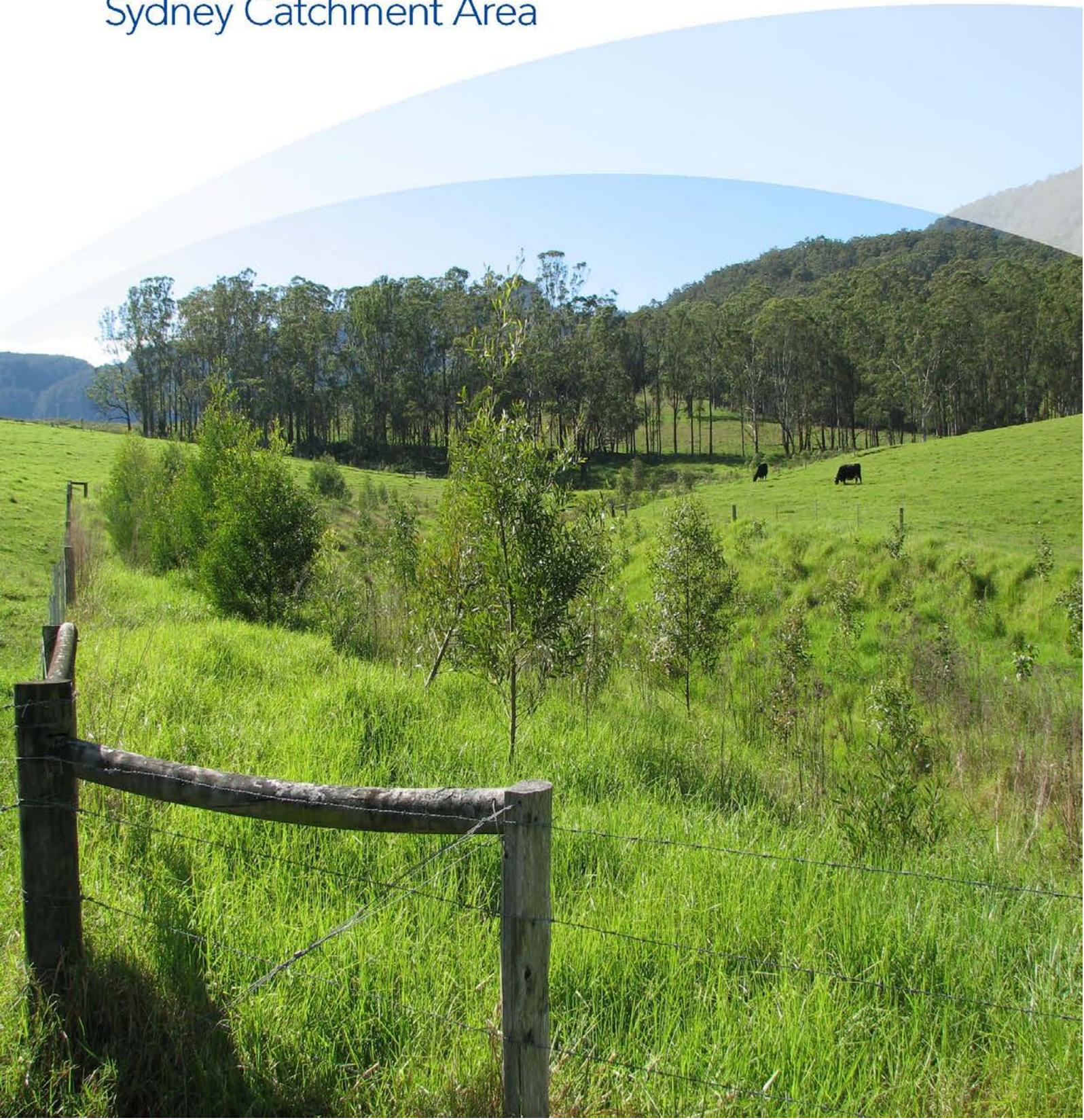


# Catchment Protection Work Program

2018-19

Sydney Catchment Area



# INTRODUCTION

WaterNSW works to increase the health of the Sydney catchment area and provide reliable, quality drinking water for the 5 million people of Sydney and the Illawarra, Blue Mountains, Southern Highlands, Goulburn, and Shoalhaven regions. Catchment management provides the first barrier in a multi-barrier approach to protecting water quality for public health.

The Sydney catchment area covers almost 16,000 square kilometres. More than one-third is important agricultural land for grazing, crops and horticulture, and just under one-third is national park and bushland. The area is home to 125,000 people living in 15 local government areas.

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. A principal objective under the WaterNSW Act is to ensure that the Sydney Declared Catchment is managed and protected in a way that promotes water quality, the protection of public health, and the protection of the environment.

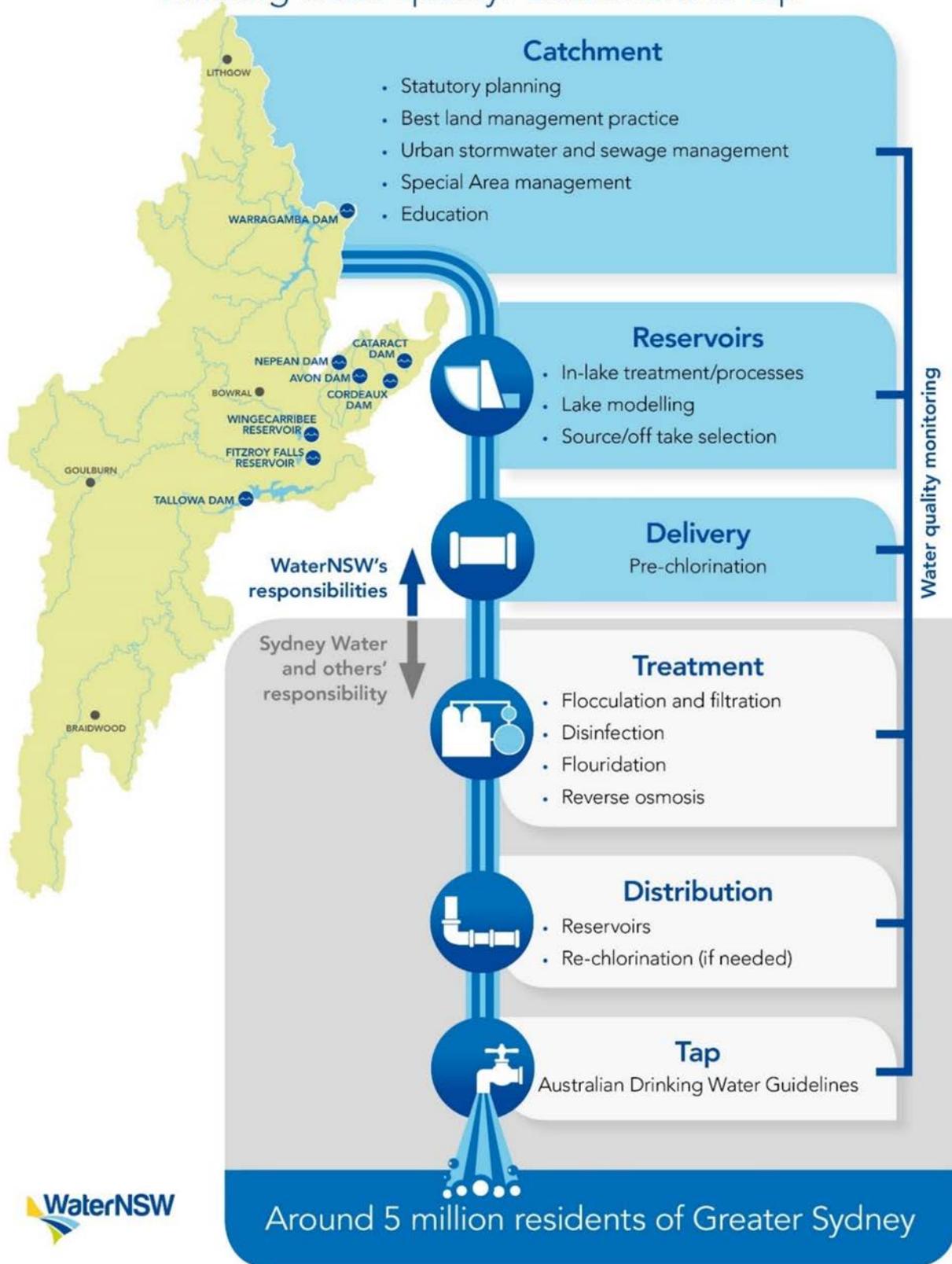
WaterNSW collaborates with a wide range of catchment stakeholders in response to water quality risk in the Sydney catchment area and uses different tools and approaches to manage those risks. The six major tools for managing water quality risk are:

1. Improved Practices
2. Land Management
3. Water Quality Science
4. Enforcement and Surveillance
5. Development Impact Assessment
6. Engaged Communities.

The Catchment Protection Work Program outlines the planned activities and intended outcomes for 2018 -19 in the Sydney Catchment Area in each of the six areas listed above, and a small capital works program. Figure 1 shows the relationship between WaterNSW activities that help manage water quality risk. The program also identifies where actions are addressing recommendations of Catchment or Operating Licence Audits, or research and monitoring.

The program fulfils WaterNSW responsibilities for water quality protection and management and the results of the program are reported in the Annual Catchment Management Report, published on the WaterNSW website.

# Multi-barrier approach to protect Greater Sydney drinking water quality: Catchment to tap



# 1. Improved Practices

Landscape degradation, poor farming practice, intensive animal practices, and past urban development all increase the risk of polluted runoff into waterways and drinking water supply reservoirs of the Sydney Catchment Area. Pathogens (*Cryptosporidium* and *Giardia*), suspended solids, phosphorus, and nitrogen are high priority pollutants.

We work and partner with stakeholders including the Local Land Services, Australian River Restoration Centre, local government, and landholders to increase the use of best practice, change long term behaviours, protect valuable landscape conditions, and reduce polluted runoff.

## 1.1. Grazing and Erosion Program

Poorly managed grazing practice combined with gully erosion is the largest source of pollutants from the Sydney Catchment Area. The Grazing and Erosion Program reduces current pathogen, nutrient, and sediment risks at source.

WaterNSW works with partners and graziers to implement four critical management practices: manage uncontrolled stock access to waterways, control gully and streambank erosion, implement sustainable grazing, and encourage and protect diverse riparian vegetation.

Planned Activities	Planned Outcomes	Budget \$'000
Collaborate with South East Local Land Services (SELLS) and Rivers of Carbon (ROC) to award 50 or more (SELLS 35 + ROC 15) grants to landholders to protect riparian areas, treat erosion, and improve grazing management <sup>1</sup>	Increased application of best management practices in the Sydney Catchment Area: length of riparian protection on high risk properties (58km), erosion treated, hectares of grazing land improved with best practices (1000ha)	\$1,615
Engage and facilitate landholders via an integration of media including social media, web, print media, field days, workshops, and events around grazing management, waterway protection and sustainable grazing.	Increasing interest and engagement from landholders in new management practices, and financial incentive programs	

## 1.2. Urban Stormwater Program

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).

In partnership with local government, WaterNSW is working to identify point sources of stormwater pollution in high risk areas, support and encourage councils to integrate water sensitive design into policy, and co-fund the implementation of water sensitive projects in target areas.

Planned Activities	Planned Outcomes	Budget \$'000
Establish collaborative partnerships between priority councils, WaterNSW and the CRC for Water Sensitive Cities that develop and implement action plans to improve management of urban stormwater	By 2020 priority councils have committed to improving stormwater management and begun to incorporate water sensitive design into policy and development control plans	\$620

## 1.3. Dairy Program

The waste from dairy operations (156,000 L/day) in the Sydney Catchment Area is the equivalent to the wastewater generated from up to 160,000 people each day. Dairy farmers have undertaken considerable work over many years to introduce new practices for managing effluent, managing stock access to waterways, and controlling nutrient inputs into pastures.

In partnership with South Coast and Highlands Dairy Industry Group, NSW Dairy Farmers, and SELLS, WaterNSW is aiming for this program to be the final phase of support for dairy farmers in the Sydney Catchment Area to manage critical sources of water quality risk.

Planned Activities	Planned Outcomes	Budget \$'000
Stage 1 - Identify and map all infrastructure on willing dairy properties and assess risks to water quality	Stage 2 – WaterNSW and SELLS have successfully engaged with the dairy industry and farmers to agree on joint projects and capacity building programs to improve the management of dairy farms in the declared catchment	\$393
Stage 2 - Actively network with Industry bodies and dairy farmers to implement farm improvements		

## 1.4. Economic Appraisal

WaterNSW works with partners to promote and implement practices in the Sydney Catchment Area based on the best available science and evidence. However, like all catchment managers, at this time WaterNSW cannot measure and quantify the pollution reduction benefit of source water protection practices at a catchment scale, and this makes appraisal of economic benefits difficult.

<b>Planned Activities</b>	<b>Planned Outcomes</b>	<b>Budget \$'000</b>
WaterNSW will examine the benefits and costs of achieving water quality targets in the Sydney Catchment Area.	Models will be created to quantify the source water protection work required to achieve a range of water quality targets.	\$208

## 2. Land Management

WaterNSW has responsibilities as a land owner and manager across the Sydney Catchment Area. Land management activities include erosion control, derelict mine management, pest and weed detection and eradication, heritage site management, unauthorised access control, and fire regime planning management.

The Special Areas around Sydney's water supply reservoirs function as important buffers and their management requirements are diverse and demanding. The Special Areas are protected catchment lands of mostly unspoilt native bushland and cover 365,000 hectares around the drinking water supply storages for Sydney, the Illawarra, Blue Mountains, Southern Highlands and Shoalhaven regions. WaterNSW and the NSW National Parks and Wildlife Service (NPWS) jointly manage the Special Areas, which are declared under the Water NSW Act 2014.

WaterNSW maintains public recreation areas at major dams and reservoirs and along the Shoalhaven River. The facilities attract more than 500,000 visitors each year. In the Braidwood area WaterNSW also owns and manages over 22,000 hectares of the catchment, with nearly 50% of the land leased or licensed to private landholders and managed under agreement.

WaterNSW works alongside many partners to accomplish its objectives including the NPWS, the Rural Fire Service, Local Land Services, the Department of Primary Industries, local councils and neighbouring landowners.

### 2.1. Fire Management

Hazard reduction burns, asset protection zones, trained and fitness assessed staff, fire appliances, fire towers, and participation on district bushfire committees are all important activities for managing WaterNSW land, assets, and water quality risks.

Planned Activities	Planned Outcomes	Budget \$'000
<p>Minimise risks to life, property and water quality, from wildfires by:</p> <ul style="list-style-type: none"><li>• Slashing grass and vegetation for fire breaks in priority areas (at least 200km and 400 ha)</li><li>• Mulching trees and woodland along fire trails to maintain fire breaks (at least 45 km)</li><li>• Collaborating with NPWS and RFS to conduct hazard reduction burns (at least 200 ha in priority blocks)</li><li>• Maintaining early detection and rapid response capability and preparedness</li></ul>	<p>Special Areas and WaterNSW land is managed to minimise the risks to life and property, water quality and ecological integrity.</p> <p>Trails are maintained to relevant RFS standards.</p>	<p>\$743</p>

## 2.2. Remote Area Fire Management

Wildfire in the Special Areas can leave soils exposed to erosion, and reservoirs exposed to sediment and burnt organic and mineral material. Every 10-15 years major fires have been experienced in the bushland areas surrounding reservoirs in the Sydney Catchment Area.

Fire risk is increasing under a changing climate, and rapid-fire response is a critical management tool to reduce the likelihood of catastrophic impacts from fires spreading.

<b>Planned Activities</b>	<b>Planned Outcomes</b>	<b>Budget \$'000</b>
Maintain early detection and rapid response capability in the Special Areas for 2018-19 fire season	Respond and attend outbreaks during the declared bushfire danger period within condition specific guidelines and containing 80% of the fires attended to within 10 hectares	\$1,520

## 2.3. Unsealed Roads Program

*Throughout the Special Areas and WaterNSW freehold land is a network of unsealed roads and trails. This network is an important asset for safe access to utilities, to an array of infrastructure and sites such as monitoring stations, for research, and fire response and management.*

*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.*

<b>Planned Activities</b>	<b>Planned Outcomes</b>	<b>Budget \$'000</b>
Inspect and Maintain unsealed road network in Special Areas in accordance with the Asset Management Plan and to the required standards	Inspect 300 km of unsealed road network  Repair and upgrade 40km Unsealed roads are maintained for safe access and strategic fire purposes.  Erosion and sediment loss is minimised and risks to water quality and ecological integrity are minimised	\$292

## 2.4. Pests and Weeds Program

As a land owner and manager WaterNSW has responsibilities to respond to pests and weeds. WaterNSW works with the Office of Environment and Heritage, local government, Local Land Services, Regional Pest and Weed Committees, and landholders to control priority pests and weeds with best practices.

Planned Activities	Planned Outcomes	Budget \$'000
<p>Ongoing control of priority pests and weeds:</p> <ul style="list-style-type: none"> <li>• Contribute to the development and implementation of the Greater Sydney and South East Local Land Service Regional Weed Plans</li> <li>• Improve recording systems for pest and weed control condition assessments and works undertaken</li> <li>• Pig, rabbit, dog, deer and fox control in the Special Areas (at least 400 hrs)</li> <li>• <i>Ludwigia</i> weed control at Prospect Reservoir</li> <li>• Willow and blackberry control in Wingecarribee Swamp (at least 50 ha)</li> <li>• Serrated tussock, broom and blackberry control on Braidwood lands</li> <li>• Blackberry, Fire Weed and other priority weeds in Kangaroo Valley weed control (at least 300 hrs)</li> </ul>	<p>Reduced abundance and extent of priority pests and weeds, minimising risks to water quality and ecological integrity</p>	<p>\$881</p>

## 2.5. Cultural Heritage

There are many natural, historic, and indigenous heritage places throughout the Special Areas and broader Sydney Catchment Area. WaterNSW works with landholders, the community, local and state government, and indigenous land councils and representatives to identify, protect, and manage the values of heritage owned and operated by WaterNSW or found on WaterNSW land.

Planned Activities	Planned Outcomes	Budget \$'000
<ul style="list-style-type: none"> <li>• Repair heritage stone works within the heritage curtilage of our dams</li> <li>• Liaise with Local Aboriginal Groups and elders on access and cultural heritage issues</li> <li>• Protect aboriginal heritage sites</li> </ul>	<p>Preservation of a diverse range of natural and cultural heritage values</p>	<p>\$40</p>

## 2.6. 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 free of charge and 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	Planned Outcomes	Budget \$'000
<ul style="list-style-type: none"> <li>• Progressive rebranding of signs at picnic and recreations areas and installation of improved compliance and safety related signs</li> <li>• Improvements to Bendeela facilities and maintenance of remote toilets in Kangaroo Valley</li> <li>• Routinely inspect trees in recreation and picnic areas and carry out works to reduce the risk of tree fall</li> <li>• Routinely inspect and maintain safety and security barriers and fences around picnic areas</li> <li>• Manage rockfall within the picnic areas and carry out works to maintain safety</li> </ul>	<p>Recreational facilities are maintained and are safe, educational, and appropriate to their setting</p>	<p>\$1,509</p>

## 2.7. Reserve Management

NPWS and WaterNSW work together under the Special Areas Strategic Plan of Management (SASPoM) to manage and protect the qualities of the Special Areas, particularly those that support water quality. Collaborative partnerships with local councils, indigenous land councils, landholders, government agencies, industry, and the community are important for management of the Special Areas.

Planned Activities	Planned Outcomes	Budget \$'000
<p>Monitor and ensure the effective delivery of the NPWS Land Management Program and the joint implementation of the SASPoM.</p>	<p>Management of Special Areas and WaterNSW lands minimises the risks to water quality, ecological integrity and cultural heritage.</p>	<p>\$3,637</p>

## 2.8. Barriers and Fencing Activities

Barriers, fences, and gates are required for a variety of reasons: to provide a safe space and protect the public and WaterNSW staff, the environment, items of cultural or heritage significance, and WaterNSW assets, and to deter unlawful intrusion into restricted or controlled areas.

WaterNSW engages with neighbours, stakeholders, and the wider community to minimise social impacts arise from the installation of fences and infrastructure.

Planned Activities	Planned Outcomes	Budget \$'000
Install and maintain appropriate barriers and fences including: <ul style="list-style-type: none"> <li>• Repair barriers and fences that are damaged or vandalised</li> <li>• Install and replace fences on priority boundaries in the Special Areas and Braidwood lands</li> <li>• Replace compliance signs in strategic locations</li> </ul>	Unauthorised access is deterred to Special Areas limiting activities inconsistent with water quality protection and the <i>Protection of the Environment Operations Act</i>	\$212

### 3. Water Quality Science

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. We work with the water industry, government agencies, research partners, and the community, to ensure that we use the best scientific evidence available.

#### 3.1. Evaluation Activities

Evaluation of WaterNSW programs and projects has an important role in improving the value and effectiveness of the work, and to advance the field of knowledge. WaterNSW uses different evaluative approaches that help to guide projects, suggest how they might be improved, and provide evidence to demonstrate whether they worked as intended.

Planned Activities	Planned Outcomes	Budget \$'000
Select faecal source tracking methods to trial.	Improved ability to link environmental detections of pathogens with specific faecal pollution sources.	\$443
Evaluate water quality changes resulting from WaterNSW to catchment improvement activities.	Improved understanding of the water quality benefits of catchment programs	
Analyse current and emerging research needs for the business and assess gaps in expertise and research partner relationships	Determine research focus areas for the Science Program (2020-2024) and support required to deliver the program	
Watching brief on new emerging issues for water quality through participation in industry and research workshops, forums and conferences.	WaterNSW is aware of and well positioned to respond to emerging water quality risk and issues.	
Review the WaterNSW macroinvertebrate monitoring program <sup>ii</sup>		

### 3.2. Mining Research

The Sydney Catchment Area is underlain by coal measures, with active mining limited to the Southern and Western coalfields including beneath the Metropolitan and Woronora Special Areas. The impacts of underground coal mining are complex and difficult to quantify. WaterNSW is working on improving methods for evaluating active and proposed mining leases.

Planned Activities	Planned Outcomes	Budget \$'000
<p>Assess mining related reports and develop research projects to support the development of cumulative impact thresholds.</p> <p>Undertake a water balance to assess cumulative impacts of coal mining on water quantity<sup>iii</sup>.</p>	<p>WaterNSW understands the past and future impacts of (coal) mining on water quality and quantity in the declared catchment with a high degree of scientific certainty.</p>	<p>\$383</p>

### 3.3. Risk Assessments

Risk assessments play an important role in how WaterNSW manages water quality for drinking water supply and for recreational users. Cost effective and standardised monitoring and detection techniques that withstand scrutiny underpin these risk assessments.

Planned Activities	Planned Outcomes	Budget \$'000
<p>Survey the biomass of carp in declared catchment lakes to develop a risk assessment for the potential impact on water quality of the National Carp Control Program (NCCP).</p> <p>Understand the impact and costs on water treatment of the NCCP in partnership with WaterRA.</p>	<p>WaterNSW understands the water quality risks of the proposed National Carp Control Program and is well positioned to proactively manage potential impacts on our customers</p>	<p>\$290</p>
<p>Undertake wet weather sampling for Cryptosporidium to fill the gap in the data available for pathogen catchment risk assessment</p>	<p>Improved ability to manage wet weather events through better understanding of the pathogen risks.</p>	
<p>Trial a cyanotoxin gene assay as a method for monitoring and assessing recreational risk from cyanotoxin production during cyanobacteria blooms</p>	<p>Improved accuracy of cyanotoxin risk alerts and a reduction in unnecessary risk alerts (false positives)</p>	

### 3.4. Research Partnerships

WaterNSW actively engages with other members of the water industry to leverage our research investment in water quality and catchment health. WaterNSW works with Water Research Australia and other partners to advance techniques and methods of water quality monitoring, risk assessment and management.

Planned Activities	Planned Outcomes	Budget \$'000
Analyse the natural organic matter (NOM) in streams in the Nepean Dam catchment to better understand the relationship between environmental and climatological variables, and NOM character.	Improved capacity to remove NOM and reduce the formation of disinfection by-products at the Nepean Water Filtration Plant.	\$281
Assess the prevalence of toxins and taste and odour compounds in benthic cyanobacteria across Australia including in WaterNSW waterbodies.	Improved understanding of the toxin, taste and odour risks that benthic cyanobacteria pose to water quality.	
Undertake experiments to assess the effects of oxidation on cyanotoxins.	Options for managing the treatment of water when cyanotoxins are present.	
Develop methods to differentiate between <i>E. coli</i> of faecal origin and those that can grow within the environment.	Improved response where <i>E. coli</i> is detected above guideline levels.	
Develop appropriate methods of DNA based faecal source tracking for the water industry.	Improved pathogen risk assessment and pathogen source attribution.	

## 4. Enforcement and Surveillance

WaterNSW has responsibilities under the Water NSW Act 2014, Protection of the Environment Operations Act 1997, and the Water NSW Regulation 2013 to protect water quality in the Sydney Catchment Area. We work with our partners including the NPWS, NSW Fisheries, local councils, NSW Police and the community.

The Special and Controlled Areas are areas of land that cover about 364,000 hectares of mostly unspoilt native bushland surrounding the water storages and infrastructure that supply Sydney, the Illawarra, Blue Mountains, Southern Highlands and Shoalhaven regions. Public access to the Special Areas is restricted under the WaterNSW Regulation 2013.

Regulatory activities include investigations, inspections, surveillance and patrols, and managing and monitoring access requests.

### 4.1. Education

WaterNSW has identified groups that are a high risk of illegally entering and damaging the Special and Controlled Areas. WaterNSW will actively engage with these groups to educate them on the reasons for exclusion of people from these areas and the potential consequences of breaking the law. Through the education program we are seeking to deter illegal entry.

<b>Planned Activities</b>	<b>Planned Outcomes</b>	<b>Budget \$'000</b>
Identify three high risk groups and deliver education that outlines reasons for access restrictions and the consequences of breaching the Regulation.	Unauthorised access to Special and Controlled Areas is reduced through a proactive education program	\$0

### 4.2. Surveillance Activities

WaterNSW has primary responsibility for managing public access to the Special Areas. These areas are restricted, and fines can apply for unauthorised access. WaterNSW provides clear signs and information about access, uses barriers and fencing, and surveillance activities to identify or deter illegal activities.

Surveillance activities are undertaken with the NPWS, Department of Primary Industries – Fisheries, and NSW Police.

<b>Planned Activities</b>	<b>Planned Outcomes</b>	<b>Budget \$'000</b>
Conduct at least three joint compliance operations with interagency partners	Unauthorised access is deterred to Special and Controlled Areas limiting activities inconsistent with water quality protection and the <i>Protection of the Environment Operations Act</i>	\$132
Conduct 1,300 hours of Special Area and Controlled Area surveillance*		

\* hours spent on joint agency operations are excluded from this figure

### 4.3. Investigations

Investigations are a regulatory activity undertaken by WaterNSW to determine breaches of legislation including the Water NSW Act 2014, Protection of the Environment Operations Act 1997, and the Water NSW Regulation 2013. This activity helps deter illegal works that can impact on water quality.

<b>Planned Activities</b>	<b>Planned Outcomes</b>	<b>Budget \$'000</b>
Investigate reports of illegal activities in the declared catchment	Persons or entities contemplating wilful breaches of the legislation protecting water quality are actively deterred by WaterNSW's successful record of detection, prosecution and promotion.	\$120
All investigations will reach a justified closure		
At least 85% of PINs are finalised through fine payment or court enforcement		

### 4.4. Consent Applications

Entering the Special and Controlled Areas requires special consent. Only a small number of people or organisations each year are granted permission under strict conditions. WaterNSW will only grant consent to enter these lands for individuals, companies or groups who can show that their proposed activity meets several criteria. Entry will only be granted where reasons meet our access policy. Our access policy can allow entry for activities including research, cultural connection, management of utilities or specialist training.

<b>Planned Activities</b>	<b>Planned Outcomes</b>	<b>Budget \$'000</b>
Assess and determine access consent applications and grant consent with appropriate conditions, or document clear reasons for refusal	Special Areas are accessed consistent with water quality protection and the Protection of the Environment Operations Act and WaterNSW policy.	\$177

## 5. Development Impact Assessment

Planning authorities receive and assess a range of development proposals in response to population growth, general intensification of land uses and for resource extraction and processing. It is important that this development does not result in further impacts on water quality.

State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011 and Planning Direction 5.2 Sydney Drinking Water Catchment are statutory instruments aimed at ensuring all new development has a neutral or beneficial effect on water quality. WaterNSW has a major role in the implementation of these instruments.

The process of assessing the impact of new development includes preparing guidelines, promoting current recommended practices, reviewing and providing advice on planning legislation and environmental planning instruments, and reviewing and providing advice on development applications. We work with the Department of Planning and Environment and local councils who have responsibilities under the *Environmental Planning and Assessment Act 1979*.

The risks presented by mining within the declared Sydney Catchment Area are an important focus for the WaterNSW. WaterNSW works with and provides advice to the Department of Planning and Environment, Independent Planning Commission, and the Department of Industry. The focus is to reduce risks associated with stored water, water supply infrastructure, and the environment.

### 5.1. Development Impact Assessment

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

State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011 states that all proposed development and activities should incorporate WaterNSW's current recommended practices. In July 2018 there are 33 practices addressing a range of land uses and phases including stormwater and wastewater management.

Planned Activities	Planned Outcomes	Budget \$'000
<ul style="list-style-type: none"> <li>• Support councils for development assessment tools and guidelines including the Neutral or Beneficial Effect Tool</li> <li>• Update the NorBE Guidelines and software tool</li> <li>• Provide advice to proponents, councils and determining authorities on high risk and state significant developments and influence their decision to ensure WaterNSW's interests are protected</li> <li>• Publish an updated Current Recommended Practice for Designing and Installing On-Site Wastewater Systems</li> </ul>	<p>Development in the catchment has a neutral or beneficial effect on water quality</p>	<p>\$749</p>



## 5.2. Land Use Planning

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 guidelines, current recommended practices, and environmental planning instruments. This guidance ensures that the plans, policies and frameworks guiding new developments have specific provisions to maintain and protect the drinking water catchments.

Planned Activities	Planned Outcomes	Budget \$'000
<ul style="list-style-type: none"> <li>Advise local councils on rezoning proposals, planning proposals, local growth strategies, rural land strategies and Development Control Plans</li> <li>Advise the Department of Planning and Environment on key changes to planning law, policies, planning instruments, regional growth plans and tools that affect the catchments and water infrastructure</li> </ul>	All relevant strategic plans and policies contain provisions that help WaterNSW protect and manage water quality, catchment health and water supply infrastructure	\$227

## 5.3. Mining

WaterNSW has no legal powers to control mining in the Sydney Catchment Area, but as the partial owner and joint manager of the Special Areas we seek to influence the planning decisions and to hold mining companies to account for all impacts which significantly harm water quantity, water quality, and ecological integrity.

Mining is a significant community issue and an important focus for WaterNSW. WaterNSW provides advice to regulators, agencies, and the companies involved. We stay abreast of knowledge advances and conduct our own research into the impacts of mining.

Planned Activities	Planned Outcomes	Budget \$'000
<ul style="list-style-type: none"> <li>Advocate WaterNSW principles for mining and coal seam gas impacts in all written advice and submissions<sup>iv</sup></li> <li>Complete and implement the WaterNSW assessment framework for evaluating future mining proposals, and amend the WaterNSW principles for mining and coal seam gas impacts<sup>v</sup></li> </ul>	WaterNSW principles for managing mining and coal seam gas impacts are considered in all decisions about mining activities and proposals in the catchment	\$771

## 6. Engaged Communities

More than 125,000 people live and work in the Sydney Catchment Area and tens of thousands of people travel through and visit the catchment daily. We work and engage 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 tools including the Visitor Centre at Warragamba Dam, the WaterNSW website, publications and media articles, targeted community education programs, community engagement and interpretation structures at our dams and recreation areas. We also deliver a school education program to primary and high schools from across the catchment and Sydney area, and professional development opportunities to teachers.

### 6.1. Community Education

The WaterNSW school excursion program offers primary and high school students the chance to explore all aspects of modern water supply, and to learn about water through hands-on activities in the Warragamba Dam Visitor Centre. The program is linked to the requirements of the NSW syllabus for the National Curriculum.

Planned Activities	Planned Outcomes	Budget \$'000
<ul style="list-style-type: none"> <li>Deliver the Warragamba Dam school excursion program to around 3,500 students</li> </ul>	Surveyed participants have an increased knowledge and understanding of the role of WaterNSW, catchment management and risks to water quality and quantity	\$928
<ul style="list-style-type: none"> <li>Host approximately 100,000 visitors at the Warragamba Dam Visitor Centre</li> <li>Deliver temporary exhibitions at the Warragamba Dam Visitor Centre</li> </ul>		
<ul style="list-style-type: none"> <li>Scope an education program to increase awareness of the need to minimise water quality impacts and illegal entry in the Upper Canal corridor, with increasing encroachment of new development in the area.</li> </ul>		

### 6.2. Community Engagement

Planned Activities	Planned Outcomes	Budget \$'000
<ul style="list-style-type: none"> <li>Metropolitan Dams Electrical Upgrade project</li> <li>Upper Canal refurbishment</li> <li>Upper Canal Post Mining Rehabilitation project.</li> <li>Warragamba Pipeline Replacement project</li> </ul>		\$0

## 7. Capital Program

Project	Area	Project Name	Budget ('000)
0127P6	DD	Bendeela Camping Ground Upgrade	\$500
0135P6	CF	Catchment Upgrade and Replacement of Plant and Equipment	\$225
0134P6	CF	Catchment infrastructure asset renewals	\$203
0136P6	CF	Fire trail upgrade	\$202
0141P6	CF	Special Areas and Braidwood land fencing	\$379

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i Responds to Catchment Audit 2016, Recommendation L1, continue best practice land management programs, targeting 'high risk' properties in priority areas i.e. Wingecarribee, Braidwood, Wollondilly, Mulwaree, Upper Wollondilly and Nattai River sub-catchments.

ii Responds to Catchment Audit 2016, Recommendation D2, integrate locations and timing for monitoring of macroinvertebrates, water quality and stream flow, including environmental flow monitoring sites.

iii Responds to Catchment Audit 2016, Recommendation M4, investigate thresholds at which mining activities cause loss of surface water to mine workings, and impact the yield of individual Sydney catchment water supply systems. Results to be considered in the Metropolitan Water Plan.

iv Addresses Catchment Audit 2013, Recommendation 2 (In the management of the Special Areas the SCA shall continue to make recommendations to the DP&I, which are commensurate with their Principles for Managing Mining and CSG impacts) and Partially addresses Catchment Audit 2013

v 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)