share and interpret the data and monitoring results. These improvements will enable the use of data to better inform policy decisions, operational responses and investment decisions.

What we're doing now

A new water quality monitoring framework

The NSW Government is delivering a new NSW water quality monitoring framework by 30 June 2025, to more effectively share and publish water quality data. The Water Group is leading the development of the water quality monitoring framework, in consultation with relevant NSW agencies, including the BCS Group, WaterNSW, NSW EPA and DPI Fisheries. The new framework will:

- confirm the agency that will hold the role of water data custodian, or owner of all water data
- set the standards for collecting and sharing data to ensure a 'whole of system' and integrated approach is taken to water data, and that the Sharing and Enabling Environmental Data (SEED) portal operated by the BCS Group links with WaterInsights operated by WaterNSW
- identify the priority gaps in water quality monitoring programs and where enhanced water quality monitoring needs to occur
- provide for an early warning system, implemented by WaterNSW, and based on water quality metrics to assist strategies and operations that have the potential to mitigate mass fish death events
- be designed incorporating evaluation and adaptative learning processes, and draw on real-time data wherever possible.

The NSW water quality monitoring framework will enable data to be used more effectively to manage water quality issues in a timely manner for incident response and broader catchment health. This framework aspires to a future where any person will be able to easily access information on the quality of the water in their local area, or area of interest, through any connected device.

Integrating water quality monitoring programs

The Water Group is identifying all agencies involved in the implementation of water quality related programs and groups requiring access to high-quality real-time water quality information for adaptive water management decision making.

Once identified, all programs will be required to use best practice methodology and appropriate monitoring technology in a coordinated and collaborative program. The outcome will be coordinated water quality monitoring programs with clear responsibilities and accountabilities to better address water quality risks across the state.

Addressing gaps in water quality and river health data

Increased monitoring efforts that are additional to existing programs and are sustained for long-term timeframes across a larger geographic scale allows for more connected, up-to-date water quality information.

The NSW Government recently delivered on its commitment, in response to the 2023 review into fish deaths at Menindee, to gather more real-time data over the 2023-24 summer through technology and crews from several NSW agencies. WaterNSW, DPI Fisheries and Essential Water took water samples for water quality, fish monitoring and town water supply purposes. The BCS Group and WaterNSW installed 5 multi-depth monitoring buoys in the Menindee area to monitor water quality at specific depths down through the water column. This data can be used to indicate when stratification starts, how long it has been present and if it has broken down, allowing the mixing of dissolved oxygen.

The NSW Government will continue to deliver water quality and river health data collected via the Biodiversity Science and Conservation's Darling–Baaka River Health Project, funded until June 2025 and the Water Science Weir 32 science program. This data continues to contribute to the ongoing management of water quality issues within the Darling–Baaka, enabling real-time informed decisions and actions to address water quality issues. The data also provides insights into and prioritisation of future management actions to improve the overall health of the Darling–Baaka River, including those that mitigate the impact of extreme events. This may include analysis of possible management actions that will improve river connectivity in the northern basin.

The NSW Government is providing new funding for continued monitoring, as well as a scientific study on the impacts of the 2023 mass fish death event on water quality in the Menindee weir pool, development of a hydrodynamic model to aid water management decision making at Menindee and the purchase of new dissolved oxygen buoys and data loggers. The hydrodynamic model will allow forecasts and predictions of dissolved oxygen conditions under various scenarios.

Collection of water samples from the Lower Darling–Baaka River will be used to assess land use impacts and undertake nutrient analyses, the data of which will contribute to the Water Quality Index and update the NSW River Condition Index within the Lower Darling water sharing plan area. This will provide information on river health and inform our model development to manage land and water in a coordinated manner. This will also support environmental water management integration into monitoring actions and framework.

The NSW Government will provide funding to continued dissolved oxygen monitoring (including the ongoing operation of the multi-depth monitoring buoys in the Menindee area) that complement, and are additional, to the installation of 40 high-priority monitoring sites across the Basin.

The NSW Government is exploring cutting-edge research into emerging technologies areas, such as the use of on-water autonomous technologies in areas not currently covered by sampling or fixed sensors (for example, remote controlled boats to collect water quality, flow and bathymetry data to inform early warning of changed environmental conditions).

Increase in scale of monitoring efforts for WaterNSW

WaterNSW is one of several agencies that conducts water quality monitoring across the state under a pre-defined program developed by the Water Group. This program includes volume and water quality parameters for both groundwater and surface water.

Under the current draft WaterNSW Operating Licence, a new Water Quality Monitoring Enhancement Program is being considered, which will focus on water quality as it relates to local water utilities in regulated rivers. The matter is still being discussed as part of the Operating Licence review and will be resolved by 1 July 2024.

Building capacity to better manage source water across catchments

Raw water quality monitoring (or source water monitoring) allows local water utilities (LWUs) to adjust their water treatment operations to better manage water quality events. Forewarning of poor water quality events in the source water allows LWUs to plan ahead and switch off water take from the raw water source and switch back on when the water quality has improved. This means the water is easier to treat and less likely to result in poor water being delivered to communities.

As part of the Town Water Risk Reduction Program the NSW Government is funding WaterNSW to deliver the Source Water Management Program. This program's objective is to improve drinking water quality by providing integrated catchment and source water quality management advice, water monitoring data to regional councils and by uplifting the capability of LWUs. WaterNSW has received strong interest from the priority LWUs (prioritised on a risk basis) representing over 40 different water supply schemes, across 14 LWUs. The delivery of the program commenced in late 2023 and will continue until June 2025.

Predictive modelling for water quality

Just as important as having more data is what we do with it. Future informed decision-making to predict and respond to water quality events must be grounded in reliable data to ensure timely identification of potential event triggers and post-event analysis.

The WaterNSW research and innovation program undertakes research into emerging monitoring and remote sensing capability, including online algal and natural organics sensors, passive samplers, satellite imagery to improve management of blue-green-algal risk and for calibration of water quality models. WaterNSW is also undertaking joint research with Sydney Water on utilising machine learning capability to forecast short-term changes in water quality in the Greater Sydney Declared Catchment.

What we will do later

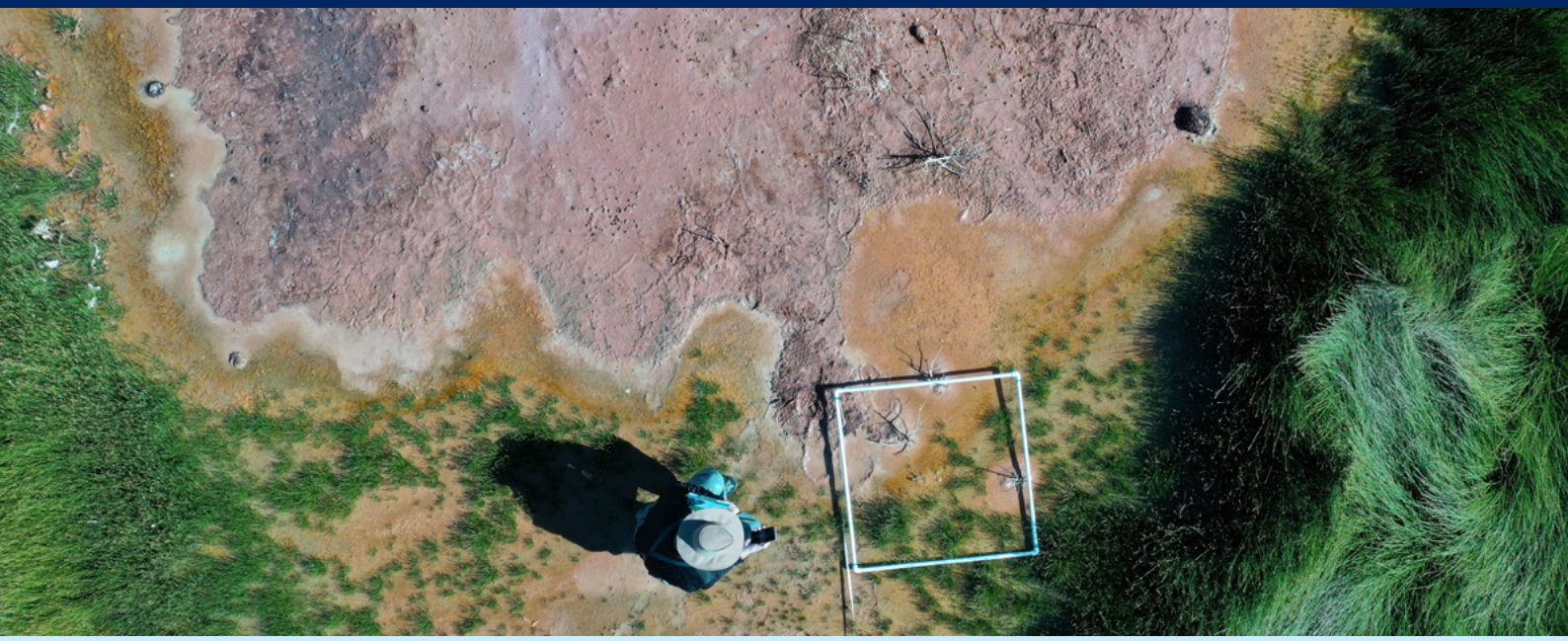
Enhancing water data shared by key agencies

The Water Group will develop the Water Data Technology Ecosystem, a ten-year plan for enhancing water data shared by the Water Group, WaterNSW and the Natural Resources Access Regulator.

People and communities in NSW will have quicker and more reliable access to water information, and the NSW Government will be able to reduce delays in water transactions, and develop and increase automation and self-service platforms, reducing transaction costs to customers.

The improved data systems will also support enhanced and more timely input to assessment of major developments, including infrastructure and housing developments.

The NSW Government will implement a central water sector database platform and deliver a more effective cross-agency data system, ensuring government agencies better manage and handle data, providing higher data quality and enhanced data analytics. The approach removes duplication of investment and inefficient, manual, double handling of data.



Appendix A
List of legislation relevant to water quality management in NSW

Federal

Instrument	Description of how it pertains to water quality management in NSW
Biosecurity Act 2015	• Regulates management of ballast water discharge (by ships) and related offences including disposing of sediment.
Environmental Protection and Biodiversity Conservation Act 1999 **(Cth)**	• Legal framework to protect and manage unique plants, animals, habitats, and places, including heritage sites, marine areas and some wetlands. • Helps to assess the environmental impact of projects and protect water resources relating to coal seam gas development and large coal mining development.
Water Act 2007 **(Cth)**	• Administered by the Commonwealth Department of Climate Change, Energy, the Environment and Water. • Establishes the Murray–Darling Basin Authority. • The Basin Plan under the Act includes a provision for water quality and salinity management plan, setting water quality and salinity objectives and targets for Murray–Darling Basin water resources (reviewed every 5 years). • Water resource plans are a key requirement of the Basin Plan with 20 water resource plans covering NSW. Water resource plans include a Water Quality Management Plan identifying water quality actions and targets for the water resource plan area.

State

Instrument	Description of how it pertains to water quality management in NSW
Biosecurity Act 2015	• Indirectly supports water quality management in NSW by regulating biosecurity threats that affect aquatic environments. It controls the introduction and spread of aquatic pests and diseases, which can alter water ecosystems and impact water quality.
Biodiversity Conservation Act 2016	• Establishes the legislative framework for biodiversity management in NSW. • Protects threatened species and ecological communities and seeks to protect areas with significant biodiversity values. • Sets out biodiversity assessment requirements for different activities and establishes biodiversity offsets as a means for development to offset and minimise impacts to biodiversity. • Establishes the private land conservation framework and Biodiversity Conservation Investment Strategy.
Coastal Management Act 2016	• Establishes management objectives to maintain and improve water quality and estuary health in coastal environment areas. • Requires councils to develop coastal management programs, setting the long-term strategy to achieve the management objectives of the Act (including to maintain and improve water quality and estuary health, for a specific coastal zone).
Contaminated Land Management Act 1997	• Establishes an investigation and remediation process and accountabilities for land deemed contaminated by NSW EPA. • Regulates point source water pollution and can prosecute those found to be in breach of *Protection of the Environment Operations Act 1997* or other licence arrangements and compliance. • Gives technical advice on water pollution aspects of strategic land use planning matters.
Crown Land Management Act 2016	• Outlines management framework for Crown land (includes land, coastal areas, waterways, built assets, and community infrastructure). • Stipulates no pollution or contamination of Crown land or any waters in, on or under the land.
Dams Safety Act 2015	• Regulates the safety management of dams in NSW to safeguard water resources from contamination by preventing dam failures or mismanagement.

Instrument	Description of how it pertains to water quality management in NSW
Environmental Planning and Assessment Act 1979	• Provides a legal framework for planning in NSW and facilitates effective planning for cities, towns and regions through consideration of social, economic, environmental and cultural matters. • Considers water quality in development assessment, which are subsequently regulated by the Act through conditions of development consent. • Considers water quality through strategic planning at the local, district and regional levels which planning authorities must develop and deliver, including regional plans, district plans and planning proposals. • Water quality provisions are set out in state environmental planning policies (SEPPs) and local environmental plans (LEPs), which outline how developments should address water quality. • Provides provisions for the different roles and responsibilities for the Minister and other planning authorities, including councils, and details processes for developing state policies, controls and guides. • Sets out the planning pathways and legal requirements that govern the assessment and approval of development and infrastructure, including how planning decisions are delivered, enforced, reviewed and appealed. • Supported by the Environmental Planning and Assessment Regulation 2021, which sets out procedural matters and how requirements of the Act are carried out.
Fisheries Management Act 1994	• Objective to conserve, develop and share the fishery resources of NSW for the benefit of present and future generations. • Fishery management strategies are developed to achieve the strategic objectives of this Act. • Determines the use of habitat protection plans for the protection of any habitat of fish, including water quality management provisions to ensure suitable habitat for fish. • Provides the framework for a permit system for activities and works in key fish habitat, and for dredging. The conditions on these permits can have water quality outcomes.
Fluoridation of Public Water Supplies Act 1957	• Authorises and controls the addition of fluoride to public water supplies to provide a public health benefit.
Food Act 2003	• Regulates the handling and sale of food, adherence to the standards of the Australian New Zealand Food Standards Code and briefly considers the impacts of water quality on food safety.
Forestry Act 2012	• Constitutes the Forestry Corporation whose function it is to authorise forestry operation in accordance with good forestry practice which includes the maintenance of water quality.
Hunter Water Act 1991	• Stipulates principal functions of Hunter Water and grants the operating licence (the operating licence sets terms and conditions regarding the provision of water supply, sewerage and drainage services and wastewater disposal, including standards relating to water quality). • Provision that systems and services meet the quality and performance standards specified in the operating licence in relation to water quality.

Instrument	Description of how it pertains to water quality management in NSW
Independent Pricing and Regulatory Tribunal Act 1992	• Establishes the Independent Pricing and Regulatory Tribunal (IPART) for NSW. • Grants IPART oversight of private and major water utilities including WaterNSW, Sydney Water and Hunter Water – all of which have water quality management and monitoring functions.
Infrastructure NSW Act 2011	• Ensures effective economic and timely planning coordination, selection, funding, implementation, delivery, and lifecycle asset management of infrastructure in NSW. • Requires the preparation of a 20-year State Infrastructure Strategy and 5-year Infrastructure Plan which prioritises long-term water security, improved management of water in regional communities in partnership with local authorities, water and wastewater recycling and integrated water cycle management approaches.
Local Government Act 1993	• Stipulates core objectives for management of community land, including to: – manage watercourses to protect the biodiversity and ecological values of the instream environment, particularly in relation to water quality – facilitate ecologically sustainable use of the foreshore and to mitigate impact on the foreshore by community use. • Councils are owners and operators/service providers of water supply, sewerage and stormwater drainage works installed in or on the land by the councils.
Local Land Services Act 2013	• Establishes Local Land Services with responsibility for management and delivery of local land services for NSW. • Ensures proper management of natural resources with the principles of ecologically sustainable development. • Requires Local Land Services to prepare a state strategic plan and local strategic plans that may include water quality provisions or other non-regulatory water management issues in the region.
Marine Estate Management Act 2014	• Provides for the management of marine estates in NSW. • Marine Estate Management Strategy developed under this Act includes improving water quality of the State's coastal waters and estuaries as an outcome. • Establishes the Marine Estate Management Authority (MEMA) that advises relevant Ministers on management of the marine estate and undertakes threats and risk assessments.
Marine Pollution Act 2012	• Protects NSW marine and coastal waters from marine pollution from vessels from contamination from sewage, discharges from vessels and other waste. • Fines and penalties for oil spills, discharge of noxious liquids, bilge water and sewage from ships into state waters are issued under this Act.
Natural Resources Access Regulator Act 2017	• Establishes the Natural Resources Access Regulator, an independent regulator to oversee enforcement of water management laws in NSW. • Ensures effective, efficient, transparent and accountable compliance and enforcement measures for the natural resources management legislation. This includes undertaking water management compliance activities.

Instrument	Description of how it pertains to water quality management in NSW
Natural Resources Commission Act 2003	• Establishes the Natural Resources Commission, an independent body with investigating and reporting function to enable informed management of natural resources in the interests of the state.
Ports and Maritime Administration Act 1995	• Enables Transport for NSW to exercise waterways management functions under the *Marine Pollution Act 2012.*
Protection of the Environment Administrations Act 1991	• Constitutes the primary environmental regulator in NSW, the EPA, which works to protect, restore, and enhance the quality of the environment in NSW and responds to emergencies where environment is at the risk of being impacted. • Informs tasks related to the quality of the environment, environmental audits, and reports on the state of the environment.
Protection of the Environment Operations Act 1997	• Objective for the protection, restoration and enhancement of the quality of NSW environment. • Establishes a licensing framework for: – activities with significant environmental impacts, enforcement of regulations and requirements of incident response management and reporting – replaces different licences and approvals with single licensing arrangements related to water pollution and waste management. • Sets out the maximum penalties for water pollution offences.
Public Health Act 2010	• Requires suppliers of drinking water to have a quality assurance program. • Requires all drinking water suppliers to comply with a quality assurance program consistent with the Australian Drinking Water Guidelines (2011). • Gives powers to require testing, require communication of test results, correct misleading information, issue advice (including boil water alerts) and require action in relation to unsafe water.
Rural Fires Act 1997	• While primarily focused on fire management, it includes provisions for the protection of water catchments from pollution during firefighting activities.
Sydney Water Act 1994	• Stipulates principal functions of Sydney Water and grants the operating licence (the operating licence sets terms and conditions regarding the provision of water supply, sewerage and drainage services and wastewater disposal, including standards relating to water quality). • Provision that systems and services meet the quality and performance standards specified in the operating licence in relation to water quality.
Water Act 1912	• Consolidates other acts related to water rights, water and drainage, drainage promotion and artesian wells. • Details rights of the Crown and of Riparian Proprietors and the regulations to obtain licenses for water conservation, irrigation, water supply and drainage purposes. • Regulates pollution of rivers and lakes and any foul water, slop water or household wastewater and related penalties.
Water Industry Competition Act 2006	• Facilitates private sector delivery of recycled water infrastructure by encouraging investment in the supply of water and sewerage services. • Provides a licensing system that is administered by IPART for private water utilities to protect public health and safety, consumers, and the environment.

Instrument	Description of how it pertains to water quality management in NSW
Water Management Act 2000	• Aims for the sustainable and integrated management of NSW's water, including the protection and, where possible, enhancement of water quality of all water sources. • Enables water sharing plans to be made and these plans set the framework for sharing water between water users and the environment. • Can establish a State Water Management Outcomes Plan. • Establishes a licensing framework for water access licences and water management work approvals (specifically a water supply works approval).
Water NSW Act 2014	• Includes principal objective to supply water (where authorised) in compliance with appropriate standards of quality, with those standards being specified in an operating licence. • Gives certain regulatory functions, including operating licence audit functions to IPART. • Ensures declared catchment management areas and water management works in such areas are managed and protected to promote good water quality, the protection of public health and safety and the protection of the environment.

Appendix B
Water quality roles and responsibilities

Over 30 agencies or organisations have both direct and indirect functions in the management of water quality in NSW. The below table covers agencies with more direct functions pertaining to water quality management in NSW.

Key functions and roles in water quality

	Role	Responsibilities
	Planning and strategy	Responsible for the development of relevant statutory instruments, strategies, policies, plans and/or guidelines
	Water and wastewater service provision	Responsible for drinking water, recycled water, bulk water, wastewater and/or stormwater
	Land/water management	Responsible for land management, habitat management and/or land use planning
	Monitoring	Responsible for water quality sampling, data collection, data management, incident reporting and/or water quality reporting
	Environmental water management	Responsible for the management of environmental water
	Regulator	Responsible for compliance and enforcement
	Quality assurance	Responsible for review, audit and/or advisory functions
	Education and awareness	Responsible for education, engagement, and/or building awareness with key stakeholders

Planning & strategy	Water and wastewater service provision	Land/water management	Monitoring/reporting	Environmental water	Regulator	Quality assurance	Education & awareness

Key water quality agency and organisations roles and responsibilities

Federal

Agency	Water quality management functions	Legislation relevant to functions	
Commonwealth Department of Climate Change, Energy, the Environment and Water	• Responsible for matters relating to water policy and resources, environmental water use and resources relating to the Commonwealth Environmental Water Holder, and national water infrastructure investment, amongst other areas. • Administers the National Water Initiative.	• *Environmental Protection and Biodiversity Conservation Act 1999* (Cth) • *Water Act 2007* (Cth)	
Murray-Darling Basin Authority	• Approves Basin state's water resource plans which all have water quality management components. • Coordinates the reporting on water quality targets under Schedule 12 of the Basin Plan. • Manages the River Murray Water Quality Monitoring program.	• *Water Act* (Cth)	

Planning & strategy	Water and wastewater service provision	Land/water management	Monitoring/reporting	Environmental water	Regulator	Quality assurance	Education & awareness

State

Agency	Water Quality management functions	Legislation relevant to functions	
Crown Land	• Responsible for managing Crown land within the NSW marine estate, this includes the bed of many of the state's waterways and estuaries, public foreshores, and beach reserves.	• *Crown Land Management Act 2016*	
Hunter Water	• Provides, constructs, operates, manages and maintains systems and services for supply of water, disposal of wastewater and sewerage and drainage services. • Ensures that systems and services meet quality and performance standards specified in the operating licence including water quality. • Publishes high-level water quality information that confirms if water is suitable for a particular purpose e.g. drinking or recreational purposes. • Collects data as part of monitoring programs to assist in understanding the quality of water it treats to supply drinking water and mitigate risks. • Collects data as part of environmental monitoring programs for receiving water catchments across the Hunter region to inform wastewater effluent management. • Conducts education and awareness initiatives on water quality management.	• *Hunter Water Act 1991*	
Independent Pricing and Regulatory Tribunal (IPART)	• Administers licences for private water utilities to protect public health and safety, consumers and the environment. • Oversight of private and major water utilities including WaterNSW, Sydney Water and Hunter Water and sets rural and urban water prices.	• *Independent Pricing and Regulatory Tribunal Act 1992* • *Water Industry Competition Act 2006* • *Hunter Water Act 1991* • *Sydney Water Act 1994* • *Water NSW Act 2014*	

Planning & strategy	Water and wastewater service provision	Land/water management	Monitoring/reporting	Environmental water	Regulator	Quality assurance	Education & awareness

Agency	Water Quality management functions	Legislation relevant to functions
Local Government / Councils	• Manages water supply, sewerage and stormwater drainage works installed in or on the land by the councils. • Able to levy stormwater management fees, which are in part used to ensure that runoff is controlled to reduce its impact on water quality following discharge. • Manages water quality strategically via Local Strategic Planning Statements. • Ensure local development considers water quality impacts as detailed in Local Environmental Plans. • Regulates surface water and groundwater where monitoring is required by a development application. • (Coastal councils) Responsible for the development and implementation of Coastal Management Plans (CMPs) under the *Coastal Management Act 2016*. A CMP sets the long-term strategy to achieve the management objectives of the act, including to maintain and improve water quality and estuary health, for a specific coastal zone.	• *Local Government Act 1993* • *Coastal Management Act 2016* • *Environmental Planning and Assessment Act 1979*
Local Land Services	• Local Land Services work with landholders to help protect and rehabilitate waterways, wetlands and riverbank vegetation. • Helps farmers, landholders, and wider community to make informed decisions regarding land management.	• *Local Land Services Act 2013*
Local water utilities, water supply authorities & private water utilities	• Delivers safe, secure, efficient, sustainable, and affordable water supply and wastewater services in NSW. Most local water utilities are local government councils in NSW. • Collects data as part of monitoring programs to assist in understanding the quality of water they treat to supply drinking water and mitigate risks.	• *Local Government Act 1993* • *Water Industry Competition Act 2006*

Planning & strategy	Water and wastewater service provision	Land/water management	Monitoring/reporting	Environmental water	Regulator	Quality assurance	Education & awareness

Agency	Water Quality management functions	Legislation relevant to functions	
Marine Estate Management Authority	• Undertakes threat and risk assessments, develops management strategies and promotes collaboration between public authorities and fostering consultation with the community.	• *Marine Estate Management Act 2014*	
Natural Resources Commission	• An independent body with investigating and reporting function to enable informed management of natural resources in the interests of the state. • Recommends state-wide standards and targets for natural management issues and undertaking audits and review related to forestry or water management issues.	• *Natural Resources Commission Act 2003* • *Water Management Act 2000*	
Natural Resources Access Regulator	• Responsible for the compliance and enforcement of water laws in NSW. • Ensures lawful use and sharing of water amongst all communities and the environment. • Enforcement of controlled activity approvals to protect waterways and ensure minimal harm as a result of the work carried out on waterfront land. • Responsible for compliance and enforcement of major utilities' approvals, for example cold water pollution incidents.	• *Natural Resources Access Regulator Act 2017* • *Water Act 1912* • *Water Management Act 2000* • *Water Management Amendment Act 2018*	

Planning & strategy	Water and wastewater service provision	Land/water management	Monitoring/reporting	Environmental water	Regulator	Quality assurance	Education & awareness

Agency	Water Quality management functions	Legislation relevant to functions
NSW Department of Climate Change, Energy, the Environment and Water – Biodiversity Conservation and Science Group	• Responsible for managing environmental water to achieve environmental objectives. • Responsible for water quality monitoring and reporting. • Responsible for developing waterway health targets and objectives. • Member of the Marine Estate Management Authority and jointly responsible for Marine Estate Management Strategy implementation. • Assistance, coordination and funding provided to local government for the development and implementation of Coastal Management Programs under the *Coastal Management Act 2016*. • Administers the Oversight Committee aimed at improving coordination and focus of diffuse source water pollution management across NSW Government.	• *Water Management Act 2000* • *Coastal Management Act 2016* • *Marine Estate Management Act 2014*
NSW Department of Climate Change, Energy, the Environment and Water – Water Group	• Responsible for surface and groundwater management including ensuring water security for NSW. • Develops and oversees water laws, policies, strategies, and statutory water sharing plans. • Responsible for water resource plans for NSW as required under the Basin Plan 2012, which include: – response protocols for extreme water quality events – Water Quality Management Plans identifying water quality actions and targets. • Oversees and supports local water utilities to ensure safe, secure and affordable urban water services to communities in regional NSW. • Issue water licences and approvals for some users/purposes. • Approves water and sewerage works, and reviews higher risk discharges. • Responsible for water quality monitoring and reporting. • Operates the NSW Government's central resource for Sharing and Enabling Environmental Data (SEED Portal) to provide an accessible and reliable platform for environmental data including water quality data.	• *Water Act 1912* • *Water Management Act 2000* • *Water Management Amendment Act 2018* • *Local Government Act 1993*

Planning & strategy	Water and wastewater service provision	Land/water management	Monitoring/reporting	Environmental water	Regulator	Quality assurance	Education & awareness

Agency	Water Quality management functions	Legislation relevant to functions	
NSW Department of Planning, Housing and Infrastructure – Planning	• Facilitates development integrating social, economic, and environmental considerations in regards with ecologically sustainable development principles. • Planning and strategy of the NSW planning framework that requires the consideration of the impacts of development on water quality at the strategic land use planning and development assessment stages of various forms and scales of development. • Outlines how development should address water quality in regulated catchments through water quality provisions in SEPPs. • Determines how water quality is managed strategically via District and Regional Plans. • Ensure local development considers water quality impacts as detailed in Local Environmental Plans. • Assesses how water quality is addressed in Environmental Impact Statements via Secretary Environmental Assessment Requirements. • Member of the Marine Estate Management Authority and jointly responsible for Marine Estate Management Strategy implementation.	• *Environmental Planning and Assessment Act 1979* • *Marine Estate Management Act 2014*	
NSW Department of Primary Industries – Agriculture	• Undertakes research and development on practices to assist landholders to keep sediment and nutrients on farm and protect and rehabilitate waterways. • Provides a range of training packages and short courses to assist landholders on how to manage water quality issues.		
NSW Department of Primary Industries – Biosecurity and Food Safety	• Considers the impact of water quality as it pertains to food safety.	• *Food Act 2003*	

Planning & strategy	Water and wastewater service provision	Land/water management	Monitoring/reporting	Environmental water	Regulator	Quality assurance	Education & awareness

Agency	Water Quality management functions	Legislation relevant to functions
NSW Department of Primary Industries – Fisheries	• Planning and strategy for the conservation of fish stocks and key fish habitats, threatened species, populations and ecological communities of fish and marine vegetation, and promotion of ecologically sustainable development. • Manages key fish habitats. • Advisory role for management of water for the environment. • Member of the Marine Estate Management Authority and jointly responsible for Marine Estate Management Strategy implementation.	• *Fisheries Management Act 1994* • *Marine Estate Management Act 2014* • *Biosecurity Act 2015*
NSW Environment Protection Authority	• Protects, restores and enhances the quality of the environment in NSW. • Primary environmental regulator in NSW, including the regulation of point source pollution. • Manages licensing and directly considers water quality when undertaking its regulatory role such as setting environment protection licence requirements. • Enforces penalties for water pollution offences and prosecutes those found polluting water (ground and surface water). • Regulates provision of wastewater services provided by local water utilities, including discharge licensing. • Regulates native forestry operations on both public and private land in NSW. • Orders land to be cleaned up that has been contaminated.	• *Protection of the Environment Administrations Act 1991* • *Protection of the Environment Operations Act 1997* • *Contaminated Land Management Act 1997* • *Pesticides Act 1999* • *Forestry Act 2012*

Agency	Water Quality management functions	Legislation relevant to functions
NSW Health	• Protects public health as the regulator of drinking water quality. • Provides guidance on managing water quality risks. • Supports local water utilities to monitor drinking water. • Supports local water utilities to have and comply with drinking water management systems. • Has a range of functions related to water quality, including requiring testing, requiring communication of results, correcting misleading information, issuing advice (including boil water alerts) and requiring action in relation to unsafe water. • Monitors cases of infectious disease, outbreaks and causes.	• *Public Health Act 2010* • *Fluoridation of Public Water Supplies Act 1957*
Sydney Water	• Provides, constructs, operates, manages and maintains systems and services for supply of water, disposal of wastewater and sewerage and drainage services. • Ensures that systems and services meet quality and performance standards specified in the operating licence including water quality. • Publishes high-level water quality information that confirms if water is suitable for a particular purpose e.g. drinking or recreational purposes. • Collects data as part of monitoring programs to assist in understanding the quality of water Sydney Water treats to supply drinking water and mitigate risks.	• *Sydney Water Act 1994*
Transport for NSW	• Responsible for strategic maritime policy, including safety, sustainability, access and infrastructure matters as well as maritime safety regulation and on-water compliance activities. • Member of the Marine Estate Management Authority and jointly responsible for Marine Estate Management Strategy implementation. • Owns and manages a portion of the stormwater network. • Responsible for water quality management for road construction and operation of the state road network. • Assesses, investigates, and manages contaminations risks from its portfolio.	• *Marine Estate Management Act 2014* • *Ports and Maritime Administration Act 1995* • *Marine Pollution Act 2012*

Planning & strategy	Water and wastewater service provision	Land/water management	Monitoring/reporting	Environmental water	Regulator	Quality assurance	Education & awareness

Agency	Water Quality management functions	Legislation relevant to functions
WaterNSW	• In the Greater Sydney Declared Catchment, responsible for the management of raw water quality, including through: – catchment and river health protection – land and water source management – water quality monitoring and reporting. • Outside of the Declared Catchment, responsible for: – monitoring and reporting on blue-green algal risk in the WaterNSW managed river systems and storages – managing cold-water pollution due to WaterNSW operations – provision of surface and groundwater monitoring services across NSW. • Provides drinking water services in the Fish River Scheme. • Responsible for optimising infrastructure operation to maximise water quality outcomes. • Operates the WaterInsights Portal to provide comprehensive data covering 760 water sources in NSW and includes water quality alerts.	• *Water NSW Act 2014* • *Protection of the Environment Operations Act 1997* • *Environmental Planning and Assessment Act 1979*

Other agencies and organisations with functions that pertain to water quality management in NSW includes the Bureau of Meteorology, Forestry Corporation of NSW, Heritage NSW, Local Government NSW (LGNSW association), Manly Hydraulics Laboratory, NSW Food Authority, NSW Water Directorate and Office of Local Government NSW.

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