Annual Catchment Management Report

2023

Contents

Executive Summary

Water NSW must manage and protect the Declared Catchment Areas, maintain a program of research for each Declared Catchment Area and undertake an educative role in the community on its activities and functions. It must also respond to the recommendations or findings of the Operational Audit (Appendix B), Catchment Audit (Appendix A), and carry on research or monitoring programs to meet Water NSW's research objectives.

Under its Operating Licence WaterNSW must report by 30 November each year on the above. This report provides details of WaterNSW's catchment management and protection activities, including its community education and catchment research activities, relevant to the Declared Catchment Areas carried out in FY2023.

The key achievements in FY2023 include:

- WaterNSW has participated in 22 collaborative research projects in FY 2023, published 5 papers and delivered 9 conference presentations including a paper that described multidecadal trends in water quality resulting from climate change
- Three out of five participating councils achieved a 5% improvement in their Water Sensitive Cities benchmark score a year ahead of target
- Delivered development concurrence assessments on time 97.7% of the time despite a 10% increase in matters requiring assessment
- Completed an evaluation of the Rural Landscape Program that concluded the program has largely delivered to identified target over the past 9 years, with revegetation outcomes identified as an area for future improvements
- In partnership with NPWS, has successfully completed significant repairs to fire trails damaged in the 2019/20 floods
- Successfully utilised social media a preventative strategy to reduce illegal access to the Special Areas

Introduction

Purpose of this Report

Under, Clause 2.2.1 of its Operating Licence (Licence), Water NSW must manage and protect the Declared Catchment Areas. Under clause 2.7.1 of the Licence, Water NSW must maintain a program of research for each Declared Catchment Area, in accordance with the requirements of the Licence. Further, under Clause 6.11.1 of the Licence, Water NSW must undertake an educative role in the community on its activities and functions in Declared Catchment Areas consistent with its objectives under section 6(1)(c) of the Act, and report on its activities in accordance with the Reporting Manual.

Water NSW must submit an annual compliance and performance report to IPART (for each financial year) on its catchment management and protection activities (Annual Report on Catchment Management). The report must cover Water NSW's catchment management and protection activities, relevant to the Declared Catchment Areas only.

Water NSW must submit the Annual Report on Catchment Management to IPART by 30 November after the end of the financial year. Water NSW must also publish this report on the internet.

This report provides details on WaterNSW's catchment management and protection activities, including its community education and catchment research activities, relevant to the Declared Catchment Areas.

Vision

Our vision is:

A healthy catchment that can continue to deliver safe, clean water through world-class source water protection and shared responsibility across the community.

The Australian Drinking Water Quality Guidelines recognise that source water protection is an essential part of the multi-barrier approach to providing drinking water.

Source water protection is also firmly established in the regulatory framework governing Sydney's drinking water catchment[i] (the Catchment). WaterNSW is legislatively required "to protect and enhance the quality and quantity of water in declared catchment areas" under the *WaterNSW Act 2014*.

The Source Water Protection Strategy (SWPS) sets the vision, the priorities, and the goals for source water protection in the Catchment over the next 20 years (Table 1). These will be

delivered through annual programs of work outlined in the Catchment Protection Work Program. The included activities and outcomes in the Catchment Protection Work Program 2021-2022 were arranged around the priorities for source water protection outlined in the strategy. The report is arranged in chapters that mirror the SWPS.

Priority	Goal
1. Leveraging the best available Science	Undertake scientific research into water quality risks and emerging issues in the catchment
2. Creating water sensitive towns	Improve the urban water practices of 5 major councils to a 'water sensitive city' score of 70%
3. Ensuring water quality compatible development	All new developments have a neutral or beneficial effect on water quality
4. Integrating water quality policy and practice	All councils and major developers formally commit to source water protection
5. Increasing regenerative agriculture	1000 landholders managing healthy waterways and regenerative grazing practices
6. Fulfilling land management responsibilities	Demonstrated reduction in water quality risks from fire and pests in the Special Areas
7. Enforcing catchment protection laws	Reduce unauthorised activities in Special Areas and pollution incidents in the catchment
8. Educating and Engaging Communities	Educate the community about WaterNSW activities and functions in the Sydney Catchment area

Table 1: Source Water Protection Strategy Priorities and Goals

The program also identifies where actions are addressing recommendations of Catchment Audits, Operating Licence Audits, or research and monitoring.

The program fulfils WaterNSW's responsibilities for water quality protection and management and the results of the program are reported in this Report.

Figure 1 shows the relationship between WaterNSW activities that help manage water quality risk.

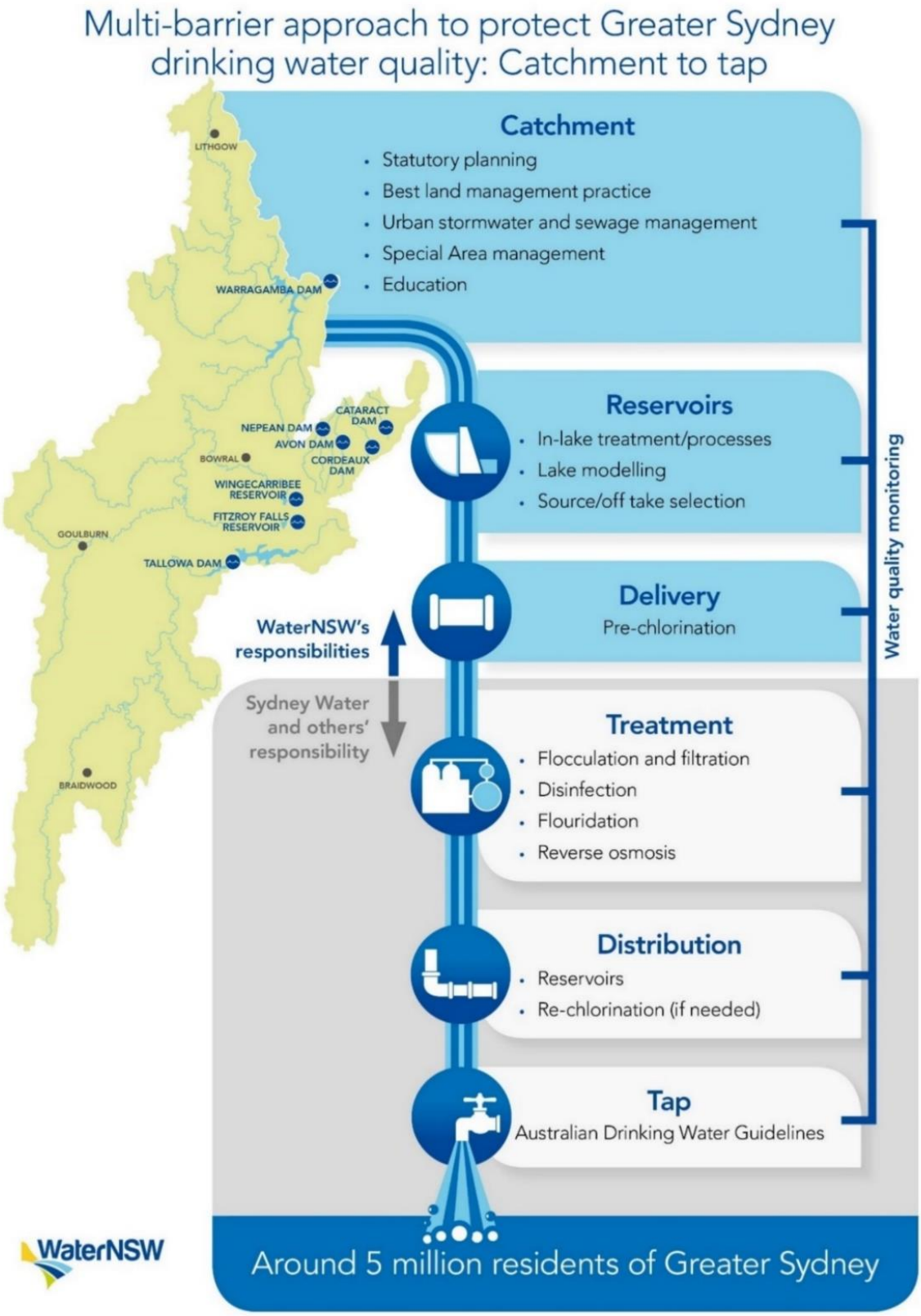


Figure 1: Activities to manage water quality in the Catchment

1. Scientific approach

WaterNSW collects a wide range of scientific and spatial information to undertake risk assessments and investigations, increase understanding and insight about pollutants and their behaviour, improve monitoring and analysis, and prioritise actions to promote catchment health and water quality. The Science Program is an adaptable program of research that meets current business needs and comprises long term and short-term projects tackling complex research questions. Ongoing development of new projects that addresses business needs and take advantage of collaborative opportunities is critical to providing an agile program. We work with the customers, water industry, government agencies, research partners, and the community, to ensure that we use the best scientific evidence available. The current 2021-2025 Science Program focuses on priority research themes of catchment resilience and integrated water management.

Planned Outcomes	Actual outcomes
WaterNSW is recognised for excellence in key areas of science impacting on its core business	Across the catchment health and water quality research portfolio there were 12 projects being delivered by our expert research team to ensure the research targeted WaterNSW business needs. WaterNSW staff have published in peer reviewed journals, presented at national and international conferences and have been invited as guest speakers to share their knowledge and expertise on catchment and water quality science. A list of publications and conference presentations are included in Appendix C.

WaterNSW has participated in research partnerships that provide access to new science that may impact on its business	WaterNSW has partnered in 21 collaborative research projects with a range of partners. We have an extensive collaboration network through Water Research Australia and engage directly with Universities, Research Hubs and Cooperative Research Centres.
WaterNSW has strong, evidence-based science to support the positions it takes regarding existing and proposed mining developments in the declared catchment	WaterNSW has recently completed a water balance for undermined swamps to understand the long-term hydrological impacts on these threatened environments. WaterNSW commenced a project to develop stream flow models to assess water losses from streams in undermined areas.

1.1 Strategy and Communication

The research undertaken as part of the science program is deemed successful when it is applied by the business or communicated effectively to customers and stakeholders who need the knowledge generated by the research. As such, working with customers and stakeholders, industry leaders and research experts ensures that the outcomes of the science program are relevant to business and avail the business of the best available science and expertise to develop sound evidence-based improvements in water quality and catchment management. Extensive customer consultation, good peer relationships within industry and collaborative research engagement are the foundations of success.

Planned Activities	Actual Activities
Continue to embed and improve good research management practices.	Continued to embed and maintain a reporting process that gives transparency on the science program progress using Azure DevOps project activity management and PowerBI reporting.
Represent WaterNSW at conferences and events, presenting scientific research outcomes from the WaterNSW science program.	WaterNSW scientists and modellers presented on our research at the following conferences: • Two technical presentations at the 2023 Freshwater Sciences Convention in Brisbane • A platform presentation, two posters and panel participation at IWA 21st Symposium on Health-related Water Microbiology • Two technical presentations, one with a nomination for top paper at Ozwater; Australia's largest water industry conference May 2023 • Presentation to the Australian Freshwater Science Society Conference in November 2022

	• Cyanobacteria research roadmap presented at Next Water Conference • Application of spatial rainfall in modelling for operational systems and Deployment of decision support system for water resource planning - Hydrology and Water Resources Symposium 2022 • Operational water quality and quantity decision support systems development with your stakeholders - International Conference on Water and Environmental Engineering
Engage and consult with internal stakeholders, industry peers, professional bodies and research providers to keep abreast of the latest scientific advancements that could provide valuable business improvements at WaterNSW.	WaterNSW is an active member of Water Research Australia with 14 active collaborative research projects. Participated in the WSAA Research and Development Network and the Innovation Communities of Practice. Updated the approved WNSW fire fight chemicals list after consultation with other fire agencies. Chaired the Technical Advisory group of a cross sector collaborative project aiming to establish Australian guidelines for Quantitative Microbial Risk Assessments. Participated in the NSW Modelling and Monitoring Hub forums. Deputy chair and animal research member on the DPI Fisheries Animal Care and Ethics Committee.

Engage and consult with internal and external stakeholders to identify opportunities to align research with ongoing strategic planning (Source Water Protection Strategy, Climate Adaptation Strategy, Water Quality Objectives, Greater Sydney Water Strategy).	Supported the DPE-led revision of NSW water quality objectives through attending workshops, data provision and technical review of draft objectives relevant to the Sydney Drinking Water Catchments. Assisted with co-ordinating the 2022 Catchment Audit and provided technical review of draft reports. Initiated projects aligning to the draft business ESG strategy.
Maintain transparency and strategic alignment of the evolving research portfolio by developing and evaluating delivery strategic roadmaps for priority program goals.	The Science Program currently has three existing research roadmaps covering four program goals established based on an as needs basis. The complexity of other goals do not currently warrant a research roadmap. The cyanobacteria research roadmap was presented at WaterRA Next Water Conference.
Establish a repository to make current and historical research findings more accessible to the wider business – Waterpedia.	A prototype system has been developed and made available to the business that can be added to and expanded by end-users.

Implement WaterNSW student research scholarships to support catchment health research and training of next generation of scientist.	WaterNSW directly supported six students on a project-by-project basis to contribute to the development of new knowledge applicable to informing WaterNSW business needs and developing up future industry research leaders. Further student projects scopes are being developed to underpin a more formal WaterNSW student scholarship process. A new PhD student project has been initiated with Southern Cross University, to work on greenhouse gas emissions and catchment health across NSW reservoirs. Staff presented at Higher Degrees by Research seminars at the University of Sydney.

1.2 Catchment Resilience

The science program theme of catchment resilience focuses on areas of research identified as a priority by the business:

- Review and develop WaterNSW specific catchment health indicators, to understand how the catchment is changing under different climatic and anthropogenic pressures (CR1)
- Catchment health future state, to identify top risks (that meet a threshold for action) to catchment health due to changing climate and anthropogenic pressures (CR2)
- Develop an understanding of the impacts of bushfire on water quality and what is effective fire remediation to protect water quality (CR3)
- Understand the impacts of extended drought on catchment health and water quality (CR4)
- Understand the impacts of mining on catchment health and water quality (CR5)

Planned Activities	Actual Activities
Develop tools and metrics to assess and communicate catchment health status to support catchment planning and management.	Draft metrics were developed for mining and urban land use themes. Contributed to the WaterRA project on Catchment Health Metrics through the project advisory committee.
Undertake research to understand how future climate and anthropogenic changes may impact the resilience of the Sydney Drinking Water Catchment.	Catchment Future Scenarios project is in progress. A horizon scan review and two WaterNSW stakeholder workshops were completed, and draft scenario narratives produced.
Improve our capability to quantify the relative water quality risk from different landscape fuel attributes and fire management practices.	Two rounds of leaf litter and ash samples from one hazard reduction burn in the Cataract Dam catchment have been collected to contribute to datasets on ash character across different habitats and under different burn conditions. Assisting in the development of region-specific GIS based catchment fuel load models. Contributed to the WaterRA project on Bushfire Contaminant Modelling Tools through the project advisory committee.
Test whether the application of statistical trend analysis will improve our ability to detect and quantify mining impacts on catchment hydrology and water quality.	DARE Centre at Sydney University engaged to establish a statistical pipeline for the estimation of streamflow losses from mining impacted regions.
Complete upgrades of swamp monitoring program. Assess available monitoring data and develop water balance model for Swamps 7, 14 and Leech to assess the impacts of mining on swamps.	The upgrades to the equipment for the swamp monitoring program have been completed. The final report has been received based on data collected from Swamps 7, 14 and Leech.

1.3 Integrated Water Management

The science program theme of integrated water management focuses on scientific research towards the following outcomes:

- Understand the relationship between lake ecology and water quality and the impact of supply security strategies (IWM1)
- Develop and improve inputs required for the WaterNSW Water Quality model, supporting decision making and reducing uncertainty (IWM2)
- Improved understanding of cyanobacteria bloom formation and strain dominance to increase ability to predict blooms (CY1)
- Improve the efficiency of cyanobacteria monitoring (CY2)

Planned Activities	Actual Activities
Continue development of an integrated water quality model to quantify the source water influences on reservoir and supply water quality under changing conditions and current operating conditions.	Developed a water quality and lake models for Avon and Cataract. Development of a decision support system and back-end database connections commenced for SCARMS and CARM.
Produce an industry standard quantitative microbial risk assessment modelling best practice guideline through an Australia-wide collaborative process.	Participated on the Technical Advisory group of a cross sector collaborative project aiming to establish Australian Guidelines for Quantitative Microbial Risk Assessments. The Guidelines are scheduled to be finalised next financial year.
Undertake field and laboratory studies to understand ecological interactions between lake water quality, macrophytes and cyanobacteria in Lake Prospect.	PhD student presented historical data analysis findings to the Australian Freshwater Science Society Conference in November 2022. Field experiments testing cyanobacteria nutrient limitation at Lake Prospect were carried out. Laboratory studies have commenced that are examining cyanobacteria interactions with macrophyte species present at Lake Prospect.

Set up procedures for automation of water quality trend analysis. Guidance for interpretation and management outcomes for the end user.	Advanced statistical analyses performed on historical water quality data sets, with automated pipelines, summary of findings, and communication of findings to internal stakeholders, and the water industry, were completed. A paper on this work was published in the Australian Water Association e-Journal.
Continue to investigate the types of planktonic species responsible for unusual taste and odour issues in lakes and the chemicals they produce. Two PhD students will undertake the research at UNSW through a WaterNSW/Sydney Water sponsored WaterRA scholarship.	A review of biogenic odour was completed as well as a historic data analysis of odour descriptors for the mixed Prospect supply system. Culturing identified a species of diatom present was able to produce unusual odours. Chemical analysis methodology was developed to screen for odours beyond MIB and geosmin.
The final report and recommendations on the trial of blue green algae fluorescent sensors will be prepared and circulated to WaterNSW stakeholders.	Report was produced assessing the performance of the chlorophyl-a fluorescent sensors deployed in Lake Burragorang.
Commence a project on ecological impacts from highly treated recycled water (WaterRA).	A literature review was completed by RMIT on the ecological impacts from highly treated recycled water.
Initiate an evaluation of microbial community dynamics as a precursor to cyanobacterial and/or algal blooms.	This project was postponed to FY2024 due to resourcing constraints.
Initiate an evaluation the impacts of inter basin transfers on water quality.	A literature review has been conducted on the impact of inter-basin water transfers on water quality. Preliminary data analysis on historical data for the receiving reservoirs, Wingecarribee and Nepean, has been completed. Preparation of the final report has commenced.

Develop a guidance manual for the use of cyanobacteria toxin gene assay.	Participating in the Project Advisory group. A literature review, exploring management strategies, key criteria against diagnostic technology and review of testing techniques used by industry, is in preparation by Walter and Eliza Hall Institute of Medical Research.
Investigate the ability to predict colour and organics in Nepean through machine learning approaches with potential to automate the approach.	Machine learning model was developed for the Nepean-Macarthur system by UTS to predict turbidity through a collaboration with Sydney Water, Trility and Melbourne Water.

1.4 Science Advice

The science team uses its expertise to provide advice and support for operational activities, monitoring and evaluation support, incident response and responding to audit recommendations. Advice is provided on mining applications, drought impacts on aquatic organisms, monitoring and evaluation of interventions, special monitoring methodology during water quality events, emerging contaminants. The team also provides support in relation to fire, heavy rainfall, and contaminant event response.

Planned Activities	Actual Activities
Provide ad hoc advice and investigations to support the business to make management decisions and assess catchment health and water quality impacts in response to events and operational needs.	Supported the business with technical science input; 437 hours across 16 pieces of advice work. Notable pieces include: • Investigations into the causal agents and preceding water quality of three separate taste and odour events. • Updated the approved WNSW fire fight chemicals list after consultation with other fire agencies. • Macroinvertebrate monitoring program advice.

	• Review of statistical validity of targeted investigative monitoring programs.

1.5 Risks and Opportunities

Along with the core research themes of catchment resilience and integrated water management, the science program is responsive to emerging risks and business improvement opportunities that new research and technology advancement provides. WaterNSW scans for risks and opportunities and where appropriate undertakes scientific research to support the business to understand and mitigate risks to catchment health and water quality and to explore emerging technologies and management techniques. Horizon scanning is a function of the science program. Emerging risks and new technologies are investigated and where relevant scientific research is undertaken to ensure WaterNSW has the best available science to assess new risks and can take advantage of innovative methods for managing catchment health and water quality.

Planned Activities	Actual Activities
Validate gut-on-a-chip detection and infectivity assays for Cryptosporidium, norovirus and adenovirus.	Progress has been made on developing a gut-on-a-chip method to detect Cryptosporidium and adenoviruses in water samples. Three manuscripts were drafted by the Murdoch University led research team.
A literature review on the capability of satellite remote sensing to monitor water quality and catchment health.	Literature review and analysis has been completed by CSIRO. Final report is currently in preparation.
Collaborate with water industry peers on the newly formed Cooperative Research Centre for Solving Antimicrobial Resistance in Agribusiness, Food, and Environments.	Officially joined the WaterRA water industry consortium membership. Participated in water industry consortium workshops facilitated by WaterRA and CRC SAAFE to scope water industry related projects.

Continue to increase data science capability within WaterNSW and for the water industry by supporting PhD students through the Industrial Transformation and Training Centre for Data Analytics and Environment.	Supporting two data science students by providing datasets, mentoring and work experience. Collaborating on an additional stream flow analysis data science project. A workshop has been organised seeking to match research skills of the centre to WaterNSW business needs.

2. Creating water sensitive towns

Issues

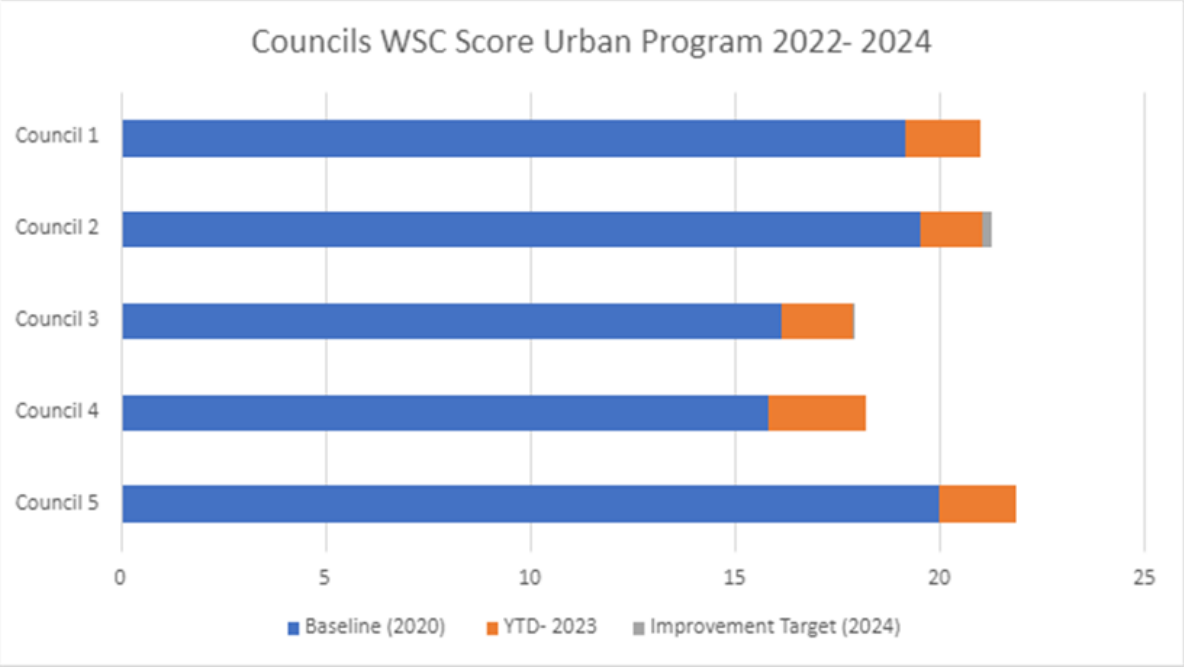
Over 125,000 people live in urban areas in the Catchment. The greatest pollutant loads come from the largest urban centres located across five local government areas.

Goal

Improve the urban water practices of the five priority councils to achieve a 'water sensitive city' score of 70%.

Achieving a score of 70% by 2040 has been broken down into intermediate goals. A goal of improving baseline scores by 1.75 points for each council was set for the period ending June 2024. **Figure 1** shows that four of our five priority councils have already achieved the interim goal by June 2023, with the fifth council on target to meet the target by June 2024.

Figure 1: progress against interim 2024 target scores



Planned Outcomes	Actual outcomes
Priority councils in the declared catchments have improved their water sensitivity ratings by 5 percent by 2024	Priority Councils have all improved their water sensitive ratings, with an average improvement of 5.32% compared with baseline assessments. It is expected for all Councils to meet the 5% improvements for 2024, with ongoing initiatives under the Urban Program partnership. Examples of water sensitive practices within Councils include embedding water values and targets into long-term strategies, embedding stormwater improvements into capital works programs, forming across team working groups, and improving walking tracks along urban waterways.

2.1 Catchment Program - Urban

After heavy and intense rainfall, runoff can wash pollutants from industrial and urban areas including overflowing Sewage Treatment Plants and septic tanks into storm water drains and waterways. The pollutants of most concern are phosphorus and nitrogen (from animal excreta and industrial, business, and residential waste), protozoan pathogens (in overflows of untreated sewage and malfunctioning on-site sewerage systems), and sediment (erosion of natural waterways from high velocity runoff).

WaterNSW is partnering with local government to identify and mitigate sources of stormwater pollution in high-risk areas, to educate and encourage councils to integrate water sensitive design into policy, and support implementation of water sensitive projects in target areas through co-funding.

Planned Activities	Actual Activities
Work in partnership with priority councils on collaborative water sensitive projects to improve management of urban areas with an emphasis on stormwater and sewerage[i]	The Urban Program 2022-2024 has worked with five priority Councils to embed water sensitive urban water management practices into their operations. Working groups across compliance, planning, development, engineering, GIS and

Planned Activities	Actual Activities
	environment teams have been established, with each Council meeting quarterly with WaterNSW teams. As of 30th June, six co-funded projects been Councils and WaterNSW have been started (to the combined value of $1,619,000), with another 5x projects in scoping.
Run regular education and capacity building catchment forums involving a range of professionals with local councils and grass roots education and awareness programs to improve water literacy	This year, 34 Council staff have participated in education and training forums provided by WaterNSW including Stormwater Operations & Maintenance, Erosion and Sediment Control and POEO Act Training). These workshops were delivered by EPA, Stormwater NSW and SECC respectively. All partner councils have also participated 'Get the Site Right' erosion and sediment education and compliance campaigns, targeting community building and development practices.
Investigate sources of stormwater pollution across key urban areas using passive sampling[ii]	Passive sampling in urban areas has not occurred in this FY. New agreements have been formed and priority sampling areas being worked through with Councils in preparation for sampling in FY24.
Establish research partnerships to support priority councils in their journey towards becoming water sensitive	New research partnerships established with Melbourne Uni to support passive sampling stormwater pollution investigations. Project agreements also formed with 2x Councils towards stormwater SQID condition audits, and 1x Council for wet and dry weather water quality sampling.

Measuring progress

Indicator	Current measure
WaterNSW Rapid Water Sensitive Cities (WSC) Benchmarking Tool will be applied biannually to benchmark the progress of each of the councils	The most recent assessment with the Rapid WSC benchmarking tool demonstrates each of the five target Councils are embedding more water sensitive practices into their operations, compared to baseline scores.

3. Ensuring water quality compatible development

Issues

New residential, commercial, and industrial developments can potentially impact water quality in local waterways and groundwater if not designed and managed effectively.

Goal

All new developments have a neutral or beneficial effect on water quality.

WaterNSW has been able to ensure that all new developments have considered NorBE. Simple development approvals have been delegated to councils (Module 1 and 2). More complex developments have been assessed by WaterNSW (Modules 3, 4 and 5). WaterNSW has been able to confirm that the majority of development approvals incorporate conditions required to achieve NorBE.

WaterNSW is encouraged that its priority councils now participate in the GTSR (Get the site Right) initiative which works with the developers' implementing development conditions during construction to identify opportunities for improvement.

WaterNSW has also been able to successfully enrol priority councils in a program to audit the performance of their stormwater quality improvement devices. The program has identified opportunities for improvement. Councils are responding positively to the findings.

Planned Outcomes	Actual outcomes
Councils in the declared catchments improve their use of the Neutral or Beneficial Effect (NorBE) tool.	NorBE Tool audit has not been conducted due to staff shortage during this period.
Developments and activities that potentially impact on controlled areas implement WaterNSW conditions.	Consultation with controlled area councils about developments and activities impacting controlled areas resulted in development applications being referred and WaterNSW conditions incorporated into consents.

WaterNSW advocacy regarding potential risks to our values (water quantity, water quality and ecological impacts) has influenced decisions and consent conditions on mining developments in the declared catchment.	WaterNSW has advocated to modify three proposals, Dendrobium Subsidence management Plan and two proposed exploration license and mining leases. Decisions are pending.

3.1 Assessments - Catchment

Consent authorities (local councils, planning panels and the Minister for Planning and Public Spaces and their delegates) cannot approve development unless satisfied the development would have a neutral or beneficial effect on water quality.

State Environmental Planning Policy (Biodiversity and Conservation) 2021 requires all proposed development to be consistent with the NorBE Guideline, which in turn requires incorporation of WaterNSW's current recommended practices or equivalents. In July 2022 practices addressing a range of land uses and phases including stormwater and wastewater management.

Planned Activities	Actual Activities
Support councils with development assessment tools and guidelines including the Neutral or Beneficial Effect Tool.	Ten NorBE training workshops were provided during January – April 2023. Phone and email support was also provided to assist councils and consultants using the tool to undertake individual assessment. Twenty-four new consultancies were registered as new NorBE Tool users – council user registrations occur within each individual council without reference to WaterNSW.
Audit council use of the NorBE tool and institute actions to improve compliance with requirements.	NorBE Tool audit has not been conducted due to staff shortage during this period.
Provide advice to proponents, councils and determining authorities on high risk and state significant developments to ensure WaterNSW interests are protected[ii].	WaterNSW provided 270 responses to proponents and councils on developments and activities potentially impacting WaterNSW land, assets and infrastructure (197 for development proposals and activities along

	the Upper Canal and Warragamba Pipelines and 83 responses to DPIE/DPE on state significant developments (SSDs and SSIs).
	• No concurrences were withheld
	• 233 concurrences were issued including:
	  • 47 letters to amended applications before approval
	  • 80 letters to modify applications after approval
	  • 35 covenants were placed on properties (s. 88B)
	  • 4 letters were provided on other matters related to development
	  • 40 responses to DPIE on state significant developments on catchment

Figure 6: Processing Performance for Development Assessment, Concurrence and Advice

Figure 6 shows WaterNSW performance on timely assessment of developments and activities over the past 5 years. Our target is to provide responses to development matters within statutory and agreed timeframes.

Financial Year	FY2018/19	FY2019/20	FY2020/12	FY2021/22	FY2022/23
Assessments Completed (#)	509	517	608	623	675
Target (%)	95	95	97	97	97
Actual (%)	99.2	99.8	99.8	98.8	97.7

3.2 Assessments - Mining

WaterNSW has no power to control or stop mining in the declared catchments however, as the joint manager of the Special Areas we seek to represent positive water outcomes to influence planning decisions. We endeavour to monitor all mining operations that may harm our values (principally water quantity, water quality and ecological integrity). We perform this role by providing advice to regulators, agencies and mining companies.

WaterNSW's Mining Principles underpin WaterNSW's decision making in relation to managing mining impacts in the Catchment and on catchment infrastructure.

Planned Activities	Actual Activities
Advocate WaterNSW's mining principles in relevant written advice and submissions.	WaterNSW has provided written responses to five mining assessments and advocated the WaterNSW mining principles in each of them.
Provide advice to the Department of Planning and Environment (DPE) on post mining applications, including subsidence management plans, extraction plans, environmental monitoring and management plans [iii].	WaterNSW has provided advice on 21 mining matters.
Implement Mining Research Strategy which includes a number of projects.	WaterNSW's mining research focused on two projects in 2023. The first, on swamp water balance modelling was completed and found that on average the postmining discharges from one swamp were reduced by 0.2 ML/day. The second, on stream flow trend analysis did commence in April and will continue into FY24. The review of the WaterNSW preliminary statistical model was completed. A new model is currently under development looking at methods to incorporate a control catchment and undermining schedule to quantify change in streamflow.

Measuring progress

Indicator	Current measure
Percentage of DAs using the NorBE online assessment tool.	Not measured as the NorBE Tool audit was deferred due to staff vacancies
Percentage of DAs completed correctly in the NorBE online assessment tool.	Not measured as the NorBE Tool audit was deferred due to staff vacancies
Mining matters where WaterNSW has influenced DPE decisions to reduce impacts.	Based on WaterNSW advice, Dendrobium conducted additional monitoring and provided a report on water quality impacts in Sandy Creek. The detailed assessment indicated declining trends in metals concentrations and there has been no further action. DPE referred WaterNSW concerns to the Panel asking for further advice on water quality impacts in the Easter Tributary caused by Metropolitan longwalls. The Panel and a team of appointed water quality experts visited Woronora Catchment in late June. The Panel recommendation whether there is a need to further investigate mining water quality will be provided in FY24.
Percentage of activities and developments complying with conditions of consent.	Not measured as the NorBE Tool audit was deferred due to staff vacancies

4. Integrating water quality policy and practice

Issues

The health of a drinking water catchment is dependent on the condition of the land and the management practices used to manage the enterprises on that land. Poor land use and development practices and standards can contribute to a range of contaminants and degradation that impact water quality.

Goal

All councils and major developers formally commit to source water protection.

WaterNSW continues to develop and grow strong relationships with councils and DPE in the policy space. In particular, WaterNSW worked closely with DPE regarding the incorporation of provisions from the former Sydney Drinking Water Catchment SEPP into the Biodiversity and Conservation SEPP to ensure WaterNSW's concurrence role was preserved and new regulated catchments provisions were consistent with our Act and Operating Licence. Other significant changes in planning laws include a major update to the Section 9.1 Ministerial Direction, and new Local Environmental Plan making guidelines.

Progress also continues to be made with Councils and developers regarding referrals and requirements under Section 2.163 of the Transport and Infrastructure SEPP, which aims to protect the Upper Canal and Warragamba Pipelines Corridors from adjacent development impacts.

We reviewed the Water Sensitive Cities benchmark scores in June 2023. The review found that priority councils had improved their benchmark scores by an average of 5.32% compared with the baseline assessments.

Planned Outcomes	Actual outcomes
Partnerships agreed with at least 5 councils to address source water protection issues.	Five priority councils have signed partnership agreements with WaterNSW. These include Blue Mountains, Lithgow, Wollondilly, Wingecarribee and Goulburn-Mulwaree councils.

4.1 Policy - Catchments

WaterNSW works with the Department of Planning and Environment and local councils with responsibilities under the *Environmental Planning and Assessment Act 1979* to provide advice on policy and environmental planning instruments. This guidance ensures that the plans, policies and frameworks guiding new developments and activities have specific provisions to maintain and protect the Catchment and water supply infrastructure.

Planned Activities	Actual Activities
Advise local councils on rezoning proposals, planning proposals, local growth strategies, rural land strategies and Development Control Plans	Sixty-five responses were provided to local councils on planning proposals, Growth Area precinct planning, Housing Strategies, Development Control Plans, Flood Studies and various council strategies and studies.
Influence DPE to seek to improve the regulation of developments in the vicinity of the Upper Canal and Warragamba Pipelines	No further consultation with DPE on the Transport and Infrastructure SEPP beyond Temporary Use Development clause. Ongoing consultation with Canal councils for referral to WaterNSW.
Hold regular meetings with councils assessing development applications adjacent to key WaterNSW infrastructure	Bi-annual meetings were held with Camden, Campbelltown, and Liverpool Councils (Upper Canal), and Penrith and Blacktown Councils (Warragamba Pipelines), and Greater Sydney Parklands (both).
Hold regular meetings with councils developing strategic planning documents affecting the declared catchments and controlled areas	As above. Regular meetings were held with Blue Mountains, Wingecarribee, Lithgow, Goulburn Mulwaree and Wollondilly as part of the Urban Program Council Partnerships where strategic matters were discussed.
Advise the Department of Planning, Industry and Environment on key changes to planning law, policies, planning instruments,	Forty-five responses were provided to DPE on Planning Proposals, Regional Plans, Greater Macarthur Growth Area, Agritourism Model

regional growth plans and tools that affect the catchments and water infrastructure	LEP Clause, Cumberland Plain Conservation Plan, Strategic Plans, Aerotropolis planning and others.
Work with Sydney Water and the Department of Health to give effect to the Joint Policy - Recreational Access to Water Supply Storages, Special and Controlled Areas in the Sydney Catchment	Recreational Access Working Group met four times in the year to discuss and respond to requests for access including DPIE Fisheries, Illawarra Escarpment MTB proposal, Great Burragorang Valley Walk and Prospect Reservoir tourism.

Measuring progress

Indicator	Current measure
Number of formal partnerships between councils and WaterNSW to address source water protection issues.	Five priority councils have signed partnership agreements with WaterNSW. These include Blue Mountains, Lithgow, Wollondilly, Wingecarribee and Goulburn-Mulwaree councils.
Number of major developers formally committed to source water protection.	No measurement has been undertaken on this indicator pending development of a methodology. However, Wollondilly Council has carried out workshops specifically targeting developer around the objectives for stormwater management in its development guidelines.
Extent of statutory planning and policy documents that contain positive improvements for water quality protection.	Overall legislative provisions for the catchment have been sustained or improved.

5. Increasing regenerative agriculture

Issues

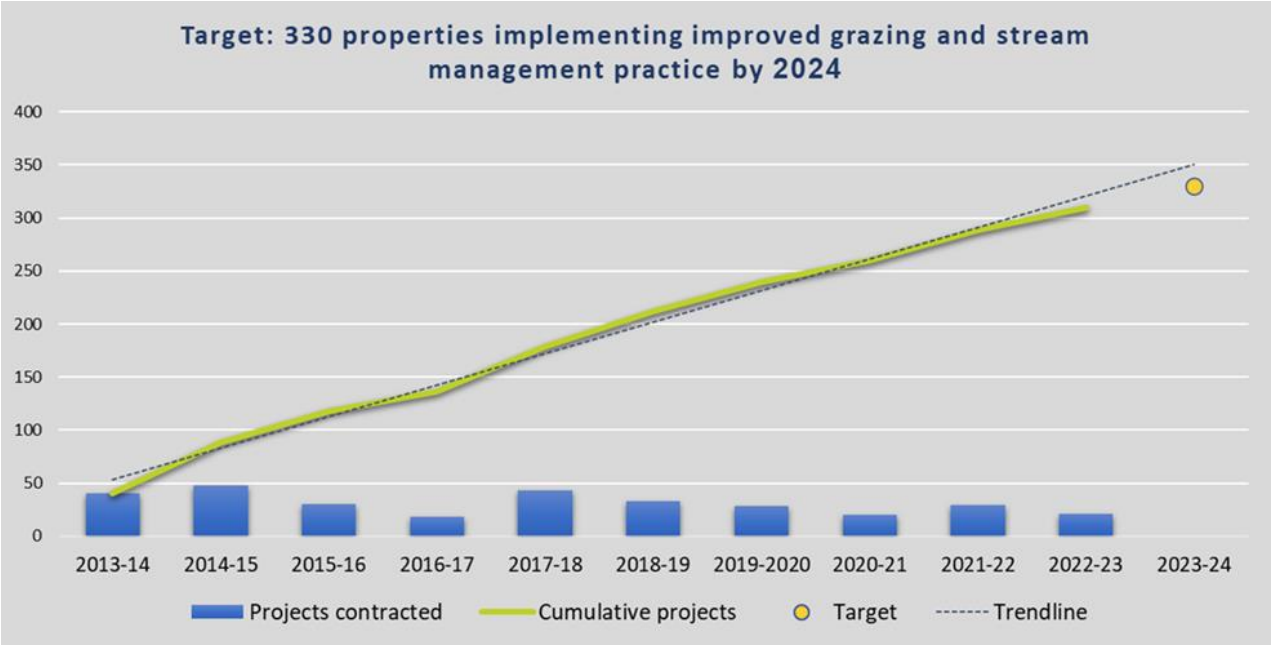
There are 485,000 hectares of agricultural land across the Catchment. Landscape degradation and poorly managed grazing practices are common and have resulted in vulnerable soils and rivers which are significant sources of sediment, nutrients, and pathogens.

Goal

1000 landholders managing healthy waterways and regenerative grazing practices.

WaterNSW estimate there are 2000 high-risk grazing properties in the Catchment. We are seeking to engage with 1000 properties by 2040 and we are on target to achieve that should current trends continue (**Figure 2**).

Figure 2: Progress against goal for grazing program



Planned Outcomes	Actual outcomes
Post-flood peak concentrations of phosphorus, nitrogen, pathogens, and sediment to diminish over time. To achieve this, our Rural Program is looking for evidence of: • Increased riparian vegetation • Management or exclusion of stock access to waterways • Treatment of soil erosion • Introduction and maintenance of rotational grazing practice	WaterNSW commissioned an independent strategic evaluation of the Rural Landscape Program. The contractor selected and assessed the outputs and outcomes achieved on 21 projects. Key conclusions were: 'the program is on the right track, has halted erosion, and reduced the impact of stock on local waterways. More can be done to achieve self-sustaining long-term benefits and outcomes. This includes the design of infrastructure which needs to provide multi-system benefits such as supporting geomorphological and ecological processes. Landholders need more support to achieve vegetation outcomes.'

5.1 Catchment Program - Rural

WaterNSW partners with Local Land Services (LLS) and the Australian River Restoration Centre (ARRC) to work with graziers, managers, and landholders. The partnership drives change by supporting landholders to design and improve farming practices, landscape and waterway conditions, and water quality in creeks and rivers.

Regenerative farming embraces a wide spectrum of practices and outcomes that support water quality, build resilience at a local and sub-catchment scale, and demonstrate compatible aims between farming and environmental outcomes.

Our partnerships focus on increasing diverse riparian vegetation, managing uncontrolled stock access to waterways, treating gully and streambank erosion, and implementing sustainable grazing practices. It also includes activities to upgrade dairy effluent management to industry best practice.

Planned Activities	Actual Activities
Collaborate with Local Land Services to deliver the Rural Landscape Program and the Australian River Restoration Centre for delivery of the Rivers of Carbon – Source Water Linkages program.	The South-East Local Land Services (SELLS) and the Australian River Restoration Centre (ARRC) worked with WaterNSW to deliver the Rural Landscape Program and the Rivers of Carbon – Source Water Linkages program.
Support landholders to protect riparian areas, treat erosion, and improve grazing management along creeks and rivers.	The SELLS created 11 agreements with landholders with plans to protect 30 km of riparian length and an area of 76 ha. Twenty head cuts were treated ranging in size from <1.5 m to >3m in depth along waterways. And rotational grazing was introduced to 464 ha. The SELLS ran nine workshops and field days on topics including healthy waterways, identifying and remediating erosion, farm dam construction, FertSmart, and riparian management and farm planning. The workshops involved 179 participants. The ARRC created 5 agreements with landholders with plans to protect 13 km of riparian length and an area of 66 ha along waterways in a variety of sub-catchments.
Undertake workshops, field days and events, social media, and other communication activities to engage with landholders about waterway protection and sustainable grazing.	ARRC delivered a field day along the Mulwaree River which attracted 30 people and focused on planting tubestock and revegetating riparian areas. The day was also promoted with web materials that attracted over 500 visitors. ARRC produced a range of resources, guides, articles, and blog posts accessible on their Rivers of Carbon web. This included 'River restoration and resilience', 'Tubestock planting and maintenance for riparian

	restoration' and social media posts to help increase interest in field days. A podcast was also created in the 'Take me to the river series, episode 21: Why regenerative farming helps our waterways', and an associated social media campaign. The podcast received over 400 visitors.
Undertake professional photo site monitoring, film creation, and website development to tell the story of landscape change.	The Rivers of Carbon – Source Water Linkages Story Maps are a resource that will be updated as project outcomes such as vegetation mature. The story maps are used to promote project possibilities in social media campaigns. The story map pages received over 2,500 visitors. The ROCSWL Outcomes Snapshot produced, showcasing project activities and outcomes, and where the program is working across the catchment. The SELLS produced a film, 'Healthy Waterways on Farm'. This film focused on a farm participating in the Rural Landscape Program, and program participants discussing the outcomes and benefits of protecting waterways.
Monitor and conclude contracted dairy projects to upgrade effluent management systems.	The three dairy upgrade projects were completed, and three projects were granted extensions. One project was withdrawn due to a change of farm circumstances.

Deliver and complete a strategic evaluation of the Rural Landscape Program.	The Strategic Evaluation of the Rural Landscape Program was completed by Alluvium Consulting. The report assesses project outputs and outcomes and provided landholder insights on a range of projects. The recommendations will improve both the Rural Landscape Program and the Rivers of Carbon- Source Water Linkages program.

Measuring progress

Indicator	Current measure
Number of grazing properties implementing and integrating recommended practices	16
Riparian and waterway length with controlled or excluded stock access	43 km
Number of head cuts and stream bank erosion treated	20 head cuts were treated ranging in size from <1.5 m to >3m in depth along waterways.
Number of hectares under rotational grazing practice	464 ha
Number of dairy farms with best practice effluent management.	There are currently 16 active dairy farms in the declared catchment. Of those, 6 are equipped with best practice effluent management systems, five have effluent management systems that are not sized to achieve best practice and five are unknown.

6. Fulfilling land management responsibilities

Issues

WaterNSW has various land management responsibilities across the Catchment, including the Special Areas, public recreation areas and a range of leased or licensed land. Fulfilling these responsibilities demands both high level strategic planning and complex daily operations, with an underlying focus on the ongoing protection of water quality. The key risks to water quality in the lands surrounding the reservoirs (the Special Areas) are from bushfire, pests and weeds, and erosion.

Goal

Demonstrated reduction in water quality risks from fire and pests in the Special Areas.

Bushfires and floods over recent years has impacted the condition of the Special Areas. Sediment and debris deposited into creek lines continues to impact the condition of creeks, rivers and storages. Wet weather has resulted in increased weed growth across all special areas. Conditions have favoured pig populations with NPWS increasing effort for pig control through baiting and aerial culling operations.

Opportunities for prescribed burning have been limited and we have had to rely on increased mechanical hazard reduction to keep fuel under control. Wet weather has also led to increased vegetation growth, with increased mechanical effort required to maintain asset protection zones and fire breaks.

A new weed, Kidney leafed mud plantain was detected during routine inspections in the Shoalhaven Special Area. This species is an aquatic weed that chokes dams, drains and water supply channels, prevents native water plants from growing and reduces food for fish and other aquatic life. We have commenced control and aim to locally eradicate the species from Lake Yarrunga.

Flood and high rain events in 2021 and 2022 resulted in damage to fire trails, culverts, trail pavement and the removal of debris blocking river crossings.

Planned Outcomes	Actual outcomes
Fire management has minimised risks to life and property, critical infrastructure, water quality and ecological integrity	Conditions were wet during the second half of 2022 resulting in a relatively mild bushfire season. These conditions also delayed the implementation of Spring 2022 and Autumn 2023 prescribed burns. Wet conditions also promoted above average vegetation growth. Additional mechanical hazard reduction was undertaken to manage this growth.
Biosecurity has been managed to minimise, prevent and eliminate risks to water quality and supply and to maintain ecological integrity.	Wet condition over the past two years has required an increase in weed control, especially blackberry. Additional works have been undertaken to control this weed. Control has also focused on Aquatic weed incursions of Ludwigia and mud plantain. Wet conditions have also contributed to increased evidence of damage by feral pigs. Weed and pest control programs have been implemented to protect the Endangered Fitzroy Falls Crayfish, the Brushtail Rock Wallaby, Koalas and Eastern Bristlebirds.
Recreation Areas are managed to provide public facilities sympathetic to their location and to protect water quality and natural values.	Facilities have been improved and additional tree safety and fencing work have been completed with a focus on public safety.

6.1 Fire Management

Fire mitigation and suppression works have been implemented to minimise the impacts of bushfire on WaterNSW land, assets, and water quality. This included representation on key district bushfire management committees, hazard reduction burns, mechanical asset protection zones, early detection (fire towers) and fire suppression crews.

Bushfire in the Special Areas can reduce vegetation coverage and increase the risk of sediment, ash and debris being transported into streams and lakes. Every 5-10 years major fires have been experienced in the bush surrounding reservoirs in the Catchment. Large fires occurred in the Warragamba and Shoalhaven Catchments in 2019/20 and recovery work has been undertaken to repair assets and minimise ongoing risk.

Fire risk is increasing under changing climate, and rapid bush fire response is critical to reduce the impacts of widespread fire.

Planned Activities	Actual Activities
Implement hazard reduction program including maintaining fire breaks (240 km / 400 ha) and conducting at least 5 priority hazard reduction burns	Four hazard reduction burns totalling 161 ha were completed comprising Block C25 south (84 ha), Garrawarra Hospital (10 ha), Cataract Picnic Area (7 ha) and Block Wg1 Warragamba (60 ha). Eight pile burns were also completed at Warragamba, Cataract, Nepean, Fitzroy Falls, Avon, Cordeaux and Upper Cordeaux. Vegetation was slashed along fire trails including: • 238 kms in Metropolitan Special Area • 4 kms in Blue Mountains Special Areas • 231kms in Warragamba Special Area • 12kms in the Prospect Special Area A further 257 ha of APZs and linear fire breaks were slashed across all Special Areas.

	New APZ were created to protect Nepean Water Filtration Plant and the Appin industrial estate. Dangerous trees along Darkes Forest Road were removed to meet Community Protection Plan requirements.
Collaborate with RFS and NPWS to ensure tenure neutral approach to fire management including active participation at Bush Fire Management Committees[iv, v]	WaterNSW and NPWS collaborated on fire planning through their Fire Technical Reference Group. They collectively represented proposed programs at bushfire management committees.
Implement Bushfire Management Plans for Sydney Catchment Area lands and maintain data sources that drive these plans.	Plans have been implemented (see actions above) through delivery of prescribed burning and mechanical vegetation control. System improvements have been made to capture data about fuel loads to influence decisions about hazard reduction as well as changes to assist in reporting to the Rural Fire Service.
Progressively identify critical water delivery and monitoring assets that require additional bushfire protection.	WaterNSW has progressed the criticality project for Water Monitoring Sites, with all sites categorised by priority. A systematic program is in development to define and maintain asset protection zones. Similarly, a program to assess requirements to harden the structures has commenced. Most major sites and associated structures have been assessed with recommendations on improving asset protection zones.
Identify key catchments vulnerable to water quality risks from bushfire.	See above.

Maintain early detection and rapid response capability and preparedness in accordance with the Bushfire Operational Protocol.	Throughout the fire season, WaterNSW ensured there were implemented operational response procedures in place for early detection and rapid response to outbreaks of bushfire. The fire towers were staffed for 132 hours during the season to detect outbreaks of bushfire. The relatively low level of hours was because due to wet weather conditions made fire unlikely. WaterNSW contracted a helicopter equipped with a belly tank and capability to deploy a winch trained crew. WaterNSW maintained The Rural Fire Service was also retained to provide suppression services through rapid response helicopter-based crews including a medium helicopter with belly tank and ground firefighting crews.
Respond to wildfires within targeted timeframes within the stand-up protocol and contain at least 80% of fires to less than 10 ha	WaterNSW crews attended six bushfires during 2022/23 Season of which two were on the Special Area. All fires were contained within 10 ha.
Monitor bushfire recovery within the Warragamba Special Area	The Soil Conservation Service has completed monitoring of vegetation at key sites and reported on post fire erosion mitigation works (learnings and recommendations) in the Warragamba Special Area.

6.2 Biosecurity

As a landowner WaterNSW has a duty to manage pests and weeds. WaterNSW works with the NPWS, local government, Local Land Services, Regional Pest and Weed Committees, and landholders to control priority pests and weeds with best practices.

Planned Activities	Actual Activities
Control priority vertebrate pests including pigs, rabbits, dogs, deer and foxes in Special Areas and Braidwood lands in accordance with LLS Regional Pest Plans.	Pigs, deer and goats were controlled using aerial and ground-based shooting across the Special Areas and Braidwood lands with 1,032 pigs and 338 deer and 85 goats taken. Foxes and wild dogs were targeted using baiting with 304 baits taken, each bait assumed to control a single animal. These activities were undertaken to assist in the protection of for Bristlebird, Koala and endangered Brush-tailed Rock-wallaby populations. A trapping program successfully trapped 16 cattle.
Control priority weeds within Regional Strategic Weed Plans, including aquatic weeds in Prospect Reservoir and Lake Yarrunga, willow and blackberry in Wingecarribee Swamp[vi].	Routine surveillance identified an outbreak of the aquatic weed, Kidney-Leafed Mud plantain in Lake Yarrunga. The outbreak was contained to an area of 0.17 ha implemented and has been contained. Regular patrols were carried out for Ludwigia longifolia and 5.21 ha was treated. In Wingecarribee Swamp 25.3 ha of willows were controlled. At Braidwood 1 ha of Scotch Broom was controlled to support the recovery of the threated Bombay bossiaea. At Wildes Meadow Creek willows were treated as part of a cross-agency program to protect the Critically Endangered Fitzroy Falls Crayfish

	Over 81 ha Blackberry was controlled across Fitzroy Falls, Metropolitan and Wingecarribee Special Areas.
Actively participate in the Greater Sydney and South East LLS Regional Weed and Pest Committees.	WaterNSW actively participated in the Illawarra Deer Management program, the Greater Sydney and South East Regional Weed Committee.
Develop an aquatic weed risk assessment process and biosecurity plan template to improve prioritisation of pest and weed control effort.	An aquatic weed risk assessment planning tool has been developed and is undergoing beta testing. WaterNSW will also use Terrestrial Weed and Vertebrate Pest Risk Assessment tools and Operational Plans templates developed by Local Land Services.
Develop and implement a research program to determine patterns of deer movement in Metropolitan Catchment Area.	A research program has been developed using tracking collars to understand deer movements in the Metropolitan Special Area. Two different methods for estimating deer populations are being explored in partnership with SELLS and NPWS.
Prepare assessment of the population of targeted priority pest species across the Warragamba Special Area.	Data to support assessment of pig populations and their response to control programs has been collected throughout the financial year. A report prepared that analyses the data has been prepared and submitted to WaterNSW for review.

6.3 Reserve Management

NPWS and WaterNSW work together to manage and protect the qualities of the Special Areas under the Special Areas Strategic Plan of Management, particularly those that support water quality.

Planned Activities	Actual Activities
Monitor delivery of land management on Special Areas through the partnership with NPWS including: • Maintenance of 100km of fire trails • Completion of 2,500ha of prescribed burning • Eradication of outbreaks of aquatic weeds • Active suppression of priority pests particularly pigs, deer, goats, horses and cattle[vii]	The partnership with NPWS has been effective with the following results recorded: • 188kms of fire trails were maintained • No prescribed burns were completed due to unseasonably wet conditions • No aquatic weed outbreaks were detected • Active suppression of pest animals was undertaken with over 1,100 animals removed • 15,000 litres of effluent were removed from remote toilets in the Special Areas.
Implement the Special Areas Strategic Plan of Management with NPWS[viii]	Strong relationships were maintained with NPWS across key land management disciplines to ensure effective coordination of management activities.

6.4 Recreation Areas Management

Every year over 500,000 people visit recreation areas at dams, reservoirs, and rivers in the Sydney and Shoalhaven regions. Services are highly valued by the community. WaterNSW has a social responsibility to provide a safe, clean, and welcoming environment for visitors to enjoy the dams, camping areas, and surrounds.

Planned Activities	Actual Activities
Implement inspection program to maintain public safety and inform maintenance activities	Periodic inspections undertaken for all key recreation areas.
Maintain recreational assets to provide amenable and safe facilities for the public, and where applicable in accordance with Conservation Management Plans	Trees were inspected and treated by arborists across 15 recreation areas. Roads, parking areas and footways were inspected and repaired across the recreation areas to ensure public safety. No parking, disabled and safety markings were renewed at Havilland Park Warragamba. Amenities buildings at Woronora, Cordeaux and Cataract recreation areas were refurbished with asbestos removed, repainting and improved lighting. Picnic tables and shelters were also refurbished. Gates were reconfigured at Bendeela to provide year-round access to the second canoe portage. New sanitation facilities were installed at Fitzroy Falls Fishing area and the Woronora site office. Cataract picnic shelters were upgraded with water filtering units to improve the reliability of the drinking water supply. Inspections and follow-up works were completed 5 playgrounds areas.

	Provision of Security guards at Bendeela recreation area for peak holiday times.

6.5 Supporting Activities

There is a network of unsealed roads throughout the Special Areas. This network is important for fire management including suppression and for safe access to key infrastructure. Upgrades, repairs, and maintenance of the network is aligned with construction guidelines and achieves standards required under the *Rural Fires Act 1997*, helps prevent erosion, and meets the safe operational needs of all users.

Barriers, fences, and gates are required to provide a safe space and protect people, the environment and assets. They also deter unlawful intrusion into restricted areas.

There are many natural, historic, and indigenous heritage places throughout the Special Areas and the Catchment. The joint managers work with landholders, the community, local and state government, and indigenous land councils and representatives to identify, protect, and manage the heritage values of the Special Areas.

Planned Activities	Actual Activities
Implement inspection program of 200 km unsealed roads and carry out repair and upgrade of prioritised works on trails and drainage features	Over 392 km of fire trails were inspected this year. The inspections identified 28 km of fire trail in the Metropolitan Special Area requiring repair. This repair was completed. Further a range of culverts and causeways required substantial debris removal to maintain functionality. WaterNSW also undertook access trail works for the ARTC at two locations in Metropolitan Special Area.

Repair trails damaged during flood events during 2021 and 2022	Repaired fire trails 6A, 6C, 9, 9E, 9K, & Buckman's Lane easement damaged during flood events during 2021 and 2022. Flood repair work was completed on Fire trails 6C/6A, 6M, 9E, and crossings of the Cordeaux River on Fire trail 6M and Cataract River on fire trail 8. Drainage has been restored by removal of flood debris from culverts across many trails.
Treat priority erosion sites within the Declared Catchment	Erosion control work programmed for Virginia South, Upper Mongarlowe and Glenrossal South and Lizard Creek work were postponed by wet weather. Monitoring of gully erosion in Wingecarribee proceeded.
Install, maintain or repair barriers, fences and signs in the Special Areas and Braidwood lands with priority on areas where unauthorised access is resulting in environmental damage	Barriers, fencing and gates are important to prevent illegal access and also to improve control of illegal dumping. To emphasise the importance of this activity, WaterNSW collected and removed a total of 8.5 tonnes of rubbish and 1.78 tonnes of asbestos dumped across the special areas. Fencing and barriers were improved across the Nepean, Cataract, Warragamba, and Shoalhaven catchments. Improvements included Repairs and improvements to gates, fences and signage on key special area boundaries including repair or upgrade of five gates and improvements to over 900m of fencing.

Maintain and protect significant heritage items within the Special Areas	Inspected two vandalised rock art sites with the traditional owners to scope remediation works. Maintained fire breaks around heritage sites in Metropolitan, Woronora and Warragamba Special Areas. Refurbished the Cataract Wishing Well. Including stonework, painting, replacing rotted timbers and pressure cleaning. Refurbished the Cordeaux heritage shelter by replacing aged structural elements, replacing glass and repainting.
Support programs to monitor and protect ecological communities	Targeted biosecurity works were carried out specifically to protect threatened species (see biosecurity section of this report). Collaborated with other agencies to improve management of koala habitat across public land in the Wingecarribee Region as well as support activities to protect the Broad-headed Snake and other threatened species.
Consult and support traditional owners of the Special Areas	Continued as an active participant in the Gundungurra ILUA Consultative Committee. The WaterNSW Reflection RAP was presented to the ILUA Committee. An MoU for access was prepared jointly with NPWS and Illawarra Local Aboriginal Land Council to provide formal cultural access in their area of activity. Final consultation with the Illawarra LALC is in progress.
Progress inclusion of Wingecarribee Swamp into the Special Area	Wingecarribee Special Area was expanded to include swamp land owned by WaterNSW by publication of the declaration in the Government Gazette.

Measuring progress

Indicator	Current measure
Range and density of priority pests and weeds	WaterNSW has collected data on the location of priority pests and weeds and is developing methods for analysis of the collected data
Asset condition profile for fire trails and fire blocks (slash breaks plus HR blocks) are consistent with desired condition	85% fire trail and 100% slash breaks and HR blocks were consistent with desired condition on 30 June 2023.
Number of bushfires that exceed 10 ha annually	No fires exceeded 10 ha in FY2023.

7. Enforcing catchment protection laws

Issues

WaterNSW has responsibilities under the *Water NSW Act 2014*, the Water NSW Regulation 2020 and the *Protection of the Environment Operations Act 1997* to protect water quality in the Catchment, including the Special Areas. Illegal and unauthorised activities can compromise the integrity of the Special Areas and the broader catchment area and threaten water quality and management objectives.

Goal

Reduce unauthorised activities in Special Areas and pollution incidents in the catchment.

WaterNSW is proactively engaging with the public using targeted social media campaigns in high-risk local government areas to ensure the community is aware that we are monitoring activities in the catchments. These campaigns reached over 166,000 people.

We have also installed a network of surveillance cameras to help us to identify illegal entries and activities. This network of cameras helps us to identify activity hotspots for targeted enforcement action.

WaterNSW is working actively with sister agencies and partners to address concerns identified through intelligence activities. Our partners include NPWS, NSW Fisheries, NSW Police, DPI Hunting, EPA, and local government areas. In FY2023 643 persons were identified undertaking unauthorised activities.

The use of camera technology and cross agency intelligence has helped us to target hotspots of illegal activity and quickly take action to address them. The result has been marked reductions in illegal activities at targeted hotspots.

Planned Outcomes	Actual outcomes
Access to Special and Controlled Areas is consistent with the Regulation and our authorised access policy.	WaterNSW processed requests for access to the Special and Controlled Areas in compliance with the Act and Regulation during the FY2023. This includes Section 50 applications under the Act for Public Agencies and Section 9 under the Regulation for all other access applications. Approvals for access were granted consistent with the application categories under the access policy. The WaterNSW authorised access policy is currently under review.
Promotion of successful prosecutions in traditional and social media deters breaches of our Act and Regulation.	WaterNSW is using targeted education campaigns in social media to promote successful field monitoring operations and discourage illegal activities (see below). WaterNSW has also formed formal relationships through the Joint Operational Group and an informal relationship with the EPA to collaborate on enforcement of the POEO Act.

7.1 Compliance

Planned Activities	Actual Activities
Identify two Local Government Areas and deliver education to member of the community relating to the importance of protecting Special or Controlled Areas.	Camden and Campbelltown Local Government Areas were identified as priority areas for education. WaterNSW has commenced preparation of a community communication program for delivery in FY2024.

Social media education campaign targeting high risk groups in Local Government Areas impacting on the catchment, encouraging the local community's support.	Targeted social media campaigns were rolled out in August 2022 and February 2023 to address hotspots identified in metropolitan, Warragamba and Woronora Special Areas. Campaigns targeted residents of Wollongong, Campbelltown, Camden, Picton, Bargo and Helensburgh.
Assess and determine access consent applications and grant consent with appropriate conditions, or document clear reasons for refusal.	WaterNSW issued 82 access consents in FY2023. Six applications were withdrawn, six applications were suspended, and one was refused. Nine consents have carried forward for determination in 2024.
Audit 10% of access consents granted for compliance with conditions.	WaterNSW regularly stops visitors to the Special and Controlled Areas to determine whether entry is in accordance with an approved consent. Throughout the year we had 82 active access consents of which 4 were for mining companies. In FY2023 we checked 41 visitors to ensure they complied with consent conditions. 4 of the 41 visitors audited were not complying with consent conditions or had on site issues. This met the required audit numbers.
Conduct at least 2 joint compliance operations with interagency partners.	Throughout the year we scheduled 5 joint compliance operations. Three were cancelled due to incompatible weather. Two went ahead. In November 2022 we carried out a joint operation in the Warragamba Special Area with NPWS and NSW Police. This resulted in:

	• One penalty infringement notice for a fishing offence. • One warning for an enter or remain offence. • Three unregistered motorbikes offences. • Two drive/ride offences for motorbikes on WaterNSW lands. • Two vehicle offences on private lands. • Two lead animal offences onto NPWS lands. • Two opportunities for education. • Five intelligence reports gathered. In May 2023 we carried out a joint operation in the Woronora and Metropolitan Special Areas with WaterNSW and NSW Fisheries. This operation was carried out over two consecutive weekends.
Conduct 1,500 hours of Special Area and Controlled Area surveillance.	Last year 666 hours of Special and Controlled area surveillance was completed. A large portion of the shortfall was due to cancellation of scheduled surveillance due to weather incompatible with these operations.
Ensure Electronic Surveillance (Trail Cameras) are installed within identified Hot Spots for a period greater than 250 days per year.	With the introduction of Surveillance Camera App and increased training and available resources there were cameras installed at all major hotspots for 365 days.

Conduct targeted operations to specifically aim at irregular issues as they arise.	Nine targeted operations were conducted across FY2023, with operations in every quarter. Key areas targeted were hotspot locations in Metropolitan, Woronora and Warragamba Special Areas.
Undertake regular inspections and interactions with councils bordering Special and Controlled areas to ensure compliance with development consent conditions[ix].	WaterNSW conducted six inspections with Councils in FY2023 including operations with Camden, Wollongong, Wingecarribee, Goulburn, Wollondilly, and Blue Mountains Councils.
Investigate reports of activities contravening the *Water NSW Act 2014* and Regulation 2020 and the water quality provisions of the *Protection of the Environment Enforcement Act 1997* in the declared catchment.	WaterNSW completed 398 investigations in FY2023 resulting in 643 persons processed. At the end of the FY2023 there were 54 matters that remained open. 56 notices were issued under *Water NSW Act 2014* and *Protection of the Environment Enforcement Act 1997* assisting in the investigation process.
90% of PINS are finalised through Revenue NSW or Court based enforcement.	WaterNSW issued 70 PINS through Revenue NSW in FY2023. All (100%) were finalised.

Measuring progress

Indicator	Current measure
Number of infringement notices issued in the Special Areas	70 Infringement Notices were issued
Number of current Special Areas access consents	82 access consents were approved
Number of investigations completed in the declared catchment	398 Investigations were completed
Number of POEO Act notices issued	13 POEO Act Notices were issued

8. Educating and engaging communities

Issues

WaterNSW is required to undertake an educative role within the community under the *Water NSW Act 2014* and the WaterNSW Operating Licence. WaterNSW works and engages with residents and landholders, community organisations, schools, businesses, local councils, and government to support the long-term management of drinking water.

We use a range of communication and education tools including the Visitor Centre at Warragamba Dam, website, publications and media articles, targeted community education programs, community engagement and interpretation structures at our dams and recreation areas.

The Warragamba Dam excursion program offers primary, secondary and tertiary students from across the catchment and Sydney area the chance to explore all aspects of modern water supply, and to learn about water through hands-on activities in the onsite Visitor Centre. The primary and secondary program is linked to the requirements of the NSW syllabus for the National Curriculum, with supporting education resources for teachers and students online.

Goal

Undertake an educative role in the community on WaterNSW activities and functions in the Sydney Catchment area.

WaterNSW works and engages with residents and landholders, community organisations, visitors, schools, universities, businesses, local councils, government and agencies in the Sydney Catchment area and beyond, to support community awareness and the long-term management of drinking water.

We use a range of communication and education tools including exhibitions, an excursion program and education/ visitor information staff at our Visitor Centre at Warragamba Dam, online information and resources, publications and media posts/ articles, targeted community education programs, community engagement activities and interpretation resources at our dams and recreation areas.

The Warragamba Dam excursion program offers primary, secondary and tertiary students and teachers from across the catchment and Sydney area the chance to explore all aspects of modern water supply, including catchment management and risks to water quality and quantity, and to learn about the value of water through hands-on activities in the onsite Visitor Centre. The

primary and secondary program is linked to the requirements of the NSW syllabus for the National Curriculum, with supporting education resources for teachers and students online.

The Warragamba Dam Visitor Centre also hosts conference field trips and technical tours for water, environmental science and engineering related industry groups and organisations.

Planned Outcomes	Actual outcomes
Surveyed participants have an increased knowledge and understanding of the role of WaterNSW, catchment management and risks to water quality and quantity in the Declared Catchment.	Post excursion evaluations completed in FY2023 reported that 100% of teachers and lecturers who participated in the excursion program either 'agreed' or 'strongly agreed' that both they and their primary, secondary or tertiary students had an 'enhanced knowledge and understanding of the role of WaterNSW, water catchments, catchment management and Warragamba Dam'.
Communities are informed about WaterNSW projects and potential impacts.	Communities, key stakeholders and property owners were provided with timely information by phone, email and letterbox drops to prepare them for any impacts from WaterNSW projects, and measures were taken to reduce the impacts of our projects wherever possible.

8.1 Community and school education

Planned Activities	Actual Activities
Deliver the Warragamba Dam school excursion program to around 3,500 students	In FY2023, over 3,500 primary, secondary, and tertiary students and teachers and lecturers participated in the face to face, curriculum linked excursion program at Warragamba Dam. An additional 250 primary students and teachers participated in hands on catchment and water quality activities and lessons over two environmental education events run in conjunction with Wingecarribee Shire Council in the Declared Catchment.
Host 80,000 visitors at the Warragamba Dam Visitor Centre.	The Warragamba Dam Visitor Centre hosted over 72,000 visitors in FY2023. Covid-19 safety practices continued to be implemented throughout FY2023 and the Visitor Centre was closed briefly due to flood operations.
Deliver temporary exhibitions and supporting activities at the Warragamba Dam Visitor Centre.	Resources to support visitor experiences were developed and delivered during FY2023, with a particular focus on public safety at our sites and around our waterways. A number of professional conference field trips were also hosted at the Visitor Centre in FY2023.
Develop and support community education programs in the Declared Catchment.	Additional community education programs did not proceed due to staff vacancies.

8.2 Community Engagement

Planned Activities	Actual Activities
WaterNSW will engage with local communities on projects and activities that impact them.	WaterNSW engaged and informed local communities and stakeholders on programs, projects and activities that impact them. Methods of communication included media release, notification letters, project updates, FAQ, media releases, door knocking activities, stakeholder emails, webpages, social media, print and digital media, stakeholder meetings and briefings, diagrams and video. Communication and stakeholder engagement plans have also been developed for all works. WaterNSW engaged on the following projects: • Wingecarribee Special Areas expansion • Tallowa Dam maintenance on overshot gate • Tallowa Dam Road repair works • Nepean Weirs e-flow upgrade including Menangle, Camden, Sharpes, Brownlow Hill, Mt Hunter, Cobbitty, Theresa Park, Wallacia and Penrith weirs • Warragamba pipeline restoration • Drought Management Workshops • Theresa Park Weir Access Road Flood Remediation • Bendeela Wombat Treatment Program • Public Safety Awareness Program 2022 • Kangaroo Valley Pipeline Renewal

9. Financial Performance FY2023

Operational Expenditure[x]

Program / activity	Budget ($'000)	Expenditure ($'000)
Scientific Approach		
Strategy and Communication	599	860
Catchment Resilience	540	444
Integrated Water Management	484	581
Science Advice	243	146
Risks and Opportunities	282	125
Total	2,037*	2,155
Creating Water Sensitive Towns		
Catchment Program - Urban	969	297
Total	969	297
Ensuring Water Quality Compatible Development		
Assessments – Catchment	715	666
Assessments - Mining	469	280
Assessments - Other	307	289
Total	1,021	1,235
Integrating Water Quality Policy and Practice		
Policy - Catchments	261	298
Policy - Mining	259	123
Total	521	422
Increasing Regenerative Agriculture		
Catchment Program - Rural	1,818	1,462
Total	1,818	1,462
Fulfilling Land Management Responsibilities		
Fire Management	3,309	3,176
Biosecurity	1,145	936
Reserve Management	3,339	2,534
Recreation Areas Management	1,897	2,896
Supporting Activities	1,908**	1,579
Total	10,951**	11,122

Enforcing Catchment Protection laws		
Compliance	852	727
Total	852	727
Engaging and educating communities		
Engaging and educating communities	1,124	983
Total	1,124	983
Grand Total	**19,293**	**18,403**

* Budget amended due to program review

** Budget amended to add portable plant and equipment and fences and barriers

Capital Expenditure

Project	Budget ($'000)	Expenditure ($'000)
Catchment infrastructure asset renewals	411	361
Safety Upgrade Avon Fire Tower (split from catchment infrastructure for project delivery/accounting purposes)	0	278
Catchment Upgrade and Replacement of Plant and Equipment	275	1,019
Fencing – Declared Catchment	479	276
Water Quality Modelling	2,826	1,522
Roads and Trails	229	122
Construction of outdoor shelter for excursions and visitors at Warragamba Dam	100	0
Grand Total	**4,320**	**3,579**

Operational Variances

- Scientific Approach – no significant variations
- Creating Water Sensitive Towns –partnership projects with local councils required longer than expected to finalise details, with projects rolling into FY2024. This resulted in a significant budget savings of $672K.
- Ensuring Water Quality Compatible Development – this work is reactive to incoming development activities and policy documentation. The team was affected by long term vacancies reducing expenditure resulting in savings of $214K.
- Integrating water policy and practice – was impacted by significant changes to planning legislation affecting WaterNSW resulting in additional expenditure of $99K.
- Increasing Regenerative Agriculture – We had strong engagement with our partners signing up projects to improve grazing practices, but wet conditions made it difficult to get machinery onto farms to install the agreed improvements. This resulted in expenditure below budget of $356K.
- Fulfilling Land Management Responsibilities – had no significant variations.
- Enforcing Catchment Protection Laws – full budget was not expended as major operations were not able to proceed due to wet weather with a saving of $125K.

Capital Variances

- Infrastructure renewals and upgrades to plant and equipment – a new staircase was required to be installed alongside the Avon Fire Tower to make it for personnel. This resulted in an overspend of $228K.
- Catchment Upgrade and Replacement of Plant and Equipment – affected by delayed delivery of plant ordered in the previous financial year which resulted in budget being exceeded by $744K. Deliveries of fire trucks were affected by COVID.
- Roads and Fire Trails - higher than expected insurance coverage resulted in savings of $107K.
- Water quality modelling saved $1,304K as vacancy rates were higher than expected.
- Fencing – higher than expected insurance coverage resulted in savings of $203K.
- Construction of outdoor shelters at Warragamba were delayed because due to competing priorities and reallocation of work to another business unit resulting in a saving of $100K.

Appendix A - 2022 Catchment Audit Recommendations

The 2022 Catchment Audit was tabled in Parliament on 22 June 2023. The recommendations are listed below along with WaterNSW proposed responses for actions it has a responsibility for.

	Climate change mitigation and adaption		
#	Recommendation	Responsible	Timing
1	Future Catchment audits to review climate data, climate impacts and NSW Government climate change policies, strategies and activities relevant to Catchment health.	Catchment auditor (WaterNSW lead)	Dec-25
2	Identify major sources of greenhouse gas emissions from the Catchment.	DPE (lead) OECC, EPA	Dec-23
3	Demonstrate how major sources of greenhouse gas emissions in the Catchment are being reduced or eliminated.	OECC (lead) EPA, DPE	Ongoing
4	Demonstrate how potential major sources of greenhouse gas emissions in the Catchment are being avoided or minimised.	DPE (lead) EPA	Ongoing
5	Develop a Catchment disaster mitigation plan to support monitoring and management of Catchment health.	WaterNSW (lead) NSW Reconstruction Authority, NPWS, RFS and DPE	Jun-25
6	Inform sustainable use of groundwater by utilising non-government bores.	DPE	Dec-24

	Adopt improved land use practices		
7	Clarify goals and performance measures for the Source Water Protection Strategy, document methods for measures, establish a baseline and report annually against the established baseline.	WaterNSW	Dec-23
8	Increase regenerative agriculture in priority reaches of the Catchment through refinements to WaterNSW rural programs.	WaterNSW (lead) LLS	Jun-25
9	Make locations and types of government-funded land management programs in the Catchment available via spatial datasets on SEED.	DPE (lead) WaterNSW, NPWS, LLS, Environmental Trust, councils	Jun-25
10	Improve annual NSW vegetation mapping using satellite imagery to show native and non-native vegetation formation classifications, and areas of no vegetation.	DPE (lead) WaterNSW, LLS, NPWS	Dec-24
11	Review the suitability of applying a 60 m buffer to assess potential mining impacts to swamps and streams.	DPE (lead)	Dec-24
12	Improve access to data for organisations involved in assessing wetland significance, risk and impacts, as well as stream health and impacts.	DPE (lead) EPA, Resources Regulator	Jun-24
	Reduce pollution		
13	Consider the implications of DPE's 2023 review of water quality objectives and the associated technical report for assessment and reporting of water quality in the Catchment by WaterNSW.	WaterNSW (lead) DPE, IPART	Jun-24
14	Review methods for measuring aluminium, including sampling and analysis, to determine toxicity risk to aquatic ecosystems.	WaterNSW (lead) DPE, IPART	Jun-24

15	Develop and implement an erosion management decision support tool for the Special Areas.	WaterNSW (lead) NPWS (partner)	Dec-24
16	Undertake detailed analysis and mapping of erosion and sediment loss.	WaterNSW (lead) LLS, DPE	Jun-24
17	Upgrade sewage treatment plants in Wingecarribee LGA and comply with environment protection licences.	Wingecarribee Council (lead) EPA	Jul-24 (Bowral)
18	Review integration of the 2023 on-site sewage management system guidelines into councils' compliance and enforcement policies and programs to inform the need for future guidance and regulatory reform.	OLG (lead) Councils, EPA	Jun-25
19	Audit stormwater management assets dedicated to council to determine if they are maintained to achieve NorBE objectives.	WaterNSW (lead) Councils	Jun-25
20	Audit Module 1 and 2 development applications, assessments and determinations against NorBE requirements.	WaterNSW	Dec-24
21	Expand collaborative pollution control programs and campaigns in high-risk areas of the Catchment.	EPA (lead) Councils, WaterNSW	Dec-24
22	Investigate causes of poor water quality at priority sites so that management can be targeted to the root cause.	WaterNSW (lead) EPA, Councils & EPL holders	Jun-25
23	Develop educational/promotional material on innovative stormwater management practices in the Catchment.	WaterNSW (lead) BMCC	Jun-24
24	Identify and map sources of mine and quarry water discharges in the Catchment, including licenced and legacy premises.	EPA (lead) Resources Regulator	Jun-25

Note: Shaded recommendations are secondary.

Appendix B. Operating Licence Audit OFIs and Recommendations

There were no identified Operating Licence Recommendations or Opportunities for Improvement identified in FY2022 related to catchment management.

Appendix C. WaterNSW Research Publications, Presentations, Papers and Posters

Conference presentations

Chris Chen (2023), Transition from HDR to Industry Forum - School of Civil Engineering - The University of Sydney

Chloe Dale, Rebecca Toth, Collaboration and partnership with external agencies – are you maximising your potential? The Australasian Environmental Law Enforcement and Regulators Network (AELERT) Conference 2023

Rohlfs, Ann-Marie. The long game: Insights from 20 years of macroinvertebrate monitoring - Australian Freshwater Science Society 2022

Rohlfs, Ann-Marie. Future Scenarios for Greater Sydney's Drinking Water Catchments OzWater23

Van Der Sterren, Marlene. Operational Water Quality and Quantity Decision Support Systems development with your stakeholders - International Conference on Water, Waste and Energy 2023

Davie, Alec. Developing a water balance model in longwall impacted upland swamps of the Sydney drinking water catchments - Australian Freshwater Science Society 2022

Ball, Andrew. An extensive monitoring program informs improved risk management of Sydney's water supply – IWA Conference 2023

Oliver, Quinn. Climatic Influencers on Warragamba Water Quality – OzWater23

Rohlfs, Ann-Marie. Unravelling multiple drivers of cyanobacteria blooms following a catastrophic lake regime shift – Freshwater Sciences 2023

Publications

Maryam Zeinolabedini Rezaabad, Heather Lacey, Lucy Marshall, Fiona Johnson (in press) 2023 Influence of resampling techniques on Bayesian network performance in predicting increased algal activity

Ann-Marie Rohlfs, Ebony Heslop, Deyvid W. B. Rosa, James Macken, Simon Fane, Quinn Ollivier, Lisa Hamilton 2023 Future scenarios for Greater Sydney's drinking water catchments. Ozwater23

Quinn Ollivier, Lorena Oliveira, Lisa Hamilton 2023 Climate influences on Warragamba water quality; a multidecadal trend. Ozwater23

Jin Zhu, Richard M. Stuetz, Lisa Hamilton, Kaye Power, Nicholas D. Crosbie, Bojan Tamburic. 2022 Management of biogenic taste and odour: From source water, through treatment processes and distribution systems, to consumers. Journal of Environmental Management 323, 116225

Papers

Chen, Chris. Application of Spatial Rainfall in Hourly Rainfall-Runoff Modelling for Operational Systems - Hydrology and Water Resources Symposium 2022

Posters

White, Emily. Implementing health-based targets in a blended drinking water supply system - Health-Related Water Microbiology Symposium 2023

White, Emily. An extensive monitoring program informs improved risk management of Sydney's water supply - Health-Related Water Microbiology Symposium 2023

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[i] Source water protection in the Sydney Declared Catchment is governed and directed by our responsibilities under the *Water NSW Act* (s. 6(1)(c), 7(1)(g), (h) and (j), and 47(2)), SEPP 2011 (Sydney Drinking Water Catchment SEPP), the Australian Drinking Water Quality Guidelines 2011, and requirements of NSW Health.
[ii] This action supports completion of Recommendation A1 of the 2019 Catchment Audit - Finalise investigations to support upgrades to sewerage infrastructure in the Wingecarribee LGA (Wingecarribee River and Nattai River sub-catchments).
[iii] Addresses Catchment Audit 2013, Recommendation 5 - (DPI, SCA, OEH, NOW, DP&I and Sydney Water should collaborate to develop a risk assessment methodology to assess the impacts of mining, CSG and industrial developments on water resources in the catchment). Also responds to recommendation of the Source Water Protection Framework.
[iv] To assist RFS in addressing Recommendation D1 of the 2019 Catchment Audit - Review and update all Bushfire Risk Management Plans relevant to the Catchment to better recognise and reduce the risks to natural assets and water quality. Apply Strategic Fire Advantage Zones principles to protect water storages.
[v] Responds to recommendation in the Source Water Protection Framework
[vi] To address dot point 1 of Recommendation C2 of the 2019 Catchment Audit - Protect the ecological values of Wingecarribee Swamp through continued weed control and implementation of the Wingecarribee Swamp Operations Plan (noting that weed control effort and funding should reduce to a maintenance level over time)
[vii] To address Recommendation C1 of the 2019 Catchment Audit - Continue joint management of the Special Areas in accordance with the scheduled update of the Special Areas Strategic Plan of Management and long-term land management programs.
[viii] To address Recommendation C1 of the 2019 Catchment Audit - Continue joint management of the Special Areas in accordance with the scheduled update of the Special Areas Strategic Plan of Management and long-term land management programs.
[ix] To assist DPE – Planning to address Recommendation A4 of the 2019 Catchment Audit - Undertake an audit of neutral or beneficial effect (NorBE) related consent / approval conditions for a range of development types.
[x] All budget and actual expenditures exclude overheads.