

4 Water

In this section 'Water' refers to beaches, bays, lagoons, creeks, wetlands, groundwater, stormwater and potable water. The SHOROC region is characterised by a diverse array of water assets, which provide vital ecosystems for aquatic and intertidal biodiversity, and are highly valued for their aesthetic and recreational opportunities.



Pressures on our Water

Key pressures include:

- stormwater runoff from impervious surfaces
- sewer overflows, outfalls and licensed discharges
- litter
- nutrient run-off from gardens, industrial estates and animal waste
- water pollution incidents
- increase in population and water consumption, and
- drought conditions (reduced rainfall).

Condition of our Water

As a life source good quality water is essential for ecosystem health, consumption and recreational activities. There is a responsibility to ensure that good water quality is maintained whilst also ensuring a sustainable level of consumption. The condition of water in the SHOROC region is highlighted below.

Regional Snapshot

Table 7: Regional Water Condition

| Indicator | SHOROC Region | | | | |
|--|---------------|---------|---------|---------|-------|
| | 2006/07 | 2007/08 | 2008/09 | 2009/10 | Trend |
| Number of pollutant traps (council control) | 174 | 175 | 180 | 183 | ↑ |
| Total gross pollutants removed from pollutant traps (tonnes) | 1,603 | 1,447 | 1,005 | 1,059 | ↓ |
| Total residential potable water use (kilolitres per capita)* | 75 | 71 | 80 | 81 | ↑ |
| Total council potable water use (kilolitres) | 384,941 | 357,601 | 364,356 | 413,876 | ↑ |

*Total Regional residential potable water use divided by the regional population.



As of 2009/10, Harbourwatch/Beachwatch water quality results are no longer reported as percent compliance. Instead, Beach Suitability Grades under the National Health and Medical Research Council guidelines for Managing Risks in Recreational Waters (2008) are utilised to grade the beaches. The Beach Suitability Grade is a long term assessment of the suitability of a swimming location and is derived from a combination of sanitary inspection and water quality measurements gathered over previous years. The sanitary inspection identifies potential pollution sources, assesses the risk posed by each and then determines the overall risk at the swimming site, and the microbial water quality is attained by calculating the 95th percentile of enterococci water quality data. The Beach Suitability Grades can be either Very Good, Good, Fair, Poor or Very Poor.

Table 8 below shows the beach suitability grade for beaches within the SHOROC region.

Table 8. 2009/10 Harbourwatch/Beachwatch Suitability Grading for SHOROC Beaches

| Harbour Beaches | | |
|-----------------|-----------------------|-------------------------|
| Council | Beach | Beach Suitability Grade |
| Pittwater | Barrenjoey Beach | Very Good |
| Pittwater | Paradise Beach Baths | Good |
| Pittwater | Clareville Beach | Good |
| Pittwater | Bayview Baths | Good |
| Pittwater | Elvina Bay | Good |
| Pittwater | North Scotland Island | Good |
| Pittwater | South Scotland Island | Good |
| Pittwater | The Basin | Very Good |
| Pittwater | Great Mackerel Beach | Very Good |
| Manly | Gurney Crescent Baths | Fair |
| Manly | Clontarf Pool | Good |
| Manly | Forty Baskets Pool | Good |
| Manly | Fairlight Beach | Good |
| Manly | Manly Cove | Very Good |
| Manly | Little Manly Cove | Good |
| Mosman | Clifton Gardens | Good |
| Mosman | Balmoral Baths | Good |
| Mosman | Edwards Beach | Good |
| Mosman | Chinamans Beach | Good |
| Warringah | Davidson Reserve | Poor |

| Ocean Beaches | | |
|---------------|----------------------------------|-------------------------|
| Council | Beach | Beach Suitability Grade |
| Pittwater | Palm Beach | Good |
| Pittwater | Whale Beach | Very Good |
| Pittwater | Avalon Beach | Very Good |
| Pittwater | Bilgola Beach | Very Good |
| Pittwater | Newport Beach | Good |
| Pittwater | Bungan Beach | Very Good |
| Pittwater | Mona Vale Beach | Very Good |
| Pittwater | Warriewood Beach | Good |
| Pittwater | Turimetta Beach | Good |
| Warringah | North Narrabeen Beach | Good |
| Warringah | Narrabeen Lagoon (Birdwood Park) | Poor |
| Warringah | Collaroy Beach | Good |
| Warringah | Long Reef Beach | Good |
| Warringah | Dee Why Beach | Good |
| Warringah | North Curl Curl Beach | Good |
| Warringah | South Curl Curl Beach | Good |
| Warringah | Freshwater Beach | Good |
| Manly | Queenscliff Beach | Good |
| Manly | North Steyne | Good |
| Manly | South Steyne | Good |
| Manly | Shelly Beach | Good |

Local Snapshot

Table 9: Stormwater

| Indicator | Year | Council | | | |
|---|---------|---------|--------|-----------|-----------|
| | | Manly | Mosman | Pittwater | Warringah |
| Number of gross pollutant traps (council control) | 2006/07 | 23 | 30 | 22 | 99 |
| | 2007/08 | 24* | 30* | 22 | 99 |
| | 2008/09 | 23** | 31 | 27 | 99 |
| | 2009/10 | 23 | 32 | 29 | 99 |
| Total gross pollutants removed from GPTs (tonnes) | 2006/07 | 183 | 377 | 57 | 986 |
| | 2007/08 | 158* | 302 | 96 | 891 |
| | 2008/09 | 79** | 286 | 99 | 621 |
| | 2009/10 | 169 | 180 | 110 | 600 |

*Two Manly units and one Mosman unit were not performing to full operational capacity during 2007/08.

**Four Manly units were not performing to full operational capacity during 2008/09

Table 10: Water Consumption

| Indicator | Year | Council | | | |
|---|---------|-----------|-----------|-----------|------------|
| | | Manly | Mosman | Pittwater | Warringah |
| Total LGA potable water use (kilolitres) | 2006/07 | 3,776,919 | 2,903,941 | 5,064,615 | 11,727,414 |
| | 2007/08 | 3,565,403 | 2,816,409 | 4,709,263 | 11,277,076 |
| | 2008/09 | 3,774,512 | 2,915,400 | 4,910,571 | 11,581,445 |
| | 2009/10 | 3,726,619 | 3,019,243 | 5,181,272 | 11,963,629 |
| Total residential potable water use (kilolitres per capita) | 2006/07 | 80 | 88 | 75 | 84 |
| | 2007/08 | 76 | 83 | 72 | 80 |
| | 2008/09 | 77 | 86 | 75 | 82 |
| | 2009/10 | 76 | 89 | 76 | 83 |
| Total council potable water use (kilolitres) | 2006/07 | 104,967 | 50,000 | 119,615 | 110,359 |
| | 2007/08 | 79,185 | 43,981 | 104,356 | 130,079 |
| | 2008/09 | 80,350 | 49,690 | 120,963 | 115,927 |
| | 2009/10 | 82,213 | 48,861 | 131,715 | 151,087 |



Table 11: Participation in Sydney Water's Water Saving Program

| Water Saving Program | Manly | | Mosman | | Pittwater | | Warringah | |
|----------------------------|------------|------------------|------------|------------------|------------|------------------|--------------|------------------|
| | 09/10 | Total 99 to 2010 | 09/10 | Total 99 to 2010 | 09/10 | Total 99 to 2010 | 09/10 | Total 99 to 2010 |
| DIY Kit | 97 | 1,457 | 16 | 830 | 30 | 1,520 | 158 | 5,145 |
| WaterFix your home | 31 | 3,971 | 21 | 2,238 | 45 | 5,241 | 118 | 14,777 |
| Washing machine rebate | 381 | 2,679 | 241 | 1,753 | 401 | 2,906 | 1,052 | 7,664 |
| Rainwater tank rebate | 35 | 363 | 13 | 300 | 69 | 1,245 | 108 | 1,797 |
| Love Your Garden | 100 | 379 | 93 | 335 | 19 | 470 | 51 | 933 |
| Toilet rebate | 102 | 164 | 60 | 76 | 197 | 389 | 653 | 1,106 |
| Total Participation | 746 | 9,013 | 444 | 5,532 | 761 | 11,771 | 2,140 | 31,422 |

Source: Sydney Water

Responding to Water Issues

Regional Responses

Formation of the SHOROC Water Cycle Management Working Group

The SHOROC Water Cycle Management Working Group was created in 2009. The group comprises staff from each of the four member Councils as well as Sydney Water, SCCG, DECCW, and SMCMA. The objective of the group is to drive best practice and coordinate the sustainable and efficient sourcing, delivery and use of water resources (including wastewater, stormwater, groundwater and potable water), with a focus on protection of environmental and public health within the SHOROC region. The group meets bi-monthly.

Narrabeen Lagoon Creating a Sustainable Catchment

2009/10 has been the third year of this joint Warringah and Pittwater Council restoration project, which was awarded a grant of almost \$2 million from the NSW Environmental Trust in 2007. The sustainable living education campaign has produced a number of highlights over the 2009/10 year. One of the major projects was a Bushcare DVD entitled "Caring for our Catchment - the Story of Narrabeen Lagoon". The DVD, highlighting the natural beauty and cultural spirit of the catchment area, outlines what is currently being done to protect the area and what

everyone can do to preserve the Lagoon's unique environment. Outdoor events including spotlight walks, eco-paddles, bird walks and bushwalks also featured, as well as the Sustainability Champions program with workshops on energy reduction, increasing backyard biodiversity and waste reduction. Schools education included a Teacher Professional Learning Day which was a high quality, well received event reaching seventy-six teachers within the catchment area.

In February 2010, Warringah Council coordinated a two day practical workshop on new approaches to promoting behavioural change on sustainability. The workshop was led by Dr Doug McKenzie-Mohr, a world leader in the growing field of community-based social marketing which draws on environmental psychology to increase public participation in sustainability at a community level.

The grant has also funded a number of on-ground works in the catchment. To date, nine long term bush regeneration contracts are in progress focusing on major creek systems including Middle, Oxford, Deep, Nareen and Mullet Creek.

They include works such as:

- severing exotic vines and clearing lantana from native canopy trees, then maintaining buffer zones to allow natives to revegetate these clearings in place of the weeds
- the removal of all *Ludwigia peruviana* (Primrose Willow) and Pampas Grass growing in the creek line and swamp areas
- maintaining areas of endangered ecological communities such as Bangalay Alluvial Forest
- maintaining and expanding areas of resilient bush and good bushland core areas; linking areas of good bush to each other through revegetating and regenerating bushland areas, and identifying bushland areas which will prove to be the most resilient or least prone to weed re-infestation.

Additionally, Warringah and Pittwater Councils are working in close connection with a community committee that has been formed to provide a conduit to the greater community and to build ownership and empowerment amongst the members.

Sewer Leak Investigation

Manly and Warringah Councils are working with Sydney Water to improve water quality of ocean and harbour beaches. The collaborative program involves dry weather monitoring of stormwater drains to waterways to identify and fix sewer leaks. Manly and Warringah Councils along with Sydney Water have extended this program to Manly Lagoon. During and after rainfall there are elevated levels of faecal bacteria in the stormwater system. This affects the water quality in Manly Lagoon and investigations are being undertaken to determine sources of faecal indicator bacteria in wet weather within the catchments.

In 2009/10, Warringah Council investigated all the stormwater pipes entering Manly Lagoon from Warringah's side of Manly Lagoon. The investigation involved sampling of any water draining from stormwater pipes during dry weather into the lagoon for indication of raw sewage. Unexpected results were communicated to Sydney Water for further investigation.

Delivering Local Responses

Manly Council

Water Savings Program

Manly Council's Water Savings Program began in 2000/01, and has resulted in a 55% reduction in Council's total organisational potable water usage. The Program involves the use of harvested stormwater, groundwater, and rainwater projects for non-potable uses to reduce the use of potable water, demand reduction and the use of water conservation devices.

In 2009/10 Manly Council continued a successful leak investigation program which identified and repaired a range of concealed leaks in Council's facilities. Council has also continued the implementation of new rainwater tank and water conservation devices to a range of sites.

Manly Lagoon Rehabilitation Works

The rehabilitation of Manly Lagoon (jointly managed by Manly and Warringah Councils) has been ongoing for a number of years following preparation of the Manly Lagoon Estuary Management Study (1995) and adoption of the Manly Lagoon Estuary Management Plan (1998), and the Manly Lagoon Integrated Catchment Management Strategy (ICMS, 2004). These documents highlighted a number of major and minor works to be undertaken to progress estuary rehabilitation. A major outstanding project highlighted in these plans is the removal of catchment-borne accumulated sediment in Manly Lagoon to the west of the Pittwater Road Bridge. This project has received \$690,000 funding from the NSW DECCW, to be matched by the Councils. Progress in 2009/10 included:

- appointment of a suitably qualified contractor to undertake the works and plans
- completion of environmental assessments (Review of Environmental Factors) with public exhibition in July/August 2010, and
- NSW Government agency approval to proceed with the works.



Mosman Council

Water Savings Action Plan

In March 2010, Mosman Council submitted the third annual report on the progress of Council's Water Savings Action Plan to DECCW. The annual report highlighted Council's water savings through actions such as the installation of dual flush toilets in the Civic Centre, the installation of touch free taps in the ladies toilets in the Civic Centre and the installation of stormwater reuse storage tanks for oval irrigation.

Creek Monitoring

The Mosman creek monitoring program was completed on 30 June 2010. Monitoring was undertaken on a quarterly basis at four creeks, for physio-chemical parameters and biannually for macro-invertebrates. Three wet weather events were also sampled for two of the creeks. Water quality was generally good, with the exception of parameters such as faecal coliforms, total nitrogen and phosphorus and copper, which were elevated at some of the creek sites, particularly following rainfall. Only very common and common water bugs were found inhabiting the creeks, as these water bugs have a greater tolerance to lower water quality levels.



Mosman Bay Creek. Source: Mosman Council

Botanic Road Stormwater Reuse Scheme

A treatment train incorporating a Stormwater Quality Improvement Device (SQID) and a Stormwater Storage System was completed during 2009/10, at Botanic Road. The storage system is located underground in the Botanic Road Reserve, and water in the storage system is treated with a ultra-violet (UV) treatment system before being used to irrigate Balmoral Oval and surrounding gardens and parkland.

Urban Irrigation Program

Mosman Council signed on to become a partner in a two year research program entitled, "Sustainable Watering to Purpose in Urban Landscapes: Developing Irrigation Benchmarks for Science-Based Policy and Practice". This program is a partnership program between the University of Western Sydney, the Council of the City of Sydney, Mosman Council, Woollahra Municipal Council, Marrickville Council, and Rockdale City Council. One or more of Mosman's ovals will be utilised as a case study for the program to determine the correct amount of irrigation required to find the balance between sustainable water consumption and oval maintenance requirements.

Pittwater Council

Warriewood Wetland and Nareen Wetland Plans of Management

Plans of Management have been adopted for both Warriewood and Nareen Wetlands, significant natural areas in Pittwater. The development of these Plans of Management were funded by SMCMA and address the following key issues: vegetation, biodiversity, habitat management, water quality, maintaining access and improving recreation areas, dealing with encroachment of private assets and community education and participation.

Estimate of Environmental Flows in Mullet Creek

Through a "Creating a Sustainable Catchment Grant" from the Environmental Trust, Pittwater undertook an environmental flow assessment study to assess the flow regime in the Mullet Creek catchment. The study aimed to develop an understanding of the impact of the main water storages in the catchment, flow extractions and transfers in creek hydrology. This study will help provide an initial step to potentially developing a Water Sharing Plan to manage the Mullet Creek resource.

The Coastal Environment Centre is also educating the community about caring for local catchments, creeks and aquatic fauna through their catchment education program. This has included recruiting volunteers for ongoing water quality monitoring and conducting community days to discover Mullet Creek and its waterbugs.

Water Management Forum

Pittwater Council in conjunction with Watersave Australia held a best practice workshop on integrated water management for public open space at Mona Vale Golf Course in September 2009. The event was held on the 29 September 2009 and 111 people attended. The purpose of this workshop was to discuss how to get the best results with a limited water supply on sports fields, reserves and golf courses, covering topics such as drought resistant grasses, innovations in irrigation, stormwater harvesting and sewer mining.

Following on from the Forum the Coastal Environment Centre has been working with Mona Vale Golf Course on educating the community and schools on their integrated water project. This project has enabled the club to clean and store stormwater for irrigation purposes, making them now fully self-sufficient and saving 22 megalitres/year of drinking water.

Great Mackerel Beach Floodplain Risk Management Study and Plan

Great Mackerel Beach is a high risk flood prone area. The Great Mackerel Beach Floodplain Risk Management Study and Plan has been drafted and recently placed on Public Exhibition. The primary aim of the Plan is to reduce the flood hazard and risk to people and property in the existing community and to ensure future development is controlled in a manner consistent with the flood hazard and risk. A detailed assessment of the impacts of climate change (sea level rise and increased rainfall intensities) on the community at Great Mackerel Beach were also included in the project. High priority actions in the Plan include the preparation of a Lagoon Entrance Management Policy, the inclusion of additional information on property planning certificates, the commencement of adaptation to climate change through development controls and the preparation of a Community Flood Emergency Response Plan.



Great Mackerel Beach Community Information Day.
Source: Pittwater Council



Warringah Council

Every Drop Counts at Warringah Council

Warringah Council has achieved four stars under Sydney Water's five star 'Every Drop Counts' program as a result of a concerted effort across Council operations to reduce water consumption. The objective of the five-star water management program is to help organisations take a holistic approach in managing their water resources. To date, only a handful of councils have reached four stars and above.

Backwash Recycling System at the Warringah Aquatic Centre

During 2009/10, a backwash recycling system was installed at the Warringah Aquatic Centre. This proposal was subject to an options evaluation process as part of Council's Business Excellence Program, including a risk evaluation and decision-making matrix which contained reference to the environmental, economic and social constraints and opportunities associated with the proposal. The system was funded through the Local Government Infrastructure Program and was commissioned in late 2009. It will reduce the need to use around 3ML of mains-supplied water per year.

Cities as Water Supply Catchments

During the reporting period, Warringah Council joined a world first water research program, Cities as Water Supply Catchments, which is aimed at meeting the challenges of housing a growing population in an era of climate change. The national five year research initiative will look at effectively and efficiently harvesting stormwater to supplement water usage across Australia. It will also provide ongoing practical solutions to harvesting stormwater by improving existing infrastructure and implementing new environmentally friendly systems. The program includes researchers from Monash, Melbourne and Queensland Universities, representatives from local, state and federal governments across Australia and industry representatives. The SMCMA through its Water

Sensitive Urban Design in Sydney Program is acting as a lead agency to facilitate a regional Sydney Metropolitan Consortium of interested councils and NSW Government agencies. Key advantages of this program over other research initiatives include:

- delivering a sound research program with strong industry focus
- allowing leading researchers from across all key discipline areas to work together, and
- providing holistic solutions to climate change challenges.

New Environmental Assessment Strategy for Local Industry

Warringah Council adopted a new Environmental Assessment Strategy for Local Industry in September 2009. The strategy is aimed at improving the environmental performance of business operations in Warringah, thereby improving the quality of our local environment. The strategy was launched in May 2010 with an industry trade event where local businesses accessed environmental information and materials to assist their businesses. Environmental assessments are undertaken for local industries, initially targeting businesses with greater risk potential to cause pollution. Council's Compliance Services team also responds to pollution spills with regard to enforcement and overseeing clean up actions.



Backwash Recycling Plant - Warringah Aquatic Centre.
Source: Warringah Council