

NSW Water Quality Monitoring Framework

Schedule A: Data sharing governance model

June 2026

Acknowledgement of Country



Department of Climate Change, Energy, the Environment and Water acknowledges the traditional custodians of the land and pays respect to Elders past, present and future.

We recognise Australian Aboriginal and Torres Strait Islander peoples' unique cultural and spiritual relationships to place and their rich contribution to society.

Artist and designer Nikita Ridgeway from Aboriginal design agency – Boss Lady Creative Designs, created the People and Community symbol.

NSW Water Quality Monitoring Framework

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Glossary

Term	Description
Data custodian	An organisation that collects water quality data and shares it with the Integrating Authority under the Framework.
FAIR	Findable, Accessible, Interoperable and Reusable
Integrating authority	The agency responsible for overseeing the Framework and the integration, sharing and publishing of data that is shared by a data custodian
IAR	Information asset register
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
NSW SEED/SEED	NSW Sharing and Enabling Environmental Data (portal)
NSW water quality monitoring framework	Project aiming to improve the collection, sharing and publication of water quality data across NSW in response to the Office of the Chief Scientist and Engineer's report on the Menindee fish death event.
Pilot group/pilot stakeholder agencies	The primary group of agencies involved in the development and implementation phases of the Framework
Technical solution	The combination of processes and digital platforms that will enable better data sharing under the Framework.

1 Background

The NSW Water Quality Data Framework project (the Framework) aims to improve the collection, sharing, and publication of water quality data across NSW.

It is being developed as part of the NSW Government's broader response to the Office of the Chief Scientist and Engineer's review of the Menindee fish death event. Delivery of full responses and commitments are progressing through the Restoring the Darling–Baaka River program.

The Framework also aligns with the NSW Water Strategy's priority to improve the health of river, floodplain, and aquifer ecosystems.

The Framework is a central component of the NSW Water Quality Governance Roadmap.

Water quality data is currently collected, stored, and used by various government agencies and organisations. However, there is a need to improve data visibility among these agencies and enhance transparency and data accessibility with the wider community.

A set of principles will guide the Framework and the participation of water quality monitoring agencies.

These principles are:

- A commitment to open data and transparency and to the NSW Government's open data framework.
- A commitment to the Framework's agreed standards and protocols for data collection, management and publication and to continual improvement and development of these standards.
- A commitment to sharing metadata that is discoverable and sufficient for publication.
- A commitment to FAIR data principles (Findable, Accessible, Interoperable and Reusable).
- A commitment to the vision of any person being able to easily access information on the quality of the water in their local area, or area of interest, through any connected device.

This schedule of the Framework (Schedule A: Data sharing governance model) outlines the governance arrangements, roles and responsibilities for government agencies and external collaborators for the collection, management and sharing of water quality data in NSW.

2 Introduction

As part of the Framework, a governance model is required to promote and support the sharing of water quality data between NSW agencies, outlining the roles and responsibilities of the involved organisations.

Water quality data is collected by numerous organisations in NSW for various purposes, including legislative, research, and business needs. There are several instances of statewide water quality monitoring programs in NSW that inform the environmental health of rivers and streams (for

example, the hydrometric network and the Statewide Water Quality Assessment and Monitoring Program). However, there are many additional water quality monitoring programs that operate on more localised scales to address and respond to specific water quality issues, with new programs being established and older programs being completed on a regular basis.

While datasets from larger statewide monitoring programs are often readily available, data and metadata from complementary programs or projects are not always publicly shared or catalogued in an easily accessible location. This means valuable information that could assist future water quality monitoring and modelling program design, inform localised incident responses, or support policy decisions may not be available to agencies. A central aim of the Framework is to overcome this challenge by enhancing sharing practices and cataloguing data in an easily accessible location.

As part of the Framework, this document presents a governance model to promote and support the sharing of water quality data collected by agencies, articulating the roles and responsibilities of organisations involved. The governance model increases visibility and accessibility of water quality data, making it available in a structured way to inform decision making and incident response processes. The governance model does not make decisions on water quality management but rather provides information to intra- and inter-agency decision-making processes.

The proposed governance model adopts a ‘federated’ system, which has been used by numerous environmental and water management agencies to support data sharing. The federated model ensures that agencies collecting data (data custodians) retain ownership and responsibility of their data. A lead agency (the Integrating Authority) provides support and guidance for data sharing. The Integrating Authority is responsible for organising and evaluating available data sources and provides access to them through a centralised location.

To organise, improve and share water quality data, the proposed governance model (this document) works in conjunction with other Framework documentation, notably:

- Schedule B: Data standards and protocols
- Schedule C: Framework technical solution

This document also provides recommendations for the continual improvement of the governance model, as well as mechanisms to support data sharing by agencies related to governance and responsibilities.

3 Data sharing governance model

3.1 Why does the framework need a governance model?

A key piece of the Framework is the sharing of data from multiple agencies and projects. To achieve this in a way that fosters collaboration, agency alignment, and supports accountability, a governance model has been established. Governance models outline structures, responsibilities and processes that guide how agency data is managed to meet business requirements and objectives.

Governance models are necessary as they:

- ensure that the roles and responsibilities of participating agencies are understood
- minimise risks around data management and data sharing
- outline the value of its participants to business objectives and agency outcomes.

An effective governance model for sharing water quality data will help achieve:

- improved understanding and communication between agencies on current and past water quality monitoring programs and the data available
- a shared responsibility and common vision for water quality data that is discoverable and accessible both internally and externally
- improved clarity on roles and responsibilities amongst data collection agencies
- a guiding agency responsible for coordinating and overseeing data cataloguing and discoverability efforts.

Effective engagement with this governance model, the Framework and other schedules along with adequate funding support will help achieve the Framework's broader goals of:

- improved accessibility of water quality data for the public and water managers
- timely access to water quality information, enabling effective decision making
- identification of monitoring gaps leading to improved coverage, more targeted monitoring programs and resource efficiency.

3.2 A federated approach

The Framework will adopt a federated governance model for sharing water quality data and information. Federated models follow a hybrid approach between centralised governance principles and decentralised functionality, with agencies collaborating under a shared framework alongside a central governing body. Individual agencies are autonomous in their operations, while contributing to the overarching framework goal. This approach encourages cooperation and mutual trust while facilitating data sharing and alignment between participating agencies.

Due to the number of agencies that collect water quality data for different purposes, a federated approach allows the Framework to build on existing water quality monitoring and data sharing practices without requiring individual agencies to make any significant changes.

Within the federated governance model for data sharing under the Framework, there are 3 roles:

- **data custodians** are the agencies collecting and sharing water quality data
- **the Integrating Authority** is the agency or entity responsible for supporting the sharing, quality assurance, integration and publishing of data
- **data users** access published data and provide feedback.

This is a generalised data governance model adopted from the Commonwealth Government's statistical data integration framework, which was developed as part of the National Statistical Service's Guide for Data Integration Projects Involving Commonwealth Data for Statistical and Research Purposes.

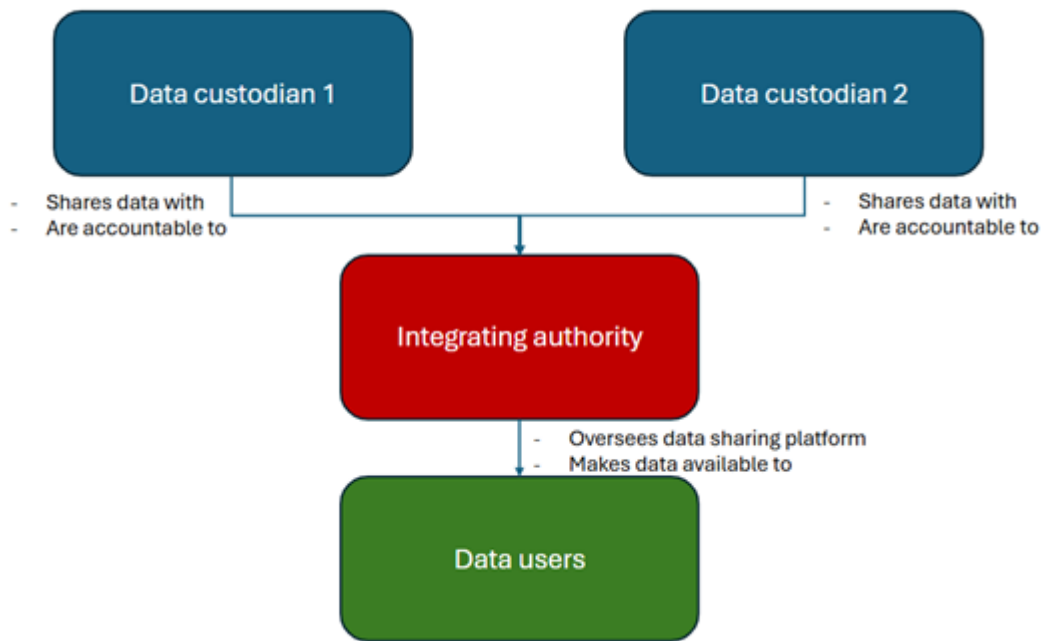


Figure 1. Governance model overview for the NSW Water Quality Monitoring Framework

The Framework, at this early stage, deliberately does not enter into detailed creation and assignment of roles, leaving the internal functionality of organisations to be internally determined. However, the federated governance model supports operational independence and data sovereignty for data custodians and provides them with support, through the Integrating Authority and selected digital infrastructure, to better share data and information related to their monitoring programs.

Furthermore, the separation between data collection, data curation and publication roles through this Framework model supports the OCSE recommendations of a “data agnostic” approach for statewide water quality monitoring and analysis.

3.3 Scope

The Framework’s data sharing governance model is a high-level approach to outline the roles and responsibilities of involved agencies and guide them in a cohesive approach to water quality data collection, management and sharing.

The governance model is focused on government agencies, promoting open data sharing of departmental programs, projects and their results. However, participation in the Framework and adoption of the governance model is available to any organisation seeking to share water quality data collected in NSW.

Importantly, the governance model provides a structure to guide and support participating agencies in sharing their data. The model relies on voluntary participation and the undertaking of responsibilities.

Notably, the governance model and the Framework **do not grant** any party to direct (beyond recommendations) intra- or inter-agency processes regarding water quality data collection, management, transfer and decision making. Furthermore, **no legislative power or responsibility is granted to any participant under this structure.**

During its establishment, the governance model will pertain to agencies and organisations that are willing to voluntarily share information or data on identified monitoring programs. The primary focus of the first phase of the Framework is promoting the discoverability of water quality monitoring programs related to the health of rivers and streams in NSW water quality, with an emphasis on real-time, routine or long-term monitoring programs and projects measuring water quality parameters including:

- temperature
- dissolved oxygen
- nutrients (nitrogen and phosphorus)
- algal counts (including cyanobacteria)
- pH
- electrical conductivity
- turbidity
- other relevant parameters.

Should agencies or organisations offer to share data outside the above scope through the governance model and the technical solution, the Integrating Authority will make its best effort to support this work, provided the data are of sufficient value and quality.

4 Roles and responsibilities of the data sharing governance model

The Framework will enhance water quality data collection, management, storage and sharing within NSW. Its governance model supports improved data sharing and accessibility for related agencies and organisations in NSW.

The Framework's governance model **does not replace existing inter-organisational work programs** and arrangements for data collection, management or sharing. It aligns with and benefits from formalised agreements already in place (for example, the WaterNSW, Natural Resources Access Regulator and DCCEEW Water Group Data Sharing Agreement).

Under the data sharing governance model, the Integrating Authority has no directive power over data custodians. It cannot enforce changes to monitoring programs or existing practices. Instead, the Integrating Authority may recommend improvements to data collection, storage and transfer practices to improve data quality and standardisation, for the custodian's consideration.

Importantly, neither the data sharing governance model nor the Framework overall has a role in determining how data is used, analysed, interpreted, or acted upon (beyond any recommendations

for best practice analysis techniques). Decision-making processes based on water quality data shared through the Framework are the responsibility of data users or inter-agency agreements.

However, the Framework’s Integrating Authority may be made aware of specific data users and uses that require water quality information, and work to ensure that relevant data is available for these purposes (for example, the Water Quality Incident Response Plan).

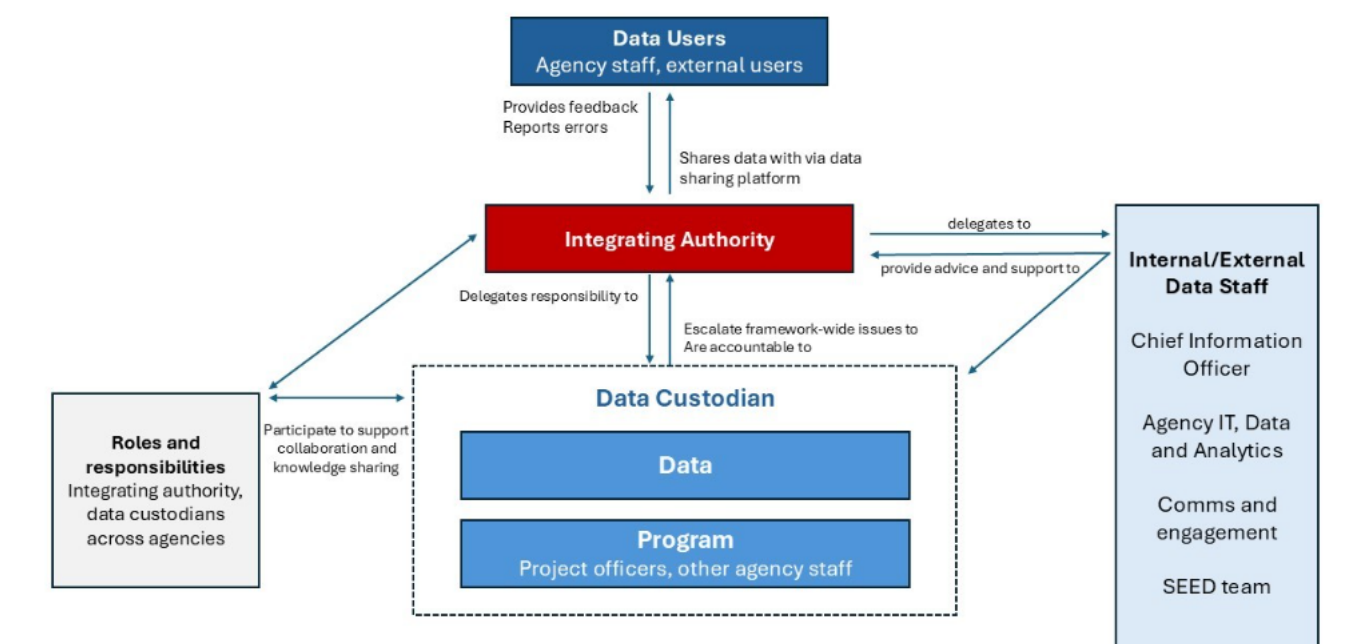


Figure 2. Data sharing governance model and process for the NSW Water Quality Monitoring Framework

4.1 Integrating Authority

An Integrating Authority is a central governing body or agency responsible for the delivery of a data integration project. It provides guidance and documentation to data custodians, outlining roles and responsibilities, metadata requirements, standards and methodologies, while promoting data quality, integrity and accessibility. By supporting data custodians, the Integrating Authority facilitates alignment across agencies of data sharing processes.

The role of the Integrating Authority for the Water Quality Monitoring Framework will be held by a single agency. For the pilot and implementation of the project (June 2024 to June 2026) this has been the Water Group in the department, represented by the Surface Water Science unit.

A key role of the Integrating Authority is guiding data custodians to better share data and adhere to the Framework’s data standards. In the near- to medium-term future of the project the Integrating Authority will be responsible for:

- providing clear documentation for data custodians to follow on how to best share water quality monitoring program data and metadata under the Framework
- supporting and facilitating data custodians in the sharing of their water quality monitoring program data and metadata
- review and assessment of the quality of shared water quality datasets and provide recommendations for improvement of data and metadata

- curating access to high quality water quality datasets and metadata
- discovering and cataloguing emerging and unidentified water quality monitoring programs and datasets.

To fulfill this role, the Integrating Authority may choose to develop or assign additional roles within its internal operations related to data governance workflows (for example, appointing data stewards or information managers). However, that will be dependent on resourcing and agency strategic objectives. Importantly, no funding is guaranteed for the Integrating Authority beyond June 2026, although funding sources are being sought.

The Integrating Authority may also have a role in the creation of data products and decision support tools using data integrated as part of the Framework. For example, products to assess the spatial coverage of water quality monitoring programs in NSW are already being considered as an output of the Framework, to identify gaps in water quality data collection and communicate how these may be addressed to appropriate funding bodies.

By fulfilling these responsibilities, the Integrating Authority ensures that water quality data is high-quality, reliable, and accessible for informed decision-making.

Further detailed responsibilities and day-to-day actions of the Integrating Authority can be found in section 4.4 below.

4.2 Data custodians

Under the Water Quality Monitoring Framework's data sharing governance structure, data custodians are defined as any agency or group with identified water quality monitoring program data or metadata, sharing information in line with the Framework's processes and standards.

Data custodians are responsible for:

- transferring or sharing data through agreed Framework platforms
- initial quality assurance and review of their data before transfer
- ensuring that data management practices align with relevant privacy laws, environmental regulations, and ethical standards.

Within their own business functions, data custodians manage the life cycle of their data, from collection and storage to maintenance, revision, analysis and publication, ensuring it remains accurate, secure, and operable.

For the implementation and piloting period of the Framework, data custodians will include pilot group agencies that can provide data to the Framework within the spatial and parameter scope of the project. In the future, the range of data custodians has the potential for expansion as new data becomes available or if the scope of the Framework project broadens.

Further detailed responsibilities and day-to-day actions of the data custodians can be found in section 4.4 below.

4.3 Data users

Under the Framework's governance model, data users are individuals, institutions or organisations that access and utilise water quality data and metadata through the Framework's selected platforms for research, policy development, environmental management, or decision making.

Although data users do not manage or maintain the data themselves, they rely on the integrity and accessibility of data provided by custodians to support their work. Data users may also have existing roles within the Framework, such as being a data custodian and/or at times in the same organisation (but not in the same operational team) as the Integrating Authority.

It is the responsibility of data users to provide feedback to the Integrating Authority for the improvement of data availability or products. For example, if a data user informs the Integrating Authority of specific data requirements for water quality data or information, the Integrating Authority may work to ensure that relevant data is made available for these purposes (for example, data required for the Water Quality Incident Response Plan, see section 5)

Further detailed responsibilities and day-to-day actions of data users can be found in section 4.4 below.

4.4 Responsibilities and key actions in practice

Table 1. Detailed responsibilities and key actions within the data sharing platform under the NSW Water Quality Monitoring Framework's governance model

Role	Responsibilities	Key actions in data sharing platform
Integrating Authority	• Data oversight & coordination: Supports data custodians in adhering to established standards and methodologies. Facilitates alignment of data collection, storage, and sharing processes across agencies • Quality assurance & integrity: Establishes measures to promote data accuracy, consistency and traceability. Develops and applies quality control protocols and validation methods and informs data custodians of errors or updates that need to be made • Data accessibility & sharing: Ensures that water quality data is available in a structured and user-friendly format. Facilitates data sharing between agencies, researchers, and users • Framework compliance & standards: Ensures adherence to national and international data standards. Provides clear documentation and metadata requirements to data custodians • Support & guidance: Assists data custodians in meeting compliance and technical requirements	• Catalogues water quality data assets • Discovery of data assets • Promote data discoverability • Acts in accordance with relevant legislative, regulatory and policy requirements • Identifying gaps in water quality data collection and communicating how they may be addressed
Data custodian	• Data collection and storage: Ensuring that water quality data is collected in accordance with Framework standards and securely stored for future use • Data protection: Safeguarding data from unauthorised access and ensuring its integrity	• Creation of data assets in alignment with internal data quality standards • Day-to-day management and handling of data assets

Role	Responsibilities	Key actions in data sharing platform
	- Legislative compliance: Ensuring that data management practices align with relevant privacy laws, environmental regulations, and ethical standards - Quality assurance: Implementing systems for data quality, consistency, and traceability, including the use of standardised methods, definitions, and classifications in data collection	- Perform quality assurance and quality control checks - Rectify and, when necessary, escalate data quality issues - Inform the Integrating Authority of any decision to change, open or close a data asset
Data user	- Acknowledge any uncertainties or constraints associated with the data when interpreting or applying findings - Review metadata and documentation provided by the custodian to understand the scope, collection methods and limitations of the data - Provide feedback and reporting errors, users should communicate discrepancies, errors, or gaps in the data to the Integrating Authority to support continuous improvement in data quality. The Integrating Authority will communicate any necessary amendments to data custodians	- Uses and accesses data assets in alignment with relevant data-related policies and protections - Seek advice on the requirements of data assets - Provide feedback to data custodians and the Integrating Authority, reporting data quality issues

5 Intellectual property and privacy

Agencies can participate in the Framework voluntarily and provide only data they consent to sharing with the Framework. Under the NSW Government Open Data Policy and the Government Information (Public Access) Act 2009 (GIPA), the department is encouraged to make data publicly available in an “open by default and protected where required” approach. However, privacy controls are possible for the discretionary sharing of more sensitive data that may be sensitive to misinterpretation or require regular review prior to publishing. Such methods include publishing sufficient metadata or data tools without raw datasets attached.

5.1 Privacy controls for data contributors

The Framework is designed with a preference for open datasets and encourages transparent, accessible data. However, for more sensitive data, privacy controls are possible. The Information Asset Register (IAR) can be used for cataloguing these data sources. The IAR internal application catalogues resources that can be discovered by and accessed by government staff.

The IAR is also used to document and identify high value assets prior to publication of data through the SEED environmental data portal. These records are also syndicated to the Data.NSW open data portal. For discovery purposes, any datasets deemed worth registering in the IAR are recommended to have their metadata published in the SEED portal. This can be done in a way that allows discovery but not access to the data. Metadata records can be published without the associated dataset attached.

5.2 SEED copyright and creative commons

Each data record on SEED is associated with a particular licence that is listed under the Metadata Statement. The terms of the licences will govern reuse of the data and its metadata. NSW Government owned data on SEED is protected under the Creative Commons Attribution 4.0. This licence allows data users to copy and share the material, or transform and build upon the material, provided the appropriate credit is given.

5.2.1 SEED privacy considerations for data users

The Privacy and Personal Information Protection Act 1998 (NSW) (PIPA) is a framework for how NSW Government agencies collect, store and use personal information. As such, any information collected by SEED cannot be used or disclosed without user consent, unless under circumstances permitted by PIPA, such as in administering environmental protection legislation. PIPA also includes the right to access and change your personal information that is held by the NSW Government.

When a user accesses the SEED portal, some information is collected, including:

- user’s IP address or host name
- the time and date the website was accessed

- viewed and downloaded pages and/or documents
- whether the site was reached via a link from another website or document
- if the user has visited the website previously (if cookies are accepted).

Information is also collected when a form is submitted on the SEED website, such as feedback. This may include:

- phone number
- full name
- business name
- email address
- street address
- ACN details.

The NSW State Records Act 1998 provides guidelines for the archival and disposal of personal information. SEED retains information for a period of time based on its purpose before archiving or disposing of it in accordance with the policies included in the Act. Digital data encryption and firewalls, in addition to physical building security measures are employed by SEED to protect user information.-

6 Data sharing agreements

The Framework does not determine how data collected by agencies is used or acted upon, it simply promotes discoverable and accessible data. However, individual agencies may wish to enter into additional data sharing agreements when only project metadata is shared on the platform, but the full dataset is desired by another data custodian agency. The following are some examples of existing data sharing and inter-agency agreements that can be referred to, should participating agencies wish to pursue additional agreements.

Table 2. Examples of existing data sharing agreements and understandings between different agencies

Data sharing agreement	Description	Agency
<u><i>Data Sharing (Government Sector) Act 2015 (NSW)</i></u>	The Data Sharing (Government Sector) Act 2015 enables NSW Government agencies to share data with each other and with the Data Analytics Centre (DAC). It aims to promote data as a public asset to support better policy, service planning, and program delivery. The Act: • facilitates data sharing by removing legal and operational barriers • requires compliance with privacy laws, ensuring that personal and health information is protected • establishes safeguards for secure and responsible data sharing • allows the minister to direct agencies and provide data to the DAC when advised by the premier, under specific circumstances.	NSW Government
<u>NSW Information Classification Labelling and Handling Guidelines</u>	The Guidelines set out the NSW Government's approach to classifying, labelling and handling sensitive information. The classification of information created, owned and managed by the NSW Government is a mandatory requirement under the NSW Cyber Security Policy. The Guidelines are consistent with the Australian Government security classification system.	Data.NSW

Data sharing agreement	Description	Agency
<u>NSW Cyber Security Policy</u>	The NSW Cyber Security Policy outlines mandatory requirements for agencies to keep data, information and systems secure. Requirements include: • implementation of governance and cyber security • supporting a culture of cyber security within agencies • managing risks to cyber security • reporting against policy requirements.	Department of Customer Service
Memorandums of understanding	There are several memorandums of understanding between different agencies collecting water quality data. These documents are formal, non-legally binding agreements outlining responsibilities and expectations of involved parties.	Various
<u>Roles and Responsibilities Agreement between WaterNSW, NSW DCCEEW Water, Water Administration Ministerial Corporation and NRAR</u>	This agreement outlines how these 4 key NSW Government agencies collaborate to manage water resources in NSW. It aims to define roles, responsibilities and functions of each agency under NSW water legislation, ensure cooperation amongst agencies in delivering services and provides a framework for governance, data sharing and dispute resolution.	NSW DCCEEW

7 Further information

This document presents a high-level governance model for the Framework. A more detailed data governance framework for DCCEEW has been developed for more complex data collection and sharing processes. That model includes several additional roles not required in the Water Quality Monitoring Framework model, including:

- data owner
- business data stewards
- delegated data owners
- technical data stewards
- internal data enablers
- data creators.

The Framework's governance model does not require this level of complexity, as the internal functionalities of participating organisations/agencies remains the responsibility of the individual entity.

8 References

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