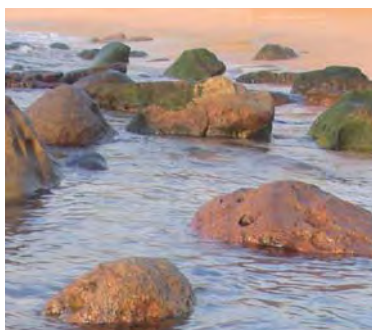




SHOROC

State of the Environment Report

2008/2009



SHOROC – Shore Regional Organisation of Councils

Comprehensive State of the Environment Report 2008/2009

Prepared by Manly, Mosman, Pittwater and Warringah Councils

November 2009

Due to the differences in the methodology in reporting by councils and stakeholders, the figures reported throughout this document may vary slightly. Any comparisons that have been drawn have been performed using the best available data and provide the most current state of an indicator. SHOROC apologises for any errors or exclusions and welcomes comments for future State of the Environment Reports undertaken.

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www.manly.nsw.gov.au

www.mosman.nsw.gov.au

www.pittwater.nsw.gov.au

www.warringah.nsw.gov.au

www.shoroc.nsw.gov.au

Abbreviations

AHO	Aboriginal Heritage Office
BOD	Biological oxygen demand
CBD	Central business district
CCP	Cities for Climate Protection
CEC	Pittwater Coastal Environment Centre
CMA	Catchment Management Authority
CMP	Coastline Management Plan
CO₂e	Carbon dioxide equivalent
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DCC	Commonwealth Department of Climate Change
DCP	Development Control Plan
DECCW	(NSW) Department of Environment, Climate Change and Water
DIY	Do it yourself
DLG	(NSW) Department of Local Government
E-waste	Electronic waste
GHG	Greenhouse gas
GIS	Geographic Information System
GPS	Global Positioning System
GPT	Gross pollutant trap
ICLEI	International Council for Local Environmental Initiatives
ICOMOS	International Council on Monuments and Sites
Kg	Kilograms
Kwh	Kilowatt hour
LEP	Local Environment Plan
LGA	Local Government Area
LGSA	Local Government and Shires Association
LPG	Liquefied petroleum gas
LRGC	Long Reef Golf Club
MEC	Manly Environment Centre
mWh	Megawatt hours
NSW	New South Wales
RAP	Remediation Action Plan
REF	Review of Environmental Factors
RTA	(NSW) Roads and Traffic Authority
SCCG	Sydney Coastal Councils Group
SHOROC	Shore Regional Organisation of Councils
SoE Report	State of the Environment Report
SQID	Stormwater Quality Improvement Device
UFAAG	Urban Feral Animal Action Group
UV	Ultraviolet

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1 Introduction



Spring Tide. Source: Manly Council.

1.1 What is SHOROC?

A Regional Organisation of Councils or ROC is a partnership of local government entities that agree to collaborate on matters of common interest. SHOROC (Shore Region of Councils) comprises the local government areas of Manly, Mosman, Pittwater and Warringah.

SHOROC was launched in August 1994 and became formally incorporated in September 2006 thereby increasing its effectiveness to advocate on behalf of the region. Its mission is to value the individuality of member councils while co-operating to achieve a better outcome for the community across the entire region, through networking, resource sharing, shared projects, and lobbying. Progress on projects managed by the various SHOROC Steering Committees is reported to the Board which meets on a regular basis.

SHOROC continues to maintain and improve co-operation and resource sharing between member councils to advocate effectively on social, economic, cultural and environmental issues and to manage sustainable growth so as to protect the environment and lifestyle of our local communities. SHOROC continues to consider environmental and sustainability matters when undertaking cooperative activities, and is in the process of incorporating sustainability into the framework of its proposed regional strategy to ensure that SHOROC and individual member Councils are committed to sustainability outcomes in the future.

For more information about SHOROC and to view annual reports, visit www.shoroc.nsw.gov.au.

1.2 What is a State of the Environment (SoE) Report?

A State of the Environment (SoE) Report is an important management tool for councils to determine the effect of management actions on environmental conditions in the local area. It provides a snapshot of the:

- State (or condition) of the environment i.e. the environmental quality and quantity of natural resources
- Pressures impacting upon the condition of the environment, and
- Response by councils and the community to address the pressures on the environment.

In accordance with the requirements of the *Local Government Act 1993* councils are required to produce a comprehensive SoE Report on all major environmental impacts, related activities and management plans. A comprehensive SoE Report is required once every four years, at the end of the year following a council election. A supplementary report is developed in the intervening years to identify any new environmental impacts since the last SoE Report and update environmental trends. This SoE Report is a comprehensive report for the 2008/09 reporting period. This report will also make up a component of each council's individual Annual Report pursuant to S.428 of the *Local Government Act 1993*.

A regional approach to SoE reporting has been adopted to enable the community and SHOROC to gain a better understanding of the state of the environment, in a regional context. Working together as a region enables the sharing of ideas and knowledge on sustainability reporting, environmental practices and innovation, collaboration on regional programs and the strengthening of regional links.

This report is designed to provide an accessible environmental reporting tool for the communities of the SHOROC region, to assist councils and councillors identify and monitor key environmental issues and to meet the legislative reporting requirements of the *Local Government Act 1993*. Each chapter of the report has been structured to reflect the accepted standard for SoE reporting known as the 'State-Pressure-Response' model which is utilised at a state and national level.



As this is a regional SoE Report, it focuses on common regional projects and details some of the local projects undertaken by each of the four SHOROC member Councils during the 2008/09 financial year. The initiatives presented in this report for each member Council do not reflect all of the initiatives undertaken by each council during the reporting period.

It should be noted that this current form of the SoE Report will be replaced by a new planning and reporting framework outlined in the *Local Government Amendment (Planning and Reporting) Bill 2009* which was assented to on 1 October 2009.

The new planning and reporting framework will be phased in over a three year period. All councils will be operating under the new system from the commencement of the next local government electoral term in September 2012.

1.3 Environmental Indicators

Indicators such as water consumption statistics and greenhouse gas (GHG) emissions are important management tools used in environmental reporting. These indicators are used to summarise and communicate information about the condition of key aspects of complex environments.

New indicators, for which all the member Councils could provide meaningful data, were selected for the first regional SoE Report in 2006/07. As the indicators are relatively new, data from years prior to 2006/07 are not available to provide a comparison. However, a regional analysis of environmental trends over time has commenced.



Native Rosemary. Source: Manly Council

1.4 Consulting with our Communities

In preparation of the 2008/09 comprehensive SoE Report, community consultation was undertaken in order to identify issues important to the community which are within council's area of influence. Input from the community was sought through written submissions and through participation in a regional community consultative meeting on 6 August 2009. Advertisements were placed in the Manly Daily and Mosman Daily inviting the community to provide submissions to the SoE Report and to attend the community consultation meeting.

Twenty five people participated in the regional community consultation meeting, with 21% of participants from Mosman Local Government Area (LGA), 21% from Manly LGA, 29% from Pittwater LGA and 29% from Warringah LGA. Participants were grouped into areas of interest, according to the chapters of the SoE Report, for discussion. Priority issues were identified and recommendations were made to address these priority issues. Details are provided in each relevant chapter, however, the primary issues raised at the community meeting are provided below (not in any specific order and with chapter reference in brackets):

- Sea level rise (effects/impacts on public and private land) (Land and Coastline)
- Improving water quality from stormwater runoff (Land and Coastline)
- Horse riding (maintaining access to safe trails in appropriate areas) (Land and Coastline)
- Inappropriate development impacting on sensitive catchment and bushland areas (Water)
- Containing new development within existing urban areas and minimising impact on bushland and open space (Human Settlement)
- Retaining/improving or protecting areas of remaining native vegetation (Biodiversity)
- Reducing motor vehicle usage and emissions by promoting alternative forms of transport (Atmosphere), and

- Better organisation, conservation, promotion of historical research and heritage items in the SHOROC region (improve documentation) (Heritage).

Whilst there were many issues raised during the community consultation meeting, these issues and their associated recommendations were clearly the priority items. It is recognised that these issues do not necessarily reflect wider community concern however they will be considered for future environmental planning and decision making across the region.

Ten written submissions were received from community groups and individual community members including information on programs that have been implemented to improve the state of the environment, primary environmental concerns, and recommendations for how these environmental issues can be dealt with and managed in the future. The main issues raised are provided below:

- Climate change and sea level rise, in particular how climate change will impact on biodiversity and coastal ecosystems
- Continued pressure for development along the foreshore - implications in terms of sea level rise, and
- Traffic congestion/air pollution.

Further details of the issues and recommendations from the written submissions are provided in Appendix A.

The SHOROC Councils have also undertaken other types of environmental consultation. For example, Warringah Council has just completed community consultation for the revision of its Environmental Strategy, and Pittwater and Warringah Councils partnered with the Nature Conservation Council of NSW in the NSW Community Climate Summit to obtain the views of a representative cross section of the community to provide input into recommendations for climate change action. Further details on this project can be found in the Towards Sustainability section.

Mosman Council held a community conversation in March 2009 to gain community input and feedback on Council's strategic plan, which included a component on the environment. Mosman Council also undertook a community environmental survey in April/May 2009 to identify the community's primary environmental concerns and determine future environmental programs.

Manly Council conducted community surveys at the 2009 Fair trade Markets and the Sustainability Fair to gauge knowledge, attitude and behaviour regarding fair trade and sustainability and climate change in order to determine the educational needs within the local community.



Community Consultative Meeting. Source: Manly Council



Rock Platform, Avalon. Source: Pittwater Council



1.5 SHOROC at a Glance

SHOROC Regional Profile

The region, shown in Figure 1, covers an area of 264 km² and is bordered on three sides by water, namely the Pacific Ocean, the Hawkesbury River and Sydney Harbour.

Figure 1: The SHOROC Region

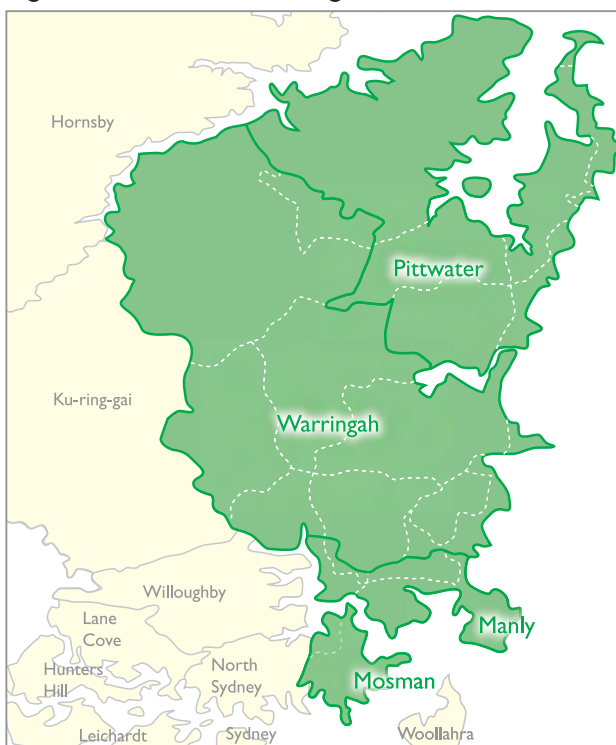
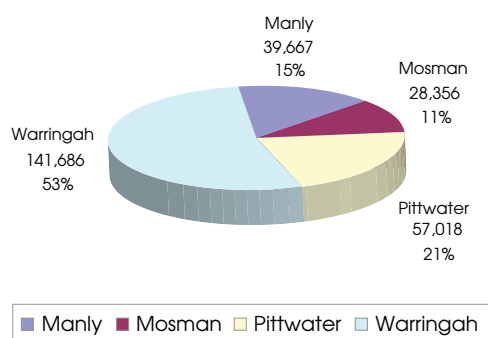
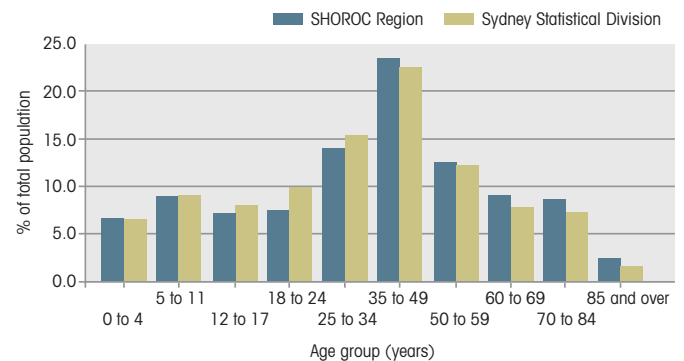


Figure 2: Population Distribution Across the SHOROC Region



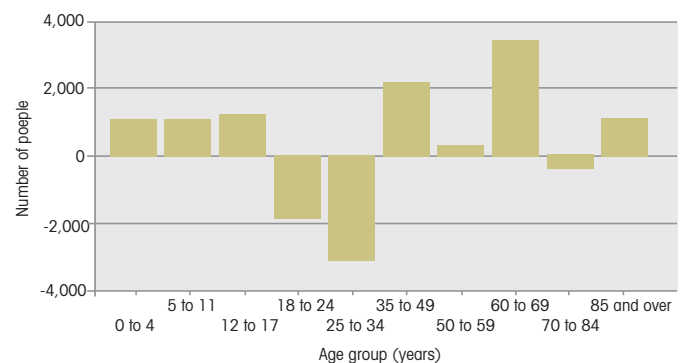
Source: www.abs.gov.au

Figure 3: Age Structure of the SHOROC Region Compared to Sydney Statistical Division, 2006



Source: Australian Bureau of Statistics. 2006 Census of Population and Housing (Enumerated)

Figure 4: Change in Age Structure of SHOROC Region, 2001 To 2006



Source: Australian Bureau of Statistics. 2006 and 2001 Census of Population and Housing (Enumerated)

As at June 2008, the four SHOROC member Councils represented 266,727 people. This is an increase of 0.3% from the previous year. Warringah has the highest population in the area, with 141,686 people, followed by Pittwater with 57,018, Manly with 39,667 and Mosman with 28,356 people (see Figure 2).

According to the most recent Census undertaken in 2006 (refer to Figure 3), analysis of the age structure of SHOROC region compared to the Sydney Statistical Division shows that there was a similar proportion of people in the younger age groups (0 to 17). However, the SHOROC region, in comparison to Sydney, has a larger proportion of people in the 60+ age groups. The SHOROC region

also shows a higher proportion of people in the 35-59 age groups but a lower proportion of people in the 18-34 age groups, comparative to Sydney (www.forecast.id.com.au).

The age structure in the SHOROC region has remained the same in the 2006 Census as that reported in the 2001 Census for most age groups, as shown in Figure 4 (www.abs.gov.au). There has been a slight decrease in the number of people aged between 18-24 and 25-34, whilst there has been an increase in the 60-69 age group.

Within the SHOROC region during the 2006 census, 53.3% of people lived in separate houses, 21.8% lived in high density housing and 14.9% lived in medium density housing. This was similar to the data recorded for the 2001 Census. During the 2006 census, 35.6% of households in the SHOROC region had two vehicles, 35.5% had one vehicle, 12% of households in the region had three or more vehicles, and only 9% of households did not have a vehicle. There was a slight increase in two vehicle households up from one vehicle households between 2001 and 2006.

The 2006 census for the SHOROC region indicates that a higher percentage of people work in the following industries compared to 2001, Professional/Scientific/Technical Services (12.7%), Retail Trade (10.3%), Health Care and Social Assistance (9.3%), Construction (7.7%), and Finances/Insurance Services (7.6%). The 2006 census showed that 58.9% of people in the SHOROC region travel to and from work via private vehicle, whilst only 15.9% of people travelled to and from work via public transport (bus, train, ferry). Public transport use decreased by 1.7% between the 2001 and 2006 census, with the use of the private vehicle slightly increasing. According to the 2006 census, 0.7% of people in the SHOROC region rode to work compared to 0.6% in 2001, and 3.7% of people walked to work compared to 3.3% of people in 2001 (0.4% increase).



Transportation in the SHOROC Region.

SHOROC Member Councils

Manly Council

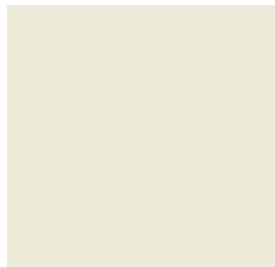
Manly is located at the southern end of the Manly Warringah Peninsula of the Northern Beaches. It has an area of 15.14km² (1,514ha), incorporating a mix of residential, recreational, bushland, commercial and industrial areas. The Manly Town Centre is located on a narrow isthmus of sand, separating the waters of North Harbour from the Pacific Ocean. Approximately 75% of Manly's perimeter is coastline, and its coastal views, bushland areas, beaches and attractions, such as the Manly Scenic Walkway and Cabbage Tree Bay Aquatic Reserve, make it a scenic place for residents and visitors alike. Manly provides habitat for both terrestrial and aquatic species, some of which are listed as protected, endangered or vulnerable.

For more information about Manly Council, its environment and initiatives, visit www.manly.nsw.gov.au.

Mosman Council

Mosman has a land area of 8.52km², and is bound by the waters of Port Jackson and Middle Harbour. The Mosman LGA borders Manly Council with the Spit Bridge as the boundary and also shares a common boundary with North Sydney Council. There are 13 prominent headlands in Mosman which form defined ridgelines. The steep topography and irregular shorelines are characteristic of Mosman, whilst the harbour views, beaches and remnant bushland contribute to Mosman's desirability as a residential area.

Visit www.mosman.nsw.gov.au for further information on Mosman Council and its surrounding environment and programs.



Pittwater Council

Pittwater extends from Narrabeen to Palm Beach, with the major centre at Mona Vale, approximately 25km north of Sydney central business district (CBD). The Pittwater Council area is approximately 90.6km² and is located on a peninsula bounded by the waters of Cowan Creek, Hawkesbury River, Broken Bay, the Tasman Sea and Narrabeen Lagoon. Pittwater's terrain is spectacular, with nine ocean beaches, rugged headlands and sandstone sea cliffs, tranquil waterways and native bushland including two National Parks containing pockets of rainforest. There are extensive wetlands providing sanctuary to many bird species and rock platforms providing habitat for a wide range of marine life.

Further information can be accessed on Pittwater's environment and programs at www.pittwater.nsw.gov.au.

Warringah Council

Warringah Council was established in 1906 and administers an area of 152km². Warringah was originally the home of the Guring-gai people and is now home to over 140,000 residents and ratepayers. Warringah's Indigenous name means 'sign of rain', 'across the waves' and 'sea'. Its bush and beach environment stretches between Manly in the south, Pittwater in the north and inland to the Ku-ring-gai National Park.

Significant natural features include close to 6,000 hectares of natural bushland and open space with many features of cultural and heritage significance including hundreds of Aboriginal significant sites, 14 kilometres of coastline consisting of sandy beaches and rocky headlands, four coastal lagoons, a portion of Middle Harbour, Manly Dam War Memorial Reserve, 50 kilometres of creeks, Stony Range Botanic Garden and 79 threatened native plant and animal species. These features all fall within Warringah's six catchment areas.

Further information on Warringah can be found at www.warringah.nsw.gov.au

2 Land and Coastline



Cabbage Tree Bay: Source: Manly Council

This chapter focuses on the condition of our land and coastal foreshores across the SHOROC region. Land is a primary resource that underpins the environment, the economy and society. The primary land uses within the SHOROC region are residential and commercial with some industrial land use. The region is also characterised by landscapes such as bushland, creeks, lagoons, streetscapes, parks, reserves and sporting ovals.

The geology of the land is predominately Hawkesbury Sandstone, which weathers to produce sandy, low fertility soils. Soils of this area are generally shallow and subject to erosion.

Coastline areas including beaches, rocky intertidal platforms and estuaries (including lagoons) provide great aesthetic and recreational opportunities. These attract millions of visitors to the region annually.

Indicators have been selected to measure and monitor issues of development, land clearing and re-vegetation, which may affect the condition of the land and coastline.

2.1 Condition of our Land and Coastline

Land within the SHOROC region comprises urban areas, interspersed with areas of native bushland and watercourses such as estuaries (including lagoons) and creeks. The region's landscape represents a highly modified environment altered from its natural state by human occupation, in particular urban development, which has occurred since European settlement. Such development has resulted in the replacement of native bushland with the built environment, modification of coastal dune systems and in some cases the erosion of soils and contamination of land and waterways.

The SHOROC region comprises approximately 82km of coastline which is characterised by headlands and beaches, and is largely accessible to residents and visitors for recreational pursuits. The coastline in the SHOROC region is also highly developed, in some instances resulting in erosion, cliff instability, and pollution.



The Spit During the Spring Tide: Source: Mosman Council



Regional Snapshot

Table 1: Regional Land Condition

Indicator	SHOROC Region		
	06/07	07/08	08/09
Total number of development applications received	3,505	3,818	3,568
Total number of development applications approved	2,844*	3,732	3,461
Total trees approved for removal on private land	1,915	1,927	1,763
Total number of native plants distributed by all councils (including grasses, shrubs and trees)	102,624	66,642	58,406

*Does not include Mosman Council.

Council Snapshots

Table 2: Development Applications

Indicator	Manly			Mosman			Pittwater			Warringah		
	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09
Number of development applications received	711	515	631	486	505	369	732	747	572	1,576 [#]	2,051 [#]	1,996 [#]
Number of development applications approved	745	674 [^]	788	384*	405	225	678	715	528	1,421 [#]	1,938 [#]	1,920 [#]

* This figure for Mosman Council represents determinations rather than approvals. The term determination refers to development applications that have been approved or refused.

[#] Includes DAs for tree removal.

[^] Where more DAs have been approved than received in a reporting year, this is due to approval of DAs lodged in the previous year.

Table 3: Land Clearing and Re-Vegetation

Indicator	Manly			Mosman			Pittwater			Warringah		
	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09
Approvals to remove trees (private land)	159	193	173	370	397	293	196	221	237	1,190	1,275	1,060
Total number of local native plants supplied to volunteers, contractors and residents	10,679	13,237	8,576	22,800	7,600	7,234	33,300	6,715	10,166	35,845	39,090	32,430

The data in Tables 1 to 3 reports on development that has occurred across the SHOROC region over the past three years, which may impact on the condition of the land through land clearing, erosion, disturbance of soils and expansion of the built environment. These tables also record the number of native plants distributed by SHOROC member Councils to assist in repairing the condition of the land by stabilising and improving the overall quality of soils.

The data in Tables 1 and 2 illustrates that overall the number of development applications submitted across the region has reduced in the past year compared to 2007/08, and may be a result of the recent downturn of the economy (with the exception of Manly). Additional staff and use of a more efficient system to process development applications (DAs) where possible, has resulted in an increased number of development approvals in Manly LGA. The number of approvals in Manly LGA has exceeded the number of DAs submitted as staffing arrangements and the new processing system has enabled assessment of a back log of DAs from previous years.

The data in Tables 1 and 3 demonstrates that within each LGA and across the SHOROC region, significantly more native plants were distributed for planting on both public and private lands, than trees (exotic and native) were approved for removal on private land, indicating a positive move towards revegetation of our region, which helps improve soil, water and air quality and increase biodiversity.

The SHOROC region is working towards maintaining and improving the integrity and condition of our land resources and bushland areas. Whilst overall a slightly smaller number of native plants have been distributed in the region compared to previous years, this is an indication that Councils are advancing in their effective planning and management of bushland focussing their attention on maintaining the integrity of existing bushland. The majority of Council and community projects during 2008/09 focused predominately on bushland regeneration rather than bushland revegetation. Natural regeneration of bushland has been successful over an ongoing period, thereby reducing the need for planting in some areas.

2.2 Pressures on our Land and Coastline

Key pressures on the condition of the land and coastline in the region include urban development, soil contamination, land degradation, vegetation clearing, coastal hazards such as storm damage, altered habitats, invasive species and bushfire.

There are also a number of environmentally sensitive landscapes in the SHOROC region that constrain land use and may increase the impact of existing pressures. For example, the region has areas with high landslip potential, relatively unstable and highly erodible soils, potential acid sulphate soils, and lands subject to flooding or coastal erosion.

Climate change is anticipated to become a further significant pressure with particular implications for the coastline, including loss of beaches, bushland and foreshore access through increased storm activity and sea level rise, and increased erosion activity and cliff instability.



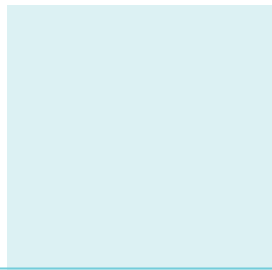
Collaroy and Narrabeen Beach Coastal Erosion. Source: Warringah Council

2.3 Responding to Land and Coastline Issues

Plans of Management

Councils must prepare Plans of Management for all community land in accordance with the *Local Government Act 1993* (as amended). In order to manage open space effectively, Plans are frequently prepared for significant Crown reserves.

The way the land is to be used and managed is governed by an adopted Plan of Management. The nature and use of community land may not change without an adopted Plan of Management. Plans of



Management must categorise the land, authorise the granting of leases or licenses and provide a set of management strategies for the land.

Plans of Management take a values based approach to land planning and management. The key values, role and purpose of the land are identified so that these assets can be protected and enhanced. Plans of Management for each council can be viewed on their respective websites.

Membership of the Sydney Coastal Councils Group

The Sydney Coastal Councils Group (SCCG) represents 15 councils adjacent to Sydney marine and estuarine environments and associated waterways. Manly, Mosman, Pittwater and Warringah Councils are members of the SCCG.

Recent and current projects that SHOROC member Councils have been involved in are outlined below. Further information on these projects is available on the SCCG website

www.sydneycoastalcouncils.com.au

Mapping Climate Change Vulnerability in the Sydney Coastal Councils

All four SHOROC member Councils participated in the SCCG Mapping Climate Change Vulnerability in the Sydney Coastal Councils project. The SCCG partnered with the CSIRO (Commonwealth Scientific and Industrial Research Organisation) and the University of the Sunshine Coast to undertake research on regional approaches to managing climate vulnerability in the Sydney region.

The final phase of the project was completed in October 2008, with the release of the Report 'Case Studies of Adaptive Capacity: Systems Approach to Regional Climate Change Adaptation Strategies'. The Report, utilising case studies from Mosman, Leichardt and Sutherland, provides key findings and recommendations for improving council's adaptive capacity to climate change.

Sydney Beaches Valuation Project

The results of the Sydney Beaches Valuation Project, undertaken in the reporting period, will enable SHOROC member Councils to be better informed on the costs and benefits of protecting coastal property, infrastructure, beach environments and amenity at threat of coastal erosion. The SCCG partnered with the University of New South Wales to undertake the valuation of selected Sydney beaches, in order to inform both existing coastal management and the response to enhanced climate change impacts. As part of this project, members of the public from SHOROC member Councils were invited to participate in an online survey about current beach usage and future management of Sydney beaches.



Collaroy Beach. Source: Warringah Council

Groundwater Education Workshops Series

The SCCG engaged the UNSW Water Research Laboratory to deliver the Groundwater Education Workshop Series in October 2008. The workshops were extremely well received with staff from 31 Sydney councils, including the SHOROC member Councils, representatives from NSW State Government departments and consultants attending. Additionally, 80% of workshop participants stated that they would apply the knowledge learnt at the workshops in their work.

Offshore Sand Scoping Study

In March 2009, the SCCG commissioned consultants to undertake a Scoping Study for the extraction of sand reserves from the Sydney shelf sand body for development protection and augmentation of beach systems under immediate threat from coastal storm activity. The project is funded by the Natural Disaster Mitigation Program and involves scoping issues in relation to the environmental, physical, social and economic aspects of utilising available offshore sands to meet the immediate and medium term management requirements of Sydney beaches e.g. Narrabeen/Collaroy beach.

Assessing the Vulnerability of Buildings to Catastrophic Marine Flooding

In 2008, the SCCG partnered with the University of New South Wales as well as the University of Bologna, Italy to undertake a research project that tests a newly developed and highly novel Geographic Information System (GIS) tool to assess the vulnerability of coastal infrastructure and buildings to catastrophic marine floods (tsunami). The project assessed the impact of a flood associated with a locally generated submarine-landslide tsunami just off-shore of the Sydney coast on two case study sites within the Randwick and Manly LGAs. The outputs of the assessment will aid SCCG councils in making decisions about long-term strategic planning and development.

Summer Activities Program

SHOROC member Councils held various activities as part of the SCCG Summer Activities Program.

Mosman Council held a Critters and Litters Workshop at Clifton Gardens in January 2009 that provided information on the importance of the marine environment, marine life found in Chowder Bay, impacts upon the marine life, and ways that the community could reduce these impacts. Pittwater Council delivered four events, attended by over 80 people. These included twilight walks in Warriewood Wetlands and on the Narrabeen Lagoon shores, and a rockpool ramble on Narrabeen Headland.

All SHOROC member Councils also hosted Science of the Surf workshops. These presentations on surf safety, rips, tides and how they work were popular with the community.

Delivering Local Responses

Manly Council

Coastal Zone Management

Manly Council has already prepared and adopted six of the eight planned Coastline Management Plans (CMPs). During 2008/09 Council has continued to prepare Manly Cove and North Harbour CMPs and has finalised the North Harbour Coastline Management Study.

Council has completed, under the Department of Environment, Climate Change and Water's (DECCW) Estuary Management Program, a comprehensive Sedimentation and Foreshore Stability Study for Clontarf-Sandy Bay area. Further, during the reporting year, Council continued to pursue the extension of the North Harbour Aquatic Reserve, Fisher Bay Mangrove Expansion Program (described in detail below), introduction of seagrass friendly moorings at Manly Cove, Manly Cove East Access Improvement Project and Coastal Hazards Remediation Works at Marine Parade.

Council and DECCW have been working together to finalise the Cabbage Tree Bay Aquatic Reserve Management Plan, the first for an aquatic reserve in NSW.

Fisher Bay Mangrove Expansion Program

During 2008/09 a total of 500 mangrove seedlings were planted at Fisher Bay near Clontarf. Council has endorsed further works including plantation of a further 2,500-3,000 seedlings, a board walk within the forest and erection of interpretive signage. Macquarie University is initiating a long-term monitoring program to detect changes in ecosystem at the planted site.



Fisher Bay Mangrove Expansion Program. Source: Manly Council



North Steyne Beach – Australia’s Cleanest Beach for 2009

North Steyne Beach was announced to be Australia’s Cleanest Beach for 2009 at the annual Keep Australia Beautiful Clean Beaches Awards. As well as winning the overall Australian title, North Steyne also won the Community Partnership, Environmental Innovation, Energy Conservation and Young Legends categories.

Remediation Works

Manly Council is currently project managing the remediation of a Declared Contaminated Site at the former landfill at Addiscombe Road, Manly Vale. During 2008/09 a Draft Remediation Action Plan (RAP) was prepared, in accordance with the *Contaminated Land Management Act 1997*, and reviewed by the Site Auditor. The Site Auditor’s Draft Site Audit Statement and Report were submitted to DECCW for sign-off.

Tania Park - Erosion Control (Stage 1)

During the reporting period, Manly Council obtained grant funding through the NSW Metropolitan Greenspace program to undertake access improvement and erosion control works (Stage 1) at Tania Park. The grant funds will match Environment Levy funding allocated to the project, which will be implemented in 2009/10. Work will be in accordance with the adopted landscape masterplan.

Mosman Council

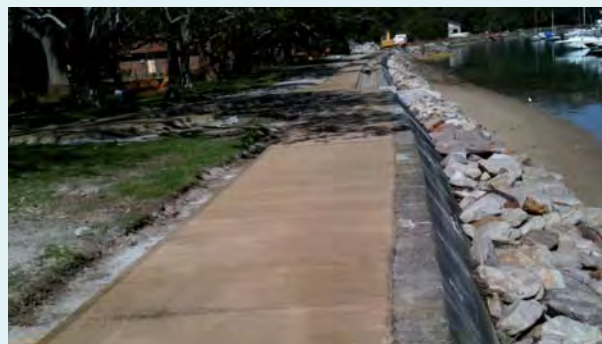
Contaminated Lands

The Remediation Action Plan for Balmoral Park was finalised during 2008/09, and the pre-remediation Site Audit Report and Statement was completed. In

accordance with the Remediation Action Plan, two areas of Balmoral Oval were remediated, involving the removal and disposal of contaminated soil, replacement of this soil with virgin excavated natural material, and a capping layer of turf to blend in with the remainder of the oval.

Seawall Works

Works have begun on the seawall at the Spit, to improve its design, taking into consideration wave action, sea level rise, and biodiversity. The seawall has been designed with the assistance of the University of Sydney (Centre for Ecological Impacts of Coastal Cities) to become an ecological habitat for intertidal species. The seawall itself has been partially constructed using sandstone blocks recycled from the Drill Hall Common site. Once seawall works have been completed, saltmarsh habitat will be established, a viewing platform installed, and a bicycle path constructed from a percentage of recycled material. Council is currently working with DECCW to develop interpretive signage to educate the public on intertidal habitat along the coastline of the Spit/Pearl Bay.



Seawall and Habitat Works, at The Spit. Source: Mosman Council

Community Garden

During 2008/09, Mosman Council undertook a study to ascertain whether a community garden would be feasible in Mosman with reference to issues such as location, space, access, garden type, and site management. Council also undertook community consultation inviting residents to provide a submission or respond to a questionnaire. Results from these submissions were reported to Council and following on from this report, a community meeting was held to discuss a proposed community garden with Mosman residents. Interested residents have since established a Mosman Community Garden Working Group to determine the way forward.

National Climate Torch Relay

The GetUp Climate Torch Relay toured across Australia to raise awareness of climate change and show that local communities support action on climate change. Mosman was chosen to host a leg of the Climate Torch Relay on 1 October 2008. The Climate Torch Relay was held at Balmoral Beach, which brought focus to the impacts that climate change could have on the coastline and beaches of Mosman. Mosman Council staff participated in the relay to raise awareness and show Council's commitment to combating climate change.



Climate Torch Relay Team. Source: Mosman Council

Pittwater Council

Development Control Plan- Amendment 5

The Pittwater 21 Development Control Plan (DCP) sets the development standards, controls and regulations that apply when carrying out development or building work within Pittwater. It supports Pittwater Local Environment Plan (LEP) which regulates uses that are permissible on the land.

Council recently reviewed the DCP and at its meeting on 15 June 2009 resolved to adopt amendments (known as amendment 5) to the Pittwater 21 DCP.

The P21 DCP Review has:

- Streamlined and simplified development approval processes
- Made controls easier to understand and applications easier to lodge
- Removed unnecessary and unjustified requirements

- Ensured that the appropriate development controls and conditions are in place
- Ensured consistency with the latest planning legislative changes
- Introduced sustainability, climate change provisions, and cumulative impacts
- Introduced biodiversity principles to development and land use, and
- Integrated actions from the Careel Bay Master Plan.

The amended DCP came into force on 6 July 2009.

Careel Bay Environmental Grant Works

The Careel Bay Wetlands are of high conservation significance as they contain a wide variety of habitats crucial in supporting a diversity of local fauna including species such as the endangered Bushstone Curlew. Migratory and local wading birds such as the Eastern Curlew also use the saltmarsh, swamp oak woodland and mudflat areas. Careel Bay is a rich habitat for fishes and marine invertebrates. Sea Horses and Pipe-fishes live in the abundant sea grasses.

Three major environmental works are currently planned or underway in Careel Bay, including salt marsh rehabilitation, foreshore restoration and casuarina forest restoration.

Wetland Restoration Project at Warriewood Wetlands and Irrawong Reserve

In 2008/09 restoration works were undertaken within the Warriewood-Ingleside Escarpment, adjoining Irrawong Reserve and Warriewood Wetlands with \$90,000 funding awarded to Pittwater Council from the NSW Environment Trust's Environment Restoration and Rehabilitation Program. The focus of this work has been Mullet Creek which runs through all three reserves and into Narrabeen Lagoon. Restoration works included restoring native wetland vegetation, protecting the biodiversity of the significant plant communities and maximising the wetlands' natural functions through a staged program to remove woody weeds.



Warriewood Wetlands. Source: Pittwater Council

Estuary Management Plan for Pittwater

A draft Pittwater Estuary Management Plan was developed and a management committee established to oversee the further development of this Plan. This comprehensive Plan is the last of a three stage project funded by the State Government and Pittwater Council. The Plan will guide future works in and on the shores of the estuary.

Coastal Walkway Between Narrabeen and Palm Beach

Council helped launch the Coastal Walkway between Palm Beach and Port Hacking. The Council assisted the SCCG and the 'Walking Volunteers' group to produce a set of walking guides that for the first time give directions to visitors and Sydneysiders on how to walk from the north of the city to the south.

Narrabeen Lagoon Walkway

In September 2008 Pittwater Council reached a joint agreement with Warringah Council and the NSW Government to complete a pedestrian walkway around Narrabeen Lagoon. When completed, this will provide the communities of both Pittwater and Warringah with a multi-use trail which links the entire lagoon foreshore.

Geotechnical Risk Management Policy

Council launched a revised landslide risk management policy to reflect new guidelines issued by the National Body for Landslide Risk Management. The policy introduced new requirements for development applications (DAs) in the low-risk category for landslide. The policy was subsequently peer-reviewed during 2009 and as a result, the Council removed the requirements for low-risk properties.

Warringah Council

Dee Why Wetlands Restoration Project

Warringah Council has been awarded the Sydney Metropolitan Catchment Management Authority's (CMA's) Urban Environmental Project Award for the Dee Why Wetland Green Web Sydney Restoration Project. Friends of the Bush volunteers were recognised for their achievements in restoring the wetland and its surrounding riparian areas.

South Creek Flood Risk Management

The South Creek floodplain is particularly prone to flash flooding in the upper catchment, and flooding from Narrabeen Lagoon in the lower catchment. Warringah Council has adopted a comprehensive Flood Study, Floodplain Risk Management Study and Floodplain Risk Management Plan for the South Creek catchment. These projects were jointly funded by DECCW and the Commonwealth Government's Natural Disaster Mitigation Program.

The Floodplain Risk Management Plan has begun implementation, with an educational campaign for South Creek planned for 2009/10. A FloodSafe brochure has been developed in conjunction with the State Emergency Service and will be included in the ongoing educational campaign.



South Creek in Flood February 2008. Source: Warringah Council

Lagoon Entrance Management

Warringah Council has responsibility for managing the entrances of Dee Why and Curl Curl Lagoons, and shares responsibility for management of the Manly Lagoon entrance with Manly Council, and the Narrabeen Lagoon entrance with Pittwater Council. During 2008/09, Warringah Council undertook a number of mechanical 'breakouts' of the entrances of Dee Why, Curl Curl and Narrabeen Lagoons and implemented improved alarm systems to assist staff in managing flood risks and ensuring timely entrance openings. Warringah Council also undertook a review of the management of these entrances to ensure practices are in keeping with best practice flood and environmental management.



Narrabeen Lagoon Entrance. Source: DECCW

Collaroy/Narrabeen Coastline Management Plan

Collaroy and Narrabeen beaches have experienced a long history of storm damage and coastal erosion, with the beaches ranked nationally as the third area most at risk from coastal processes. To help address these issues, Warringah Council worked with the State Government and local community to develop the Collaroy/Narrabeen CMP. The Plan is in accordance with the State Government's Coastline Hazards Policy and whilst formally adopted by Council in 1997, Council has continued to carry out actions from the Plan throughout the reporting period aimed at preserving and protecting the beach as a national asset for public recreation and amenity; and ensuring that building and development along Collaroy/Narrabeen Beach has regard to the current and future hazards of wave impact and coastal erosion.

Narrabeen Lagoon Multi-Use Trail

Warringah Council is preparing to construct approximately 2.5 kilometres of trail, boardwalk and bridge infrastructure around the western edge of Narrabeen Lagoon. The outcome will be an 8.5 kilometre Multi-Use Trail circumnavigating the entire Lagoon. This will provide an outstanding iconic recreational and tourist facility for Sydney's Northern Beaches. Warringah Council aims to allow maximum accessibility for a wide range of users whilst ensuring minimal impact on the sensitive environment. Through facilitating safe access to the foreshores of Narrabeen Lagoon, this project will increase the community's awareness about this unique and extraordinary environment.

Interpretive and safety signage will also be installed on the proposed trail. Funding for the design and construction of the Multi-Use Trail has been obtained from the Commonwealth's Regional and Local Community Infrastructure Program, the Department of Planning's Metropolitan Greenspace Program and the DECCW's Estuary Management Program.

The trail will link with a pedestrian bridge over Deep Creek which is being jointly funded by the NSW Roads and Traffic Authority (RTA), Pittwater and Warringah Councils.



Narrabeen Lagoon Multi-Use Trail. Source: Warringah Council

Coastal Walkway Completed in Warringah

The last section of the Coastal Walkway in Warringah was completed in June 2008 with a new coastal stairway at Fox Park, Collaroy. The Coastal Walkway, which extends from Barrenjoey to Royal National Park, is considered one of Australia's great urban coastal walks traversing headlands, beaches, lagoons and bushland of coastal Sydney. Coastal Walkway maps and information can be found at www.walkingcoastalsydney.com.au



Community Case Study –

Ecodivers in Action

As part of Coastcare’s “Life on the Edge” challenge, Ecodivers undertook 54 clean up events between December 2008 and March 2009, removing over one tonne of plastic and fishing debris from Manly/ Mosman shorelines and waterways. Ecodivers also ran “Save your Bottom” a seagrass education and preservation project to highlight the importance of seagrass as habitat for juvenile fish and other marine fauna such as seahorses, and threats to seagrass including physical disturbance from boat anchoring, high nutrient runoff and dredging to boat owners and the general public. Three types of seagrass are found in the SHOROC region; *Halophila ovalis*, *Zostera capricorni* and *Posidonia australis*.

2.4 Community Responses and Recommendations for Future Direction

Land and coastline issues were addressed as part of the SHOROC SoE community consultation meeting held on 6 August 2009 (refer to section 1.5). Participants in the consultation were asked to identify priority issues of concern to them relating to the area’s land and coastline, and to work together to make recommendations for responding to these issues. The priority land and coastline issues and recommendations are identified in Table 4 below.

Whilst there were many issues raised during the community consultation meeting, these issues and their associated recommendations were the priority items identified. It is recognised that these issues do not necessarily reflect wider community concern, however they will be considered for future environmental planning and decision making across the region. See section 10 ‘Future Directions’ for further analysis.

Table 4: Priority Issues and Recommendations Relating to Land and Coastline Identified in the Community Consultative Meeting, 6 August, 2009

Issue	Recommendation
Sea level rise – effects/impacts on both public and private land	<ul style="list-style-type: none"> • Develop and implement strategies/plans to address impacts of sea level rise and protect public/private property • Enforce a foreshore building line, and • Ensure appropriate seawalls are in place.
Licensing (liquor licensing) of surf clubs – concern will they become ‘surf pubs’?	<ul style="list-style-type: none"> • Recommend SHOROC lobby State Government to put restrictions on the licensing laws.
Retaining and improving access to safe horse-riding trails (concern about National Park closures forcing riders onto highly trafficked Council roads)	<ul style="list-style-type: none"> • Reopen riding trails • Construct greater linkages between trails • Undertake risk assessment and works to ensure trails are safe for horse riders/horses, and • Develop a horse-riding policy in association with horse-riders/clubs.
Impact on water quality, seagrasses and biodiversity from stormwater runoff. Protection of seagrass as a critical marine habitat	<ul style="list-style-type: none"> • Undertake frequent stormwater maintenance • Develop a policy restricting stormwater entering the waterways from public/private property • Increase education programs on stormwater runoff and the marine environment, and • Develop an enforcement program – delivered by council rangers.

3 Atmosphere



Source: Warringah Council

The atmosphere surrounding the earth consists of a complex balance of gases and particles that support life by providing air to breathe, filtering harmful ultraviolet radiation from the Sun and maintaining a suitable temperature. However, there are substances in the air which may impair the health of humans, plants and animals, reduce visibility or upset the temperature balance. While these substances, including GHGs and some pollutants such as dust occur naturally, human based activity, such as burning fossil fuels, has rapidly increased the amount of these substances in our atmosphere, resulting in negative impacts to urban air quality and changes to our earth's climate system. In particular, increases in GHGs, such as carbon dioxide and methane, have contributed to global warming i.e. climate change (IPCC).

Anticipated impacts of climate change in the Sydney region include more hot days, bushfires, intense storms, coastal erosion and beach recession. According to CSIRO, these impacts will have significant economic, social and environmental ramifications (CSIRO, 2007). Councils are planning and taking action to mitigate against these impacts by taking steps to reduce our GHG emissions and preparing for and adapting to those impacts of climate change that we cannot avoid.

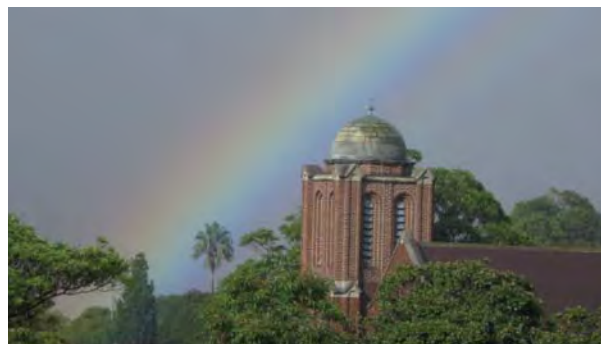
The SHOROC member Councils have identified urban air quality and GHG emissions as the two dominant atmospheric issues in the region. Indicators have been selected to measure and monitor these issues and activities that contribute to them.

3.1 Condition of our Atmosphere

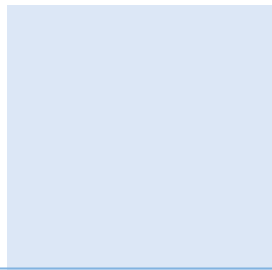
Atmospheric quality of the SHOROC region is largely typical of Sydney, however being a less industrialised coastal region, the air quality of the region benefits from the ocean breezes, which clear pollutants from the area by dispersing them out to sea or further inland.

Air quality in the SHOROC region varies considerably depending on natural events such as windy days, bushfires and also human activities such as the use of vehicles, wood heaters and the burning of other fossil fuels such as natural gas. Poor local air quality is generally associated with highly urbanised or industrialised areas where vehicle use, wood-fired heating and emission production is high, whereas better air quality is generally associated with open space, coastal and bushland areas. Air quality also varies locally, depending on adjoining land uses, and even varies within the home or workplace. Air quality can also impact on human health, and as such a high value is placed on being surrounded by clean, fresh air.

Air quality in the SHOROC region is generally good, with sea breezes keeping pollution to a minimum and minimal heavy industry in the area.

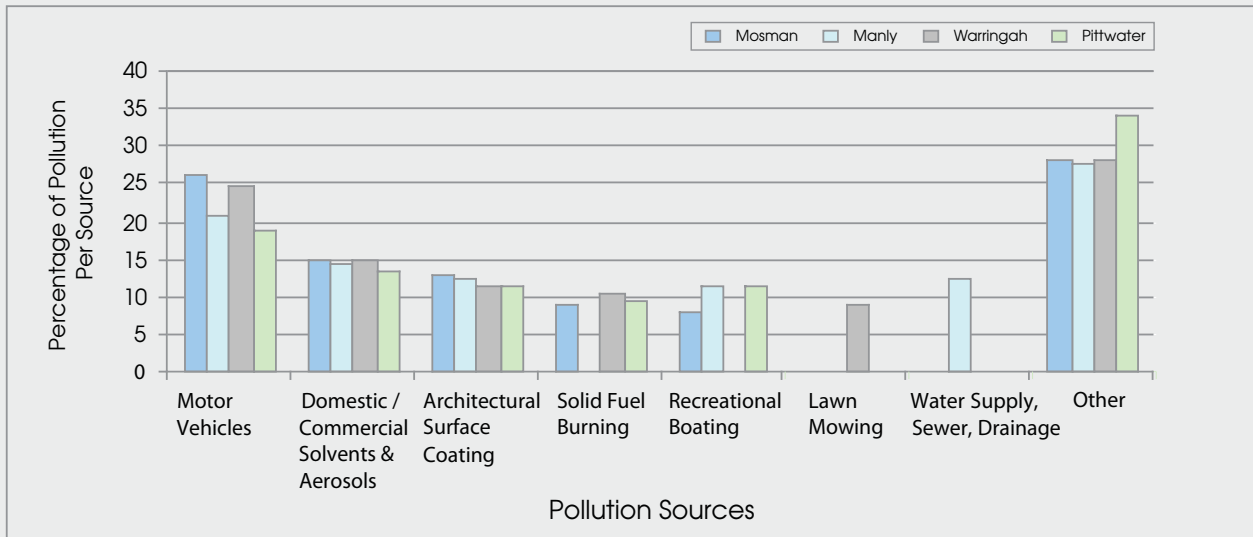


Rainbow over Mosman Art Gallery. Source: Mosman Council



Regional Snapshot

Figure 5: National Pollutant Inventory Data for the SHOROC Region 2007/08



Source: National Pollutant Inventory, Department of Environment and Water Resources (www.npi.gov.au)

Figure 6: National Pollutant Inventory Data for the SHOROC Region – Comparison between 2006/07 and 2007/08

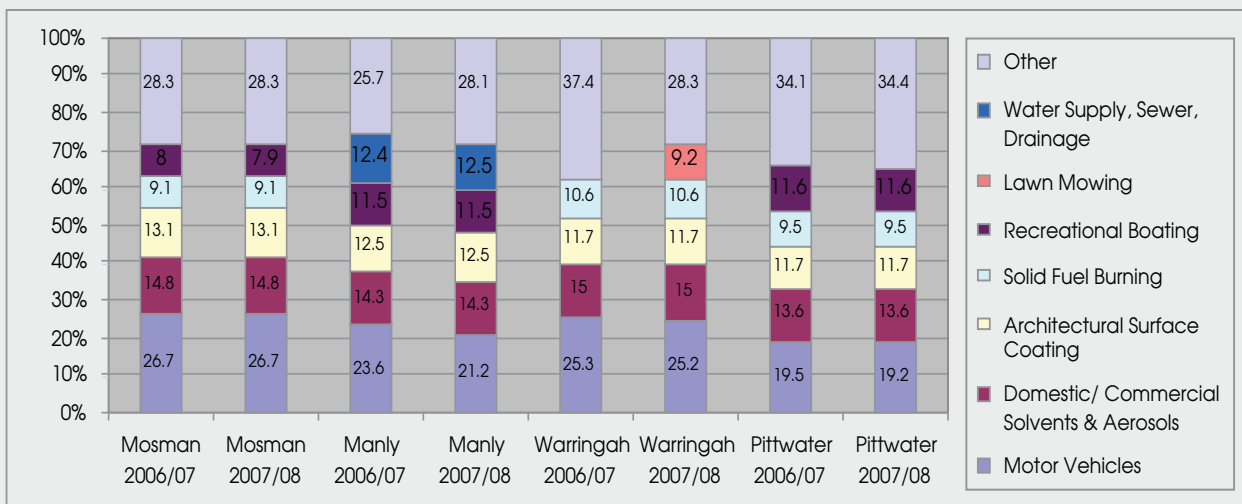


Table 5: Residential Rebate Program Uptake by LGA to 30 June 2009

SHOROC	Rainwater Tank Rebate ¹	Hot Water System Rebate ²	Ceiling Insulation Rebate ³	Washing Machine Rebate ⁴	Total Rebates	Rebates for LGA per Capita
Manly	98	74	49	256	477	0.012
Mosman	71	42	32	200	345	0.012
Pittwater	295	172	83	261	811	0.014
Warringah	451	371	238	730	1,790	0.013

Notes

1 Sydney Water & DECCW totals from the start of the rainwater tank rebates on 1/7/07.

2 Totals from the start of the hot water system rebates on 1/10/07.

3 Totals from the start of the ceiling insulation rebates on 1/10/07. Program finished 30/6/09.

4 Sydney Water & DECCW totals from the start of the washing machine rebates on 1/8/08.

Regional Snapshot

Table 6: Regional Atmospheric Condition

Indicator	SHOROC Region		
	06/07	07/08	08/09
Number of registered vehicles (community)	184,929	188,940	192,555
Air pollution complaints	142	156	157
GHG emissions from all council fleet vehicles (tonnes CO ₂ e)	4,131	3,848	3,719
Electricity use – council operations (megawatt hours)	19,350	20,158 [#]	20,074
GHG emissions from council electricity use (tonnes CO ₂ e)	19,462	19,662 [#]	19,063
Number of Council fleet vehicles [^]	653	564	573

[#] mWh figures from Pittwater 07-08 amended to reflect increased carbon accounting accuracy.

[^] Includes passenger fleet, light commercial, heavy truck and plant vehicles (if present in council fleets)

Council Snapshots

Table 7: Air Quality

Indicator	Manly			Mosman			Pittwater			Warringah		
	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09
Air pollution complaints received by council	20	8	3	2	3	2	49	65	63	71	80	89



Table 8: Greenhouse Gas Emissions

Indicator	Manly			Mosman			Pittwater			Warringah		
	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09
Registered vehicles in council LGA*	23,113	23,727	24,585	16,733	17,305	17,649	44,968	45,676	46,842	100,115	102,232	103,479
Number of council fleet vehicles [^]	170	162	177	40	35	28	219	156	155	224	211	213
CO ₂ e emissions from council fleet vehicles (tonnes CO ₂ e)	1,335	1,367	1,384	220	202	157	1,071	1,112	1,104	1,505	1,167	1,074
Electricity use- council's operations (mWh)	5,698	5,441	5,427	2,809	2,853	2,846	4,925	5,574*	5,352	5,919	6,290	6,449
GHG emissions from mWh (tonnes CO ₂ e)	5,485	5,775	5,760	2,915	2,962	2,694	4,471	4,796*	4,605	6,321	6,129	6,004

*Figures provided by NSW RTA.

[^]Includes passenger fleet, light, commercial, heavy truck and plant vehicles (if present in councils fleet).

*mWh figures from Pittwater 07-08 amended to reflect increased carbon accounting accuracy.

The National Pollutant Inventory data for the SHOROC region is shown in Figure 5. A comparison between 2006/07 and 2007/08 for each member council is shown in Figure 6. The data (which is the most current data available) indicates that the individual pollutant source emitting the largest percentage of pollutants across the SHOROC region is motor vehicles. The pollutant data for 2006/07 and 2007/08 are shown to be fairly similar. There has been a slight decrease of emissions from motor vehicles in Manly since 2006/07, and in 2007/08 lawn mowing was identified as a separate pollutant source in Warringah.

Table 5 shows the uptake of climate change rebates by the SHOROC community from 2007 to June 2009. The rebates were offered to the community by DECCW under the NSW Climate Fund.

A total of 3,423 rebates under the State Government's rebate scheme, were taken up by the SHOROC community, this being approximately 3.6% of the total rebates taken up across NSW. Within each of the four LGAs the most popular rebate was the washing machine rebate, for the purchase of a water and energy efficient washing machine, followed by the rainwater tank rebate.

Table 6 shows that air pollution complaints have remained relatively stable throughout the reporting period.

The number of registered vehicles in the community has increased across the SHOROC region by 3,615, which is approximately triple the population increase for the region over the past year (see Tables 8 and 20). It is highly likely that the increased number of vehicles in the region would result in an increase in GHG emissions.

Manly, Mosman, Pittwater and Warringah Councils are all moving towards reducing the size of their fleets, both by reducing the number of vehicles and by replacing six cylinder vehicles with more fuel efficient models. Whilst the number of fleet vehicles across the region has remained relatively stable, with an overall increase of nine vehicles, the purchase of smaller and more fuel efficient models has resulted in an overall decrease of 129 tonnes of GHG emissions across the Council fleets.

As shown in Table 8, the region has seen an overall decrease from 2007/08 in Council electricity consumption of 84,550 kWh, and a decrease of 59 tonnes CO₂e pollution to the atmosphere. All four SHOROC councils are taking active steps to manage

and reduce emissions. This year Manly, Mosman and Warringah Councils further decreased greenhouse gas emissions by significantly increasing the amount of GreenPower purchased. In April 2009, Pittwater completed a comprehensive emissions audit and improvements in its energy and emissions information management system to make carbon accounting more accurate and comprehensive. Pittwater's improved carbon accounting accuracy has been reflected in GHG figures for the 2007/08 reporting period.

Overall, the region is maintaining relative stability for the condition of our atmosphere.



Traffic Congestion. Source: Warringah Council

3.2 Pressures on Atmosphere

Pressures on the atmospheric environment in the SHOROC region include pollutants from motor vehicles, particularly with increasing traffic congestion. Motor vehicle emissions contribute to the production of pollutants and GHG emissions through the burning of fossil fuels (typically petroleum, liquefied petroleum gas and diesel). According to the Commonwealth Government, for every litre of petrol used in a motor vehicle, 2.3 kilograms of carbon dioxide (CO₂), a major GHG, is released from the exhaust (DEWHA, 2008).

The SHOROC area is generally characterised by public transport largely confined to major arterial roads which may increase the use of private vehicles in the region. Increased use of private motor vehicle transport increases GHGs and reduces air quality in the region.

Emissions from bushfires, hazard reduction burning of bushland, highly urbanised areas and industrial processes place further pressure on air quality in the region.

Electricity and gas consumption contribute to overall GHG emissions, due to the process of burning fossil fuels such as coal to produce electricity.

3.3 Responding to Atmospheric Issues

Cities for Climate Protection

The Cities for Climate Protection (CCP) Program is an international program assisting local governments and their communities reduce GHG emissions. Between 1997/98 and 2007/08, Australian councils reduced CO₂e emissions by over 18 million tonnes (www.environment.gov.au/settlements/local/ccp).

The CCP Australia program builds local government capacity to address climate change through a strategic milestone framework. This framework empowers councils to establish an inventory of their GHG emissions, set reduction goals, plan and implement actions, and monitor and review their progress. Manly, Mosman, Pittwater and Warringah Councils were all members of the CCP Australia program. Manly and Mosman Councils achieved the highest milestone 'CCP Plus' while Pittwater and Warringah Councils achieved Milestone 5.

During 2008/09 each Council continued to implement its CCP programs, however in May 2009 the Commonwealth Government announced that its funding of CCP would cease on 30 June 2009. In response ICLEI Oceania announced that it would therefore end its CCP milestone support program and projects. However, NSW Councils do have the opportunity to continue climate change work with ICLEI Oceania through a new CCP Partners Program.



Earth Hour

Earth Hour, an initiative of WWF-Australia, was supported by the SHOROC member Councils once again in March 2009 through Council participation, the hosting of local events and the promotion of the event through local media to residents.

The Earth Hour campaign, which first took place in Sydney in 2007, expanded in 2009 to include more than 4,000 towns and cities from 88 countries taking part. All Australian capital cities, 56% of Australian local councils, and 49% of Australian adults participated.

In addition to promoting Earth Hour to the local community and participating by turning the lights off in its main buildings, Warringah Council hosted an energy efficiency workshop, visited Forestville Shopping Centre with its mobile environmental education Eco Van to promote energy efficiency, and launched its Warringah Climate Challenge program with an Eco Fair at Dee Why Beach Reserve.

Mosman Council switched off its own lights in the Civic Centre, Library and Depot for one hour, sent letters to local businesses and schools to encourage them to participate, and promoted Earth Hour to Mosman residents through the local paper, noticeboards, Council's website, and via a letterbox drop. Manly Council switched off its lights in the Townhall building and held an event to promote Earth Hour at Manly Cove featuring fire twirlers and pyrotechnics. Pittwater Council again supported Earth Hour at Avalon Beach, with a small donation and waste removal. The event attracted an estimated 2,500 people, who enjoyed a festive event including a lantern parade. Pittwater Council got on board – switching off lights in Council owned buildings and public lighting at rockpools. In the lead up to Earth Hour, Council ran a staff "climate conversation" with an Al Gore trained facilitator.



Earth Hour Event at Manly Cove. Source: Manly Council

Fridge Buy Back Program

This Program provides a free community collection service for working second fridges, and offers a \$35 rebate where applicable. All fridges collected are degassed and the metals recycled. SHOROC member Councils have promoted the program across the SHOROC region through the local newspaper, Council websites, noticeboards, letterbox drops, and through the rates notice. In total 678 fridges were collected across the SHOROC region during 2008/09. Over the total life of the project, 1,353 fridges have been collected across the SHOROC region, saving 11,526 tonnes of CO₂e, and collectively saving residents \$1,895,000 on their electricity bills.



Fridge Buyback. Source: Warringah Council

Delivering Local Responses

Manly Council

Climate Change Levy

Manly Council explored the possibility of introducing a Climate Change Levy to assist Council fund the implementation of climate change mitigation and adaptation projects. However, the introduction of such a levy was rejected by a majority vote at the Council elections held in September 2008.

Manly Council Carbon Neutral by 2010 and Beyond

Manly Council, at its meeting of 21 July 2008, resolved to become Carbon Neutral in its operations and service delivery, by the end of 2010. During this reporting year Council commenced its preparations to achieve this goal.

Climate Change Adaptation Action Plan

Manly Council received funding through the Commonwealth Government's Department of Climate Change (DCC) Local Adaptation Pathways Program to undertake a climate change risk assessment and to subsequently develop a Climate Change Adaptation Action Plan for Manly. During this reporting year the risk assessment was completed and a Draft Action Plan prepared in consultation with the community. It is expected that the Action Plan will be finalised in 2009/10 and will provide a strategic approach to climate change risk management and adaptation for Manly Council and community.

Hop, Skip and Jump – Manly's Free Community Bus

This free community bus service continued to grow throughout 2008/09, transporting residents and visitors alike to reduce the community's reliance on private vehicles. During 2008/09 a total of 360,188 passenger journeys were made, bringing the progressive total since inception in March 2006 to 1,015,311. The service attracted a new sponsor, NRMA Motoring & Services, who were impressed with the guiding principles behind the operation and wished to demonstrate their support for such a valued community service.

By using the Hop, Skip & Jump community bus, patrons are contributing to a cleaner, healthier and happier future for all Manly residents and making a significant improvement to our environment.

The buses operate on a 20% biodiesel blend and it is calculated that the use of this fuel, as opposed to standard diesel, has effected a reduction of over 21 tonnes of GHG emissions during the year. This is in addition to the less-quantifiable reductions achieved by residents turning away from private vehicle use to the bus service. In June 2009, the one millionth passenger to ride Manly's seven-day-a-week service was awarded a \$500 gift voucher courtesy of NRMA Motoring & Services.



Hop Skip and Jump Community Bus. Source: Manly Council



Council Fleet

Manly Council reviewed leaseback vehicles in July 2008. Following this, Council introduced more fuel efficient diesel four cylinder vehicles in the leaseback scheme. The use of biodiesel on Council's heavy fleet was also expanded during 2008/09.

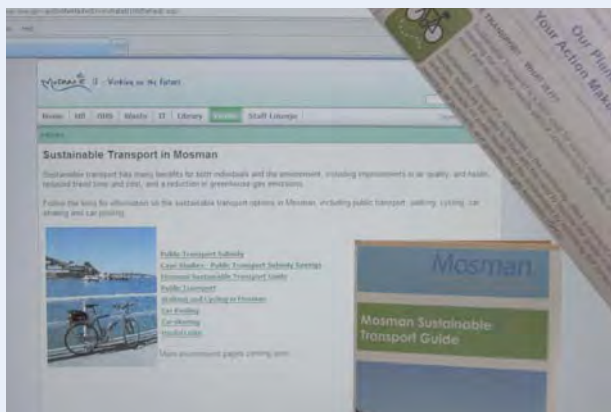
Mosman Council

Sustainable Transport

Mosman Council has achieved several actions in its Sustainable Transport Action Plan, as a means of reducing GHG emissions from Council and community transport. Actions include the completion of the Sustainable Transport Fact Sheet for Mosman residents incorporating information on what is sustainable transport, benefits of sustainable transport and tips. This factsheet was distributed to Mosman residents via a letterbox drop.

Sustainable Transport Guide

A Mosman Sustainable Transport Guide was developed for the community as well as Council staff. A map was printed on one side detailing all sustainable transport options in Mosman and detailed information was provided on the other side about walks, bike routes, bus and ferry times, bike parking and car share locations. The Guide was distributed to all Council information centres, was placed on the website, was sent via e-mail to all existing staff and in the future a copy will be given to all new staff as well as included in information packs at the Mosman Festival.



Sustainable Transport Material. Source: Mosman Council

Staff Activities

Council has developed an Enviro page on the intranet providing staff with information on sustainable transport, the staff public transport subsidy scheme and providing a forum for staff carpooling.

Car Share Scheme

A feasibility study on the introduction of a car share scheme in Mosman was completed during 2008/09. Car share companies were invited to express their interest in partnering with Mosman Council. Through this process, Council has partnered with GoGet Carshare to undertake a car share trial in Mosman over a 12 month period. Council has provided two car share parking spaces, one in the Mosman Square Carpark and the other in the Raglan Street East Carpark, enabling easy access for the Mosman community.



GoGet Carshare Vehicle. Source: Mosman Council

Council Fleet

Council continues to reduce the number of vehicles in its fleet. Vehicle numbers have decreased from 35 in 2007/08 to 28 vehicles in 2008/09, with a reduction of 45.14 tonnes CO₂e.

Greening Our Streets Program

During 2008/09, Mosman Council invited residents to contribute a voluntary payment of \$6 towards the purchase of GreenPower for Mosman's street lighting. This program raised \$13,365 from community contributions enabling Council to purchase 50% GreenPower for street lighting from 1 February to 30 June 2009.

Greenhouse Gas Reduction Plan

Mosman Council developed its Greenhouse Gas Reduction Plan in early 2009. This Plan was adopted by Council and includes actions for both Council and the community to implement to reduce GHG emissions in Mosman. The adoption of this Plan indicates Council's continued commitment towards GHG reduction and combating climate change.

Pittwater Council

Climate Change Policy Adopted

Over recent years both the community and Council have identified the need for increased action and commitment in responding to the challenges of climate change. In consultation with the community, Council developed a Climate Change Policy which was adopted on 6 April 2009. The policy statement expresses a range of policy positions, including accepting that our climate is currently being modified by human activities at a rate unprecedented in human history. The policy acknowledges the important role of local government in abating emissions, managing climate change impacts and promoting community climate action at the local level. The policy commits Council to building on GHG abatement initiatives already in progress within Council's operations, and working in partnership with the community to respond to the challenges posed by climate change. The policy commits Council to incorporating consideration of climate change and its potential impacts into every aspect of Council's operations.

'Going Solar' Community Education Program launched

In June 2008, solar panels with a capacity of 1,435 watts were installed on the Coastal Environment Centre (CEC) as part of an upgrade towards development of a sustainability demonstration site for community education and awareness. The Solar Powered CEC project was launched on 16 November 2008, with an event attended by local politicians, schools and

community groups. Walk through tours have been conducted on a weekly basis showcasing the solar electricity, solar hot water, and lighting efficiency features of the Centre. Residents have been able to attend tours, and learn about the simple energy saving actions that can reduce power bills and CO₂e emissions in their own homes. Energy consumption at the Centre has reduced significantly, and in partnership with the University of NSW, Council is aiming to make the CEC Pittwater's first carbon neutral facility.



Source: Pittwater Council

Reducing Fleet Emissions

Reducing Fleet Emissions Pittwater has completed its program of replacing its light commercial vehicles with more fuel efficient and cleaner burning diesel and LPG vehicles. Trials are currently being conducted on an additive that will significantly reduce oil consumption and improve fuel consumption by the addition of additives to the heavy commercial vehicles. The percentage of four cylinder vehicles in the fleet has also increased from 41% last financial year to 51% at the end of 2008/09. In addition, 25% of six cylinder vehicles are now run as dedicated LPG vehicles.



Warringah Council

Greening of Warringah's Fleet

Throughout the 2008/09 year, Warringah Council's fleet has continued to drive towards lower GHG emissions and the use of more greenhouse friendly fuels. Overall, a reduction of 8% of CO₂e emissions

was achieved throughout the year, largely due to the higher proportion of diesel fuelled vehicles which produce significantly less CO₂e emissions than their petrol alternatives. Warringah has increased its use of diesel and ethanol fuels and has seen a decrease in the use of unleaded and premium fuels throughout the year.

In a new fleet initiative, Warringah Council's non-operational vehicles must now use less than 200 grams of CO₂e and 7.0 litres of fuel per 100 kilometres.



Greener Fleet Car. Source: Warringah Council

Warringah's Energy Savings Action Plan

Warringah's Energy Savings Action Plan was formally accepted by NSW DECCW in July 2008. The Plan is intended to reduce Council's energy consumption by nearly 4 million kWh over the next four years. By June 2009, Warringah had largely completed the installation of measures for its Energy Performance Contract (five separate energy efficiency and renewable energy projects across seven sites at a cost of nearly \$600,000). In addition, as part of Council's annual energy and water savings program, Council installed photovoltaic solar panels at the Dee Why Surf Club, Belrose Children's Centre and Collaroy

Progress Association building. Work also proceeded at a number of other facilities in retrofitting energy efficient lighting.



Source: Warringah Council

Internal Climate Change Workshops

Council's Executive Management Team along with other key internal staff meet regularly to ensure Council's approach to climate change mitigation and adaptation is tracking with best practice across Australia. The major workshop initiative was the commencement of a climate change risk assessment and strategic review of Council's GHG emissions reduction targets beyond 2010. Consultants were engaged to assist Council with this work. Four risk assessment workshops were held with staff to identify and evaluate risks to Council's operations and services from climate change. A total of over 400 risk statements were prepared. This is the first stage of a longer-term climate change adaptation project that will inform Council about how to plan for and adapt to climate change risks over the coming decades. In addition, a number of community and corporate emission reduction scenarios have been identified and the feasibility of these is currently under investigation. A presentation on the project was also given to Warringah Councillors.

Remote Control Lighting and Irrigation for Sports Fields

Warringah Council has started installing state of the art remote control lighting and irrigation for sports grounds, which will allow Council to better manage resources and save on energy and water costs. The new Park Infrastructure Remote Control Park Management System will enable staff and sports users to remotely turn lights on and off from their desktop or by SMS and Council will also be able to use it to control irrigation for the grounds.

The system will initially be installed at 10 sportsgrounds chosen for their high demand by various sporting groups and these include Abbott Road softball grounds, Curl Curl; Allambie Heights Oval; Beverley Job Park, Narraweena; Collaroy Plateau Park; Dee Why Park; Griffith Park, Collaroy; Harbord Park; St Matthews Farm Reserve, Cromer; Terrey Hills Playing Fields; and Wyatt Reserve, Belrose.



Remote Control Lighting and Irrigation for Sports Fields.
Source: Warringah Council

3.4 Community Responses and Recommendations for Future Direction

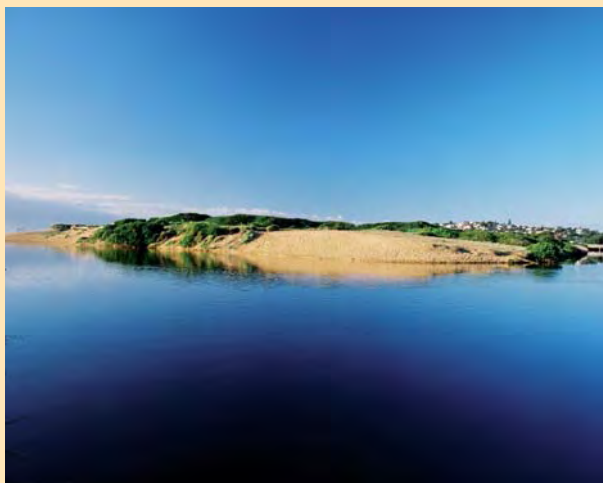
Atmospheric issues were addressed as part of the SHOROC SoE community consultation meeting held on 6 August 2009. Participants were asked to identify priority issues of concern relating to the atmosphere, and to work together to make recommendations for addressing these issues. The priority atmospheric issues and recommendations identified are provided in Table 9 below.

Whilst there were many issues raised during the community consultation meeting, these issues and their associated recommendations were the identified priority items. It is recognised that these issues do not necessarily reflect wider community concern, however they will be considered for future environmental planning and decision making across the region. See section 10 'Future Directions' for further analysis.

Table 9: Priority Issues and Recommendations Relating to the Atmosphere Identified in the SHOROC SoE Community Consultative Meeting, 6 August 2009

Issue	Recommendation
High level of emissions from high motor vehicle usage	<ul style="list-style-type: none">• Reduce emissions and promote alternative forms of transport
Carbon emissions associated with the transportation of food	<ul style="list-style-type: none">• Recognise and reduce food miles (through permaculture/home vegetable gardens)
Large ecological footprint associated with current lifestyles and behaviours	<ul style="list-style-type: none">• Live locally (sports, schools employment), produce locally (permaculture)
Lack of awareness about the significant connection between protecting and enhancing natural green environments and good air quality	<ul style="list-style-type: none">• Raise awareness that healthy natural green environments maintain air quality

4. Water



Curl Curl Lagoon. Source: Warringah Council

This chapter reports on the quality of receiving waters and the consumption of potable water across the SHOROC region. Indicators have been selected to measure and gauge issues of water quality and water consumption.

In this section 'water' refers to the marine environment, beaches, bays, harbour, lagoons, creeks, wetlands, groundwater, dams, wastewater, greywater, stormwater, and potable water.

The SHOROC region is characterised by a diverse array of natural water assets, which provide vital ecosystems for aquatic and intertidal biodiversity. These assets are also highly valued for their aesthetics and recreational opportunities.

The SHOROC region lies within the Sydney Water service area for potable water and waste water services.

4.1 Condition of our Water

Water is one of the SHOROC region's most important natural resources for environmental, social and economic reasons. As one of our life sources, good quality water is a daily necessity for our community. The region's water resources are enjoyed and highly valued by locals and visitors alike. Good water quality is also essential for ecosystem health.

The condition of SHOROC's natural waterways is generally affected by pollutants such as sewer overflows and urban stormwater runoff carrying pollutants including heavy metals, pesticides, fertilisers, sediments, rubbish and weeds.

Continued drought conditions and changing weather patterns have caused a reduction in rainfall over the Sydney catchment area. This has resulted in lower dam levels and the need for water conservation measures to assist in reducing water consumption and ensuring that there continues to be enough water to meet our own water needs as well as the needs of future generations.



Maintenance of Gross Pollutant Traps. Source: Manly Council

Regional Snapshot

Table 10: Regional Water Condition

Indicator	SHOROC Region		
	2006/07	2007/08	2008/09
Number of pollutant traps (council control)	174	175	180
Total gross pollutants removed from pollutant traps (tonnes)	1,603	1,447	1,085
Total residential potable water use (kilolitres per capita)*	75	71	80
Total council potable water use (kilolitres)	384,941	357,601	364,356

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

Council Snapshots

Table 11: Stormwater

Indicator	Manly			Mosman			Pittwater			Warringah		
	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09
Number of gross pollutant traps (council control)	23	24*	23**	30	30*	31	22	22	27	99	99	99
Total gross pollutants removed from GPTs (tonnes)	183	158*	79**	377	302	286	57	96	99	986	891	621

*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 12: Water Consumption

Indicator	Manly			Mosman			Pittwater			Warringah		
	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09
Total LGA potable water use (kilolitres)	3,776,919	3,565,403	3,774,512	2,903,941	2,816,409	2,915,400	5,064,615	4,709,263	4,910,571	11,727,414	11,277,076	11,581,445
Total residential potable water use (kilolitres per capita)	80	76	77	88	83	86	75	72	75	84	80	82
Total council potable water use (kilolitres)	104,967	79,185	80,350	50,000	43,981	49,690	119,615	104,356	120,963	110,359	130,079	113,353

Source: Sydney Water.

Note: residential water consumption per capita is residential water use per person. LGA water consumption includes commercial, industrial, houses, units/flats and 'other' as classified by Sydney Water.

Table 13: Beachwatch Water Quality Data Indicating Beaches Not 100% Compliant during 2008/09

✓ = 100% compliant

Beach	LGA	Summer 06/07		Summer 07/08		Summer 08/09		Winter 2006		Winter 2007		Winter 2008	
		Faecal	Enterococci	Faecal	Enterococci	Faecal	Enterococci	Faecal	Enterococci	Faecal	Enterococci	Faecal	Enterococci
Palm	Pittwater	97%	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Whale	Pittwater	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Avalon	Pittwater	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Bigola	Pittwater	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Newport	Pittwater	✓	✓	✓	✓	88%	91%	✓	✓	✓	✓	✓	✓
Bungan	Pittwater	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mona Vale	Pittwater	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Warriewood	Pittwater	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Turimetta	Pittwater	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Birdwood Park	Warringah	93%	66%	✓	77%	97%	81%	✓	77%	77%	14%	✓	97%
North Narrabeen	Warringah	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Collaroy	Warringah	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Long Reef	Warringah	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Dee Why	Warringah	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
North Curl Curl	Warringah	✓	✓	✓	82%	✓	✓	✓	82%	91%	91%	✓	✓
South Curl Curl	Warringah	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Freshwater	Warringah	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Queenscliff	Manly	97%	✓	86%	86%	✓	✓	86%	86%	✓	77%	✓	✓
North Steyne	Manly	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
South Steyne	Manly	97%	79%	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Shelly	Manly	86%	79%	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Ocean Beaches



Beach	LGA	Summer 06/07		Summer 07/08		Summer 08/09		Winter 2006		Winter 2007		Winter 2008	
		Faecal	Enterococci	Faecal	Enterococci	Faecal	Enterococci	Faecal	Enterococci	Faecal	Enterococci	Faecal	Enterococci
Harbour Beaches - Pittwater	Great Mackerel	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Elvina Bay	96%	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	The Basin	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Bayview Baths	✓	✓	✓	82%	✓	88%	✓	82%	✓	76%	✓	✓
	Winji Jimmi	✓	✓	91%	82%	✓	✓	91%	82%	✓	90%	✓	✓
	North Scotland Is.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	South Scotland Is.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Saltpan Cove	93%	93%	91%	64%	✓	✓	91%	64%	✓	76%	✓	✓
	Clareville	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Paradise	✓	✓	✓	91%	✓	✓	✓	91%	✓	✓	✓	✓
	Barrenjoey	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Clifton Gardens	✓	✓	✓	94	✓	✓	✓	✓	91%	82%	✓	✓
	Little Sirius Cove	✓	94%	84%	61%	✓	✓	80%	75%	✓	82%	✓	✓
	Balmoral	✓	✓	✓	90%	✓	✓	✓	✓	✓	✓	✓	✓
Harbour Beaches - Sydney Harbour	Edwards	✓	✓	✓	94%	✓	✓	✓	✓	✓	✓	✓	✓
	Chinamans	✓	✓	✓	94%	✓	✓	✓	✓	82%	82%	✓	✓
	Davidson Reserve	✓	✓	86%	77%	97%	97%	86%	77%	✓	60%	96%	97%
	Gurney Crescent Baths	✓	✓	82%	82%	✓	✓	82%	82%	✓	✓	✓	83%
	Sangrado Baths	✓	✓	77%	68%	97%	✓	77%	68%	65%	40%	✓	61%
	Clontarf Pool	✓	94%	82%	77%	✓	✓	82%	77%	✓	✓	✓	✓
	Forty Baskets	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Fairlight	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Manly Cove	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Little Manly Cove	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓



Beachwatch (including Harbourwatch) monitors faecal coliform and enterococci bacterial levels in water at Sydney's 100 ocean and harbour swimming sites. Faecal coliforms and enterococci are bacteria found in the intestinal tracts of humans and most other mammals. They are used as an indicator of pollution (and potential pathogens) in water. However, as of May 2009, Beachwatch commenced monitoring of enterococci only.

Poor water quality is generally linked to rain events, during and after which pollution from stormwater and sewer overflows can make the region's beaches unsuitable for swimming, due to high levels of faecal contaminants and litter.

Data provided in Table 13 indicates that the water quality of the SHOROC region's coastal and harbour beaches improved during the 2008/09 reporting period. Winter water quality was notably improved at Birdwood Park, Sangrado Baths, Little Sirius Cove and Forty Baskets Beach. Summer water quality was notably improved at Sangrado Baths, Queenscliff Beach, Chinaman's Beach and Davidson Reserve.

Tables 10 and 11 demonstrate that, whilst there has been a slight increase in the number of gross pollutant traps under council control across the region, there has been a 25% decrease in the total gross pollutants removed throughout 2008/09 (despite a small increase in gross pollutants removed in Pittwater). In some instances this may be due to some units not operating at full capacity during the reporting period, however in most instances this could reflect a lower rainfall period meaning fewer gross pollutants were washed into the stormwater system, or that littering decreased over the reporting period.

Tables 10 and 12 show that both residential water use per capita and total LGA water consumption has increased across the region between 2007/08 and 2008/09. This may be due to more water being used during the hotter summer period in 2008, even though restrictions were still in place. Table 10 and 12 also show that council water consumption across the region has increased, (despite Manly Council's water consumption remaining relatively stable and Warringah Council's consumption

decreasing between 2007/08 and 2008/09).

Reduced water consumption for Warringah Council can be attributed to continued installation of water saving devices in Council facilities, increased staff awareness about water saving, improvements in water monitoring systems and greater attention to leak detection and maintenance. Increased water consumption for Mosman Council is predominantly due to a large anomalous increase in water consumption by one of the commercial sites owned by Council but leased to another business. Mosman Council will investigate water usage of its own properties and leased properties to reduce water consumption in the future.

4.2 Pressures on our Water

Our local waterways provide habitat for a range of fauna including fish, frogs, reptiles and birds. Poor water quality can significantly impact on these aquatic habitats and their inhabitants. Human activities impact on the condition of these waterways, including stormwater runoff from impervious surfaces, effluent transport and disposal, boating, fishing, swimming, scuba diving, and polluting of waterways.



Burnt Bridge Creek. Source: Manly Council

Other pressures on water quality in the SHOROC region include:

- Increases in impervious surfaces, which reduce infiltration of water and increase the amount of urban stormwater runoff generated
- Sewer overflows resulting from aged infrastructure and illegal connections
- Sewer outfalls and licensed discharges

- Litter
- Nutrient run-off from gardens, industrial estates and animal waste, and
- Water pollution incidents.

These pressures on water quality generally increase during times of high rainfall and flooding. Increases in population and demand may also potentially lead to increases in water consumption and result in the generation of higher volumes of waste water and place additional pressure on the region's waterways.

4.3 Responding to Water Issues

Narrabeen Lagoon – Creating a Sustainable Catchment

The NSW Environmental Trust awarded Pittwater and Warringah Councils a \$1.96 million grant to restore the Narrabeen Lagoon catchment area for a period of three years from 2007. The money is being spent on a catchment-wide sustainable living education program, creek bank remediation works, bush regeneration and building Council's capacity for sustainability. The grant will also support existing restoration programs within Narrabeen Lagoon by focusing on Middle, Mullet and Nareen Creeks which urgently require resources and remediation works. These additional funds will enable both Councils and the community to help preserve the Narrabeen Lagoon catchment area and its unique environment.

The sustainable living education campaign has produced a number of highlights over the 2008/09 year. One of the major tools used to track the progress of the program was a catchment-wide survey of resident perceptions about the environment. Two hundred randomly chosen residents participated in a phone survey and the data collected will be used to help plan the duration of the program.

This past year's educational programming focused heavily on building the capacity of the residents through sustainable living workshops, community forums, bush walks, and a community festival. There was also a strong focus on providing schools

with resources to enable them to become more sustainable. Both Councils have also been working very closely with community groups in the area to ensure the messages of sustainability remain in the community beyond the life of the grant.

The grant has funded a number of on-ground works to manage the natural resources in the catchment. To date, five long-term bush regeneration contracts have begun within Middle, Nareen and Mullet Creek catchments as well as the removal of numerous coral and willow trees. Over the past year works have been focused on the following:

- 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 and expanding areas of resilient bush and good bushland core areas, and
- linking areas of quality bushland through revegetating and regenerating bushland areas, and identifying bushland areas which will prove to be the most resilient or less prone to weed re-infestation.



Weed Removal at Middle Creek. Source: Warringah Council

Other highlights during the reporting period have included the planting of over 5,000 trees, shrubs and ground cover plants at Middle Creek in areas cleared through bush regeneration, and an increase in the number of volunteer bush regeneration groups that are established in the area. These groups help to ensure long-term sustainability goals in regards to protecting and maintaining our bushland areas.



Additionally, Warringah and Pittwater Councils are working 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.

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. This project has received \$690,000 funding from the NSW DECCW, to be matched by the Councils.

In 2008/09, both Manly and Warringah Councils restated their commitment to implement the project, and project management and administration has been handed over to Manly Council. Manly Council has commenced finalisation of environmental approvals and documentation, including the draft Review of Environmental Factors (REF).

Wet Weather Sewage Overflows

During medium to large rainfall events, more water can enter the sewerage system than can be transported. The system has overflow points to prevent the sewage backing up and discharging to properties. Overflow points generally discharge to the environment such as stormwater systems and creeks. SHOROC member Councils have been working with Sydney Water on a \$22 million infrastructure project to improve sewerage services on the North Shore. This work will help reduce the incidence of wet weather overflows by replacing, repairing and enlarging pipes.

Dry Weather Sewer Leakage

In dry weather the sewer can discharge due to damaged pipes or blockages. Tree roots cause about 80% of blockages. Since 2005, Sydney Water has worked with SHOROC member Councils and inspected about 124 km of sewer pipes in the four LGAs. More than 11 km (at a cost of \$4 million) of sewer pipes has been relined based on the findings of the inspections.

Public and Private Sewer Leakage

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. The investigation of dry weather stormwater discharges to ocean and harbour beaches found few stormwater drains were discharging and of these only two had potential problems which are being investigated by Manly Council and Sydney Water. Manly and Warringah Councils along with Sydney Water are extending 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. Manly Council, Warringah Council and Sydney Water are working to determine sources of faecal indicator bacteria in wet weather within the catchments.

In 2008/09, Manly Council completed an investigation of all stormwater pipes entering Manly Lagoon from the Manly Council side of Manly Lagoon. Monitoring work involved water quality sampling of stormwater pipes using sewage tracers, and communication of unexpected results to Sydney Water for further investigation and rectification.



Monitoring Stormwater Quality for Sewer Leaks. Source: Manly Council

Sydney Water's WaterFix Program

Interested residents in the SHOROC region have taken up Sydney Water's WaterFix program, which includes a free do-it-yourself (DIY) water saving kit, WaterFixing the home, a \$150 washing machine rebate, a \$1,500 rainwater tank rebate, and the Toilet Replacement Service (Sydney Water replaces a single flush with a 4-star, water efficient, dual flush toilet, saving about 25,000 litres every year and up to \$200). The community's interest in reducing their water consumption not only encourages using water wisely but also reduces their water bill and the consumption of water for the region.



Washing Machine Rebates. Source: Manly Council

Table 14: Participation in Sydney Water's WaterFix Program

Water Saving Program	Manly		Mosman		Pittwater		Warringah	
Date	08/09	Total 99 to 09	08/09	Total 99 to 09	08/09	Total 99 to 09	08/09	Total 99 to 09
DIY Kits	123	1,360	84	816	81	1,490	265	4,987
WaterFix Your Home	100	3,940	51	2,218	66	5,196	194	14,659
Washing Machine Rebate	527	2,298	368	1,514	518	2,505	1,543	6,612
Rainwater Tank Rebate	35	328	30	287	114	1,176	178	1,689
Love Your Garden	96	279	93	242	216	451	311	882
Toilet Rebate	61	62	16	16	186	192	454	459
Total Participation	942	8,267	642	5,093	1,181	11,010	2,945	29,288

Toilet rebates were introduced by Sydney Water in 2008/09 (see Table 14). The uptake of other rebates and programs across the region has declined in the 2008/09 reporting period.



Delivering Local Responses

Manly Council

Burnt Bridge Creek Integrated Restoration Project

Burnt Bridge Creek is one of three creeks entering Manly Lagoon. The creek has been subject to a range of impacts including poor water quality and bushland degradation.

In 2008/09, Manly Council received \$1,997,570 from the NSW Government Environment Trust (Urban Sustainability – Major Projects Program), to fund an Integrated Restoration Project for the creek. The project represents an alliance partnership with Warringah Council. Over the past year Manly Council has been completing the mandatory business plan for the project, in addition to undertaking preliminary topographic surveys and establishing water quality monitoring stations.

Upon approval of the business plan by the funding body, project funds will be used to achieve six major environmental outcomes for the creek over a three year period. These include:

1. Stormwater harvesting for Balgowlah Golf Course and Balgowlah Oval (providing alternate water source for irrigation, increasing wet weather stormwater retention capacity of the sub-catchment and reducing dry weather dam extraction)
2. Stormwater treatment for the Sydney Road Catchment (improving stormwater quality)
3. Modification of the existing artificial Burnt Bridge Creek Weir to a sediment control basin with future truck maintenance access
4. Removal of aquatic and riparian weeds
5. Burnt Bridge Creek bank restoration, and
6. Community engagement/education to protect Burnt Bridge Creek catchment values.

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 2008/09 Manly Council continued a successful leak investigation program which identified and repaired a range of concealed leaks in Council's facilities. Council has also identified, photographed and Global Positioning System (GPS) registered the locations of all Council's water using sites and meters. Council has also continued the implementation of new rainwater tank and water conservation devices to a range of sites.



Keirle Park Rainwater Harvesting Tank. Source: Manly Council

Testing The Waters – Helping To Heal Our Catchments

'Testing The Waters – Helping To Heal Our Catchments' is a catchment awareness and water quality testing educational event. It is held annually by Manly Council and Sydney Water's StreamWatch division. It provides high school students with a snapshot of the health of local waterways, and the many issues that surround and impact on catchment areas. This is achieved through student catchment tours, while undertaking water quality monitoring activities which also allows students to see firsthand some of the challenges facing our catchment areas. In 2008, a newly developed program was run which aimed to build on the successes of three previous years of events and ensure students received a more thorough understanding of catchment issues. Over 90 students participated in this program run in September 2008.

Mosman Council

Water Savings Action Plan

In March 2009, Mosman Council submitted the second 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 an efficient Zip Hydrotap in the Civic Centre kitchen, water efficient touch-free taps in the ladies toilets, and three rainwater tanks installed at Council facilities.



Touch Free Taps. Source: Mosman Council

Creek Monitoring

Council continued to monitor creeks in Mosman under the Estuary Management Grant from the DECCW. The project involves the physical, chemical and biological monitoring of four creeks within the Mosman LGA. Monitoring was undertaken on a quarterly basis from June 2008 to June 2009. The quality of both water and sediments has been monitored and macro-invertebrates were identified at each site twice throughout year. In June 2009, Council engaged consultants to continue the monitoring project for an additional 12 months.



Mosman Bay Creek. Source: Mosman Council

Botanic Road Stormwater Reuse Scheme

The installation of a treatment train incorporating a Stormwater Quality Improvement Device (SQID) and a Stormwater Storage System commenced during the 2008/09 financial year. The stormwater from the catchment will flow through the SQID to remove gross pollutants and some sediments, and will then flow into the storage system. The water in the storage system will be treated with an ultra-violet (UV) treatment system before being used to irrigate Balmoral Oval and surrounding gardens and parkland.



Stormwater Harvesting and Reuse System. Source: Mosman Council

Pittwater Council

Warriewood Catchment Servicing Strategy

Sydney Water has been developing an integrated servicing strategy for the Pittwater area in line with the NSW Government's 2006 Metropolitan Water Plan. The strategy includes the provision of drinking and non-drinking water, wastewater collection and treatment. The servicing strategy builds on and improves existing infrastructure in order to service growth, reduce wet weather overflows, protect catchment and river health and reduce the demand for drinking water. A sustainability analysis is being used as an input to developing the servicing strategy. Options were considered by stakeholders and favoured alternatives for non-drinking water supply to growth areas in Ingleside and recycled water for irrigation to the playing fields and golf courses close to Warriewood Sewage Treatment Plant.

Sydney Water is working with Pittwater Council to finalise the preferred option.



Irrigation Systems

At Kitchener Park, Mona Vale and North Narrabeen Reserve, North Narrabeen, Council has installed water management systems to irrigate the sporting fields. This is achieved by drawing water from a depth of over 60 metres below the ground, treating the water in a holding tank and using sprinklers to irrigate the reserves.

At Lake Park Reserve, North Narrabeen, Council has installed a spear point which draws on ground water which is pumped into a holding tank where it is treated and then used to irrigate the sports field. Council is also intending to collect rainwater from the clubhouse roof to supplement the use of ground water.



Irrigation Tanks. Source: Pittwater Council

Integrated Water Harvesting Scheme

Council received grant funding from DECCW to undertake the Sydney Lakeside Caravan Park - Integrated Water Harvesting and Reuse Scheme project. The project involved environmental management works to reduce mains water and groundwater reliance at the site. The Caravan Park is recognised as Council's highest water using site in Council's Water Savings Action Plan.

Stage 1 of the project incorporated the collection of roofwater off amenities blocks and buildings (including the Coastal Environment Centre) for toilet flushing and irrigation. The project involved the installation of a number of underground and above ground tanks to collect and reuse rainwater. The project was also able to use existing rainwater tanks at the caravan park, by relocating or re-adjusting connections on-site.

Creek Care Program

The Council has an ongoing program of restoring creeks across Pittwater in partnership with local volunteers. Between 2008 and 2009 the Council undertook restoration work at Mullet and Nareen Creeks in Narrabeen, including weed control, revegetation works and water quality sampling. Council is also reviewing all flood zones and associated mapping.



Creek Care. Source: Pittwater Council

Water for Life

Council, with State Government funding, ran an effective water savings education campaign *Water for Life*. The program was delivered to the broader community via communications (advertising, media articles, signs, rates notices), education (workshops, market displays, eco-events, school education), free water-saving kits and a web page full of practical information and links. Council's staff also received education and water-saving tips.

A before and after community survey supported the finding that:

- The majority of residents (96%) consider water conservation to be very important
- More are now actively reducing their water use and about half feel they could do more, and
- Most find the website meets all their information needs for saving water.

Warringah Council

Water Quality Monitoring Program

In 2006/07, Warringah Council developed a new water quality monitoring program that covers freshwater monitoring and assessment. In 2008/09 two programs under the freshwater monitoring and assessment component were undertaken (water quality monitoring and biological assessment). The objective of the program is to obtain information on the baseflow water quality in a selection of freshwater creeks in the LGA. Water quality monitoring was undertaken at 15 sites on one event and biological assessment of water quality was undertaken at 13 sites in autumn.

The water quality monitoring program measured physico-chemical water quality including temperature, dissolved oxygen, pH, conductivity, nutrients, suspended solids, chlorophyll-a and faecal coliforms.

The biological assessment program takes samples of small organisms, macroinvertebrates and diatoms, in conjunction with water quality measurements. The types and number of these organisms found at each site provide an indication of whether the site is polluted or un-polluted. There are 13 impacted sites and two reference sites sampled as part of this program. The data will be used to prioritise creek rehabilitation and plans for future development.

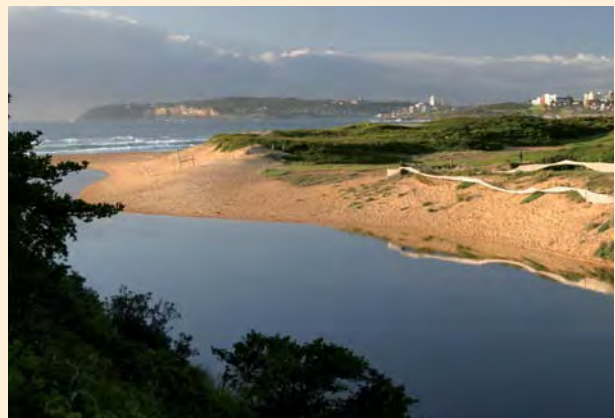
Warringah Council's Water Savings Actions

Warringah's Water Savings Action Plan was formally accepted by DECCW in July 2008. Council is on track to achieve a 30% reduction in water consumption by 2010/11 through a program to progressively upgrade appliances and fittings with more water-efficient devices. For example, amenities upgrades at the Civic Centre included waterless or low water using urinals.

Since 2004 the Warringah Aquatic Centre (WAC) has made significant improvements with water efficiency, and continues to pursue innovative methods to further reduce the Centre's water usage. Water savings actions have been in three areas:

- Pool operations procedures
- Roof water collection for pool makeup, and
- Reduction of water use through amenities.

As a result of these actions, the WAC has reduced its consumption of potable water by 52% since 2005. Further water saving actions are continuing. In 2008 the WAC was successful under the Regional & Local Community Infrastructure Program in obtaining funding for a backwash recycling system which will further reduce water usage by over 3 million litres per year and result in a direct saving of over \$6,000 a year in water costs. Warringah Council was a finalist in the 2009 Keep Australia Beautiful NSW Water Conservation Award for the water savings actions carried out at the WAC.



Curl Curl. Source: Warringah Council

Groundwater Investigations at Curl Curl Lagoon

In 2008/09 Council commenced a detailed investigation into the quality and movement of groundwater that discharges into Curl Curl Lagoon. The objective of this program is to provide information to enable decisions to be made about future rehabilitation options for the lagoon. Twenty groundwater monitoring bores were installed at various locations around the lagoon. During the installation of these bores, soil samples were taken for analysis and the soil profiles were recorded. The first round of environmental monitoring of these groundwater wells has occurred in conjunction with surface water monitoring in the lagoon. The project will be completed in 2009/10.



Industry Audit and Education Program

During 2008/09 Council continued to take a pro-active approach to environmental management of local industries to prevent pollution. Council conducted environmental audits of industrial and commercial premises, concentrating on the auto-servicing sector. The major focus of these audits is preventing contamination of stormwater runoff. Council also responded to pollution spills, the most common being oil and concrete.

New Swimming Site for Warringah Dogs

Warringah Council has approved the first site for dogs to legally swim in the LGA with Curl Curl Lagoon no longer a prohibited area. Clear warning signs will be installed to inform the public that the water in Curl Curl Lagoon is polluted and that the effects on dog health are not known. Many people have been taking this risk and illegally swimming their dogs at the mouth of the Lagoon in the past. The signage will ensure that the dog owners are aware that they are taking this risk themselves. The swimming area is adjacent to an off-leash area at Flora and Ritchie Roberts Reserves. Dogs remain prohibited from all ocean beaches in Warringah, as they are at all Sydney metropolitan ocean beaches.



New Swimming Site for Dogs. Source: Warringah Council

Community Case Study

Long Reef Golf Club Urban Stormwater Reuse

The Long Reef Golf Club (LRGC) is located on Griffith Park, Collaroy. LRGC leases a portion of the land, which is a Crown Reserve managed by Warringah Council under the *Crown Lands Act* 1989. LRGC has been active in water conservation and management for many years and has recently won the 2009 Keep Australia Beautiful Sustainable Cities Grundfos Water Conservation Award for the total re-use of urban stormwater from the Anzac Avenue outfall which runs across Fisherman's Beach.

The Stormwater Reuse Project diverts urban run-off in a complementary water management approach. Urban stormwater runoff from Anzac Avenue and boat-ramp ocean outfall is diverted to sedimentation and fore bay ponds. This rescued water is connected to the rehabilitated wetland retention/detention area, and then used for irrigation, wash down, toilet flushing, boat wash down and aquifer recharge.

The infrastructure to by-pass this outfall, commissioned in May 2009, results in the diversion of flows up to 2000L/s (predicted 20 year average recurrence interval) which results in severe scouring (eroding) of Fisherman's Beach. This outfall is now redundant, improving the beach amenity with increase in sand accretion. The photos show results immediately before and after rainfall events prior to and after storm water diversion.



Fishermen's Beach Before Stormwater Diversion. Source: LRGC



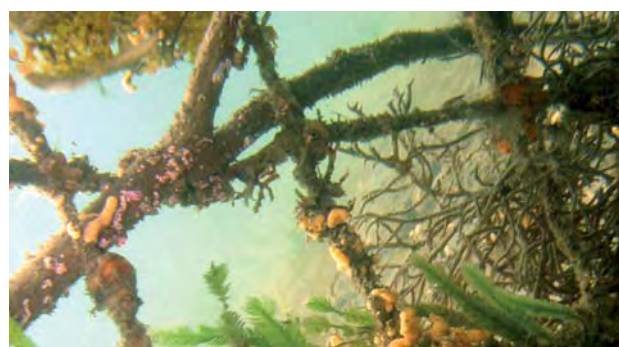
Fisherman's Beach After Stormwater Diversion. Source: LRGC

4.4 Community Responses and Recommendations for Future Direction

Water issues were addressed as part of the SHOROC SoE community consultation meeting held on 6 August 2009. Participants were asked to identify priority issues of concern relating to water, and to work together to make recommendations for addressing these issues. The priority water issues and recommendations identified are provided in Table 15 below.

Whilst there were many issues raised during the community consultation meeting, these issues and their associated recommendations were the priority items identified. It is recognised that these

issues do not necessarily reflect wider community concern, however they will be considered for future environmental planning and decision making across the region. See section 10 'Future Directions' for further analysis.

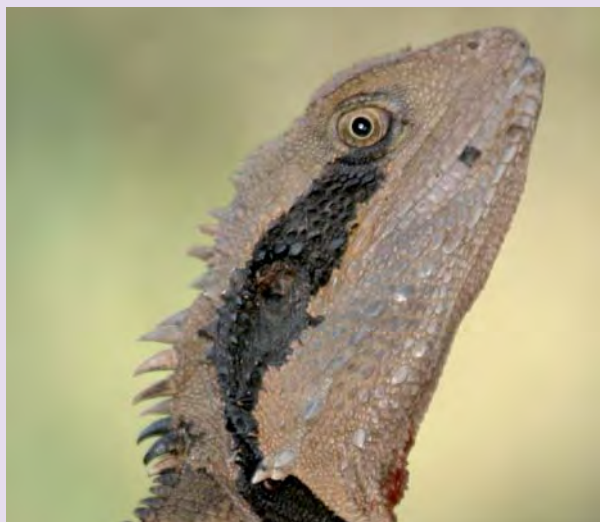


Caulerpa on Net at Chowder Bay. Source: Eco Divers

Table 15: Priority Issues and Recommendations Relating to Water Identified in the SHOROC SoE Community Consultative Meeting, 6 August 2009

Issue	Recommendation
Inappropriate development impacting on sensitive catchment and bushland areas	<ul style="list-style-type: none"> • Strengthen environmental/sustainability conditions in Development Control Plans/Local Environment Plans • Develop education programs for community including working groups • Increase Bushcare programs and involve Bushcare groups in more Council projects, and • Increase notification of, and enforcement against, inappropriate development.
Increase opportunities for rainwater and stormwater capture and reuse (residential, commercial /industrial)	<ul style="list-style-type: none"> • Offer rebates to businesses and residents • Fast track development applications that include rainwater tanks or stormwater/greywater harvesting • Introduce buy-back tariffs, and • Promote through community education programs.
Negative impact of stormwater flowing into bushland on biodiversity, aquatic habit and water quality	<ul style="list-style-type: none"> • Implement stormwater education program, and • Increased capture of stormwater through tanks on residential property/streets.
Spread of aquatic pest species such as <i>Caulerpa taxifolia</i>	<ul style="list-style-type: none"> • Education program for boat owners/users on <i>C. taxifolia</i> and pollution, and • Powered vessels should be given a sustainability rating by the manufacturer.

5. Biodiversity



Eastern Water Dragon. Source: Warringah Council

Biodiversity is the variety of all life forms - the different plants, animals and micro-organisms, the genes they contain, and the ecosystems in which they live and form a part of.

Biodiversity underpins the ecological processes which make life on Earth possible, such as provision of fresh air, clean water, nutrients and pollination of plants. It provides much of our medicines, fertile soils, food, industrial products as well as recreational opportunities and a source of cultural identity and inspiration.

The SHOROC region has a significant range of biodiversity. The region has large tracts of council-managed bushland, complemented by Garigal, Ku-ring-gai and Sydney Harbour National Parks.

Along with high biodiversity the region is home to many threatened plants, animals and communities. This includes 28 endangered ecological communities, over 180 threatened species and seven endangered fauna populations.

Biodiversity indicators have been selected to measure the condition and number of native species, threatened species and ecological communities, to gauge local and regional threats to biodiversity such as noxious weeds and pests, and to report on activities which aim to improve biodiversity such as Bushcare.

5.1 Condition of our Biodiversity

Biodiversity in the SHOROC region incorporates terrestrial (land), intertidal, aquatic and marine (water) based plants, animals and micro-organisms and the ecosystems in which they live. Whilst most of this diversity is contained in the region's bushland areas and waterways, it is complemented by biodiversity found in the region's urban and rural residential areas, including private gardens and street trees. Some endangered ecological communities such as Pittwater Spotted Gum Forest and Duffy's Forest are largely found on private property. Additionally corridors for movement and long-term viability of plants and animals occur chiefly outside reserve areas.

The condition of the region's biodiversity is affected by a number of natural and human induced factors such as changes to fire regimes, invasive species, land and river bank clearing, land use change, encroachment, fragmentation and water pollution. In addition, the impacts of climate change on biodiversity are predicted to be significant. In some cases, these and other factors have resulted in the loss of biodiversity to the extent that the viability of a species or population is threatened.

Under the *NSW Threatened Species Conservation Act 1995*, the term threatened is used to describe both endangered and vulnerable species, populations and ecological communities. Endangered species are those that are likely to become extinct if threats continue to those species. Vulnerable species are those that are likely to become endangered should those threats continue.



Flannel Flowers. Source: Warringah Council

Regional Snapshot

Table 16: Regional Biodiversity Condition

Indicator	SHOROC Region		
	06/07	07/08	08/09
Total noxious weed notices to residents	199	234	253
Total noxious weed assessments undertaken	354	389	546
Bushcare program volunteer hours	15,744	21,067	17,157
Total number of active registered Bushcare volunteers	937	907	585
Number of threatened species (flora and fauna)	167	167	183

Council Snapshots

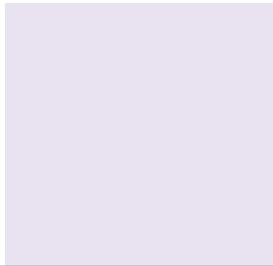
Table 17: Council Biodiversity Condition

Indicator	Manly			Mosman			Pittwater			Warringah		
	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09
Noxious weed notices*	48	83	40	0	0	0	90	56	161	61	95	52
Noxious weed assessments undertaken*	0	47	80	25	24	9	177	171	170	152	147	287
Number of registered active Bushcare volunteers	210	66*	86*	177	196	87*	250	356	181*	300	289	231
Bushcare program volunteer hours	583	528	598	2,754	5,292	2,054	6,207	9,283	7,220	6,200	5,964	7,285
Number of active Bushcare groups	16	11	12	17	34	17**	26	28	37	51	51	51
Number of native plant species recorded in LGA	449	449	449	454	454	454	unknown	unknown	unknown	914	914	914
Number of threatened flora species	10	10	10	3	3	3	14	14	21	20	20	20
Number of threatened fauna species	20	20	20	4	4	4	42	42	46	54	54	59
Number of endangered ecological communities	2	2	2	3	3	0	9	9	10	16	16	16
Number of endangered fauna populations	2	2	2	0	0	3	2	2	2	0	0	0
Number of feral fauna species targeted through programs	2	2	1	2	1	1	3	2	2	6	4	3

*In Mosman during 2008/09 there were 157 registered volunteers but only 87 of these were active. In previous years the number provided was the number of volunteers registered, but not necessarily active. Active volunteers have been recorded for Manly from 2007/08 to 2008/09 and during 2008/09 for Pittwater and Warringah. Previous years also included registered, non-active volunteers.

**Mosman Council also has 7 informal individual Bushcare groups with 1 or 2 volunteers who are not formally supervised by Council, therefore not included in the figure for 2008/09. These informal groups were included in the figure for 2007/08 which explains the discrepancy in group numbers.

*Under the NSW Noxious Weeds Act 1993, private occupiers of land must control noxious weeds on their land. Under the Act, Councils, as the local control authority, may require owners or occupiers of land to control noxious weeds. A Noxious Weed Assessment gives prior notice that a Weed Control Notice may be issued, and provides information about the weeds of concern to the landholder along with a timeframe for compliance. If the landholder fails to control weeds as required under the Act, a Weed Control Notice may be issued specifying the time (not being less than 14 days) within which action is to be taken. Failure to comply may result in prosecution.



Tables 16 and 17 show the number of threatened species, endangered populations and ecological communities in the SHOROC region. Over time this information will allow the region to monitor the biodiversity that is under threat. Noxious weed notices, feral species eradication programs and Bushcare volunteer programs are reported on as an indication of on-the-ground responses to the pressures on biodiversity.

Overall, both the number of noxious weed assessments undertaken and the number of notices issued across the SHOROC region increased from the 2006/07 reporting year to 2008/09. This data represents a positive trend for biodiversity and human health through the removal of noxious weeds that have the potential to spread and reduce biodiversity values.

Both Warringah and Manly Councils delivered a proactive program of residential inspections this year, with Warringah focussing largely on areas adjacent to bushland containing threatened species. Although more inspections were carried out in both LGAs, less notices were issued. This could be attributed to the long term educational programs carried out on the importance of threatened species and weed awareness.

The commitment of the SHOROC community towards Bushcare and the continued regeneration of SHOROC's bushland areas is highlighted through the number of hours Bushcare volunteer have dedicated. The data indicates that overall, the number of Bushcare volunteer hours has decreased across the entire region despite an increase in Manly and Warringah. All SHOROC member Councils have been undertaking reviews of their Bushcare volunteer programs and ensuring that only registered and active volunteers are reflected in SoE data. Previous years' data included volunteers who were registered but not active.

In addition, a large proportion of residents involved in Bushcare are of a mature age, and therefore the number of hours that these participants could contribute to Bushcare may have declined during 2008/09. Bushcare programs have been actively promoted to the local communities during 2008/09

to encourage new residents and other members of the community to join a Bushcare Group.

The number of threatened species increased significantly across the region throughout the reporting period, due to additional threatened species formally recognised in Pittwater and Warringah. This can be attributed to new determinations by the NSW Scientific Committee, findings from flora and fauna assessments, and the first known occurrence of a Bush-stone Curlew in 2008 within the Warringah LGA.

This data represents a positive trend across the SHOROC region for restoration of our bushland areas, removal of key weed species on public and private lands and management of our biodiversity.



Bush Regeneration at Tania Park. Source: Manly Council

5.2 Pressures on Biodiversity

The most significant pressures identified for the SHOROC region's biodiversity include:

Terrestrial Biodiversity

- Altered and inappropriate fire regimes
- Clearing and fragmentation of native bushland
- Spread of weeds including garden escapees
- Simplification of ecosystems by a reduction in diversity of native species
- Illegal poisoning of trees and removal of bushland
- Decline of street trees and trees on private properties due to age

- Illegal dumping of rubbish in bushland areas
- Predation and disturbance of native animals by domestic and feral animals
- Plant diseases such as Phytophthora root rot caused by the soil fungus *Phytophthora cinnamomi*
- Encroachment of private property into native bushlands
- Stormwater flow through bushland causing erosion and carrying nutrients and weeds
- Companion animals spreading disease to native fauna
- Increasing frequency and intensity of storm events
- Inappropriate recreational use of bushland reserves, and
- Likely climate change impacts include increases in temperature leading to changes in range of weeds, other invasive species and pests and diseases; changes in distribution and abundance of species; species loss; and changes in range of invasive species.

Aquatic and Marine Biodiversity

- Elevated nutrients from on-site waste-water systems entering into waterways increasing algal growth and impacting on seagrasses
- Illegal dumping of rubbish in aquatic areas
- Spread of invasive flora and fauna
- Stormwater discharges reducing water quality
- Anchoring and ballast water from boats spreading weeds and exotic species of fauna
- Moorings damaging seagrass beds
- Increasing frequency and intensity of storm events
- Replacement of swimming nets, and
- Likely climate change impacts include sea level rise; increased intrusion of salt water vegetation into freshwater ecosystems in coastal areas; altered rainfall and runoff patterns; and increased occurrence of eutrophication of lagoons, wetlands and estuaries.



Intertidal, Little Sirius Cove Mosman. Source: Mosman Council

5.3 Responding to Biodiversity Issues

National Tree Day

Each of the SHOROC member Councils participated in Planet Ark's National Tree Day events during July 2008. Tree planting makes a positive contribution to our environment by enhancing the local habitat, providing shelter for our native animals and helping to absorb carbon emissions.

For example, in Warringah, over 2,000 plants were planted at Nolan's Reserve by school students and community volunteers and around 1,000 native plants were planted by 65 volunteers in Manly. Over 70 people from the Pittwater community and businesses planted more than 2,000 plants at Avalon Beach Dunes and along Careel Creek. In Mosman over 600 native plants were planted by the Mosman community at Rosherville Reserve on National Tree Day, and approximately 120 students from Middle Harbour Public School and Beauty Point Public School planted trees on School's Tree Day held on Friday 31 July 2009.



National Tree Day, Tree Planting. Source: Manly Council



Urban Feral Animal Programs

During 2008/09, representatives from the SHOROC member Councils attended quarterly meetings of the Urban Feral Animal Action Group (UFAAG) to discuss and exchange information on feral animal issues across the region and possible solutions/ programs that could be implemented.

All SHOROC member Councils are committed to ensuring the protection of native flora and fauna through feral species removal programs. The Manly, Mosman, Pittwater and Warringah Threat Abatement Programs continue to coordinate and implement ongoing feral animal monitoring and control programs. Priority species for the SHOROC region include European red foxes, rabbits, cats, Indian Mynas and seagulls. Methods implemented during 2008/09 to control feral animals included trapping and baiting.

Delivering Local Responses

Manly Council

Threatened Species

Threatened populations of Little Penguins (*Eudyptula minor*) and Long-nosed Bandicoots (*Parameles nasuta*) are present in the Manly LGA. During 2008/09 Manly Council continued its active involvement in the Little Penguin Recovery Program in association with DECCW and other stakeholders. Council continued to work closely with DECCW's volunteer Penguin Wardens and constructed gated barriers at the Manly Wharf to assist in protecting the Little Penguins nesting at the Wharf. Manly also continued to provide input into the development of the Long-nosed Bandicoot Draft Recovery Plan.



Gated Penguin Barriers at Manly Wharf. Source: Manly Council

Bush Regeneration Program

The Bush Regeneration Program has seen extensive restoration work undertaken in 42 reserves by Council bush regenerators, contractors and volunteers.

Burnt Bridge Creek Restoration Works

Burnt Bridge Creek restoration works included ongoing bush regeneration, Coral trees removal, and revegetation with work completed by Council staff, contractors, and volunteers.

During the reporting period, approximately eight large clumps of Coral trees were removed from the section of creek bank adjacent to the Balgowlah Golf Course. To supplement weed control activities, revegetation was undertaken at multiple locations along the creek corridor.

In addition, 1000 native plants were planted to assist stabilising creek banks, replace Coral trees and improve the riparian vegetation condition.



Burnt Bridge Creek Restoration Works. Source: Manly Council

Mosman Council

Native Bogul Project

The Native Bogul Project is being undertaken by Scientists from the University of New South Wales, the University of Sydney, and Taronga Zoo, with support from DECCW, Mosman Council and Rentokil. The project will provide information on the impacts of invasive black rats on native flora and fauna, remove black rats from Mosman bushland areas, decreasing the risk of spread of disease to both humans and native wildlife, re-establish a self-sustaining population of native bush rat (Bogul) in bushland areas, increase community awareness of biodiversity issues, and restore the natural ecosystem.

During 2008/09 the study began on a small scale with a simulated environment having been built at Taronga Zoo to monitor the interactions between the black rat and native bush rat (Bogul), prior to reintroduction into Mosman's bushland.

Mosman Council has made the commitment to become a partner in this project, providing in-kind support through staff time, and promotion of the project to the Mosman community, and a monetary contribution of \$10,000 per year for three years, should the application for the Australian Research Council Linkage Grants be successful.



Dr Grainne Cleary and Native Bogul. Source: Lorinda Taylor, Taronga Zoo

Phytophthora Project

In collaboration with the University of Sydney, Mosman Council has been conducting a study to determine the effect of soil nutrient loads on the severity of dieback caused by the soil borne pathogen *Phytophthora cinnamomi*. From the study results it is not clear if all the observed dieback symptoms can be attributed to *P. cinnamomi*, or whether other factors may be involved. Understanding the effects of soil nutrient loading, as a result of runoff, on *Phytophthora* dieback will contribute to improved management of tree health in urban areas.

In February 2009, four sites within Lawry Plunkett Reserve were sampled for soil nutrients and microbial activity and to confirm the presence of *P. cinnamomi*. *P. cinnamomi* was found in all sampled sites. A second *Phytophthora* species was also present in the samples, and is being identified. Results suggest that soil fertility and the ability of the soil to suppress disease, was not different between the four sites, whilst nutrient levels and soil characteristics varied between sites. It was determined to further investigate the effect of high nitrogen loads on the severity of dieback in *Angophora costata*, *Eucalyptus botryoides*, *Eucalyptus piperita* and *Corymbia gummifera* caused by *P. cinnamomi* in a glasshouse trial. The glasshouse trial is currently underway and 60 seedlings of each plant species have been inoculated with *P. cinnamomi* and are being treated with nitrogen.



Cross Street Partnership

During 2008/09 Mosman Council worked in partnership with DECCW to restore a degraded area of bushland at the end of Cross Street adjacent to the Drill Hall Common. The work has involved the large scale removal of large woody weeds and targeting of Pampas Grass and Morning Glory. The woody weeds have been piled up for an ecological burn to stimulate the native seedbank in the soil. An area of approximately 3,800m² has been revegetated using a diversity of locally indigenous native plant species. Mosman Council has engaged bush regeneration contractors to regularly maintain the revegetation area and the adjoining bushland.

Volunteers Autumn Planting

During May 2009, Mosman Bushcare volunteers planted over 1,000 locally indigenous plant species at Bushcare sites and bushland reserves, to increase native fauna habitat and local biodiversity at these sites. Two public planting days were organised at The Grove and Government Road Bushcare sites.



The Grove Planting Day. Source: Mosman Council

Pittwater Council

Eradication of Bitou Bush and Boneseed from Pittwater's Sand Dunes, Headlands and Seacliffs

This initiative is part of the NSW Threat Abatement Plan (TAP) – 'Invasions of Native Plant Communities by *Chrysanthemoides monillifera* (Bitou Bush and Boneseed) Project funded by the Sydney Metropolitan and Hawkesbury Nepean CMAs; a 5 year project which commenced in 2007/08.

The project aims to restore endangered ecological communities (e.g. Themeda Grasslands and Littoral Rainforest) on coastal cliffs and headlands to a healthy condition by removing invasive weeds such as Bitou Bush, Boneseed and Asparagus Fern and facilitate natural regeneration. Asparagus Fern will also be targeted where it occurs within the Bitou infestation as it is envisaged that Asparagus Fern will proliferate after Bitou removal and hence threaten endangered ecological communities if it too is not controlled.

Restoration of Coastal Shale Heath and Littoral Rainforest at Little Head & Norma Park

Little Head Reserve and Norma Park Reserve are composed of Coastal Shale Heath, a forest type very different from what is found in the Sydney basin area, which is mostly sandstone. Coastal Shale Heath is found intermixed with Littoral Rainforest on several headlands of the Pittwater peninsula. Pittwater Council, the NSW Environmental Trust, and Bushcare Volunteers are engaged in a joint project to help restore and protect this endangered ecological community in NSW. This project is also made possible through the financial support of the local community.

Pittwater Spotted Gum Forest Restoration

Pittwater Spotted Gum Forest is listed under the Threatened Species Conservation Act 1995 as an endangered ecological community. Pittwater Spotted Gum Forest is home to a large number of local native animals, including many bird species and the endangered Squirrel Glider.

Community workshops revealed that the community values and identifies with the "leafy" look of Pittwater. The Spotted Gums and other Eucalyptus trees make up much of this valued "green look". Over 70% of Pittwater Spotted Gum Forest is found on private land, with only 30% existing in Council bushland reserves. Council will continue to work with local property owners to ensure this forest community is going to be around for generations to come. Council has undertaken works to help restore and protect the natural state of the Pittwater Spotted Gum Forest in critical areas, especially in public reserves.

Pittwater Estuary – Seagrass Friendly Mooring Project

Around 40 moorings in Pittwater Estuary have been converted to seagrass friendly moorings. This joint project between Pittwater Council, the Hawkesbury Nepean CMA, Department of Primary Industries and NSW Maritime includes a 3-year trial of the moorings. The long-term aim is to stop the current on-going damage to the seagrass beds.



Seagrass. Source: Pittwater Council

Pittwater Fauna Survey and Wildlife Corridors Mapping

Bushland areas across Pittwater were surveyed for native animals as part of the Pittwater Fauna Survey and Management Plan. Species recorded include some not previously noted including Little Bent Wing Bat and Feather-tail Gliders. This study will form the baseline for information influencing future planning and activities in Pittwater. The Draft Fauna Management Plan and Wildlife Corridors Plan were completed.

Vegetation Mapping

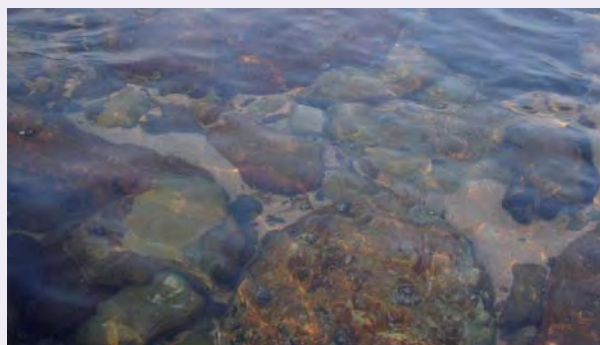
Vegetation mapping commenced in 2008/09. Over eight endangered ecological communities, as defined by the *Threatened Species Conservation Act 1995*, were found to occur in Pittwater. This mapping will assist Council to locate the different communities and to plan for their long-term survival.

Northern Beaches Marine Care and Humpback Whale Project

Funded by the Commonwealth Government, the key outcomes of the project were the production of an educational kit aimed at Kindergarten to Year 6. The kit included practical educational activities that teach young people about caring for our local environment and waterways. Another key outcome was the creation of a five-panel art piece by local Indigenous artist Jessica Birk. This has been incorporated into an educational brochure on the Indigenous representation and interpretation of the local environment around Narrabeen Lagoon. The educational kits along with commemorative framed pictures of the whales will be given to local schools and surf clubs.

Local Ecostudy Project

This project involved a collaboration between local high schools (Pittwater and Barrenjoey) and primary schools (Newport and Bilgola Plateau), Macquarie University and the Coastal Environment Centre. Local ecosystems were investigated to identify factors affecting survival of organisms in an ecosystem (Winnemere Bay and Avalon Dunes). High school students were trained in the use of the mobile and collaborative technologies in their school locations. The high school students mentored their primary school buddies to record their understandings using a number of forms of digital representation on excursions jointly run by the Coastal Environment Centre and Macquarie University. These recordings were uploaded onto the children's group wiki sites.



Avalon Beach. Source: Pittwater Council



Warringah Council

Bushland Plans of Management

Warringah Council developed a generic Bushland Plan of Management during the reporting year, which was adopted in August 2009. The plan provides guidance on the management of almost 100 bushland reserves throughout Warringah, comprising over 300 hectares of bushland. The main value of these reserves is for the conservation of remnant bushland in an urban setting. Low-impact recreation is another value. In addition, some reserves support rare or threatened species or endangered ecological communities.

Council also adopted the Urban Bushland Reserves Plan of Management for Anembo, Bantry Bay, Condoover, Lillihina and Rhoker Reserves in November 2008 and the Urban Bushland Reserves Plan of Management for Collaroy Escarpment, Lionel Watts Reserve and Frenchs Forest Showground in August 2009.

These complement existing Bushland Plans of Management, including Allenby Park, Berry Reserve and Adjoining Foreshores, Coastal Lands, Dee Why Lagoon Wildlife Refuge, Dee Why Valley and South Creek Corridor, Griffith Park, Jamieson Park, JJ Melbourne Hills Memorial Reserve & Adjoining Community Land, Manly Warringah War Memorial Park, Red Hill & Golden Grove Parks and Threatened Bushland Reserves (Duffys Forest Ecological Community).

Support for Bush Regeneration Volunteers

All Warringah Friends of the Bush volunteer sites have been assessed for strategic value and most groups have now been provided with a contract supervisor and a site plan. The program supports 231 volunteers at approximately 51 sites. A propagation nursery at Manly Dam has been established to supply volunteers with local native plants required for regeneration works.

New Community Nursery

A new community nursery has been completed during the reporting period at the Manly Dam War Memorial Park depot for growing local native plants for bush regeneration sites in Warringah. Council staff and Friends of the Bush volunteers meet twice a month to propagate native plants. Initially the nursery will be primarily growing plants for Council bush regeneration sites and excess plants will be given away through Council's community programs. As the nursery is starting as a small scale production mainly staffed with volunteers, it will not be open to the public at this stage.



Community Nursery. Source: Warringah Council

Brush Turkeys Return to Warringah

In another win for local biodiversity, Warringah Council Bushland Officers have discovered Brush Turkeys in the area after being very scarce for the past 20 years. During an inspection of a property in Killarney Heights, staff discovered a Brush Turkey building a nesting mound in a resident's front garden. These birds were on the decline until recently, which may indicate that the trend towards native gardens together with the Regional Fox Baiting Program, are working.

Endangered Bird Found in Dee Why

The endangered Bush Stone-curlew (*Burhinus grallarius*) was spotted in Dee Why in December 2008, in the first recorded sighting of the rare bird in Warringah. This once common bird is now endangered in the south-east of Australia. Continued work by Warringah Council's Bushland Officers, bush-regeneration contractors and the community volunteers to restore Dee Why Creek has significantly improved the birds' habitat and may have contributed to it making its home here.



Endangered Bush Stone-curlew. Source: Warringah Council

Locally Extinct Plant Discovered After 15 Years

In August 2008, Warringah Council bushland staff made what is believed to be the most southerly find of *Canavalia rosea*, commonly known as Coastal Jack Bean or Sword Bean, at the Reefcare volunteer site on Long Reef Headland. This plant had not been observed in the area for more than 15 years. Hundreds of volunteers have worked

tirelessly to remove weeds and reinstate native grasses at Long Reef over the last ten years. The removal of the noxious Bitou Bush has allowed dormant *Canavalia* seeds to germinate.

Council has been looking for this plant for many years as it is not just important for anchoring sandy coastal terrain, it also has great historical significance in both traditional and early European cultures. The beans were of great importance to Aboriginal communities who used it for food and medicinal purposes.

Bush Restoration at Manly Dam

During 2008/09, the Cootamundra Stage 3 Bush and Creek Restoration Project on the north eastern section of Manly Dam War Memorial Park focused on a major creekline feeding the lake, receiving runoff from a large proportion of the suburb of Allambie Heights through high capacity stormwater outlets. Exotic plant species had dominated the site but now all environmental and noxious weeds on Warringah's weed lists have been eradicated. Two species of native Crayfish were found in a small undisturbed section of the creek - the Smooth Sydney Crayfish (*Euastacus australasiensis*), and the Spiny Crayfish (*Euastacus spinifer*) which had not been recorded on the site before. Their habitat is precarious due to their susceptibility to sedimentation and change of water flow and velocity. Frogs have been recorded in greater numbers and the restored seepage/hanging swamp area has addressed all threats to the native *Galaxias brevipinnis* fish habitat.



Peppermint Angophora Forest at Manly Dam. Source: Warringah Council



Community Case Study

North Head Sanctuary Foundation

North Head Sanctuary Foundation is a community group which works to restore degraded areas on North Head and to conserve the natural, built and cultural values of the headland as a whole.

The Foundation brings together scientists, educators and others with an interest in ensuring that North Head is managed as a sanctuary and that residents and visitors recognise and appreciate the significance of this special place.

During 2008/09 the Foundation, in partnership with the Sydney Harbour Federation Trust, established a native plant nursery and education room at the former School of Artillery site on North Head. The nursery, which is focused on propagating local plants for restoring degraded parts of North Head, has several hundred plant seedlings and has begun planting out in consultation with the Sydney Harbour Federation Trust. The new education room features a comprehensive photo display of plants flowering in each season.



Bushland on North Head. Source: Manly Council

Northern Beaches Roadkill Prevention Group

The Wallaby Proof Fence was installed in 2007, along a section of the Wakehurst Parkway. No wallabies have been killed on this section of road since September 2007. The Northern Beaches Roadkill Prevention Committee continues to monitor the Parkway underpasses with sand traps and in the future, motion sensing cameras will be used to check animals using these culverts. The underpass areas are being baited in the Fox Baiting Program, which may prevent fox predation on animals using the culverts.

Wildlife roadkill, including threatened species, continues to occur outside the fenced area, however. In 2008, 41 wallabies were killed elsewhere along the Wakehurst Parkway over a 10 month period. A significant number of wallabies have also been killed on arterial roads such as McCarr's Creek Road, Chiltern Road, Myoora Road, Mona Vale Road and Morgan Road. A Rosenberg's Goanna died on Powderworks Road while two Ospreys were killed on Wakehurst Parkway.

The Committee is currently collecting tissue samples from deceased wallabies, to determine whether breeding is sufficient to compensate for the loss of animals through roadkill within the Narrabeen Lagoon Catchment.

5.4 Community Responses and Recommendations for Future Direction

Biodiversity issues were addressed as part of the SHOROC SoE community consultation meeting held on 6 August 2009. Participants in the consultation were asked to identify priority issues of concern to them relating to biodiversity, and to work together to make recommendations for addressing these issues. The priority biodiversity issues and recommendations identified are provided in Table 18 below.

Whilst there were many issues raised during the community consultation meeting, these issues and their associated recommendations were the priority items identified. It is recognised that these issues do not necessarily reflect wider community concern, however they will be considered for future environmental planning and decision making across the region. See section 10 'Future Directions' for further analysis.



Banksia ericifolia. Source: Mosman Council

Table 18: Priority Issues and Recommendations Relating to Biodiversity Identified in the SHOROC Community Consultative Meeting, 6 August 2009

Issue	Recommendation
Retain/improve/protect areas of remaining native vegetation	<ul style="list-style-type: none"> • Councils to survey, identify and rank remaining natural areas on both public and private land, including consideration of climate change • Develop ways to protect biodiversity through Plans of Management, Local Environment Plans and Development Control Plans • Implement targeted education programs about the significance and value of natural areas, and • Improve ranking and identification of natural areas to enable appropriate zoning of land.
Lack of Council ability to enforce environmental conditions	<ul style="list-style-type: none"> • Allocate resources in councils to improve enforcement of environmental conditions often attached to developments e.g. restrictions relating to cats and dogs

6. Human Settlement



Sidewalk Cafes Avalon. Source: Pittwater Council

This chapter reports on human settlements including population, noise and waste.

Improving, maintaining and balancing the diverse social, economic and environmental characteristics of the region are crucial in attaining a good quality of life for the community as a whole. The size, rate of increase and settlement patterns of the region's population has an impact on the environment both within and outside the region. Changes in land uses for human purposes can damage natural ecosystems, and alter air and water cycles. Population growth is also associated with a range of other issues, such as energy consumption, transport and waste management.

The impacts of human settlement vary. They may:

- Threaten the survival of plant or animal species
- Degrade the quality of the water or air vital for the safe and sustained survival of all life in the region
- Result in an increase in noise, and
- Negatively impact the aesthetic appeal of an area.

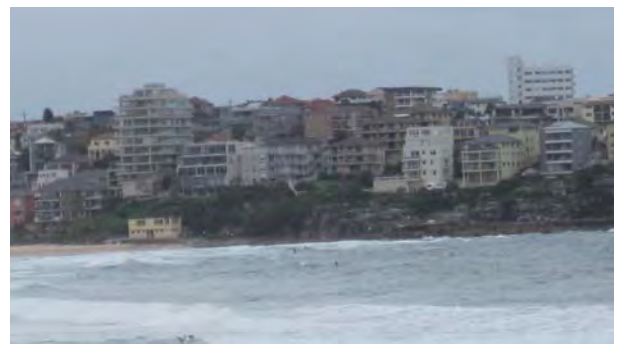
Local councils are responsible for urban planning, infrastructure, environmental restoration and protection, conservation of resources, provision of community facilities, and community services. Ecologically sustainable development practices are essential in managing and improving services and facilities and should include attributes such as culture, community involvement, facility access, employment opportunities, human health and safety. Community involvement in projects, including the opportunity for volunteering, fosters a sense of community for the area.

Human habitat indicators have been selected to measure and gauge local and regional issues of population pressures, noise complaints, waste generation and recycling.

6.1 Condition of our Human Settlement

Human settlement in the SHOROC region is characterised by a variety of land uses incorporating residential, commercial, industrial and open space areas. These highly modified environments are interspersed with remnant bushland and natural waterways, which contribute to the desirable character of the area.

Home to over 270,000 people, the SHOROC region covers an area of 264 km² and is bordered on three sides by water, namely the Pacific Ocean, the Hawkesbury River and Sydney Harbour. Land available for development is minimal, therefore the region continues to experience higher density living. The increased number of people living in the area can have both positive and negative implications. Negative implications include an increase in waste and noise which can have an effect on human health and wellbeing. Positive implications can include a greater sense of community.



Development on Queenscliff Headland. Source: Manly Council

Regional Snapshot

Table 19: Regional Human Settlement Condition

Indicator	SHOROC Region		
	06/07	07/08	08/09
Estimated population at 30 June	263,134	265,666	266,727
Total waste to landfill per capita, including general cleanup (kg)	221	227	222
Total waste to recycling per capita including metal and green waste (kg)	218	226	221
Noise complaints including general and barking dogs	3,143	2,946	2,651

Council Snapshots

Table 20: Population

Indicator	Manly			Mosman			Pittwater			Warringah		
	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09
#Estimated population of each LGA – at 30 June	39,103	39,677	39,667	27,936	28,152	28,356	56,619	56,920	57,018	139,476	140,917	141,686
Residential density (persons per hectare)*	25.82	26.21	26.20	32.79	33.04	33.28	6.25	6.28	6.29	9.33	9.42	9.47

*Estimated Residential Population estimates for 2008 were made available in April 2009, with further revision expected in April 2010. Population estimates between 2007 and 2011 are still subject to revision and will not be considered final until after the 2011 Census.

*Population density represents the average number of people per hectare. Residential density figures can be misleading as land included in the calculation may not be used for habitation e.g. shopping centres, national parks, large bodies of water, industrial estates etc. As a result areas with large amounts of residential housing will have higher densities than those where large amounts of land is used for industry or open space.

Table 21: Noise

Indicator	Manly			Mosman			Pittwater			Warringah		
	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09
General noise complaints received by council	40	90	87	50	79	71	186	92	325	730	825*	640
Barking dog complaints received by council	7	67	41	45	41	38	260	127	221	1,825	1,625*	1,228

* These figures for Warringah LGA in 2007/08 are sourced from two information systems as well as anecdotal information due to a system changeover mid year. These figures may not be accurate due to the reporting and recording mechanisms of the two systems.



Table 22: Waste

Indicator	Manly			Mosman			Pittwater			Warringah		
	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09
Total waste to landfill including general cleanup (tonnes)	7,922	7,858	7,333	6,791	6,891	6,363	12,029	12,692	13,420	31,256	32,796	31,984
Total waste to recycling including metal and green waste (tonnes)	7,479	7,576	6,618	5,637	5,609	5,567	11,304	11,636	11,729	32,832	35,243	34,936
Total waste to landfill including general cleanup per capita (kg)	204	198	185	243	244	224	212	223	235	224	233	226
Total waste to recycling including metal and green waste per capita (kg)	193	191	167	202	199	196	200	204	205	235	250	246
Green waste diverted from landfill per capita (kg)	41	44	30	39	54	56	36	41	46	102	109	112
General cleanup sent to landfill per capita (kg)	22	22	30	16	16	14	20	36	29	33	35	34

Available data in Table 19 shows that noise complaints have decreased across the SHOROC region.

These figures show that total waste to landfill is down by 5kg per capita in the SHOROC region, and total waste to recycling is also down 5kg per capita over the 2008/09 reporting period. The reduction in waste to recycling could indicate that residents are purchasing less packaged goods, and the overall regional reduction in waste to landfill may indicate a reduction in consumption and growing awareness of environmental sustainability issues. Both figures could also be indicative of reduced consumption due to the prevailing economic climate.

6.2 Pressures on our Human Settlement

All councils within the region face various pressures on their surrounding environment and communities, such as the pressures of waste, noise and congestion. These pressures impact on the state of our human habitat.

Waste generation is a pressure that is increasing due to growing populations, increased consumerism, increases in development, higher use of plastic bags, higher use of packaged foods, illegal and incorrect dumping of waste and littering. These factors contribute to higher amounts of waste being sent to landfill throughout the region.

Noise from urban developments, companion animals, transport, traffic, construction, recreational noise and neighbourhood noise may have adverse impacts upon the community's quality of life. Noise is still an apparent issue within the region, although data shows that noise complaints have decreased between 2007/08 and 2008/09.

6.3 Responding to Human Settlement Issues

Noise Management

Noise pollution is regulated under the *Protection of the Environment Operations (POEO) Act 1997* and councils use a range of measures to ensure noise in the community is kept at an acceptable level. Noise impacts are carefully considered during the development approval process and consents are appropriately conditioned to regulate and control noise. Noise requirements are also considered and included within planning instruments such as development control plans to reduce and control noise. Councils enforce the legislative requirements through environmental health, compliance officers and rangers who respond to noise complaints as they are received.

Companion Animal Education

Manly, Pittwater and Warringah separately host Dog Days and Mosman hosted a Pets Day Out. These events provide residents and visitors with a forum for companion animal social interaction. The events also provide Councils with a valuable opportunity to communicate with dog owners and raise awareness of responsible dog ownership such as minimising barking.



Source: Warringah Council

Waste Management and Minimisation

SHOROC member Councils all strive to encourage waste reduction and avoidance, prevent littering and illegal dumping, recover resources, and prevent and avoid hazardous materials. The region's growing population places further pressure on correct methods of waste disposal. To provide effective waste management, each Council runs waste initiatives for their residents such as:

- Providing recycling bins and green waste bins for residents
- Providing worm farms and compost bins
- Providing residents with domestic waste calendars outlining residential garbage recycling, general and metal clean-up collection dates, and
- Promoting waste avoidance, recycling and reuse.

These, and other, waste management practices implemented by the SHOROC member Councils during 2008/09 aim to significantly reduce the amount of waste sent to landfill, increase the use of secondary resources (such as recycled products), reduce the use of toxic materials and products and reduce litter and illegal dumping.

Each month Warringah, Pittwater and Manly Councils and Kimbriki develop a collaborative advertisement for the Manly Daily that addresses recycling or tips to minimise household waste. Previous topics have included information on paint tins, waste free Christmas, vegetation and light bulbs. During this reporting period Mosman Council held discussions with the other SHOROC member Councils to begin participating in this program.



Source: Warringah Council



Kimbriki Recycling and Waste Disposal Centre

Kimbriki is a general, solid waste (non-putrescible) landfill and recycling centre operated by Kimbriki Environmental Enterprises Pty Ltd. During 2008/09 the SHOROC member Councils worked closely to establish a company to operate Kimbriki in the future. Warringah, Manly, Mosman and Pittwater Councils are the shareholders of this new company.

Recycling and re-use processes developed at Kimbriki result in only 26% of the 183,900 tonnes of waste material received at the site going to landfill. In 2008/09 Kimbriki recycled 57,400 tonnes of vegetation, 94,300 tonnes of concrete/brick including stockpiles and 2,600 tonnes of metal products with 47,800 tonnes of waste going to landfill.

Major works have begun on the new high level drain that diverts fresh catchment water from the Kimbriki site. Licensing information and environmental monitoring results can be viewed on the Kimbriki website www.kimbriki.com. Three surface water locations, discharge points from the site for the perimeter drains, are tested approximately 10 – 12 times per year dependent upon discharge from the site. These sites are primarily a trigger point to ensure no leachate contamination has flowed into the surface waters and at these points testing is for ammonia, pH, suspended solids, biological oxygen demand (BOD) and conductivity. All test results throughout the reporting year were well within acceptable limits.



Major Works Have Begun on the New High Level Drain that Diverts Fresh Catchment Water from the Kimbriki Site. Source: Kimbriki

Household Chemical Cleanout

The Household Chemical Cleanout Program has been delivered in partnership with DECCW and local government since March 2003. Cleanout enables the environmentally responsible disposal of common household hazardous waste reducing community and environmental exposure to chemicals, radiation and waste. Through the establishment of well publicised temporary collection sites, the Cleanout program has facilitated the collection, treatment, recycling and safe disposal of household hazardous waste throughout the Sydney, Hunter and Illawarra regions of NSW.

The 2008/09 financial year saw record increases in all key performance indicators, including:

- 38 collections were held throughout Sydney, Hunter and Illawarra regions
- 22,711 households participated in the Cleanout program, and
- 763 tonnes of household hazardous materials were collected.

Figure 7: Types of Hazardous Waste Disposed of in the Chemical Cleanout Program

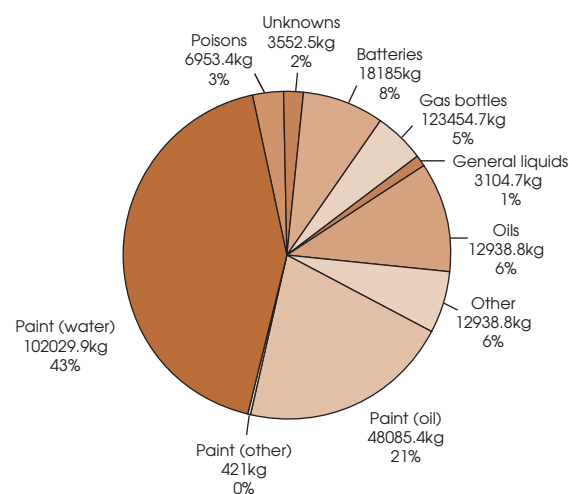


Figure 7 shows material collected in the Northern Sydney Region (which includes Hornsby, Kuring-gai, Lane Cove, Manly, Mosman, North Sydney, Pittwater, Ryde, Warringah, Willoughby, Hunters Hill LGAs).

At the Warringah Cleanout in September 2008, 1,529 people attended and almost 50 tonnes of materials were collected, including 32,000kg of paint and 3,500kg of acid batteries. Results demonstrated that 43% of the residents attending had used the service before.

Clean Up Australia Day

Each of the SHOROC member Councils took part in Clean Up Australia Day on Sunday 1 March 2009 and Clean Up Schools Day on Friday 27 February 2009. Councils offer support to the Clean Up events to help raise awareness of litter issues and how litter affects our terrestrial and aquatic environments.

E-Waste Campaign

In March 2009 Pittwater joined Manly, Mosman and Warringah Councils in a lobbying campaign to ban electronic waste (e-waste) in landfill from January 2010. The campaign, the first of its kind in NSW, aims to pressure manufacturers and the Commonwealth Government into enacting legislation to force manufacturers to take responsibility for the safe disposal of e-waste.



E-Waste. Source: Pittwater Council

Delivering Local Responses

Manly Council

Second Hand Saturday

Second Hand Saturday is a program aimed at promoting reuse and repair as opposed to disposal by encouraging residents to host a garage sale prior to their general clean up. This may effectively reduce the amount of waste that is sent to landfill and reduces demand on resources for new goods. Second Hand Saturday also promotes community spirit by encouraging neighbours to get together to organise a garage sale or street sale. Council supports residents by advertising their garage sale in the Manly Daily and providing posters to assist with promotion. Over the past year 160 residents participated which means goods that may otherwise end up in landfill have been acquired by someone else.

National Recycling Week

Manly Council promotes a waste minimisation ethic through workshops and events such as National Recycling Week activities. A Recycling Olympics was held during National Recycling Week in November with Nippers from North Steyne and Manly Surf Clubs. The activity also featured 'Reggie Recycle the Recycling Clown', 'The Box' mascot and a childrens' recycled art display. Talks for the adults included presentations by a Sydney University researcher on industrial waste recycling, an end processor for Council's recycling, the Fridge Buyback Program and local community groups involved in litter and waste education related initiatives.



Recycling Olympics. Source: Manly Council



Litterguards

The Litterguards Program was developed in response to community pressure to reduce littering on and around the Ocean Beach area of Manly during the peak summer period.

The main objectives of the program are to:

- Decrease litter on the beach and in the marine environment
- Educate the public about the social, economic and environmental impacts of litter, and
- Encourage best practice waste management in public places and litter avoidance.

Litterguards wear distinctive clothing and directly approach groups and individuals on the beach reminding them to properly dispose of their waste and recycling. The focus for 2008/09 was groups of younger people who were observed to be the most prolific litterers by Council rangers, compliance staff and Litterguards alike.

Litterguards approached over 430 groups of youths over the summer months and also spoke with over 1,200 individuals reminding them to take their rubbish with them and dispose of it appropriately.

Beach litter levels decreased visibly during the 2008/09 reporting period, according to Council cleansing staff, with beach litter weights recorded by council's beach rake reduced by 21% from the 2005/06 season before the introduction of the Litterguards Program.

Overall the response to the Program from both visitors and locals was extremely favourable and Litterguards received many positive comments during their 2008/09 beach patrols.

Food & Wine Festival

Manly Council's annual Food and Wine Festival attracts around 30,000 people. The festival is an opportunity to provide information on waste and recycling and encourage home composting. The 2009 Food and Wine Festival and associated Sustainability Fair featured biodegradable cutlery

and crockery that was collected after use for large scale composting at numerous bin stations staffed by over 140 community volunteer waste educators. More than 85% of the total waste generated by the 30,000-40,000 participants was diverted from landfill for recycling including 7.7 tonnes of co-mingled recycling, 3.5 tonnes of paper and cardboard recycling and 1.31 tonnes of food organics.

Mosman Council

E-Waste Recycling Tour for Councillors

An E-Waste Recycling Tour was conducted on 16 February 2009 with Councillors and Council staff visiting the recycling and landfill facilities at Eastern Creek and Chullora. This tour raised awareness of the environmental and economic issues surrounding e-waste disposal, and encouraged Councillors to take this information back to the community.



E-Waste Collection Day. Source: Mosman Council

E-Waste Recycling Collection for Residents

Mosman Council's first community e-waste collection was undertaken on Sunday 22 February. Residents were able to drop off their e-waste including computers, televisions and other electronic equipment at the Council carpark in Mosman Square on Sunday 22 February. A total of 20.6 tonnes of e-waste was collected on the day and taken by SIMS Metal to their Villawood facility, where 98% of this e-waste was recycled.

Battery Recycling Program

During the Month of June 2009, Council took part in the Battery Recycling Program offered by Battery World. Council promoted the Program to the local and provided a battery recycling bin in

the Civic Centre foyer for the community to access and dispose of their batteries for recycling. During the month, 50.92 kg of batteries were collected for recycling. The Program was popular with the community and succeeded in reducing the number of batteries disposed of to landfill, and raised awareness of alternative disposal options which are safer for human health and the natural environment.

Public Place Recycling

The Public Place Recycling Trial was undertaken at Balmoral over a twelve month period, which was completed in February 2009. The aim of the Trial was to increase resource recovery of recyclables and decrease waste generation. Following the Trial monitoring undertaken indicated a 3% contamination rate in the garbage bins compared to a 12% contamination rate prior to commencing the public place recycling Trial. Due to the success of the Public Place Recycling Trial, Council has made the decision to increase the number of recycling stations at Balmoral, as well as install recycling station at Clifton Gardens Reserve.



Public Place Recycling. Source: Mosman Council

Bin Rollout

Mosman's new bin system, which rolled out on 1 July 2008, encouraged residents to adopt a smaller bin size. The majority of Mosman residents now have a 120L or an 80L garbage bin. Residents were offered an economic incentive to opt for a smaller bin size through a reduction in rates. An education campaign was undertaken to promote the new bin system and raise community awareness of waste reduction through responsible consumerism, reuse and recycling. The aim of reducing the garbage

bin size was to reduce the capacity for waste to be sent to landfill. So far the bin system has shown good results with the rate diverted from landfill being 46.7% in 2008/09 compared to 44.9% in 2007/08, with a reduction of 528 tonnes of waste to landfill in 2008/09 compared to 2007/08.

Illegal Dumping Campaign

Mosman Council participated in the Regional Illegal Dumping Campaign run by DECCW from 13 April to 10 May 2009. An education and enforcement campaign was undertaken to address illegal dumping issues, particularly in multi unit dwellings where dumping is common. Advertisements were included in the local paper, on Council's website and noticeboards, and on bus backs. During the four week program there were a total of 71 illegal dumps in Mosman, including 61% from multi-unit dwellings, 38% from houses and 1% other. Of the 71 dumps, 52% were cleaned up by Council's contractors and 44% were cleaned up by the resident responsible after a notice was served by Council. The results of this campaign demonstrate that education and enforcement, if done in coordination, help to reduce the frequency and volume of illegal dumping, reducing clean up costs to councils.

Pittwater Council

Newport Community Centre

Pittwater opened a multi-purpose recreation centre at Newport. This development incorporates a number of ecologically sustainable development principles including:

- The re-use of some of the existing primary restructure reducing demolition waste and the requirement for new building materials
- Passive solar design providing maximum use of natural light and cross ventilation
- Control of sunlight into the building through eaves and adjustable shades to control sunlight into the building
- Installation of water tanks for rainwater storage and re-use



- Installation of waterless urinals and sensor taps, and
- Installation of solar panels on the roof.



Newport Community Centre. Source: Pittwater Council

Flourescent Tube Terminator

Pittwater purchased a fluorescent tube terminator to properly dispose of their old fluorescent tubes across Council. This program will be rolled out for residents to use in the coming year.

Warringah Council

New Waste Service

Warringah's new waste service commenced in July 2009. The new service makes it easier for residents to recycle, minimising waste going to landfill. Regardless of recycling number or symbol, all containers with firm sides and not made of polystyrene can be recycled. This includes all plastics, cartons, metal and glass containers. Residents also received a free lime lidded vegetation recycling bin and collections are now fortnightly. Throughout the reporting period, a waste and recycling calendar was distributed and a comprehensive advertising and publicity campaign ensured residents knew about the changes and how to get more information.

Bin it Properly!

During peak holiday seasons, particularly in January, residential garbage and recycling bins often overflow with rubbish. Warringah's short, sharp 'Bin it Properly!' education campaign used powerful imagery to give an immediate message:

Bin overflowing? Reduce your waste this summer or swim in it! The aim was to raise awareness that overflowing bins pollute the environment and to give residents a variety of options to deal with it.

National Recycling Week

Warringah Council hosted a number of activities to highlight the importance of recycling during National Recycling Week in November 2008. The e-waste collection, held in October 2008 as a partnership between Apple and Council at Frenchs Forest, yielded 24,136 kilograms of e-waste. The main items residents delivered were stereos, VCRs, computers, monitors, printers and televisions. Other highlights of National Recycling Week included:

- 28 residents attended a tour to the Chullora Materials Recycling Facility to see first hand how recyclable items are sorted and baled
- 40 residents attended a workshop to make boxes and gift cards from reused materials
- 22 residents attended the Hilltop to Headland Lecture by Planet Ark on recycling in Australia, and
- Over 100 residents enjoyed the Women's Clothing and Accessory Swap held at the Narrabeen Tramshed.

Bringing New Life to Old Waste

Reuse and recycling have been an ongoing theme in Warringah's waste education this year. Features included:

- Hundreds of children making cards and origami with reused and recycled materials during Vacation Care workshops
- Adults making their own Christmas and gift cards at a reuse workshop in November
- Ongoing worm farming and composting workshops for residents, during which 30 residents won a worm farm, and
- The set up of worm farms in three child care centres.



Brookvale Child Care Children Planting New Food Garden.
Source: Warringah Council

Green Film Festival

Council hosted a green film festival during March 2009, during which 136 residents attended 'Garbage Warrior' and 68 people attended 'Who Killed the Electric Car' and 'The Power of Community: How Cuba Survived Peak Oil'. Each film highlighted the positive aspects of living sustainably and generated interesting discussion.

6.4 Community Responses and Recommendations for Future Direction

Human settlement issues were addressed as part of the SHOROC SoE community consultation meeting held on 6 August 2009. Participants in the consultation were asked to identify priority issues of concern relating to human settlement, and to work together to make recommendations for addressing these issues. The priority human settlement issues and recommendations identified are provided in Table 23 below.

Whilst there were many issues raised during the community consultation meeting, these issues and their associated recommendations were the priority items identified. It is recognised that these issues do not necessarily reflect wider community concern, however they will be considered for future environmental planning and decision making across the region. See section 10 'Future Directions' for further analysis.

Table 23: Priority Issues and Recommendations Relating to Human Settlement Identified in the SHOROC SoE Community Consultative Meeting, 6 August 2009

Issue	Recommendation
Contain housing in existing urban areas to prevent spread into bushland and existing open space	<ul style="list-style-type: none"> • Encourage development of 1-2 bedroom dwellings, hostels, higher density 'community living', and • Limit size of homes being built e.g. no bigger than 300m² floor space, through local environment plans.
Impact of development on bushland areas and non-urban land	<ul style="list-style-type: none"> • Implement measures to protect land e.g. zoning and incentives • Acquisition of environmentally sensitive land by Councils to protect it from development • Develop management responses/programs to reduce threats to bushland • Develop a Northern Beaches Nature Conservation Trust • Prescribe planting of native trees only on public and private land • Statutory recognition of values of bushland for habitat and catchment protection, and • Implement effective programs to deal with noxious weeds and feral animals.
Ineffective public transport system which encourages use of private vehicles and leads to traffic congestion	<ul style="list-style-type: none"> • Provide minibuses to connect to main transport corridors • Increase minibuses to transport people e.g. elderly to local facilities • Provide 'circular' bus route to community venues / beaches • Improve bus service to main centres e.g. Chatswood • Remove walkways on Spit Bridge to allow for another lane, and construct a walkway under the bridge, and • Provide a 24 hour clearway along Spit and Military Roads.

7. Aboriginal and Non-Aboriginal Heritage



Aboriginal Heritage. Source: Manly Council.

Heritage is defined as places, objects, customs and cultures that have aesthetic, natural, historic or social significance or other special values for present and future generations (Australia ICOMOS, 1999).

Remnants of Aboriginal heritage sites including occupational, ceremonial and midden sites can be found on public and private land. Non-Aboriginal heritage refers to use of the land since European settlement and includes the oldest commercial, industrial and iconic architecture still present as well as military heritage in the SHOROC region.

Heritage indicators have been selected to measure and gauge both Aboriginal and Non-Aboriginal heritage in the SHOROC region and within individual council areas.

7.1 Condition of our Heritage

The Sydney Basin is one of the richest areas in Australia in terms of Aboriginal archaeological sites. There are thousands of sites, more than half of which contain rock art, and in Sydney's sandstone belt at least 1,500 rock shelters have been discovered to contain cultural deposits.

A significant number of sites have been found in the northern Sydney area and there are likely to be many more that have yet to be identified. All Aboriginal sites have legal protection under both State and Commonwealth law and it is an offence to damage or destroy them without agreement from DECCW.

Evidence of Aboriginal occupation in the SHOROC region includes rock engravings, rock paintings, shell middens, axe grinding grooves, sites of religious significance, fish traps, seed grinding patches, open camp sites and stone arrangements. Aboriginal items and culture have been lost or damaged since European settlement, however today some items and sites of cultural and heritage significance to Aboriginal and Torres Strait Islander people still remain.

Our local heritage gives us a sense of living history and provides a physical link to the work and way of life of earlier generations. It enriches our lives, helps us to understand who we are today and assists us to plan for our future.

The SHOROC region's heritage is diverse and includes historic sites, modified and built environments with community values, such as dwellings, public buildings, townscapes, gardens, reserves, buildings, roads, and aspects of our current multicultural society involving ethnic traditions, cultural events, national, state, and local symbols, artworks, craft, and literature.

Regional Snapshot

Table 24: Regional Aboriginal and Non-Aboriginal Heritage Condition

Indicator	SHOROC Region		
	06/07	07/08	08/09
Total number of Aboriginal heritage sites (including national parks)	1,002	1,018	871*
Total number of non-Aboriginal heritage items	1,027	1,033	1,064
Heritage conservation areas	20	20	21

*Data provided to councils by DECCW through the AHO for the 2008/09 SoE has revealed anomalies in previously reported Aboriginal heritage site data.

Council Snapshots

Table 25: Aboriginal Heritage

Indicator	Manly			Mosman			Pittwater			Warringah		
	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09
Number of Aboriginal Heritage Sites	110	112	99*	107	107	105*	322	334	291*	463	473	376*

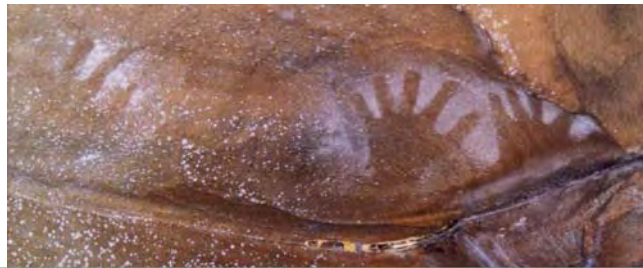
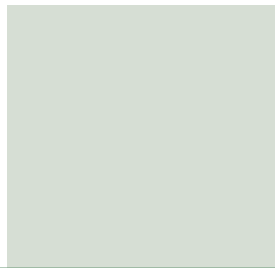
*Data provided to councils by DECCW through the AHO for the 2008/09 SoE has revealed anomalies in previously reported Aboriginal heritage site data.

Table 26: Non-Aboriginal Heritage

Indicator	Manly			Mosman			Pittwater			Warringah		
	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09	06/07	07/08	08/09
Total Number of non-Aboriginal heritage items	306	312	314	478	478	478	101	101	130	142	142	142
Breakdown: number of built items	194	199	201	437*	437*	437*	69	69	74**	102	102	102
Number of landscape items	78	79	79	34*	34*	34*	20	20	28**	36	36	36
Number of archaeological items	34	34	34	16	16	16	7	7	28**	2	2	2
Heritage conservation areas	2	2	2	11	11	11	5	5	6	2	2	2

* Some items in the Mosman LGA are classified as both built and landscape items, therefore the breakdown figures add up to a number greater than the total number of items.

**The listing of heritage items is no longer broken down into "built items", "landscape items" and "archaeological items" in Pittwater LEP (schedule 9). Therefore these numbers have been estimated and cannot be used as a direct comparison with 07/08 figures.



Data provided in Tables 24 and 25 represents the total number of Aboriginal heritage sites whether located in national parks, on Council-managed land, or private land. All sites are managed under the NSW *National Parks and Wildlife Act 1974*.

Whilst it may appear that there has been a significant loss of Aboriginal heritage sites across the region, this is not necessarily the case. SHOROC member Councils have been advised that variations to the Aboriginal heritage site database managed by DECCW do appear from time to time where for example, one site may have been recorded multiple times.

Data provided to Councils for the 2008/09 SoE Report has revealed anomalies in previously reported information. For example, it has been uncovered that Warringah has 376 Aboriginal heritage sites, not 463 as reported in the 2006/07 SoE Report. Data provided for the 2008/09 reporting period is the most current data available.

The number of non-Aboriginal heritage items has also increased since last year, due to an increase in non-Aboriginal heritage items identified in the Manly and Pittwater LGAs. The large increase in the number of non-Aboriginal heritage items in Pittwater LGA has resulted from the gazettal of Pittwater LEP 1993 (Amendment 81) Heritage Conservation. This involved updating existing heritage provisions including definitions and listing additional items. This represents a positive trend for the maintenance and protection of non-Aboriginal heritage in the SHOROC region.



Built Heritage at South Steyne. Source: Manly Council

7.2 Pressures on our Heritage

Pressures on Aboriginal heritage include low awareness of Aboriginal heritage and the importance of place to the Northern Beaches Aboriginal community, natural processes such as wind, water, erosion and fire, and human related processes including urban development, recreation and vandalism.

Pressures on non-Aboriginal heritage include low awareness of built and natural heritage, destruction, deterioration and unsympathetic restoration of built heritage and the impacts of natural processes and urbanisation degrading landscape heritage items.

Overuse of sites by tourists and lack of funding to maintain heritage items place additional pressure on the SHOROC region's heritage.

7.3 Responding to our Heritage Issues

Guringai Festival

The annual award winning Guringai Festival is a cultural celebration of local Aboriginal heritage. It was initiated in 2001 to raise awareness of the unique needs of Aboriginal and Torres Strait Islander people living in the Northern Sydney region and to give the wider community opportunities to engage with Aboriginal culture. The festival committee included 10 councils working in partnership with local reconciliation groups and includes the four SHOROC member Councils.

This year's theme, *Star Dreaming*, coincides with the International Year of Astronomy and connects with Australia's Aboriginal people as many traditional Dreaming stories are about the relationship between ancestral beings, the sun, moon, stars and planets. The 2009 festival included almost 50 events between 25 May and 12 July.

As part of the festival, Warringah Council introduced a mini-festival called "Star Dreaming Rainbow Serpent" at Glen Street Theatre. It was a weekend of free activities sharing Aboriginal culture during which art and craft workshops, dance and music performances, bush tucker, talks, exhibitions,

storytelling and learn to dance classes with NAISDA (National Aboriginal and Islander Skills Association – now known as NAISDA Dance College) were held. The story of Creation and Dreaming from the ground to the stars was delivered as a PowerPoint presentation and talk. A dusk parade of the Rainbow Serpent to culminate in a celebration of Aboriginal culture on the winter solstice was programmed but due to weather conditions experienced over the weekend this had to be abandoned. In lieu, a traditional smoking ceremony was held.

Mosman Council hosted a seniors lunch, a display of Aboriginal prints at Mosman Art Gallery, Maa-roon: Yidinji Culture - a presentation of traditional song and dance, and Aboriginal art workshops.

Pittwater Council hosted *A Northern Town* – a documentary by Rachel Landers and Dylan Blowen, *Weaving Words with Wisdom* – a walk guided by indigenous women, and together with the Manly Warringah Pittwater Aboriginal Support Group presented *A Northern Town* – a documentary by Rachel Landers and Dylan Blowen.

Manly Council hosted a bush tucker demonstration at the Mark Olive Outback Café and featured the work of indigenous artists at the Manly Art Gallery examining colonial portraiture and popular cultural symbolism.

Further information on the Guringai Festival can be found at www.guringaifestival.com.au



Guringai Festival. Source: Warringah Council

Northern Sydney Aboriginal Social Plan

The Northern Sydney Aboriginal Social Plan 2007-2011 is the main avenue for addressing persistent issues regarding the health and wellbeing of Aboriginal people in the region. Councils continue to support the implementation of this plan where one of the key priorities for 2008 was the establishment of a free counselling service for Aboriginal people, and for people affected by Stolen Generation issues in particular. The counselling service offers Aboriginal people free access to services dealing with reconnection with family members, grief and loss, conflict resolution strategies, parenting and communication problems.

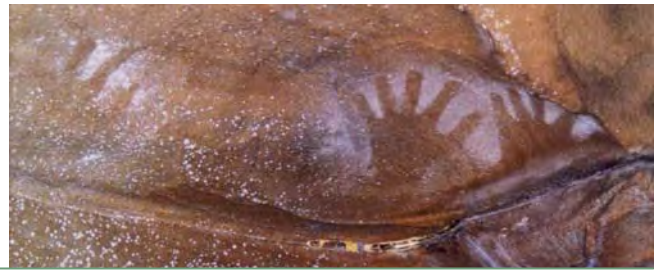
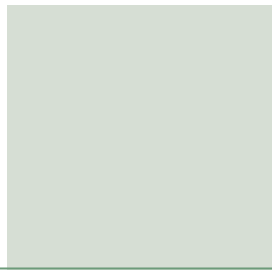
The counselling service is part of an initiative to address issues relating to Stolen Generations and their families and has generated significant interest amongst local Aboriginal people. There is a commitment to train 17 Aboriginal trainees as counsellors and the program is likely to expand to include education workshops for the Aboriginal and Torres Strait Islander community.

Aboriginal Heritage Office

Ku-ring-gai, Lane Cove, Manly, North Sydney, Pittwater, Warringah, Willoughby and Armidale Dumaresq Councils jointly fund the Aboriginal Heritage Office (AHO). Armidale Dumaresq joined the partnership in August 2008. The AHO works to ensure the protection of Aboriginal sites and cultural heritage.

In 2008/09, the AHO continued to coordinate training for Council staff who were primarily involved in the development of assessment processes as well as outdoor staff. They outlined the policies and legislation relating to Aboriginal heritage, including meeting with Department of Planning and DECCW staff about changes to legislation, and conducted a number of guided walks and schools and Aboriginal site awareness programs at various locations within the region.

In addition, the AHO carried out a series of projects including school events, site management reports and updates, and a promotional DVD on the work of



the AHO and the richness of the Aboriginal heritage of the area. This DVD was given to delegates at the 2008 Local Government Conference.

Throughout the reporting period, a number of new sites were recorded within the Council LGAs (i.e. not including national park sites which are managed by DECCW) and site protection works were carried out in areas within council's area of management (see Table 27).

Table 27: New Aboriginal heritage sites recorded and protection works conducted within Manly, Pittwater and Warringah LGAs

	Manly	Pittwater	Warringah
Total sites	67	127	198
New site	2	4	2
Protection works in progress	4	1	1

Note: Mosman Council does not fund the AHO and therefore does not receive data from this source.



Appreciating Heritage. Source: Warringah Council

Aboriginal Site Management and Monitoring

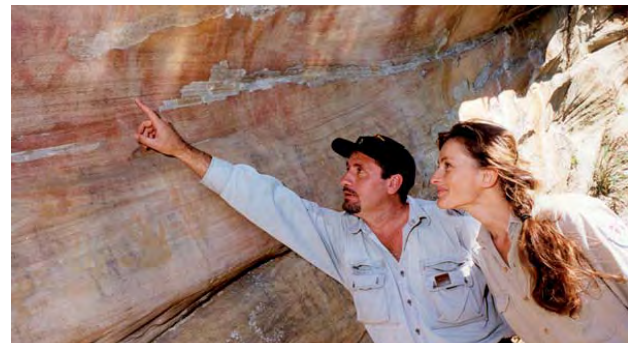
During 2008/09, Pittwater's Aboriginal Potential Areas mapping was completed by the AHO and a complete update and review for Manly and Warringah was commenced and is due for completion in 2010.

Volunteer Monitors

The AHO has received funding for a continuation of its volunteer monitoring program through the Indigenous Heritage Program. The project aims to train more volunteers in basic Aboriginal heritage site management and expand the network of Site Care groups throughout the partner Councils to provide regular monitoring and care of specific Aboriginal sites. The project will be implemented over 2009/10.

AHO Resources

An important part of the role of the AHO is to enhance appreciation of Aboriginal culture in the wider community. Numerous resources, such as two new brochures for Manly Council titled Gayamagal Country highlighting both the Manly to Spit Bridge walk and Shelly Beach, are available for free download from the AHO website www.aboriginalheritage.org



Working with the AHO. Source: Warringah Council

Delivering Local Responses

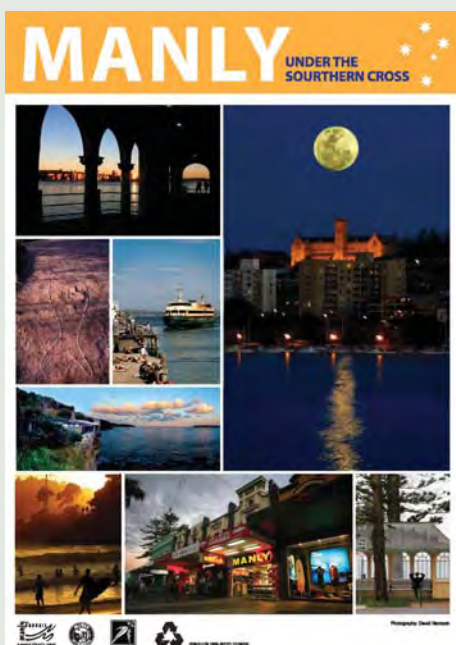
Manly Council

Heritage Festival

The National Trust of Australia (NSW) held the 29th annual Heritage Festival in April 2009. The Festival focuses on caring about built, environmental and cultural heritage within NSW communities. The theme of the 2009 Festival was "Our Place in Space – Under the Southern Cross", highlighting Australia's history and place in the numerous discoveries Australia has made in the world of astronomy.

Manly produced a poster to promote both the heritage of Manly and the 2009 NSW National Trust Heritage Festival.

A number of free activities were organised during the Festival to promote the heritage of the Manly LGA, including a walking tour on the history of the 'Quarries of Old Manly', a photographic exhibition of Surf Life Saving in Manly at Manly Library, a tour of Manly Cemetery, the Nature of Manly Exhibition at the Manly Art Gallery and Museum and other activities run by the North Head Sanctuary Foundation located at the former School of Artillery site at North Head.



Heritage Festival Poster. Source: Manly Council

Local Heritage Assistance Fund

In 2008/09 a number of heritage conservation projects were assisted under Council's annual Local Heritage Assistance Fund. This included the conservation of a sandstone fence, painting existing painted surfaces in a colour scheme suitable to the architectural style of the building, restoration of a verandah (previously enclosed) and reinstatement of missing original architectural features at three properties within the Manly LGA.



Local Heritage Assistance Fund Project. Source: Manly Council

Manly Heritage Review

Council's specialist heritage advisor undertook a review of a number of potential heritage items. As a result of the review a number of properties are recommended for heritage listing due to their heritage value. Council is currently consulting with the property owners regarding the protection of the identified heritage value of the properties.

Mosman Council

Drill Hall Common - Adaptive Re-use of the Drill Hall

The Drill Hall Common has recently undergone extensive refurbishment works. It is recognised as being of great heritage significance due to its role in harbour defence since 1871 and being one of the earliest Commonwealth Drill Halls erected in NSW. The Harbour Federation Trust's Drill Hall Precinct Management Plan specifies the adaptive re-use of the old building as part of the wider range of works to be completed in the Precinct for community use and conservation.

The refurbishment of the Drill Hall Common was completed to return the Drill Hall to its former glory, and to raise awareness of the importance of heritage buildings in Mosman. The Drill Hall was officially re-opened in December 2008. Currently the site is used to facilitate family day care playgroups, vacation care, indoor sporting groups, functions and events.



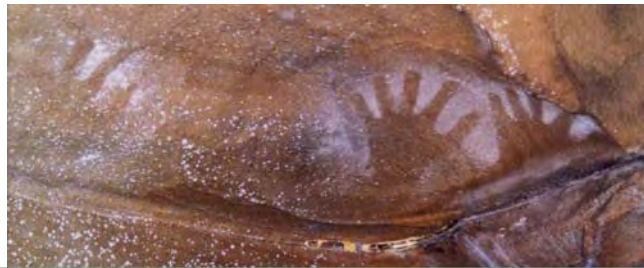
Drill Hall. Source: Mosman Council

Balmoral Jetty and Baths Upgrade

Since its establishment in 1898, the Balmoral Baths have been a popular bathing location. Originally built as an initiative to encourage public bathing areas in Sydney, the Baths have also proven popular with the diverse marine flora and fauna which reside in the area and include seagrass, sea stars, cuttlefish and the highly protected seahorse colony.

In 2008 extensive refurbishment works were undertaken on the structure and berthing jetty to restore longevity to the structure and replacement of twenty-four timber piles and 1,100sqm of decking and 490 metres of hand railing.

Careful planning and research was undertaken to ensure a sympathetic upgrade in keeping with the heritage and environmental sensitivity of the site. The works have helped to maintain the heritage features and aesthetic integrity of the baths and jetty, to ensure the community can continue to enjoy the public amenity.



Seahorse at Balmoral. Source: Emily Buckle

Interpretive Signage for Shark Net

The Edward's Bay Shark Net interpretive signage was erected at the end of 2008. The design of the sign includes images of the shark net over time, a brief history on the shark net and specific details on the size and configuration of the net prior to removal. The interpretive sign was installed after the net was removed to formally recognise the site, as the net was considered by some members of the Mosman community to be an iconic heritage item. The Edwards Bay Shark Net interpretation sign is the latest addition to a suite of interpretative signs that are being erected at key heritage sites in the Mosman LGA.

Pittwater Council

Pittwater LEP- Amendment 81- Heritage Conservation

The Pittwater LEP 1993 - (Amendment 81) - Heritage Conservation amends Pittwater LEP 1993 by replacing the existing heritage provisions with updated heritage provisions.

The Plan provides an updated heritage schedule, which includes 35 new heritage items (including Currawong) of various types and one new heritage conservation area.

Other minor changes include:

- Removal of the level of significance column from Schedule 9
- Deletion of Clause 32(8)- "Demolition of item of State significance", and
- Deletion of the definition of "local heritage significance"

The alterations mean that the LEP does not differentiate whether a heritage item is of local or State significance. A separate process exists for the protection of State heritage items under the *Heritage Act 1977*.



Barrenjoey Lighthouse. Source: Pittwater Council

Currawong- Minister's Refusal of Development Application (Part 3A)

On April 28 2009, the Minister for Planning refused an application from Eco-Villages Australia Pty Ltd for a 28 lot subdivision at Currawong Beach comprising 25 lots for low density residential use, 1 lot for environmental conservation, 1 lot for private open space and 1 lot for public open space.

Currawong has been listed as a State Heritage item on the NSW State Heritage Register by the NSW Department of Planning in the government gazette (no. 71 pg 2229) on 12 May 2009.

A copy of the Minister's Instrument of Determination and the Director-General's assessment report on the project is available on the Department's website, under the "Major Projects Register" section (www.planning.nsw.gov.au).



Currawong. Source: Pittwater Council

Weaving Words with Wisdom

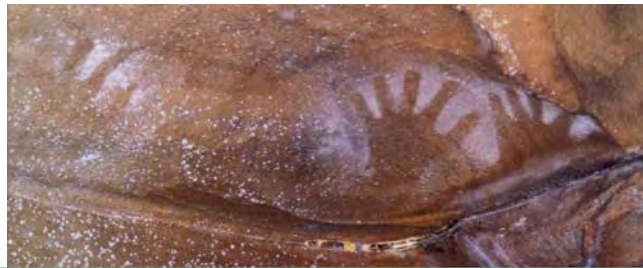
Council facilitated this event as part of this year's Guringai Festival. Over 30 people attended and learnt how to weave with native *Lomandra*, heard about local bush foods and tasted dip made from Warrigal Greens.



Weaving Words of Wisdom. Source: Pittwater Council

Heritage Advisor Service

Council has continued with its heritage advisory service, with the services of an expert heritage architect available to owners of heritage properties. His expertise was also used extensively by Council in the assessment of development applications which affected heritage properties.



Warringah Council

Anniversary of the Apology

Council celebrated the first anniversary of the apology to Australian Indigenous people with a special event at Glen St Theatre, attended by approximately 170 people. The guest speaker was Lois Birk, Guringai Local Aboriginal Education Consultative Group member, who had attended the apology service in the nation's capital in the previous year. Mayor Michael Regan took the opportunity to launch Warringah Council's Reconciliation Action Plan at the event.



Aboriginal Flag. Source: Warringah Council

Warringah's Reconciliation Action Plan

Warringah Council's first Reconciliation Strategy was adopted in 1998. To mark its tenth anniversary and the apology to The Stolen Generations by the Prime Minister in February 2008 a new Reconciliation Action Plan has been written. The new Plan is in keeping with Reconciliation Australia's framework and has achieved their official endorsement.

Warringah's Reconciliation Action Plan was prepared in consultation with Aboriginal & Torres Strait Islander community members, Reconciliation Australia and Indigenous agencies and was adopted by Council on 9 September 2008. The Plan recommends a range of actions to further reconciliation in the local area and to enhance Council's services, ceremonial practices and employment practices to enable greater participation of local Aboriginal & Torres Strait Islander people in the life of Warringah and its council.

Never Been Beaten Lime and Cement Works

The Never Been Beaten Lime and Cement Works has been listed as an item of local heritage significance since 2000. During 2008/09, Council had the opportunity to undertake further detailed heritage assessment work for this item as a section of the Narrabeen Lagoon Multi-Use Trail (between Deep Creek Bridge and Middle Creek Reserve), winds through the ruins of this old cement works.

Council engaged heritage consultants to carry out further research into the history of the cement works and also to identify, locate and photograph all of the ruins and remnants which are scattered over the site. A report was prepared which detailed the history of the site and located the ruins. This information was used to prepare an updated Heritage Inventory form for this item.

After confirmation that the trail construction was to proceed, Council engaged consultants to prepare a detailed Conservation Management Plan for the site, to ensure that the heritage item is appropriately identified, conserved and managed as part of the Trail project. As a result this heritage item will be recognised and its existence made known to the community. More importantly, the heritage investigations which have taken place will ensure that any works to the heritage item or in the vicinity of the item, will not affect its heritage significance. Parts of the ruins will also undergo conservation works, which will include appropriate identification and interpretative information for the general public.

7.4 Community Responses and Recommendations for Future Direction

Heritage (Aboriginal and non-Aboriginal) issues were addressed as part of the SHOROC SoE community consultation meeting held on 6 August 2009. Participants in the consultation were asked to identify priority issues of concern relating to heritage, and to work together to make recommendations for addressing these issues. The priority heritage issues and recommendations identified are provided in Table 28 below.

Whilst there were many issues raised during the community consultation meeting, these issues and their associated recommendations were the priority items identified. It is recognised that these issues do not necessarily reflect wider community concern, however they will be considered for future environmental planning and decision making across the region. See section 10 'Future Directions' for further analysis.

Table 28: Priority Issues and Recommendations Relating to Heritage Identified in the SHOROC SoE Community Consultative Meeting, 6 August 2009

Issue	Recommendation
<p><i>Moveable Heritage - Research & Archive:</i></p> <p>Lack of access to information pertaining to heritage across the SHOROC region</p>	<ul style="list-style-type: none"> • Establish a regional centre for the storage of archival material of local historic significance • Better promotion of the history of the SHOROC region, and • Research and identify private and public museums and collections in the region (including arts and culture)
<p><i>Aboriginal Heritage:</i></p> <p>Need for improved conservation of indigenous rock engravings, middens, rock art and sites generally</p>	<ul style="list-style-type: none"> • Improve conservation of Aboriginal heritage items and sites and obtain more information on the categories of sites
<p><i>Natural Heritage:</i></p> <p>Lack of recognition of marine heritage e.g.: Pittwater, Middle Harbour, Cabbage Tree Bay</p>	<ul style="list-style-type: none"> • Improve recognition of marine heritage items, for example through the production of educational materials (printed and web accessible)
<p><i>Natural Heritage:</i></p> <p>Need for integrated catchment management to address conservation and protection of natural heritage</p>	<ul style="list-style-type: none"> • Produce printed material (web accessible) • Protection of lagoons and creeks to remain a priority with a focus on the total catchment area • Ensure controls exist to preserve natural heritage, and • Preserve and protect remaining natural heritage features such as waterfalls and rockfalls.

8. Towards Sustainability



Warringah Climate Summit. Source: Warringah Council

There are many definitions of the word 'sustainability' but it essentially means being able to meet the needs of the present without depleting resources or harming natural cycles for future generations. Planning for environmental sustainability provides a framework which links economic, social, environmental and governance matters with natural resource management. It is essential because a healthy environment underpins a productive economy and a healthy society.

The awareness and action of the community are vital in achieving sustainable outcomes. The SHOROC member Councils are increasingly providing a facilitation role in organising and involving their organisations as well as the community and businesses in environmental programs for sustainability. Under the *Local Government Act (1993)* Councils are required to consider the principles of sustainability in decision making processes. Each council has adopted a number of means to ensure council operations are moving towards sustainability. Each year, councils prepare a Management Plan that identifies what they will do over the next four years in terms of social, economic and environmental outcomes.

Councils also run a large number of programs for the community aimed at achieving environmental sustainability in a range of issues such as water conservation, bushland and biodiversity management, sustainable transport, energy reduction, waste avoidance and minimisation.

Each of the previous chapters contain information to highlight how the region is moving towards sustainability, and this chapter builds on that information by providing further detail on community and corporate action for sustainability.

Responding to Sustainability Issues

SHOROC Sustainable Procurement Policy

During 2008/09, the SHOROC Sustainable Procurement Committee developed a Sustainable Procurement Policy to ensure that large SHOROC tenders incorporated principles of sustainability and that sustainable products and services are procured where appropriate, to reduce the impact of SHOROC member Councils on the environment. The SHOROC Sustainable Procurement Policy was adopted by SHOROC in April 2009.

NSW Climate Consensus Project

Pittwater and Warringah Councils were selected as partners in The Nature Conservation Council's innovative 'NSW Climate Consensus Project', which aimed to develop a representative, NSW community consensus view on 'how we can work together to respond to climate change'. The project was designed to create opportunities for informed, active community participation in decision making around our response to climate change and to influence policy and program development at a local and state level.

During October and November 2008, local forums were run by partner councils in 12 locations around the state, using random recruitment and a deliberative democracy approach to develop key policy recommendations for consideration by Councils. Local forums were followed by the NSW Community Climate Summit in February 2009.

Outcomes from the summit were taken to Pittwater and Warringah Councils, where they were warmly welcomed. Recommendations from the Pittwater forum will feed into the 09/10 Climate Change Action Plan and climate change education programs. Recommendations from the Warringah forum will feed into the revised Environmental Management Strategy and Education for Sustainability programs. Recommendations from the state-wide Summit were received by the Minister for the Environment and will help guide the development of the State Government's Climate Change Action Plan.

Delivering Local Responses

Manly Council

Ocean Care Day

Manly's Ocean Care Day Festival is an annual event coordinated by the Manly Environment Centre and was held on Sunday 7 December on Manly Ocean Beachfront. The festival is a fun, interactive all-inclusive community event that aims to raise awareness of the range of environmental issues we face today. Most importantly, it aims to provide information to people, which will empower them to take action and make lifestyle choices which will create positive outcomes for themselves, the wider community (locally and globally) and the environment.

This year's festival theme was the 'International Year of the Reef' - The Reef in our Backyard - Cabbage Tree Bay. The event featured over 60 eco exhibitors, marine talks, live music, Penguin Plaza, kids activities, Maori Pavillion - arts & craft, face painting, meet local artists and view their work in the Artists' Tent, Manly Yacht Club Race, prizes and giveaways throughout the day.

Sustainability Strategy

Manly Council continued to implement the 2006 Manly Sustainability Strategy - For Today and Future Generations during 2008/09. The Strategy's principal objective is to integrate social, economic and environmental considerations of sustainability and direct council's initiatives to enable the people of Manly to live and work in harmony with their environment. The implementation status of the Strategy is monitored by Council and was reviewed in detail in March 2008. This monitoring review served to identify those areas that have been partially or fully implemented, those actions that are ongoing and those areas that are next amongst Council's sustainability priorities.

Sustainability and Climate Change Committee

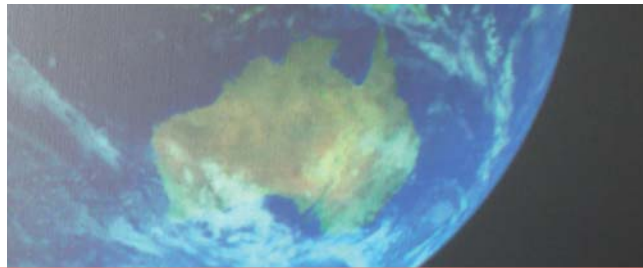
The Sustainability and Climate Change Committee (SCCC) is one of Council's special purpose advisory committees established following the September 2008 Council elections. The SCCC meets to provide strategic advice and input into Council's projects, plans, policies and strategies that relate to sustainability and climate change.

Fair Trade

Manly Council has been working towards becoming accredited as a Fair Trade Community since August 2005 by promoting local support of Fair Trade products. In September 2008, Manly Council officially received Fair Trade Accreditation from the Fair Trade Association of Australia and New Zealand (FTAANZ) making Manly NSW's first Fair Trade Community. As part of Manly Council's commitment to Fair Trade, Council ran its third Fair Trade Christmas Markets and hosted a Manly Fair Trade Market in May 2009 during Fair Trade Fortnight. A range of Fair Trade vendors are showcased along with entertainment, kid's activities, Fair Trade coffee and chocolate.



Fair Trade Markets. Source: Manly Council



Manly Sustainable Business Awards

The Manly Sustainable Business Awards Program was conducted for the second consecutive year in 2008. This initiative expands upon and replaces the annual Green Business Awards Program that was run by Council for 11 years. Manly Sustainable Business Awards looks at business management across the triple bottom line: social, economic and environmental. The aim of the Awards Program is to promote corporate responsibility within the local business sector and provide community acknowledgement for outstanding sustainable business management. In 2008 awards were offered under five categories: Water Use Management, Waste Management, Energy Efficiency, Contribution to Local Community and Excellence in Sustainable Business Management.

Manly Sustainability Fair 2009

In June 2009 Manly Council held its third annual Sustainability Fair on Manly Council Chambers Forecourt, integrated within the Manly Food and Wine Festival. "Green Up Your Life" was the theme, sending out the message that sustainability can and needs to be incorporated into all aspects of people's lives. The Fair showcased sustainable lifestyle products, technologies and practices such as eco-shopping, sustainable gardening and sustainable building design. Thousands of people attended the event, making it the most successful of Manly's Sustainability Fair's to-date.



Manly Sustainability Fair. Source: Manly Council

Manly Environment Centre

The Manly Environment Centre (MEC) shopfront started in 1991. As the first national suburban environment centre it is well established as a pro-active organisation dedicated to the health of the local environment. The MEC acts as an environmental resource and research base, an advocate, and environmental educator. As an action and education based centre, the shopfront houses more than 10,000 publications and other resources, the largest collection of environmental education materials accessible to the community in Australia. Information is provided to people, empowering them to take action and make lifestyle choices which will create positive outcomes for themselves, the wider community (locally and globally) and the environment.

In 2008/09 the MEC held 11 events including National Sustainable House Day tours, Ocean Care Day, and also organised numerous educational programs, and projects to protect and enhance the environment and to inspire and lead the community towards sustainability. During 2008/09 these activities engaged hundreds of local residents, overseas visitors, local tourists, day trippers, students and children. Furthermore, increased student visitation and participation by universities, TAFE, colleges, schools for internships, work experience and Duke of Edinburgh saw 7,800 volunteer hours donated to the MEC and extensive use of MEC resources. Manly Council continued to fund the MEC during 2008/09.

Mosman Council

Environmental Sustainability Policy

Mosman Council undertook a review of its Environment Policy which had been in place since 2000. The Policy was updated and given a sustainability focus to reflect the current environment, and ensured that the Policy encompassed all Council operations, services and processes. The Policy, renamed the Environmental Sustainability Policy, was provided to all staff for review before going to Council for adoption in June 2009.

Sustainable Purchasing

A series of templates and packages have been developed for the various sections of Council based on purchasing activities. The packages include information on sustainable products and the templates include sustainability criteria for quotations and tenders for various products including paper, stationary and catering. These packages will be reviewed by the Green Purchasing Team in August 2009 and will then be rolled out to staff.

World Environment Day Education - Community

Mosman Council promoted World Environment Day on 5 June 2009. World Environment Day was publicised to the Mosman community through the local newspaper, noticeboards, sustainability e-mail list and Council's website. A World Environment Day display was also set up in the foyer providing information on waste, biodiversity, water and energy, and tips to reduce your ecological footprint.

World Environment Day Education - Staff

World Environment Day was also promoted to Council staff. All staff took part in a 'muffin-day' and morning tea with sustainable products, food and drink. Donations were also raised for Landcare and Coastcare.



World Environment Day Staff Activity. Source: Mosman Council

Waste to Art Tent at Mosman Festival

During the Mosman Festival on 23 October 2008, Council hosted the Waste to Art Tent for the second year in a row. Various creations were made by children and adults alike, using everyday household items, to promote the reuse of resources around the home.

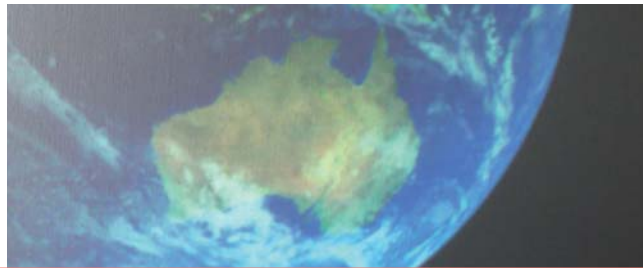


Waste to Art Activity. Source: Mosman Council

Living Environment Evenings

Mosman Council hosted two biodiversity seminars as part of the Living Environment Evening Series. The 'Native Birds: Bush to Backyard Discovery' Seminar, presented by Birds Australia, was held in March 2009, and provided information on native birds and their habitat, threats, and ways to improve diversity and abundance of native birds in Mosman by restoring bushland areas and attracting native birds to backyards.

The War of the Rats: Native Bogul Versus Invaders, presented by Dr Grainne Cleary was held in April 2009, and provided information on the black rat compared to the native Bogul, and the study currently being undertaken at the Zoo to determine whether the Bogul can be successfully reintroduced into Mosman's bushland areas. Both Living Environment Evenings were a success with approximately 25-30 community members in attendance at each.



Sustainable Christmas Markets

A Sustainable Christmas Stall was set up during the Mosman Markets on 6 and 18 December 2008. The stall included information, sustainable displays and sustainable products, which demonstrated how residents could be creative during the festive season and reduce their impact on the environment through thoughtful use of biodegradable catering items, reusing paper and material for creative wrapping ideas, and doing their shopping whilst saying no to plastic bags.

EcoGardening Workshop

An EcoGardening Workshop was held on 9 May 2009 at the Drill Hall, providing 32 Mosman residents with an experiential learning experience, increasing their understanding of sustainable gardening, wormfarming and composting, permaculture methods, and reducing their impact on the environment. This hands-on workshop enabled participants to learn eco-gardening tips and make their own mini food forest to take home.

Schools Worm Farming Workshop

Worm Farming Workshops were undertaken at Middle Harbour Public School on 1 April 2009, and at Mosman Public School on 30 June 2009.

Schools Climate Challenge Workshop

Queenwood School for Girls participated in the NSW Nature Conservation Council Climate Challenge during 2008/09. As part of the Challenge, a Climate Challenge Workshop was undertaken with Year 11 students at the School, focusing on waste issues and what actions the students could take to directly reduce their impact on the environment and combat climate change.

Litter and the Marine Environment Workshop

Mosman Council staff conducted a Workshop at Lands Edge (Middle Head) on 23 and 25 September 2008. The workshops were conducted for students staying at the Lands Edge facility for an excursion with an environmental basis. The students took part in litter surveys and learnt about the marine

environment at Clifton Gardens, research on litter and its impacts on the environment and Councils use of litter data to reduce incidence of water pollution and harm to marine organisms.

Pittwater Council

Sustainability Education Plan

Sustainability education is an essential tool for meeting the challenges of ecological sustainability, including climate change, reducing our ecological footprint, water conservation, biodiversity conservation, natural resource management and waste management. With a grant of \$20,000 from the NSW Environmental Trust, Council has developed an integrated Education for Sustainability Plan for the Pittwater LGA. The Pittwater Sustainability Education Plan is linked to the NSW Environmental Education Plan 2007-2010 and to the Pittwater 2020 Strategic Plan. The plan will help Council to develop and deliver coordinated and comprehensive sustainability education programs which address priority sustainability issues that will benefit residents, businesses and Council staff.



Staff Sustainability Workshop. Source: Pittwater Council

Go Green Days

Education days were undertaken with students at Newport Public School and Narrabeen North and Environment Day at Elanora Heights. Students participated in a variety of workshops around their school, including rock platform studies, water quality monitoring, threatened species roadshow, water tank study, tree planting and invertebrate

audits run by CEC educators and Pittwater Council staff. Approximately 1,580 students attended these sessions.

Furthermore, over 8,842 students from high schools, primary schools and pre-schools have attended various excursions to the coast, surrounding bushlands and Warriewood Wetlands run by the Coastal Environment Centre.

Establishment of S-team

Pittwater Council has established a Sustainability Team consisting of representatives from each of the business units within Council. The working group has been set up to coordinate sustainability initiatives across the organisation and ensure effective implementation through leadership and shared development of ideas.

So far Council has achieved a 30% energy use reduction within Pittwater's public buildings through the use of a sensor lighting system and stricter controls on heating and air conditioning. Other initiatives have included information technology services which ensure automatic shut down of computers overnight and all photocopying and printing defaulting to double-sided printing.

Solar Panels

2.2 kilowatt system solar panels have been fitted to the roofs of the Newport Community Centre and Avalon Recreation Centre. The panels will be monitored to measure the level of power generated and the resulting credits for storage of power not used.

Warringah Council

2008 LGSA Excellence in the Environment Awards

Warringah Council was a finalist in the Energy and Water Management Category of the 2008 Local Government and Shires Association (LGSA) Excellence in the Environment Awards for its portfolio of works to reduce energy and water consumption over the past few years.

Warringah Climate Challenge

Warringah Council and the Nature Conservation Council of NSW (NCC) partnered to deliver the Warringah Climate Challenge from March to June 2008. The program provided 424 local residents with practical tools to live in a more sustainable manner and to make a stance against global warming.

Participants who took the Challenge earned stars by reducing their household emissions and making lifestyle changes. Twenty-three households earned 35 stars or more to become Challenge Champions. Highlights of the Challenge were the Eco Fair Launch in March 2009; a series of 20 free sustainable living workshops; a Midway Meetup in May where participants got together at Narrabeen to share success stories and learn from expert speakers; and the Awards Night in June.

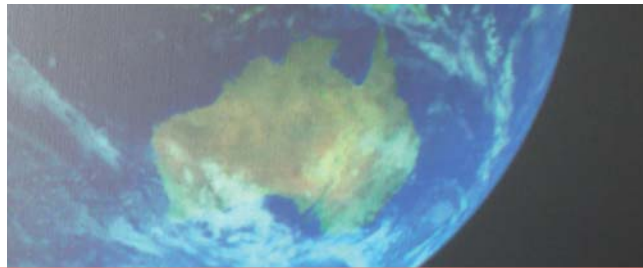
The Stuart family of Narrabeen took out the People's Choice Award at the June Awards Night as they showcased how they dramatically reduced their household waste throughout the Challenge. By reducing, reusing, composting and recycling they were able to reduce the amount of garbage in the general waste bin to just 20cm each week.



Climate Challenge Launch. Source: Warringah Council



Warringah Climate Challenge Awards Night. Source: Warringah Council



2009 Keep Australia Beautiful NSW Sustainable Cities Awards

Warringah Council won several awards in the 2009 Keep Australia Beautiful NSW Sustainable Cities Awards. Council won the DECCW Environmental Education Award for its Green with Env-E program, was runner up in the Grundfos Water Conservation Award for water savings actions undertaken at the Warringah Aquatic Centre, and was runner up for the Keep Australia Beautiful NSW Biodiversity Conservation Award for the Friends of the Bush Manly Lagoon Riparian Rehabilitation program.

New Green With Env-E Staff Training Program

During 2008/09, Warringah Council staff participated in a grant program with the Northern Sydney Institute of TAFE and worked to help develop an online sustainability training program for Council staff across NSW. This project has improved the education of Warringah's staff and will contribute to improving the environmental operations of many local government organisations in NSW as TAFE delivers it across the state. The project involved 18 pilot participants from across Council. The delivery of the program improves an organisation's environmental outcomes by delivering learning outcomes in energy reduction practices, renewable and non-renewable resources, waste management, pollution issues, and legislative requirements of Council operations.



Green with ENV-E. Source: Warringah Council

Warringah's Sustainability Working Group

The internal Sustainability Working Group (SWG) met four times in 2008/09 and conducted one field trip (Beverly Park sewage reuse scheme). The SWG comprises representatives of most of Council's Business Units and coordinates the implementation of sustainability initiatives within the Council.

Sustainable Procurement Training

With the assistance of the Local Government and Shires Associations, Warringah conducted two sustainable procurement courses for council staff. The courses introduced participants to the principles of sustainable procurement and the methods for evaluating products and services. A range of Council business units were represented at the courses and further courses are planned for 2009/10.

Fairtrade Awareness

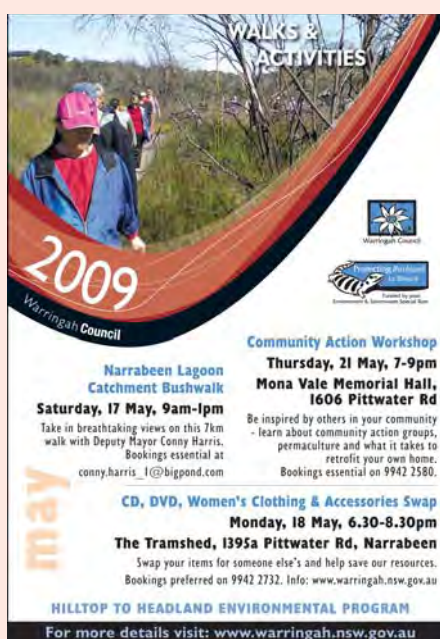
Warringah participated in Fairtrade Fortnight by holding two staff awareness sessions. At these sessions, 80 staff sampled a range of Fairtrade foods and received information on the benefits of using Fairtrade products. Fairtrade coffee and tea is now provided in staff kitchens and meeting rooms at the Civic Centre and Cromer Administration Building.

Schools Environmental Resource Kit

Warringah Council produced a Schools Environmental Resource Kit which was designed to assist schools to run successful environmental education programs. The kit includes project ideas and estimated costs, case studies and links to lesson plans. Council also produced a guide for schools on grants and resources available for environmental projects. Both resources are available on Council's website www.warringah.nsw.gov.au/education

Hilltop to Headland Lecture and Workshop Series

Hundreds of local residents enjoyed the thirteenth year of the popular Hilltop to Headland Environmental Series. The program is a free series of community talks, walks and workshops which enable residents enabling residents to understand both local and global environmental issues and to be engaged in practical ways to protect and conserve the northern beaches environment.



Hilltop May 2009 Source: Warringah Council



Up Close and Personal. Source: Warringah Council

Sustainability Champions Program

The six month Sustainability Champions Program, part of the Narrabeen Lagoon Creating a Sustainable Catchment Project, concluded in September 2008. Twenty participants participated in the program which was aimed at local people interested in knowing more about their ecological footprint and doing their part to live more sustainably. The program involved four free workshops on waste, water, energy and biodiversity and two group meetings. Outcomes from the program will inform the 2009 program.

2008 Narrabeen Lagoon Community Wildlife Survey

The Narrabeen Lagoon Community Wildlife Survey was completed in November 2008. The survey was posted on the web and distributed at Warringah Council functions. The information from the survey has provided Council with a valuable insight into local attitudes and concerns in relation to our wildlife. The survey asked questions relating to threats to wildlife, Council actions, residents actions, and animal observations - including threatened species and feral animals. Results from the survey can be viewed at Council's website www.warringah.nsw.gov.au

9. Future Directions



Source: Warringah Council

The 2008/09 State of the Environment Report has been produced at a time of significant regulatory reform, which will ultimately change the way councils in NSW approach planning and reporting. On 25 June 2009 the Minister for Local Government introduced the *Local Government Amendment (Planning and Reporting) Bill 2009* to State Parliament. This Bill was assented to on 1 October 2009.

As a result of the new legislation a more integrated and holistic planning and reporting framework has been established for councils in NSW. This framework includes:

- A Community Strategic Plan (10 year plus strategic direction for each council), including a Resourcing Strategy (including a Rolling 10 Year Financial Plan, Workforce Plan and Asset Management Strategy)
- A four year Delivery Program (that sets out interim measures to achieve the goals in the Community Strategic Plan), and
- An annual Operational Plan and Budget (outlines actions that councils intend to take during each year, which help achieve the four year Delivery Program and 10 year Community Strategic Plan).

Ultimately, the new framework requires greater accountability and transparency – councils are required to outline a clear strategic direction for their community through their Strategic Community Plan and then report their performance back to their community against what they said they would do and also pre-defined measures. While this framework is different to previous legislative requirements councils are still obliged to plan and report on environmental matters.

Significantly, councils may choose to apply the new planning and reporting framework differently to best meet the unique and immediate needs of their own communities and, more importantly, plan for their future. As a result, the ways in which councils report on indicators that measure the state of the environment may be different. The *Local Government Amendment (Planning and Reporting) Bill 2009* specifies that councils need to produce a State of the Environment Report every four years to coincide with the election of councillors. Councils have the discretion as to whether they prepare a State of the Environment Report as part of their Annual Report, as a standalone report and/or prepare a report on a regional basis with surrounding councils.

The implementation of the new planning and reporting requirements will be phased in over three years: 2010, 2011 and 2012. Councils need to elect which year they want to implement the framework to comply with these new legislative requirements. Mosman, Warringah and Pittwater Councils anticipate it will be among the first group of councils to implement these changes in 2010.

In addition, SHOROC member councils, Manly, Warringah and Pittwater will also be implementing the Sydney Metropolitan Strategy: North East Subregion and Mosman will be implementing Sydney Metropolitan Strategy: Inner North Sub region. Draft strategy documents have already been publicly exhibited. When finalised, these Subregional Strategies will guide land-use planning of SHOROC member councils until 2031.

Regional Issues and Recommendations

This report, incorporating council data and responses at both a local level and regional level, as well as community consultation responses, indicates the importance of the environment to Council and the community, and the key environmental/sustainability issues across the SHOROC region. Some of the key issues identified within this report include:

- Climate change adaptation and mitigation (further reduction in carbon emissions)
- Sea level rise and continued foreshore development
- Impact of inappropriate development on bushland/green space
- Public transport and traffic congestion
- Biodiversity corridor linkages
- Waste avoidance and reduction
- Reduction in water and energy use
- Stormwater impacting on water quality and the marine environment, and
- Need for integrated management to conserve heritage across the SHOROC region.

Recommendations to address identified issues have arisen from Council staff and community consultation as well as outcomes of the SoE Report. It is recommended that these key environmental sustainability issues provided throughout this report be the focus areas for SHOROC member Councils to help inform immediate and long term planning.

Recommendations include:

- Manage the risks associated with climate change impacts, particularly current and future flooding and coastal hazards, through risk assessment, floodplain management and coastline management actions
- Improve our understanding of creeks and estuaries through monitoring programs so that ongoing management is based on clear information

- Improve community based education and involvement for sustainability
- Continue to monitor and implement best practice Council and community GHG emission reduction and climate change initiatives
- Continue to strengthen partnerships between SHOROC member Councils and their communities
- Increase community and Council involvement and partnerships for bushland restoration, waste reduction, energy and water saving initiatives
- Continuously improve planning controls and guidelines to improve protection of bushland/catchments/greenspace
- Continue to work towards improved public transport, and
- Continue to manage stormwater quality and quantity through ongoing maintenance, re-use and targeted community education.

These priority recommendations will be considered and incorporated where possible within the relevant strategic plans of the four member Councils, and primary regional issues will be considered for inclusion in the regional strategy to be implemented as a regional project.

A further recommendation is that SHOROC member Councils identify a key set of environmental sustainability indicators to enable both local and regional trends to continue to be reported on a meaningful basis. This recommendation is made in light of uncertainty over the structuring of environmental and sustainability reporting for local government in the future, presented by pending changes to each of the member Councils' community and strategic planning as described above. The application of a set of key environmental/sustainability indicators by each of the four member Councils, will also enable more effective collaboration and communication between the councils, will remove some barriers to successful project implementation on a regional basis and will improve the outcomes of regional projects as all Councils will be working towards common goals.

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Appendix A

As outlined in Chapter 1.5 Consulting with our Communities, in preparation of the 2008/09 comprehensive SoE Report, community consultation was undertaken in order to identify issues important to the community which are within council's area of influence. The issues and recommendations in Table 29 below are a summary of the written submissions received through this consultation process.

Table 29: Summary of Written Community Submissions – Regional SoE Report 2008/09

Chapter	Issue	Recommendation
Atmosphere	Traffic congestion/ pollution	<ul style="list-style-type: none"> • Monitor air quality • Encourage use of public transport • Encourage local community buses and car-pooling enterprises rather than serving the city with well-sited parking spots and other approaches. • Encourage passive sporting activities such as swimming and bush-walking rather than sports that use vehicles. • Establish and promote the use of dedicated and safe cycle networks.
Atmosphere	Building on the foreshore – sea level rise	<ul style="list-style-type: none"> • Introduce legislation/laws/ bylaws as needed at local/ state/federal levels to prevent any further development of seafront, or sand-dune areas. Plan for long range resumption of those properties and their removal. Start with the lowest lying areas, selecting these in consultation with NSW government agencies devoted to preparing for coastal inundation due to climate change induced sea level rises.
Atmosphere	Barrier to residents switching to renewable energies such as solar	<ul style="list-style-type: none"> • Council's be supportive of residential schemes for roof-top solar systems for power and hot water generation by reasonable consideration of DAs for easing of known barriers.
Atmosphere	Failure of programs to date to achieve community greenhouse gas emissions targets that have been set by the member Councils as a condition of their participation in the Cities for Climate Protection Program	<ul style="list-style-type: none"> • Getting households to switch to 100% Green Power • Getting households to avail themselves of the free home energy efficiency assessment being offered via the Australian Government Green Loans scheme. • Every Council in SHOROC on 100% Green Power • All street lighting in SHOROC on Green Power • Every Councillor on 100% Green Power in their own residence • Council support for recruiting and training enough Green Loans assessors for the area

Chapter	Issue	Recommendation
Atmosphere	Failure of programs to date to achieve community greenhouse gas emissions targets that have been set by the member Councils as a condition of their participation in the Cities for Climate Protection Program	<ul style="list-style-type: none"> • A SHOROC negotiated deal with a Green Power provider that could be offered to all residents in the region • Council panel of service providers to undertake work recommended in Green Loans assessment • Council hotline for signing up for a Green Loans Assessment • A hotline to assist people in making the switch to Green Power and explaining the cost implications • Availability and publicising of data on what the GHG reduction achieved so far • Clear explanatory brochures and websites explaining the benefits and countering misinformation • Recognition of people who had switched to GreenPower via a letterbox decal • Provision of a kit that could be used by someone already on Green Power to recruit their friends • Street competitions and other promotional events • Awareness raising through meeting with and supporting environmental groups in local schools • Target across SHOROC for electrical energy reduction below 1995 levels and for the % of electrical energy drawn from renewable sources (50/50 by 2020)
Atmosphere	Climate Change – impact on the coastal ecosystems (Curl Curl Lagoon & Greendale Creek)	<ul style="list-style-type: none"> • A target reduction of 20% of 1990 of CO2 level in atmosphere by 2020 is imperative. SHOROC needs to support community groups achieve this target
Water	Stormwater volume and quality impacting on waterways	<ul style="list-style-type: none"> • Collection and reuse of rainwater from all streets.
Biodiversity	Movement to dilute the essential integrity, principles and purposes of national parks. Attempts to undermine the fundamental integrity of the NPWS Act for vested interests – adverse impacts on native flora and fauna	<ul style="list-style-type: none"> • SHOROC to lobby for national parks to remain for 'conservation purposes' and oppose single interest movements which may impact upon the integrity of the national park system • SHOROC support limited recreational uses in national parks and reserves (no 4WD)

Chapter	Issue	Recommendation
Biodiversity	Off leash dog areas – impact on biodiversity / habitat	<ul style="list-style-type: none"> • Council put more thought into planning / decision-making for dog off-leash areas. Off-leash areas should not be designated in places that are vital habitat for native wildlife – due to impacts dogs may have on wildlife • Provide information to owners on responsible pet ownership and impact dogs/cats can have on native wildlife
Biodiversity	Increase in feral cat population – impacting on native wildlife	<ul style="list-style-type: none"> • Develop strategies to reduce feral cat populations and rehabilitate wildlife. The four councils to set up a regional rehabilitation centre
Biodiversity	Lack of data on native wildlife in parks/reserves across the SHOROC area & national parks	<ul style="list-style-type: none"> • Need for a comprehensive fauna study across all parks/reserves in the SHOROC region to identify wildlife and update existing information for improved management strategies • Bushcare activities could provide monitoring, as well as bush regeneration, and walking activities could be combined with professional observations and recording of flora and fauna. These activities could be promoted to occupy a deserved place as a component of standard education. Education for Sustainability could contribute to management
Biodiversity	Climate change will impose an additional stress on the environment. It is important to protect and manage bushland areas for environmental conservation	<ul style="list-style-type: none"> • Increased protection and recognition of biodiversity values is required at all levels of government and planning controls / legislation • Positive steps should be taken to permanently protect the remaining natural habitat in the Narrabeen Lagoon catchment so that it can be managed for environmental protection and provide better resilience for biodiversity in the event of climate change • Provide linkages for habitat – rebuild corridors, and protect existing bushland corridors in a north to south direction, and east to west direction, to allow for climatic variation in temperature and rainfall • Management strategies to protect the resilience of bushland areas, prevent further fragmentation • Provide support for financial and other incentives and mechanisms to protect bushland on private land. Crown land could be protected as a regional park • Protect areas for migratory habitat. This aspect must be taken into consideration when providing environmental protection for the catchment

Chapter	Issue	Recommendation
Biodiversity	Climate change will impose an additional stress on the environment. It is important to protect and manage bushland areas for environmental conservation	<ul style="list-style-type: none"> • Strategies to minimise spread of weeds in bushland and along creek lines • SHOROC support and lobby for restrictions on high impact recreational activities in bushland areas to reduce impacts on already stressed environments and species • Not take up bio-banking - the current practices taking place under the guise of bio-banking are not sustainable and not suitable for this catchment
Biodiversity & Water	Leaves dropping from street trees increasing water pollution and council maintenance costs	<ul style="list-style-type: none"> • Strategy to replace deciduous street trees with non-deciduous street trees to enhance native habitat/ corridors for native birds, and reduce stormwater pollution from organics as well as reducing costs of street sweeping
Heritage	Borders / land ownership used to report on heritage	<ul style="list-style-type: none"> • Heritage management should occur across borders – regional strategies
Human Settlement	Waste to landfill – plastic bottles	<ul style="list-style-type: none"> • Introduce a refundable container deposit scheme for plastic bottles across the SHOROC region
Human Settlement	E-waste disposal to landfill – alternative disposal methods	<ul style="list-style-type: none"> • Add eGarbo to the list of suppliers for e-waste collection on your website and note specific details about each suppliers pricing options, collection methods and schedules
Human Settlement	Need to maintain urban amenities	<ul style="list-style-type: none"> • The acquisition, and or the recategorising of suitable land by SHOROC Councils. It is possible that land that is designated “floodprone” could be considered financially viable