

SHOROC

State of the Environment Report

2006/2007



SHOROC – Shore Regional Organisation of Councils

Supplementary State of the Environment Report 2006/2007

Compiled by Manly Council

Prepared by Manly, Mosman, Pittwater and Warringah Councils

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 apologise 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

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1 Introduction



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. The SHOROC region comprises the local government areas of Mosman, Manly, Warringah and Pittwater.

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 deal for the community 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 has and will continue 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. Recent issues include the NSW State Government's Metropolitan Strategy, transport and land use issues, workforce planning, employment, procurement, waste management, safe communities, sportsfield management and environmental sustainability.

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

Actinotus helianthi. Source: Warringah Council

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:

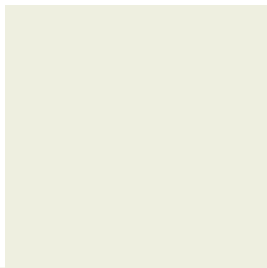
- State (or condition) of the environment. i.e. the environmental quality and quantity of natural resources
- Pressures impacting upon the condition of the environment, and
- Response by councils and the community to address the pressures on the environment

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. The first SoE report of a council for the year ending after each election of councillors must be a comprehensive SoE. As such a comprehensive SoE is required once every four years. 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 is a supplementary document that supports the comprehensive 2003-04 SoE reports from Manly, Mosman, Pittwater and Warringah Councils. 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*.

1.3 Why a Regional SoE?

This is the first SoE report for the SHOROC region. It was created 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, the success of collaborative programs and the strengthening of regional links.

This report is designed as a baseline document to provide an accessible environmental reporting tool for the communities of the SHOROC area, assist councils and councillors to 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, the report focuses on common regional projects and details some of the local projects undertaken by each of the four member councils during the 2006/07 financial year. The limited number of initiatives presented in this report for each member council does not reflect all of the initiatives undertaken by each council during the reporting period. Furthermore, the layout of the regional SoE does not allow for each member council to identify progress on their environmental management plans, which some councils have previously included in their SoE reports.



Burnt Bridge Creek, Manly. Source: Manly Council

1.4 Environmental Indicators

Indicators are important management tools used in environmental reporting. They summarise and communicate information about the condition of key aspects of complex environments so that our decision making can be better informed.

As this is the first regional SoE Report for the SHOROC area, new indicators have been selected, for which all the member councils can provide meaningful data. As the indicators are new, data from previous years is not available to provide a comparison. For this reason a regional analysis of environmental trends over time will be more evident in future SHOROC SoE reports. This type of analysis will be provided in next year's SoE report, when comparative data will be available.

1.5 Consulting with our Communities

Councils often involve the community, including environmental groups, in the preparation of the SoE. Councils carry out this community consultation in a variety of ways such as requesting public submissions, undertaking surveys or including community consultation in the review of council strategies or policies.

Pittwater, for example, is currently developing a new community driven Strategic Plan – Pittwater 2020, within a sustainability framework. This has involved extensive community consultations, including a forum in November 2005 and again in November 2006 to develop strategic goals, actions and initiatives against a range of sustainability themes.

Warringah Council held over 200 face-to-face interviews with residents at council's 2007 Australia Day celebrations. The Survey enabled the community to identify environmental issues of primary concern, respond to a set of indicators that link directly to the SoE Report, and gauge awareness of the SoE Report.



Pittwater 2020 Strategic Plan Community Consultation. Source: Pittwater Council

1 Introduction

1.6 SHOROC at a Glance

SHOROC Regional Profile

The four SHOROC Councils represent almost 270,000 people. The region, shown in Figure 1, covers an area of 267.26km² and is bounded on

three sides by water. Warringah has the highest population in the area, with 143,027 people, followed by Pittwater with 57,944, Manly with 39,805 and Mosman with 28,414 people.

Figure 1: The SHOROC Region



Source: SHOROC website, 15 October 2007



Manly Council

Manly has an area of 15.14km², incorporating a mix of residential, recreational, bushland, commercial and industrial areas. 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, and 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 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 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, the largest of the four areas, is bounded by Cowan Creek in the north, Narrabeen Lagoon and the Pittwater Council area in the north-east, the Tasman Sea in the east, the Manly Council area and Middle Harbour in the south and the Ku-ring-gai Council area in the west. Warringah covers an area of 153km² and has a unique and spectacular environment that contributes to a distinctive sense of place and quality of life.

Warringah's 14km coastline contains nine beaches and more than 6,000 hectares of natural bushland and open space. Warringah is home to many threatened plants, animals and vegetation communities.

www.warringah.nsw.gov.au provides further information on Warringah Council's environment and programs.



Australian Pelican. Source: Warringah Council

2 Land and Coastline



This chapter focuses on the condition of our land and coastal foreshores in the SHOROC area. Land is a primary resource that underpins the environment, the economy and society. SHOROC's land and coastline is diverse in character including residential, business, industrial and natural landscapes.

Coastline areas including beaches, rocky intertidal platforms, estuaries and lagoons provide great aesthetic and recreational opportunities for the region's residents and tourists.

A new set of land indicators have been selected to measure and monitor issues of development, land clearing and re-vegetation, which affect the condition of the land.

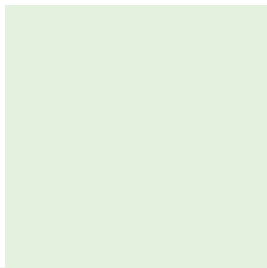
2.1 Condition of our Land and Coastline

Land within the SHOROC region comprises urban areas, interspersed with areas of native bushland and watercourses such as lagoons, estuaries and creeks. This landscape represents a highly modified environment altered from its natural state by human occupation, particularly urban and industrial development, which has occurred since European settlement. Such development has resulted in the replacement of native bushland with the built environment and in some cases the exposure of soils to erosion and contamination.

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

Tables 1 to 3 demonstrate that within each Local Government Area (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. As native plants distributed includes grasses, shrubs and trees, and applications for removal relates only to trees, these two data sets are not easily comparable. There are more native plants being planted compared to the number of trees being removed, indicating a positive move towards revegetation of our region, which will improve soil quality, reduce erosion and increase habitat areas.

*View of Sydney Harbour entrance from Dobroyd Head.
Source: Manly Council*



Regional Snapshot

Table 1: Regional Land Condition

Indicator	SHOROC Region
Total number of development applications received	3,505
Total number of development applications approved	2,844*
Total trees approved for removal on private land	1,915
Total number of native plants distributed by all Councils (including grasses, shrubs and trees)	102,624

*Does not include Mosman Council.

Council Snapshots

Table 2: Development Applications

Indicator	Manly	Mosman	Pittwater	Warringah
Number of development applications received	711	486	732	1,576
Number of development applications approved	745	384*	678	1,421

*This figure for Mosman Council represents determinations rather than approvals. The term determination refers to development applications that have been approved or refused. This figure was not added to the regional total in Table 1.

Table 3: Land Clearing and Re-vegetation

Indicator	Manly	Mosman	Pittwater	Warringah
Approvals to remove trees (private land)	159	370	196	1,190
Total number of local native plants supplied to volunteers, contractors and residents	10,679	22,800	33,300	35,845

Figures in these tables represent baseline data. Trends will be reported from 2007/08.

2 Land and Coastline

2.2 Pressures on our Land and Coastline

Key pressures on the condition of the land in the region include urban development, soil contamination, land degradation, vegetation clearing, coastal hazards, 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. The region, for example, has areas with high landslide 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 on the state of the region's land resources, with particular implications for the coastline. Already, the effects of extended drought, increased storm activity, and more frequent and intense bushfires are evidenced through the region's parched soils, loss of grass in open space areas, erosion, loss of trees from storm events and increased bushfire hazards.

Climate change is also expected to impact on the region's coastal foreshores with predicted sea level rise and a wide range of potential coastal impacts including beach erosion, long-term shoreline recession and coastal inundation into the future.

2.3 Responding to Land and Coastline Issues

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. All of the SHOROC Councils are members of the SCCG.

The SCCG aims to protect and conserve the coastal zone through lobbying, environmental activities and promotion, the exchange of technical information and advice between member councils, local government, state government organisations and academic research institutes, and the implementation of projects beneficial to coastal councils.

Recent and current projects include the development of a Groundwater Management

Handbook, guidelines and a practice note for landslide risk management and hazard zoning, climate change fact sheets, the Summer Activities Program, and the Systems Approach to Regional Climate Change Adaptation Strategies in Metropolises Project.

Summer Activities Program

The Summer Activities Program was originally developed by Coastcare, however the SCCG has continued the initiative over the last five years in the Sydney region. The program aims to coordinate and promote coastal educational activities organised by SCCG member councils. The Summer Activities Program encourages local communities to enjoy the coast and to become involved in the protection, management and rehabilitation of coastal and marine environments.

The 2007 Program ran from 6 to 31 January, featured over 65 events and was attended by over 1,700 people. Each of the SHOROC Councils reported well attended community events for the Summer Activities Program.

Bush Fire Hazard Reduction and Fuel Management

The Warringah Pittwater Bush Fire Management Committee has been involved in the compilation and implementation of the 2006/07 Fuel Management Program. This has involved the environmental and risk assessment of bushland areas, in particular areas of bushland that adjoin the urban interface, which required fuel management works during 2006/07.

Within the financial year nine hazard reduction area burns were completed representing 45 hectares. The hazard reduction program was severely restricted due to inclement weather during the weather window available for hazard reductions.

The Manly Mosman District Bushfire Management Committee adopts a hazard reduction burn program each year for the Mosman and Manly local government areas. In 2006/07 Mosman conducted one broad acre burn and pile burn preparation at 11 sites. However due to inclement weather these burns were rescheduled for 2007/08. The program has reduced the fire hazard in selected areas of Manly and Mosman, and increased the number of native plant species in bushland areas exposed to fire.



Delivering local responses

Manly Council



Coastline of North Harbour from Fairlight. Source: Manly Council

Coastal Zone Management

Since 2000 Manly Council has been developing Coastline Management Plans (CMPs) to encourage current best practice for the management of coastal and estuary foreshores.

Council has established the community based Manly Coastline Management and Manly Harbour Foreshores Management Committees to oversee the preparation and implementation of the various Coastal and Estuary Management Plans and associated Coastline Hazard Definition Studies.

During 2006/07 Manly Council continued to prepare CMPs for Manly Ocean Beach, Manly Cove and North Harbour. Funding was provided under the Department of Natural Resources Estuary Management Program for the development of the Clontarf to Bantry Bay Estuary Management Plan.

In the Keep Australia Beautiful 2006 Clean Beach Challenge, Shelly Beach was awarded the Overall Cleanest Beach (Sydney Region) and Runner-up in NSW. Manly Council was awarded the Local Government Leadership Award for both the Sydney Region and NSW categories. In 2007 Manly Council was presented the Community Action Award for North Steyne Beach.

Remediation Works

The NSW Department of Planning, in cooperation with Council, completed additional remediation works at Little Manly Point during 2006/07.

Planning for the remediation of the Addiscombe Road Declared Contaminated Site continued during 2006/07. The site will be remediated to passive open space and nature conservation areas.

Mosman Council

Contaminated Lands Management

Mosman Council engaged consultants to undertake a Contaminated Lands Site Investigation at Balmoral Oval to investigate potential soil and groundwater contamination of the oval and surrounding parkland, and to provide a site environmental management plan to manage the potential risks, to improve the amenity of the area, and reduce potential environmental and health impacts.

A contaminated lands site investigation was undertaken at the Northern Nursery School, a site owned by Council and leased by the School. A site environmental management plan has been completed and remediation actions undertaken. Remediation works were also undertaken at Clifton Gardens in conjunction with the installation of the new playground.



Taylors Bay, Mosman. Source: Mosman Council

2 Land and Coastline

Planning Systems

Mosman Council is in the process of reviewing planning systems and plans that control zoning, development, access and potential environmental impacts. From the review it is likely that Mosman's Local Environmental Plan (LEP) will be amended to include references to climate change that may impact upon foreshore properties and access.

Public Access

During 2006/07 a stormwater quality improvement device (SQID) was installed at Julian Street to capture pollutants entering the bay, and a water quality monitoring program commenced to evaluate the performance of the SQID. To improve the amenity of the area weeds were removed from the foreshore and native plants were planted on site. A walking track has also been completed along the foreshore to enable greater public access of the site.

Pittwater Council

Coastal Zone Management

In conjunction with the Pittwater Land, Water and Coastal Portfolio Committee (LWCPC), Pittwater Council develops its strategic management approach to local and regional coastal land and water management issues.

During 2006/07, Pittwater Council adopted the Pittwater Estuary Management Study that had been prepared with the assistance of the LWCPC. The study developed and considered some 42 potential management options to sustainably deal with the issues of water quality, sedimentology, ecology, heritage and development.

Council continued to roll out the Plans of Management for individual Pittwater ocean beaches under the Ocean Beaches Plan of Management program. A draft plan of management has been prepared for Avalon Beach and has been extensively exhibited to the local community.

Other projects designed to improve the amenity and ecological value of the Pittwater coastal zone include:

- Council has continued to investigate the potential to create Wildlife Protection Areas on community lands that provide habitat for threatened species, harbour remnant bushland and/or adjoin national parks. A proposal to designate Wildlife Protection Areas on public reserves adjoining Ku-ring-gai Chase National Park behind Mackerel Beach was developed and brought before council in June 2007. The proposal was placed on public exhibition for 60 days. Outcomes will be reported in the next State of Environment Report
- Commenced a project to correct major erosion, sedimentation and shoaling which is occurring at Rowland Reserve, Bayview
- Created a beach dune at the northern end of Bilgola Beach, including extensive replanting of the dune areas with native coastal species and re-routing of stormwater pipes to prevent beach erosion
- Rehabilitated the creekline of Fern Creek upstream of Garden Street in Warriewood Valley. This includes reshaping of the creekline cross-sections and extensive revegetation linking to the adjacent district park
- Track upgrades at south Turimetta and Mona Vale Headlands (both part of the Bicentennial Walkway) which will reduce erosion and trip hazards, and
- Preparation of a first working draft of a Roads Masterplan for Scotland Island which aims to reduce significant soil erosion into the Pittwater Waterway



Barrenjoey Head. Source: Pittwater Council



Warringah Council

Coastal Management

The Warringah LGA includes six catchment areas which contain four coastal lagoons, a portion of Middle Harbour and some 50 kilometres of creeks. Narrabeen Lagoon is jointly managed with Pittwater Council and Manly Lagoon is jointly managed with Manly Council. Dee Why and Curl Curl Lagoons are managed solely by Warringah Council.

Warringah continued to actively manage the entrances of its four lagoons in order to minimise flooding and maintain lagoon health. A number of mechanical breakouts were conducted during the year when water levels reached agreed breakout levels.

An aerial survey of the Warringah LGA was completed and the data from this survey will be used to provide detailed 0.5m contours of the land surface, provide information for highly accurate flood mapping and provide for 3D modelling of buildings and terrain in Warringah.

Narrabeen Lagoon

In order to mitigate and manage flood risk and water quality issues due to lagoon closure, entrance clearance operations were undertaken in Narrabeen Lagoon between October and December 2006. These operations involved the removal of approximately 45,000 cubic metres of sand from the entrance of Narrabeen Lagoon, which was used for beach replenishment works along Collaroy/Narrabeen Beach, and minor replenishment of the beach area adjacent to the Sydney Lakeside Holiday Park.

As part of the Stage 1 activities for the Narrabeen Lagoon Restoration Project, Council prepared a concept design and undertook a preliminary environmental assessment. The Project aims to restore the natural water depths around the Central Basin of Narrabeen Lagoon while protecting and enhancing existing habitats. An investigation was also undertaken into the ecological effects of infilling the deep holes left by former dredging operations adjacent to Wimbledon Island.

In May and June 2007, Warringah Council upgraded a 1km section of the Narrabeen Lagoon Trail in Jamieson Park. The upgrade involved trimming of vegetation to increase visibility and raising the track level with crushed sandstone to improve access.

Bicentennial Walkway

Warringah commenced work on a new section of the Bicentennial Walkway which runs between McKillop Park at Harbord and South Curl Curl, and provides yet another step in the Coastal Walkway project to create a continuous coastal walkway between Manly and Pittwater.



*Narrabeen Beach storm damage June 2007.
Source: Warringah Council*



Dee Why Lagoon. Source: Warringah Council

3 Atmosphere



The atmosphere surrounding the earth consists of a complex balance of gases that support life on earth by providing air for us to breathe 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 greenhouse gases 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, which has resulted in impacts to urban air quality and changes to our earth's climate system.

SHOROC has identified urban air quality and greenhouse gas emissions as the two dominant air issues in the region. Indicators have been selected to measure and monitor these issues and activities that contribute to them.

Hazard reduction burn. Source: Mosman Council

3.1 Condition of our Atmosphere

Atmospheric quality of the SHOROC region is largely typical of Sydney, however being a 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.

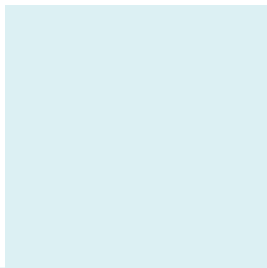
Air quality in the SHOROC region varies considerably depending on natural events such as windy days, bushfires and also human activities such as the use of vehicles, wood heaters and the burning of other fossil fuels. Poor local air quality is generally associated with highly urbanised or industrialised areas where vehicle use, heating and production is high, whereas better air quality is generally associated with open space 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.

The data presented in Tables 4 to 6 can be useful for identifying the condition of the region's air quality through recording air pollution complaints from the community and tracking community and Council vehicles and emissions.

Figure 2 demonstrates roughly 25% of pollution comes from motor vehicle use across the SHOROC region. This is the most recent information available from the National Pollution Inventory.



Air travel is a primary source of greenhouse gas emissions. Source: Mosman Council



Regional Snapshot

Table 4: Regional Atmospheric Condition

Indicator	SHOROC Region
Number of registered vehicles	184,929
Air pollution complaints	142
CO ₂ emissions from all Council fleet vehicles (tonnes)	4,131
Electricity use – Councils operations (kilowatt hours)	19,350,334

Council Snapshots

Table 5: Air Quality

Indicator	Manly	Mosman	Pittwater	Warringah
Air Pollution complaints received by Council	20	2	49	71

Table 6: Greenhouse Gas Emissions

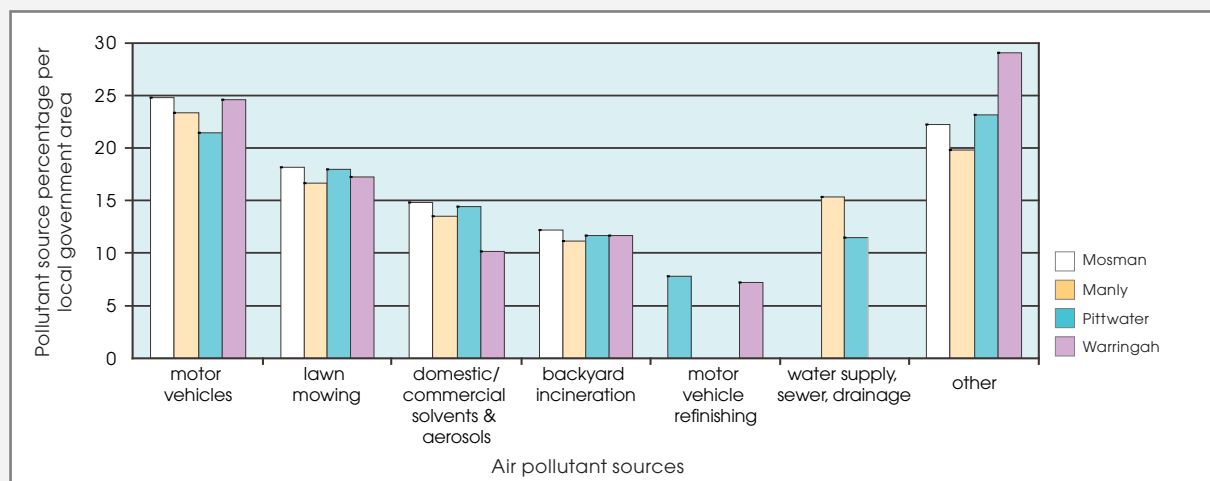
Indicator	Manly	Mosman	Pittwater	Warringah
Registered vehicles in Council LGA*	23,113	16,733	44,968	100,115
Number of Council fleet vehicles^	170	40	146	224
CO ₂ emissions from all Council fleet vehicles (tonnes)^	1,335	220	1,071	1,505
Electricity use – Council's operations (kilowatt hrs)	5,697,935	2,808,530	4,924,714	5,919,155
GHG Emissions CO ₂ – from kilowatt hrs (tonnes)	5,485	2,915	4,741	6,321

*Figures provided by NSW RTA 2006/07.

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

Figures in these tables represent baseline data. Trends will be reported from 2007/08.

Figure 2: National Pollutant Inventory Data for the SHOROC Councils (2005/06)



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

3 Atmosphere

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 greenhouse gas emissions through the burning of fossil fuels. While the region's public transport systems may contribute to greenhouse emissions, the use of public transport, can reduce private car use and therefore reduce the pressure on air quality. However, the SHOROC area is generally characterised by inadequate public transport away from major trunk routes.

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

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 to reduce greenhouse gas emissions. Over 8.8 million tonnes of CO₂ abatement has been reported since the CCP Australia program started in 1997. This is equivalent to taking 2 million cars off the road for a year.

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 greenhouse gas emissions, set reduction goals, plan and implement actions, and monitor and review their progress. All four SHOROC Councils are members of the CCP Australia program. Manly and Mosman Councils have achieved the highest milestone 'CCP Plus' while Pittwater has achieved Milestone 5 and Warringah Milestone 4. During 2006/07 each council continued to implement their CCP programs.

Fridge Buyback Program

During 2006/07 all four SHOROC Councils participated in the Fridge Buyback Program, Manly, Pittwater and Warringah Councils launched their programs together, whilst Mosman launched their program with North Sydney, Willoughby and Lane Cove Councils. The program collected unwanted working second fridges from residential houses, in exchange for energy efficient light bulbs, a triple-A rated showerhead and peace of mind that their fridge would be degassed and recycled. The program was established to reduce energy consumption and greenhouse gas emissions.

SHOROC were leaders in the program with Pittwater, Mosman, Manly and Warringah ranking first, second, fourth and tenth respectively from 36 participating Councils. As identified in Table 7, SHOROC residents recycled 675 fridges, which saved 6,102 tonnes of CO₂ emitted over the expected lifetime of the fridges and recycled 60,750kg of metal.



Program Launch, from left to right: Mayor of Manly Cr Dr Peter Macdonald, Administrator of Warringah Council Dick Persson AM and Mayor of Pittwater Cr Alex McTaggart.
Source: Warringah Council



Table 7: Fridges collected over the SHOROC region

Council	Fridges Collected	CO ₂ saved (tonnes)*	Metal recycled (kg)
Manly	73	660	6,570
Mosman	54	488	4,860
Pittwater	244	2,206	21,960
Warringah	304	2,748	27,360
TOTAL	675	6,102	60,750

*This tonnage is based on an average fridge life of 8 years, plus greenhouse gas benefits of compact fluorescent lights and AAA showerheads distributed to each resident.

Delivering local responses

Manly Council

Manly Appliance Rebate Program (MARP)



During 2006/07 Manly Council developed and implemented an appliance rebate program for residents in the local area. The project was funded by assistance from the Demand Management Planning Project (DMPP). Rebates of \$200 were offered to residents

for the replacement of old air-conditioner units with more energy efficient models and for replacing electric cook-tops and heaters with gas cook-tops and heaters. The aim of the project was to encourage residents to reduce their electrical demand and therefore energy use, thereby reducing impacts on our electricity system and greenhouse gases.

Climate Change Working Group

During 2006/07 the Climate Change Working Group (CCWG) was initiated as a council committee. The group meets to identify likely impacts of climate change and to provide advice on prevention and mitigation strategies.

Climate Change Forum

On 29 October 2006 Council hosted a Community Climate Change Forum. Author and science commentator, Dr Karl Kruszelnicki, facilitated the free event. The event provided a unique opportunity for a panel of experts to discuss the topic of climate change as it relates to the Manly area.

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

This initiative was ongoing during 2006/07. Residents are encouraged to hop on the Freebie community bus and skip their car. Benefits of the community bus include reducing the amount of cars on the road resulting in less traffic and greenhouse gas emissions.

Smoke Free Zones

During 2006/07 Manly Council expanded the Smoke Free Zones campaign to include development of the Smoke Free Zone logo for use by other councils, installation of notices prohibiting smoking at entrances to all beach areas, children's playgrounds on Council land, and at Council's playfields and sporting grounds. Council's events, including the annual International Jazz Festival and the Manly Food and Wine Festivals were smoke free events and smoke free clauses have been included in all agreements with restaurants using Council land for al-fresco dining. Promotion of the Smoke Free Zones campaign has continued through Council's Safe Summer campaigns, Council publications, Council stationery, loudspeaker announcements on Manly Beach and Customer Service surveys.

3 Atmosphere

Mosman Council

Energy Efficient Products

During 2006/07 Mosman Council promoted the use of energy efficient products and raised awareness of energy consumption and the link to climate change by partnering with Easy Being Green to distribute Climate Change Packs, including energy efficient light globes and showerheads to members of the community. A total of 3,624 packs were given away to residents saving approximately 489 tonnes of CO₂ emissions.

Sustainable Transport Action Plan

As a component of the CCP Program, Mosman Council developed and adopted a Sustainable Transport Action Plan which aims to raise both staff and community awareness of sustainable transport alternatives and implement sustainable transport measures on the ground that will encourage greater uptake of sustainable transport by both staff and Mosman residents.



Traffic congestion on Military Road. Source: Mosman Council

Pittwater Council

Council is reducing greenhouse gas pollution from its own operations, fostering energy efficiency in urban design and working with the community through education to encourage energy use efficiency.

Reduced Carbon Emissions from the Fleet

During 2006/07 Pittwater commenced replacement of its vehicle fleet to 4 cylinder petrol vehicles and Euro IV compliant diesel powered vehicles where practical. This will result in a net reduction of greenhouse gases of 18% once the replacement programme has been completed. Pittwater's Ranger vehicles have also been moved from 6 cylinder light commercial vehicles to small 4 cylinder station wagons resulting in a 38% reduction in greenhouse emissions per vehicle.

Energy Saving Initiatives

In addition to participation in the CCP program and making significant changes to its fleet, Pittwater has initiated the following programs during 2006/07:

- Trial of more environmentally friendly and energy efficient street-lighting at The Serpentine, Avalon
- Development of a Revolving Energy Fund, with seed funding of \$100,000 to commence in 2007/08. The fund will enable new projects to be initiated, with the energy savings monitored. Savings will be re-invested back into the fund and used for other projects to enable ongoing greenhouse gas emissions reductions to be realized
- Submission of Pittwater's draft Energy Savings Actions Plan (mandated by the NSW State Government) to the Department of Environment and Climate Change
- Upgrading of older style pumps in 4 rock pools and changes to their use such as, adjusting the timers and control clocks and re-housing the pumps, resulting in a 30% energy saving, and
- A range of other initiatives involving heating, cooling and lighting in Council owned buildings



Climate Action Pittwater

A new community group, Climate Action Pittwater formed in March 2007 to address the challenges posed by global warming. The inaugural meeting attracted over 70 residents, who continue to meet regularly to plan actions, forums and fundraising initiatives.

Pittwater High School Solar Power Station Project

Pittwater High School has embarked on an ambitious project to become a Solar Power Station by installing 1,000 solar panels to power the school. The project aims to demonstrate to all Australians that we can begin to move away from reliance on fossil fuels, move to renewables and reduce our carbon footprint.

Warringah Council

Changes to Warringah Council's Fleet

In July 2006 Warringah Council implemented a new Fleet Strategy with the key objectives to reduce fleet size, fuel consumption and green house gas emissions for both passenger and commercial vehicles. During 2006/07 the Warringah Private Use Fleet has systematically replaced 54 six cylinder vehicles with various four cylinder models, including 19 turbo diesel vehicles. This has led to overall fuel consumption decreasing by 15% per month and instances where CO₂ emissions have almost halved.

Over the same period, eight operational vehicles and two contractor vehicles have also been converted from petrol averaging 14 litres/100 kilometres to turbo diesel vehicles averaging less than 10 litres/100 kilometres. The fleet also includes five LPG vehicles.

The fleet has been reduced in size from 185 vehicles in July 2006 to 178 in June 2007.

Warringah's Energy Savings Initiatives

In addition to participation in the CCP Program and making significant changes to its fleet, during 2006/07 Warringah also:

- Submitted its draft Energy Savings Actions Plan (mandated by the NSW State Government) to the Department of Environment and Climate Change
- Engaged consultants to undertake a Detailed Facilities Study, as a preliminary to an Energy Performance Contract (EPC), to achieve energy savings at Council's largest energy-using sites
- Established an Energy Revolving Fund to support smaller energy-saving projects outside the EPC
- Began implementing quarterly reporting of energy and water use for all sites, with all our major sites reported separately and benchmarked against equivalent sites across the State
- Set up a Sustainability Management Committee to identify and implement opportunities for energy and water conservation, and promote staff awareness and participation in these programs, and
- Installed power factor correction on the main mechanical services board at the Warringah Aquatic Centre which will save 15-20% of current energy consumption



Warringah students learning about sustainable energy at the World Environment Day Youth Expo May 2007.
Source: Warringah Council

4 Water



This chapter reports on the quality of receiving waters and the consumption of potable water in 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 ocean environments, beaches, harbour, lagoons, aquatic habitats, creeks, wetlands, groundwater, dams, wastewater, black water, stormwater, potable water and the catchment activities which may impact upon them.

The SHOROC region is characterised by an abundance of natural water assets, which are highly valued for their aesthetics and recreational purposes and are vital ecosystems for aquatic biodiversity.

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

4.1 Condition of our Water

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

As shown in Tables 8 to 10, the condition of SHOROC's natural waterways is generally affected by pollutants such as sewer overflows and urban runoff carrying pollutants such as heavy metals,

pesticides, fertilisers, sediments, rubbish and weeds. The current drought has also affected the quality and availability of our water resources resulting in water restrictions for potable water use and reducing stormwater flushing for our regional waterways. Water consumption across the region is shown in Table 11.

Beachwatch (including Harbourwatch) routinely monitors faecal coliform and enterococci bacterial levels in water at Sydney's 100 ocean and harbour swimming sites.

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 recreation, particularly due to elevated levels of faecal coliforms and enterococci. 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.

Results for the SHOROC region demonstrate that water quality is good in the region. Monitoring sites include swimming enclosures, popular harbour beaches such as Balmoral and surf beaches such as Avalon, Dee Why and Queenscliff. Monitoring sites for each LGA are:

Manly

North Steyne, South Steyne, Queenscliff and Shelly Beach, Clontarf Pool, Little Manly Cove, Manly Cove, Forty Baskets Pool, Fairlight Beach, Sangrado Baths and Gurney Crescent Baths

Mosman

Chinamans Beach, Edwards Beach, Balmoral Baths, Little Sirius Cove and Clifton Gardens.

Pittwater

Palm, Whale, Avalon, Bilgola, Newport, Bungan, Mona Vale, Warriewood, Turimetta, Barrenjoey Beach, Paradise Beach Baths, Clareville Beach, Winji Jimmi Bay, Salt Pan Cove, North Scotland Island, South Scotland Island, Bayview Baths, Elvina Bay, The Basin and Great Mackerel Beach.

Warringah

North Narrabeen, Collaroy, Long Reef, Dee Why, North Curl Curl, South Curl Curl, Freshwater, Birdwood Park (Narrabeen Lagoon) and Davidson Park.



Regional Snapshot

Table 8: Regional Water Condition

Indicator	SHOROC Region
Number of pollutant traps (Council control)	174
Total gross pollutants removed from pollutant traps (tonnes)	1,603
Total domestic potable water use (kilolitres per capita)	376
Total Council potable water use (kilolitres)	349,129

Council Snapshots

Table 9: Beachwatch Water Quality Data

Council Area	Average Water Quality Compliance (all ocean and harbour beaches)
Manly	<p>Summer 2006/07</p> <p>Manly's ocean and harbour beaches recorded good summer water quality conditions. All beaches recorded 100% compliance with water quality standards with the exception of Queenscliff, South Steyne and Shelly Beaches and Clontarf Pool.</p> <p>Faecal coliforms – 100% compliance except Queenscliff Beach and South Steyne Beach at 97% and Shelly Beach 86%</p> <p>Enterococci – 100% compliance except for Shelly Beach 79% and Clontarf Pool 94%</p> <p>Winter 2006</p> <p>Manly's ocean and harbour beaches recorded good winter water quality conditions. All beaches recorded 100% compliance with water quality standards with the exception of Sangrado Baths.</p> <p>Faecal coliforms - 100% compliance except for Sangrado Baths at 65%</p> <p>Enterococci – 100% compliance except for Queenscliff and Manly Cove 95%, Clontarf Pool 84%, Forty Baskets Pool 80%, Queenscliff 77% and Sangrado Baths 40%.</p>
Mosman	<p>Summer 2006/07</p> <p>Mosman's harbour beaches recorded excellent summer water quality conditions. All beaches recorded 100% compliance with water quality standards, with the exception of Little Sirius Cove, which still reported a good water quality result overall.</p> <p>Faecal coliforms - 100% compliance</p> <p>Enterococci - 100% compliance all sites except Little Sirius Cove at 94% compliance.</p> <p>Winter 2006</p> <p>Mosman's harbour beaches recorded good winter water quality conditions. All beaches recorded 100% compliance with water quality standards with the exception of Little Sirius Cove.</p> <p>Faecal Coliforms – 100% compliance except Little Sirius Cove at 80% compliance.</p> <p>Enterococci – 100% compliance except Little Sirius Cove with 75% compliance.</p>

4 Water

Pittwater	Summer 2006/07
	<p>Pittwater's 9 ocean and 11 harbour beaches recorded excellent summer water quality conditions. All beaches recorded 100% compliance with water quality standards, with the exception of Palm Beach, Salt Pan Cove Baths and Elvina Bay.</p> <p>Faecal coliforms – 100% compliance except Palm Beach 97%, Salt Pan Cove Baths 93%, Elvina Bay 96%.</p> <p>Enterococci – 100% compliance except Salt Pan Cove Baths 93%.</p>
	Winter 2006
	<p>Pittwater's ocean and harbour beaches recorded excellent winter water quality conditions. All beaches recorded 100% compliance with water quality standards except Salt Pan Cove Baths, Bayview Baths and Winji Jimmi Bay.</p> <p>Faecal coliforms – 100% compliance.</p> <p>Enterococci – 100% compliance except Salt Pan Cove Baths 76%, Bayview Baths 76% and Winji Jimmi Bay 90%.</p>
Warringah	Summer 2006/07
	<p>Warringah's beaches recorded good summer water quality conditions. All beaches recorded 100% compliance with water quality standards with the exception of Birdwood Park which is a lagoon swimming site.</p> <p>Faecal coliforms – 100% compliance except Birdwood Park 93%.</p> <p>Enterococci – 100% compliance except Birdwood Park 66%.</p>
	Winter 2006
	<p>Warringah's beaches recorded good winter water quality conditions. All beaches recorded 100% compliance with water quality standards, with the exception of Birdwood Park, North Curl Curl and Davidson Park.</p> <p>Faecal coliforms – 100% compliance except Birdwood Park 77%, North Curl Curl 91%.</p> <p>Enterococci – 100% compliance except Birdwood Park 14%, North Curl Curl 91%, Davidson Park 60%.</p>

Table 10: Stormwater

Indicator	Manly	Mosman	Pittwater	Warringah
Number of gross pollutant traps (council control)	23	30	22	99
Total gross pollutants removed from GPTs (tonnes)	183	377	57	986

Table 11: Water Consumption

Indicator	Manly	Mosman	Pittwater	Warringah
Total domestic potable water use*	3,776,919	2,922,325	5,107,867	11,837,398
Total domestic potable water use (kilolitres per capita)	102	103	88	83
Total Council potable water use (kilolitres)	104,967	50,000	83,803	110,359

*Source: Sydney Water. Water consumption includes commercial, industrial, houses, units/flats and 'other' as classified by Sydney Water
 Figures in these tables represent baseline data. Trends will be reported from 2007/08.



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. Human activities impact on the condition of these waterways, including stormwater transport, effluent transport and disposal, boating, fishing, swimming and scuba diving.

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 additional pressure on the region's waterways.

4.3 Responding to Water Issues

SQID Working Group

Warringah, Pittwater, Manly and Mosman Council's are represented on the SQID (stormwater quality improvement devices) Working Group, formed by the SCCG to resolve issues related to the installation, maintenance and disposal of water from the SQIDs. Issues and solutions raised by the group will improve the response and decision-making capabilities of Councils and aim to maintain water quality at acceptable levels.

Every Drop Counts Program

During 2006/07 the SHOROC Councils were involved in the Sydney Water 'Every Drop Counts' Program. As a part of this program Councils have undertaken management diagnostics to determine the areas that need to be addressed to best reduce potable water consumption. A wide range of actions have been put in place by the SHOROC Councils to conserve water.

WaterFix Program

Interested residents in the SHOROC region have taken up Sydney Water's WaterFix program, which includes do it yourself (DIY) water saving kits (self installation of water saving devices), WaterFixing the home (for \$22 a certified plumber visits residents' homes, checks for minor water leaks and installs water saving devices), \$150 washing machine rebate and \$1500 rainwater tank rebate. 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.

Table 12 shows that a significant number of the participants who have taken up various water saving programs through the WaterFix Program, joined during the financial year of 2006/07. The high participation in 2006/07 is a reflection of the growing awareness towards saving water, as a result of water restrictions and water wise programs promoted by SHOROC Councils, and other organisations such as Sydney Water.

Flooding

Manly, Pittwater and Warringah Councils all experience flooding events due to their location and topography. Low lying areas and the steepness of adjacent land combined with impervious surfaces through urban development and aging stormwater pipes increases the severity of the flooding during high rainfall events. To help combat this problem councils now require new urban developments to include OSD (Onsite Stormwater Detention) tanks. Implementation of this initiative continued during 2006/07.

4 Water

Table 12: Participation in Sydney Water's WaterFix Program

Water Saving Program	Manly		Mosman		Pittwater		Warringah	
Date	06/07*	Total 99 to 07	06/07*	Total 99 to 07	06/07*	Total 99 to 07	06/07*	Total 99 to 07
DIY Kits	668	916	347	523	782	1,190	2,445	3,832
WaterFix your home	631	3,453	293	1,867	701	4,761	2,122	13,223
Washing machine rebate	673	862	459	601	755	942	1,969	2,525
Rainwater tank rebate	88	197	87	185	291	793	472	1,090
Total Participation	2,060	5,453	1,186	3,176	2,529	7,686	7,008	20,670

*Figures represent residents who joined during the 2006/07 financial period.



Warringah's Stony Range Botanic Garden.
Source: Warringah Council

Creek Restoration

In February 2007, Warringah and Pittwater Councils received a \$1.96 million grant from the State government for community environmental education and restoration work on creeks feeding into Narrabeen Lagoon. Remediation work will be carried out at Middle, Mullet and Nareen Creeks, including reducing stormwater pollution, removing excess siltation and weed infestation, and protecting urban bushland and animal habitat. The comprehensive works and education program will help preserve the lagoon and protect one of the last remaining freshwater wetlands in the area. Work will commence on the grant funded project early in 2007/08.



Discovering the upper reaches of Mullet Creek.
Source: Pittwater Council



Delivering Local Responses

Manly Council

Water Leak Audit

In 2006/07 Council officers undertook a water leak audit and rectification program for Council facilities. This involved monitoring and modelling actual (observed) and predicted water usage for a range of Council facilities and investigation of suspected unexplained high water usage facilities. To date this process has already identified and repaired concealed water leaks estimated to save 28 million litres a year.

As part of the process key linkages have also been formed with users of sporting facilities and public open spaces in the Manly LGA.

Through undertaking a management review of water usage, awareness of key Council staff, of water savings and usage in all areas of Council has also been raised.

Manly Council was the winner of the Department of Energy, Utilities and Sustainability 'Strategic Urban Water Management Leadership Award' in 2006 for the Energy and Water Green Globe Awards 2006, for 'superior performance in the development and delivery of water efficiency initiatives'.



Low flow shower with water permeable pavers located at Queenscliff.
Source: Manly Council

Mosman Council

Overflow Abatement Program

During 2006/07 Mosman Council participated in the Sydney Water Overflow Abatement Program. Sydney Water, in consultation with Council, has identified the areas of major concern in terms of dry weather sewer overflows within the Mosman area. These problems will be addressed in the

future through infrastructure upgrades within the Mosman Bay catchment and through the installation of a storage facility in the Little Sirius Cove catchment. This program aims to reduce water pollution from sewer overflows and reduce risks to public health.

Stormwater Re-use

In 2006/07 Mosman Council commenced planning for the Cross Street Water Reuse Project. This project will involve the refurbishment of the old Drill Hall leased by Council from the Sydney Harbour Federation Trust, and community sporting facilities. Stormwater will be captured on-site, treated and reused for irrigating Rawson Oval and for possible toilet flushing. This project will reduce Council's water consumption by 4 mega litres per year, and will also improve water quality and reduce impacts of stormwater on bushland.

Water Savings Action Plan

Mosman Council developed a Water Savings Action Plan (WSAP) in March 2006, this Plan being approved by the Minister for Water Utilities on 1st November 2006. The WSAP was adopted by Council in February 2007 and incorporated within the Environmental Management Plan. The WSAP sets out water savings initiatives that Council will implement to save water used through its daily operations. During 2006/07 Council began implementing actions in the WSAP including installing water efficient devices in Council buildings and amenities blocks. Mosman Council will submit its first progress report to the State Government in March 2008.



Pollutants captured by the SQID, improving water quality.
Source: Mosman Council

4 Water

Pittwater Council

Stormwater Improvements

– Careel Creek Baramy Device

Pittwater Council replaced an existing trash rack across Careel Creek with an innovative Baramy Stormwater Quality Improvement Device downstream from the Avalon Shopping Centre. The device, installed in 2006/07, prevents gross pollutants from entering Careel Creek and flowing out to the environmentally sensitive estuarine wetlands at Careel Bay.

The former trash rack trapped pollutants in a wet state, causing vegetation to stagnate. The new device provides a dry clearing bed with cleaner water continuing along the creek. The new device has significantly reduced the smell of decaying organics.



*Pittwater Council staff cleaning Baramy device.
Source: Pittwater Council*

Pittwater Community Water Conservation Plan

Following completion of its Water Savings Action Plan in May 2006, Council commenced development of a Community Water Conservation Plan due for completion by October 2007. The plan will set targets, and recommend measures to reduce potable water consumption within the LGA through a range of initiatives including community education and alternative recycled water projects.

Community input to the plan is being obtained through a Working Group of residents together with Sydney Water, councillors and staff, and via a community-wide web-based survey to gauge water savings practices, priorities and ideas from the broader community.

The Web survey, completed by 255 people, was carried out between March and May 2007 and focused on attitudes towards water conservation, household water conservation practices and peoples preferences for strategies and measures to reduce water consumption. A number of conclusions emerged from key findings:

- More progress can be made to conserving water in households
- There is strong support for more community education and information, and
- People support a multi-faceted approach to water conservation



*Residents learning about the wide range of water tanks available.
Source: Pittwater Council*



Warringah Council

Freshwater and Estuarine Water Quality Monitoring Program

In 2006/07, Warringah Council developed a new water quality monitoring program that covers freshwater monitoring and assessment, estuarine monitoring and assessment and event-based monitoring (stormwater). It is anticipated that Council will be reporting on the state of the area's creeks and lagoons in the 2007/08 State of Environment Report.

Water Savings Actions

Council has achieved three stars under Sydney Water's 'Every Drop Counts Business Program', and during 2006/07, carried out detailed audits of three of its largest water using sites. Council has achieved a total saving of 68,000L/day, since joining the program.

During 2006/07 Council also completed and submitted its Draft Water Savings Action Plan (WSAP) to the Department of Energy, Utilities and Sustainability. This plan included actions to improve management and accountability for water use as well as initiatives to save water at specific sites through conservation and reuse.

During 2006/07 the Warringah Aquatic Centre commenced the process of installing rainwater tanks to help refill the pool, upgraded toilets and installed movement sensors at urinals. Council is now using bore water at a number of sportsgrounds and investigating other opportunities to replace 'town water' on Council sites.



Source: Warringah Council



Dee Why Beach. Source: Warringah Council

In 2006/07 Council undertook a number of audits of sportsgrounds and recreation facilities to determine their present condition and the future works necessary to achieve improved energy and water efficiencies. For example, the urinals at Harbord Oval amenity block are now automatically flushed with wastewater from hand basins. In addition, all beach surf clubs have been fitted with time flow taps and/or flow restrictors while dual-flush cisterns are being phased in slowly. Council is now collating data from all water accounts and using quarterly reports to monitor use and identify excessive consumption and opportunities for improvement.

Golf Course Partnership Program

Warringah has completed a community partnership program with local golf courses to ensure compliance with environmental legislation and encourage best practices. The project ensures that golf courses on Council owned land, (Long Reef, Wakehurst and Warringah) have or will prepare their environmental management plans/programs that comply with environmental legislation and best practises.

5 Biodiversity



Biological diversity (or biodiversity) is defined as the variety of life forms, the different plants, animals and micro-organisms, the genes they contain, and the ecosystems they form. Biodiversity includes genetic diversity, species diversity and ecosystem diversity (Commonwealth of Australia 1996). Biodiversity is essential in forming functioning ecosystems which maintain important processes on which all life depends. Biodiversity also has an intrinsic value and as such conservation of biodiversity is one of the primary principles of ecologically sustainable development.

Biodiversity indicators have been selected to measure and gauge local and regional issues of noxious weeds and pests, Bushcare activities and the condition of threatened species and ecological communities.

Grass Tree *Xanthorrhoea* sp. Source: Warringah Council.

5.1 Condition of our Biodiversity

Biodiversity in the SHOROC region incorporates terrestrial (land), aquatic and marine (water) based plants, animals and micro-organisms. Most of this diversity of flora and fauna is contained in the region's bushland areas and waterways, however the region's urban areas including reserves, private gardens and street trees also contain important biodiversity.

The condition of the region's biodiversity is affected by a number of natural and human induced factors such as bushfire, invasion by pests and weeds, land and river bank clearing, development, fragmentation, water pollution and climate change. 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.

Tables 13 and 14 show the number of threatened species, endangered populations and ecological communities in the SHOROC area. Over time this will allow the region to monitor the biodiversity that is under threat. Noxious weed notices and Bushcare volunteers are also reported to gauge on-the-ground responses to biodiversity issues.



Scarab Beetle. Source: Warringah Council



Regional Snapshot

Table 13: Regional Biodiversity Condition

Indicator	SHOROC Region
Total noxious weed notices to residents	199
Total noxious weed assessments to residents	354
Bushcare program volunteer hours	15,744
Total number of active registered Bushcare volunteers	937

Council Snapshots

Table 14: Council Biodiversity Condition

Indicator	Manly	Mosman	Pittwater	Warringah
Noxious weed notices*	48	0	90	61
Noxious weed assessments issued to residents*	0	25	177	152
Number of registered active Bushcare volunteers	210	177	250	300
Bushcare program volunteer hours	583	2,754	6,207	6,200
Number of active Bushcare groups	16	17	26	51
Number of native plant species recorded in LGA	449 (as of 2003)	454	Unknown	914
Number of threatened flora	6	3	14	20
Number of threatened fauna	6	4	42	54
Number of endangered ecological communities	3	3	9	16
Number of endangered fauna populations	3	0	2	0
Feral Species Programs	2	2	3	6

*Under the NSW *Noxious Weeds Act 1993*, Councils as the local control authority, may require owners or occupiers of land to control noxious weeds. Under the Act, private occupiers of land must control noxious weeds on their land. 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.

Figures in these tables represent baseline data. Trends will be reported from 2007/08.

5 Biodiversity

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
- Simplification of ecosystems by a reduction in native diversity of species
- Illegal poisoning of trees
- Decline of street trees and trees on private properties due to age
- Illegal dumping of rubbish in bushland areas
- Spread of invasive weeds
- Predation of native animals by feral animals
- Plant diseases such as Phytophthora root rot caused by the soil fungus *Phytophthora cinnamomi*
- Encroachment of private gardens into native bushlands
- Stormwater flow through bushland causing erosion and carrying nutrients and weeds
- Companion animals disturbing and spreading disease to native fauna, and
- Increasing frequency and intensity of storm events

Aquatic Biodiversity

- 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
- Increasing frequency and intensity of storm events, and
- Replacement of swimming nets

5.3 Responding to Flora and Fauna Issues

Bushland Management

Bushland regeneration is carried out within the SHOROC region by all Councils, with the aims of restoring and maintaining bushland and parks, controlling the spread of noxious weeds, providing habitat and wildlife corridors for native fauna and to guarantee the long-term viability of our natural heritage. In 2006/07 15,744 hours were dedicated by 937 active registered volunteers across the region towards the rehabilitation of our bushland areas. To ensure effective and holistic bush regeneration practices SHOROC Councils conducted flora and fauna surveys of their bushland areas to identify any areas that contain threatened species, communities or populations. SHOROC Councils' Bushcare programs have shown an increase in the number of fauna and flora species and a decrease in noxious weeds in areas of regeneration.

Sydney North Regional Weeds Committee

Representatives from the SHOROC Councils attended biannual meetings of the Sydney North Regional Weeds Committee during 2006/07. The aims of the committee are to:

- Promote the coordination of noxious and environmental weed management at a regional and catchment level
- Provide a forum for information exchange
- Increase awareness of noxious and environmental weeds in the community, and
- Identify new weed problems and solutions.

The Committee works on regional projects such as weed brochures for regional distribution and solutions to eradicating terrestrial and aquatic weeds.



Urban Feral Animal Programs

During 2006/07, representatives from the SHOROC 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/feral animal programs that could be implemented.

All SHOROC 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 2006/07 to control feral animals included trapping and baiting.

All SHOROC Councils continue to encourage their residents to microchip and de-sex their pets to foster responsible pet ownership and reduce the numbers of unwanted strays in the area.

Aquatic Weed Management – *Caulerpa taxifolia*

In 2006/07 SHOROC Councils Manly, Mosman and Pittwater continued to work with the State Government and Sydney Coastal Councils Group to ensure effective management methods for the removal of the invasive aquatic weed *Caulerpa taxifolia*.

Participating SHOROC Councils and the SCCG continue to support the State Government in educating maritime user groups on the distribution of this invasive marine plant and ways in which its spread may be minimised.

In recognition of the importance of this issue, (with the assistance of the Minister responsible for Fisheries), the SCCG established the SCCG *Caulerpa Taxifolia* Task Force to identify and promote coordinated strategies for the control and eradication of *Caulerpa taxifolia* in partnership with State Government agencies, Local Government, industry and the community.

Delivering Local Responses

Manly Council

Ecological Burning

Fire is an important part of the Australian landscape and plays a significant role in the germination and survival of many native plants species. Over several years Council has used fire as a successful tool to restore bushland areas. Due to the successful ecological burns undertaken in many of Manly's bushland reserves over the last few years, 2006/07 saw the continuation of the ecological burning program.

During the year Wellings Reserve, Nolans Bush, and Tania Park were the focus of ecological burning activity, in areas where fuel loading of deep leaf litter and timber debris was suppressing native regeneration. Since burning took place, all of these reserves have regenerated well.

Wildlife Protection Area – Federation Point

In response to community concern, requests from the Department of Environment and Climate Change NSW (DECC) and Council's responsibility for the conservation of Manly's Endangered Population of Little Penguins, Council designated the foreshore area of Federation Point a Wildlife Protection Area (WPA). The WPA includes the rocky foreshore area from the mean high water mark landward to the cliff top and extends from the tip of Federation Point east along the foreshore behind Manly Pier Restaurant. Administered under the *Companions Animals Act 1998*, the designation of the WPA precludes dogs and cats from the foreshore. To coincide with the designation of the WPA the stairs and boardwalk/walkway around to Ocean World has been made a dog 'on leash area'. Signage has also been installed.



Little Penguin, *Eudyptula minor*.
Source: Manly Council

5 Biodiversity

Threatened Species



Long-nosed Bandicoot
Parameles nasuta

Threatened populations of Little Penguins (*Eudyptula minor*), Long-nosed Bandicoot (*Parameles nasuta*) and Grey-headed Flying Fox (*Pteropus poliocephalus*) are present in Manly's LGA. Though extensive urban development has occurred within Manly, the presence of these populations indicates that

Manly provides the habitat requirements for these species to survive. Manly Council has sought to protect these habitats through the establishment and management of Federation Point Wildlife Protection Area, Cabbage Tree Bay Aquatic Reserve, North Harbour Aquatic Reserve and ongoing management of our bushland areas, which provide protection for these populations. Council has continued to liaise with the DECC during 2006/07 to ensure ongoing implementation of the Recovery Plan for the Endangered Population of Little Penguins at Manly.

Mosman Council



Seahorse on the net at Clifton gardens. Source: Iain Grey

Removal of Swimming Nets

In 2006/07 Mosman Council put forth a motion to remove the swimming net at Edwards Beach. A protocol was also put in place for the maintenance and replacement of the remaining nets at Balmoral and Clifton Gardens, as a method of protecting aquatic organisms, primarily seahorses that may have inhabited the nets. Council has adopted a method of installing the new net prior to removal of the old net so that seahorses have the opportunity to colonise the new net before the old net is removed. The removal of the net is now undertaken one panel

at a time and includes thorough searches of the panels for seahorse and other organisms before they are towed to shore. Existing seahorses are relocated to the seagrass beds nearby or to the new net. During cleaning of the net, only rubbish is removed, small pieces of weed and algae are left in place as habitat for aquatic organisms. During 2006/07 local volunteer divers assisted Council by providing information on aquatic species inhabiting the nets and undertaking inspections and reporting to Council in the periods between formal inspections.

Chinamans Beach

Signs have been installed at Chinamans Beach to raise community awareness of the Chinamans Beach monitoring and manual cleaning program and its importance to the ecology of the sandy beach. All mechanical beach raking has ceased and the beach is cleaned of rubbish via hand picking. All seaweed, sticks, seeds, shells and aquatic organisms washed onto the beach are left in place to provide habitat and food for insects, crabs, birds and other beach organisms, significantly improving the ecology of the beach. Mosman Council won the Leadership Award for the Keep Australia Beautiful Clean Beach Challenge in 2006/07 for its roll in maintaining a clean beach whilst enhancing biodiversity and the ecology of the beach.

Pittwater Council

Threatened Species



Glossy Black Cockatoo – a threatened species.
Source: Pittwater Council

There are more than 65 recorded threatened plant and animal species and ecological communities in Pittwater. Council works in partnership with



the community to protect, enhance and restore the habitats of these species through a range of programs including Bushcare, native plant-giveaways to residents and enhancement plantings. Endangered species include the Bush Stone Curlew, the Southern Brown Bandicoot, the Regent Honeyeater and the Giant Dragonfly. Endangered populations of animals listed in Pittwater are the Squirrel Glider and the Koala. Vulnerable species include the Spotted-tailed Quoll, the Powerful Owl and the Giant Burrowing Frog. Endangered Ecological Communities include Coastal Saltmarsh, Littoral Rainforest, Pittwater Spotted Gum Forest, Themeda Grasslands and Duffy's Forest.

Squirrel Glider and Spotted Gums Workshop

Survival of fauna depends on the willingness of the local community to be good 'backyard buddies' and help our native wildlife survive. In 2006/07, Council ran several education events, including a free workshop for residents with Spotted Gums or Squirrel Gliders in their backyard or on their land.

The free workshop, jointly delivered by Taronga Zoo Keepers and Council education officers showed residents how to protect and create a wildlife sanctuary in their gardens for these endangered species. Free native plants were given away to Pittwater residents.

Pittwater Spotted Gum Forest Restoration

In 2006/07, Council commenced a major environmental project to protect and restore the endangered Spotted Gum Forest, home to a large number of local native animals, including many bird species and the endangered Squirrel Glider. Over 70% of Pittwater Spotted Gum Forest is found on private land, with only 30% existing in Council bushland reserves.

With the assistance and support of local landowners, Bushcare volunteers and funding support from the Hawkesbury-Nepean Catchment Management Authority (CMA), council is undertaking works to help restore and protect the natural state of the Pittwater Spotted Gum Forest in Avalon, Newport, Palm Beach, Scotland Island, Bayview and the Western Foreshores.

Plantfile Online

Pittwater Council is the first council in Australia to offer PlantFile on-line. The index links plant names with pictures, growth type, water use and other details, making finding the right environmentally friendly plants for a garden easy. Over 200 species are currently detailed on the website.

The system is extremely useful to anyone planning or planting a garden in Pittwater, including residents, landscapers and landscape architects. By selecting a plant which is suitable for a site, the need for watering and soil additives is minimised. PlantFile includes plants which encourage locally native animals and the return of small birds like Blue Wrens.

Warringah Council

Warringah's Biodiversity



*Black Swans and cygnets nesting at Manly Dam January 2007.
Source: Warringah Council*

2006/07 saw the return of bandicoots to Dee Why Lagoon. The bandicoot has long been absent from the Dee Why Lagoon area, but due to better environment preservation techniques and pest species control the bandicoot has returned. This is one of a number of species including brush turkeys, wallabies and different varieties of birds that have returned to Warringah's native vegetation communities.

5 Biodiversity

Threatened Species

In 1998 Duffy's Forest was listed as an endangered ecological community under the NSW *Threatened Species Conservation Act 1995*. Council continues to implement the *Grevillea caleyi* Recovery Plan through planning hazard reduction burns, fencing sites in council reserves when required, carrying out weed control and bush regeneration, removing rubbish, managing impacts associated with run-off and identifying newly discovered sites.

Community awareness of *Grevillea caleyi* continues through Council's 'Protecting our Threatened Species Duffy's Forest Environmental Education Program', which is available free to all local primary schools, won the national Silver Environs Sustainability Interface Award in September 2006. The program involves a series of lessons on Warringah's threatened species followed by an excursion to one of the last remaining examples of Duffy's Forest bushland. Some 318 students from five schools were involved in the Duffy's Forest education program during this reporting period, which encourages students to appreciate and care for bushland areas and native animals.



Warringah is home to the threatened Southern Brown Bandicoot.
Source: Warringah Council

Warringah Council is also implementing a Recovery Plan for the threatened Southern Brown Bandicoot. Council is an active member of the Southern Brown Bandicoot Working Group and undertakes fox control in Council managed reserves around known populations. Additionally, Council requires Species Impact Statements for new development proposals on known and potential habitat, and Rangers patrol the Duffy's Forest area and issue infringement notices for unleashed dogs.

Wildlife Protection for Long Reef Headland

The Wildlife Protection Area at Long Reef was extended to cover the entire headland including Long Reef Golf Club in an effort to protect native flora and fauna species and to link with the Dee Why Lagoon Wildlife Refuge.

Over the past ten years Council and dedicated Reefcare volunteers have carried out extensive bush regeneration, revegetation, feral animal control and research with a focus on restoration of natural vegetation and its potential habitat for native fauna.

Stony Range Becomes a Botanic Garden

In March 2007, Stony Range Flora and Fauna Reserve was officially recognised as a botanic garden. This 3.64 hectare reserve is supported by a committed team of Bushcare volunteers and is an oasis for local native species in the heart of busy Dee Why.



Long Reef Headland. Source: Warringah Council

6 Human Settlement



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.

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 on projects, including the opportunity for volunteering, creates and improves the 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.

Composting to reduce waste to landfill. Source: Manly Council

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.

The region has grown recently through development in growth areas, such as Warriewood Valley and Manly Vale. Higher density living and greater community interactions have both positive and negative implications. Negative implications include an increase in waste and noise affecting health and wellbeing. Positive implications include a greater sense of community.



Urban development in the SHOROC region. Source: Manly Council

6 Human Settlement

Regional Snapshot

Table 15: Regional Human Settlement Condition

Indicator	SHOROC Region
Estimated population at June 2007	266,767
Total waste to landfill, including general cleanup (tonnes)	58,178
Total waste to recycling including metal and green waste (tonnes)	57,252
General Noise Complaints	1,008
Noise Complaints due to Barking dogs	2,137

Council Snapshots

Table 16: Population

Indicator	Manly	Mosman	Pittwater	Warringah
Estimated population of each LGA – at 30 June 2007	37,382	28,414	57,944	143,027
Residential density (persons per hectare)*	24.84	33.34	6.40	9.56

*Population density represents the average number of people per hectare/square kilometre for a region. Residential density figures can be misleading as land included in the calculation may not be used for habitation e.g.: shopping centres, national parks, 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 17: Noise

Indicator	Manly	Mosman	Pittwater	Warringah
General noise complaints received by Council	40	50	188	730
Barking dog complaints received by Council	7	45	260	1,825

Table 18: Waste

Indicator	Manly	Mosman	Pittwater	Warringah
Total waste to landfill including general cleanup (tonnes)	7,922	6,791	12,209	31,256
Total waste to recycling including metal and green waste (tonnes)	7,479	5,637	11,304	32,832
Total waste to landfill including general cleanup per capita (kg)	213	239	208	219
Total waste to recycling including metal and green waste per capita (kg)	202	198	195	230
Green waste diverted from landfill per capita (kg)	43	38	35	99
General cleanup sent to landfill per capita (kg)	23	15	20	32

Figures in these tables represent baseline data. Trends will be reported from 2007/08.



6.2 Pressures on 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, increases in development, higher use of plastic bags, higher use of packaged foods, illegal and incorrect dumping of waste and littering. This pressure contributes to a higher amount of waste that is sent to landfill.

Busy and congested urban living can create unwanted offensive noise that intrudes on people's daily activities causing stress, affecting people's health and even causing them to relocate. Noise pressures include construction noise, noise from residential air conditioners, mechanical and commercial plant, and barking dogs.

6.3 Responding to Human Settlement Issues

Noise Management

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

Waste Management and Minimisation

SHOROC 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 sustainable living and working

These, and other, waste management practices implemented by the SHOROC Councils during 2006/07 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.

Kimbriki Recycling and Waste Disposal Centre

Kimbriki is directed by a Joint Services Committee consisting of Warringah, Manly, Mosman and Pittwater Councils. The Centre is licensed to receive non-putrescible waste such as recycled materials and other dry wastes.

Recycling and re-use processes developed at Kimbriki result in only 26% of the 211,000 tonnes of waste material received at the site being landfilled. In 2006/07 Kimbriki recycled 56,000 tonnes of vegetation, 77,000 tonnes of concrete/brick and 2,800 tonnes of metal products with 48,000 tonnes of waste going to landfill.

During 2006/07 the SHOROC Councils worked closely to establish a company to manage the disposal of waste sustainably into the future. At the time of publication this proposal is awaiting Ministerial approval. In this new structure there will be the opportunity to address long term issues such as the amount of valuable resources going to landfill.

6 Human Settlement

During 2006/07 SHOROC Councils engaged consultants Wright Corporate Strategy to complete an initial investigation into the suitability of the Kimbriki site for the development of an alternative waste technology (AWT) facility. The completion of the study will determine the most suitable AWT and site conditions at Kimbriki, gauge community response to alternative waste service arrangements, and demonstrate benefits and costs of an AWT facility.

SHOROC Waste Audit

Mosman Council, on behalf of SHOROC, contracted EC Sustainable Environmental Consultants to undertake an Audit of the Domestic Putrescible (garbage) Stream in the SHOROC Council Areas between February 2006 and February 2007.

The Audit was carried out in order to assist the SHOROC Councils to:

- Investigate regional alternative waste technology (AWT) solutions

- Compare each Council's current performance in waste diversion from landfill and establish regional waste diversion data
- Develop education strategies
- Compare data to previous and future waste audits
- Improve the quality and performance of existing waste & recycling services, and
- Identify recovery rates (the % of total household waste that is recycled)

The results of the audit are summarised in Figure 3. The audit found that, in total, up to 78% of the material in the putrescible (garbage) stream could be diverted from landfill with appropriate alternate waste technologies (for example Enclosed Municipal Solid Waste composting) and improved kerbside collection systems (for example recycling plastics 1 to 7).

Figure 3. Recyclables in the Waste Stream for the SHOROC Councils

Material category	Percentage (%) of Key Recyclables in the Waste Stream by Area Household Type														
	Mosman			Manly			Warringah			Pittwater			SHOROC		
	SODs	MODs	All	SODs	MODs	All	SODs	MODs	All	SODs	MODs	All	SODs	MODs	All
Metals (Aluminium and Steel)	4.10	3.79	3.88	2.68	4.29	3.70	2.31	3.68	3.44	2.95	4.48	4.22	3.01	4.06	3.81
Plastics (1-7)	7.25	8.83	8.41	5.65	8.33	7.34	6.80	9.07	8.67	6.37	9.11	8.65	6.52	8.83	8.27
Recyclable Glass	7.56	3.39	4.49	3.38	2.27	2.68	6.20	2.52	3.17	7.35	2.82	3.57	6.12	2.75	3.48
Paper and Cardboard	11.89	9.04	9.79	5.67	4.12	4.69	8.17	5.11	5.65	6.54	4.65	4.96	8.07	5.73	6.27
Food	37.59	39.07	38.68	36.59	40.06	38.79	41.59	39.40	39.79	40.12	38.88	39.09	38.97	39.35	39.08
Garden Organics and Wood	3.55	4.36	4.15	2.60	2.80	2.72	3.08	5.35	4.95	4.82	8.19	7.64	3.51	5.18	4.87
Clothing (Textiles/Leather/Footwear)	3.40	2.57	2.79	3.65	2.78	3.10	3.55	2.12	2.37	1.71	3.01	2.79	3.08	2.62	2.76
Total	75.34	71.05	72.18	60.21	64.65	63.02	71.70	67.25	68.04	69.86	71.14	70.93	69.28	68.52	68.54

Source: SHOROC Waste Audit (Feb 06-Feb 07), EC Sustainable Environmental Consultants
 *SOD = single occupied dwellings, MOD = multiple occupied dwellings



Rubbish Free Lunch Challenge

During National Recycling Week in November 2006, 4,800 students from 17 schools across Northern Sydney participated in the 'Rubbish Free Lunch Challenge'. The program was a joint initiative of Manly, Warringah, Mosman, Hornsby, Hunters Hill, Ku-ring-gai, Ryde and Willoughby Councils. The event challenged students to reduce their environmental footprint through recycling, reducing and reusing waste at school and at home.

Among the challenges, the program asked students to bring a rubbish-free lunch one day during National Recycling Week. Each school compared their collective rubbish on an ordinary day and on the rubbish free lunch day to determine if lunch waste had been reduced. In between the two audits, schools were given advice on how to reduce their impact on the environment from their own lunchboxes. Local winners of the Rubbish Free Lunch Challenge were Warringah's Narrabeen Lakes and Wakehurst Public Schools in the 'Lowest Weight' category, and Collaroy Plateau Community Kindergarten in the 'Biggest Change' category.

Waste Wise Councils

SHOROC is committed to being recognised as a leader in corporate sustainability. Each Council undertakes a variety of waste reduction and education initiatives including provision of recycling facilities in Council buildings for staff use, recycling organic food waste, staff training in waste avoidance, reduction, recycling and sustainable purchasing, waste wise meetings and events, and green cleaning.

Waste Wise Community

SHOROC Councils highlight the importance of avoiding, reducing and recycling waste through waste education teams featured at various community events throughout the year such as Ocean Care Day and National Recycling Week. Through event exhibits and events held by each of the SHOROC Councils, residents have been educated on how to, save water through purchasing rainwater tanks, clean using green-friendly methods, set up worm farms and compost bins, reduce energy consumption, and minimise waste through sustainable shopping. All Councils carry out various residential, business and school waste minimisation education programs and strategies.

Delivering Local Responses

Manly Council

Litterguards Program

The Litterguards program was developed in response to community pressure for reducing littering incidents on and around the Ocean Beach area of Manly during summer. The main objectives of the program were to decrease litter on the beach and surrounding areas, educate the public about the social, economic and environmental impacts of litter and encourage best practice waste management in public places.

Litterguards work by directly approaching groups and individuals on the beach reminding them to properly dispose of their waste and recycling. The beach areas were patrolled on foot and the non sanded areas in the purpose built Litterguards buggy. Observations of correct waste and recycling disposal, particularly by younger people, were rewarded.

Beach litter levels decreased during the trial period and the response from the community was favourable and well supported.



Manly Litterguard team 2006. Source: Manly Council

Waste Wise Events

Manly Council continually strive towards reducing their ecological footprint by promoting waste wise events such as the Manly Food & Wine Festival. This popular event, now in its 21st year, highlights the importance of integrating avoidance, reuse and recycling into activities without compromising hygiene standards or comfort to around 40,000 people over the weekend. This year saw an extension of the festival with the inclusion of the Manly Sustainability Fair - a showcase of environmental products and services. All events in Manly require a waste management plan prior to approval which denies products which are non-biodegradable or non-recyclable, requests waste avoidance and encourages separation of waste at the source.

6 Human Settlement

Mosman Council

Waste Programs

In 2006/07 Mosman Council commenced a review of public place recycling to determine the need for recycling facilities in public places such as parks and foreshore areas, and the type of system best implemented.

Council took part in the Dumping is Dumb education program, an initiative of the Department of Environment and Climate Change, including a media campaign and advertisement on Sydney buses, to raise community awareness of illegal waste dumping.

Council implemented changes to the residential waste collection service rolling out the Mobile Recycling Bin Project. Crates for commingled recycling and paper were replaced with two mobile recycling bins, one for paper/cardboard and the other for commingled recycling with the service being offered on alternate weeks with the garbage collection.

Oval Top Dressing

Green waste collected from the kerbside and composted at Kimbriki Recycling and Waste Disposal Centre is purchased by Council and mixed with recycled sand to apply on Council ovals as top dressing. This ensures that the ovals are maintained, whilst reusing natural materials.



*Topdressing Allan Border Oval with recycled materials.
Source: Mosman Council*

Pittwater Council

Supporting Volunteers

Pittwater is characterised by a high level of community activism and volunteering to help both people and the environment, an important indicator of "social capital". Pittwater Council offered a range of acknowledgements for volunteers throughout the year, including:

- Australia Day Citizen of the Year Award
- Outstanding Community Service Awards, and
- Environmental Volunteer of the Year Award

Waste Education

Pittwater Council continued to promote community awareness of waste reduction and recycling through print media and at a range of events throughout the year, including Living with Less Chemicals Workshops, and Dog's Day by the Bay, which is run each year as a waste wise event.

Council also developed education strategies and materials to promote the diversion of waste from landfill and to promote increased community participation in domestic and commercial recycling.



*Volunteer helping remove Asparagus Fern.
Source: Pittwater Council*

Warringah Council

Waste Education

Warringah's Australia Day, World Environment Day Youth Expo and Community Expo were all waste-wise events. The Community Expo attracted more than 20,000 people and waste was minimal due to council's proactive approach in encouraging service providers to provide only compostable cups, plates and cutlery.

Chemical Collections

This year Warringah Council hosted two free chemical collections at the Warringah Aquatic Centre Car Park, Allambie Heights. The September 2006 Chemical Clean Out saw more than 36.5 tonnes of unwanted chemical waste collected from 1,256 residents. The amount collected for the April 2007 collection almost doubled with more than 27.5 tonnes of waste collected from 845 residents.



*Warringah's waste education trailer at Australia Day 2007.
Source: Warringah Council*

7 Aboriginal and Non-Aboriginal Heritage



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 where disturbances and development has been limited. Non-Aboriginal heritage refers to use of the land since European settlement. Heritage sites include oldest commercial/industrial and iconic architecture still present and 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.

Blessing The Barn at it's re-opening 2006. Source: Mosman Council

7.1 Condition of our Heritage

At the time of European settlement, the vast area of land stretching between what is now known as Newcastle through to the southern-most part of modern Sydney was home to the Guringai people. Evidence of Aboriginal occupation includes rock engravings, rock paintings, shell middens, axe grinding grooves, sites of religious significance and various occupation sites. 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.

Non-Aboriginal settlement has also left a rich heritage in the area including historic sites, modified and built environments with community values, such as townscapes, buildings, roads, and aspects of our current multicultural society involving ethnic traditions, cultural events, national, state, and local symbols, artworks, craft, and literature.



Aboriginal Heritage was celebrated at Warringah's World Environment Day Expo in May 2007. Source: Warringah Council

7 Aboriginal and Non-Aboriginal Heritage

Regional Snapshot

Table 19: Regional Aboriginal and Non-Aboriginal Heritage Condition

Indicator	SHOROC Region
Total number of Aboriginal Heritage Sites (including National Parks)	1,002
Total number of Non-Aboriginal Heritage Items	1,027
Heritage conservation areas	20

Council Snapshots

Table 20: Aboriginal Heritage

Indicator	Manly	Mosman	Pittwater	Warringah
Number of Aboriginal Heritage Sites	110*	107	322	463

*Does not include sites within National Parks.

Table 21: Non-Aboriginal Heritage

Indicator	Manly	Mosman	Pittwater	Warringah
Number of Non-Aboriginal Heritage items	306	478	101	142
Breakdown:				
Number of built items	194	437*	69	102
Number of landscape items	78	34*	20	36
Number of archaeological items	34	16	7	2
Heritage conservation areas	2	11	5	2

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

Figures in these tables represent baseline data. Trends will be reported from 2007/08.



7.2 Pressures on Our Heritage

Major threats to the conservation of Aboriginal and Non-Aboriginal heritage in the SHOROC region include:

- Lack of knowledge and recognition
- Vandalism and destruction of sites (deliberate or otherwise)
- Erosion or damage of sites from wind, water, sun and human activities
- Development pressures, and
- Lack of funding to adequately maintain and/or restore heritage items

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

7.3 Responding to our Heritage Issues

Aboriginal Heritage Office

The Aboriginal Heritage Office (AHO) is a joint initiative of Manly, Pittwater, Warringah, North Sydney, Lane Cove, Willoughby and Ku-ring-gai Councils and is supported by the NSW Heritage Office and Department of Environment.

The responsibility of the AHO is to monitor Aboriginal sites, develop long term management reports to ensure their protection, involve both Aboriginal and Non-Aboriginal people in discussions concerning heritage issues, communicate with schools and other groups to educate the community in understanding and appreciating the unique culture of Aboriginal people.

The AHO also holds talks, walks and activities to provide awareness of the Aboriginal culture in the wider community.

In 2006/07, the AHO gave heritage advice on development applications to ensure Aboriginal cultural sites were adequately protected, continued to coordinate training for Council staff, primarily those involved in the development of assessment processes, outlined the policies and legislation relating to Aboriginal heritage, and conducted an interactive walk and talk program at various sites around Warringah.

During 2006/07 a NSW Heritage Office grant funded a series of 18 events for schools in the area. The Aboriginal Heritage Office also held a stall and conducted a heritage walk at Manly Dam for the 'Celebrating Manly Dam' Community Day in November 2006. The AHO also received Federal Government funding through the Indigenous Heritage Program funding for a project to review the promotion and user pressures of Aboriginal heritage along the foreshores of Northern Sydney. This has provided options for improving the protection of Aboriginal heritage but not at the expense of community walks and talks.

Guringai Festival

The 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 ten Councils working in partnership with local reconciliation groups and includes the four SHOROC Councils – Mosman, Manly, Warringah and Pittwater.

The 2007 Guringai Festival program was run between 21 May and 15 July 2007, and included more than 30 events under the theme of 'Corroboree, Culture, Community.' As part of the festival, Warringah Council sponsored an Aboriginal performer and storyteller to visit local primary schools. Each of Warringah Council's five vacation care centres also provided an Indigenous Games Workshop run by staff from the NSW Department of Sport and Recreation. Mosman Council presented an art exhibition and an author talk in collaboration with Mosman Reconciliation Group, while Manly and Pittwater Councils worked with the Aboriginal Support Group to present several screenings of the film "Kanyini", a spiritual celebration of land, spirit and wisdom of the world's oldest living culture.

7 Aboriginal and Non-Aboriginal Heritage

Delivering Local Responses

Manly Council

Manly's Sustainable Heritage Conservation Plan

In 2007 Council commenced a comprehensive review of its heritage listings, strategies and policies. The aim of the Sustainable Heritage Conservation Plan is to assess the values of Manly that should be protected so that both present and future generations will also be able to enjoy Manly as we do today. The review has been undertaken by a team of expert heritage specialists with significant input from Manly's community.

The Plan will have a particular focus in linking heritage and sustainability issues.

The project has been progressed in two parts. The first part is a technical assessment of potential heritage items and conservation areas, again, with a particular focus on heritage and sustainability. The technical assessment is supported by community consultation including intercept interviews of 300 members of the public on street corners, in addition to surveys of business owners, some specific property owners, and children at local schools. The later stages of the consultation will involve further public consultations, listing and strategy recommendations to Council, and an exhibition period in parallel with the new standard LEP.



Manly Council Civic Building. Source: Manly Council

Mosman Council

DVD Mosman's Built Heritage



Mosman Council's Heritage DVD.
Source: Mosman Council

As part of Mosman Council's ongoing commitment to the promotion of heritage in the community Council has produced a DVD about Mosman's Built Heritage. The DVD features the words, wisdom and images

from Robert Irving OAM, well known architect historian, author and former academic. The DVD is targeted at people who are planning to carry out building work, or who own a heritage property, or those who are just interested in Mosman's beautiful buildings and landscape. The DVD is divided into four short programs which can be viewed separately or all together. They are:

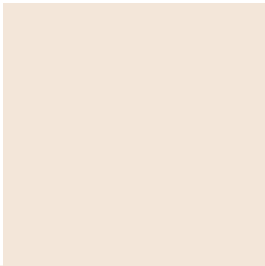
1. What do we value about Mosman's Heritage?
2. Mosman's Federation Past.
3. Mosman Between the Wars.
4. Today's Buildings: Tomorrow's Heritage.

Council has made the DVD available to view on its website, on Google Video or for purchase. The DVD is proving to be very popular among Mosman residents and heritage professionals.

Keep Australia Beautiful Sustainable Cities Awards

Mosman Council won a Highly Commended Award for its Heritage Management in the Keep Australia Beautiful Sustainable Cities Awards. The Award recognises the comprehensive framework in place to manage heritage in Mosman. This includes:

- Listing of all heritage items and conservation areas in its Local Environment Plan, and planning guidelines in Development Control Plans
- Ownership of significant heritage buildings, resources of the Local Heritage Fund (\$20000 pa), and ongoing assistance of a heritage advisor



- Awards program to highlight excellence in heritage conservation, and community involvement through the Heritage and Architecture Community Group, and
- Commissioning of heritage studies including an Aboriginal Heritage Study (2005) and Additional Heritage Items (2006)

Pittwater Council

Bilarong Cultural Festival

The Bilarong Cultural Festival, celebrating Indigenous spirit and culture was staged for the second year in March 2007, with Aboriginal and other traditional elders hosting workshops. The program also included dance performances, kid's festival, stalls and displays and the popular Parade of Light.



Parade of light at the Bilarong Cultural Festival.
Source: Pittwater Council

Pittwater Heritage Festival

The theme of this year's Heritage Festival in March was "Places in Context". The festival program included a range of activities, including guided walks to learn how, when and why Pittwater's landscape has changed from an Aboriginal homeland to 21st Century suburbs and a guided tour of early constructions, terraces and Beechworth cottage as well as other cultural sites at the Basin on Pittwater's Western Foreshores with local historian, Jim Macken.

Warringah Council

Ripple Festival

Warringah Council hosted the Ripple Festival, which included a series of concerts, movies and other events at Dee Why beach, Manly Dam, and the Warringah Aquatic Centre. This was an opportunity for residents to celebrate what is unique about our local water - its cultural significance and ecological importance.

As part of the festival more than 1,500 people attended the 'Treasured Water' twilight community event at Manly Dam in March 2007. Over 400 local school students, seniors and residents built colourful lanterns featuring animals that live in, and depend on, the water at Manly Dam. The candle-lit lanterns featured in the event along with Indigenous music and speeches from local school students.



Manly Dam's Treasured Water event celebrating water in Warringah. Source: Warringah Council

8 Towards Sustainability



Sustainability refers to the use of current resources in a responsible manner ensuring future generations will also be able to benefit from a safe, healthy, productive and diverse environment.

Each of the previous chapters contribute to an understanding of how the SHOROC region and Councils, are moving towards sustainability, however this chapter provides additional information by reporting on Council initiatives as well as the Australian Conservation Foundation (ACF) Consumption Index which provides an assessment of sustainability by identifying our progress in areas of greenhouse pollution, water use and our ecological footprint.

*Peppermint Angophora Forest Manly Dam.
Source: Warringah Council*

8.1 Condition

Our community's level of consumption of natural resources such as water, land and fossil fuels, is key to determining the impact of our community on the state of the environment.

The consumption index identifies the community's use of water and land and the amount of greenhouse gases they emit through human based activities. The index uses three indicators of consumption including greenhouse pollution, water use and our eco-footprint. The results shown in Figure 4 incorporate residential and transport consumption as well as consumption from the production of food, clothing and other manufactured goods.

Figure 4 shows that during 1998-1999 each of the SHOROC areas had a higher level of consumption than the state and national average. Updated figures are being released late in 2007 and these will be able to identify areas of improvement and areas that need attention. This higher level of consumption is being addressed through programs run by each Council. These programs are outlined throughout this SoE Report.

Data provided in Figure 4 is from the ACF's 1998-1999 survey, which is the most current information available for the entire region. This data shows that during this period in time the SHOROC areas were above the state and national averages for greenhouse pollution, water use and eco-footprint. Given that the data is nearly ten years old, it is likely that present-day consumption would be significantly different due to a variety of contributing factors such as population growth, water restrictions and lifestyle changes.

8.2 Pressures on Sustainability

Consumption of resources such as fossil fuels, water, paper, packaging, other non-renewable resources, and land, plays a significant part in determining the sustainability of our community. Unsustainable lifestyles and behaviours also place further pressure on the earth. SHOROC Councils are encouraging and supporting sustainability through on-ground actions and education for sustainability programs.



Figure 4: ACF Consumption Index for the SHOROC region Councils.

Council	Greenhouse Pollution (tonnes/person/year)	Water Use (usage litres/ person/year)	Eco-footprint (hectares/ person/year)
Manly	24.02	910,000	7.38
Mosman	27.75	1,040,000	8.07
Pittwater	20.55	810,000	6.73
Warringah	20.70	820,000	6.77
State Average	19.31	740,000	6.33
National Average	18.90	722,500	6.40

Australian Conservation Foundation (source: www.acfonline.org.au/consumptionatlas).

8.3 Responding to Sustainability Issues

Walk Against Warming

In November 2006, SHOROC Councils supported the Walk Against Warming event hosted by the Nature Conservation Council. This event was promoted to the community by way of posters and flyers displayed at community venues, advertisements in the local media, on Council websites and through staff newsletters. The event aimed to raise public awareness of global warming and encourage the State and Federal governments to take action.

Earth Hour

Earth Hour, an initiative of WWF-Australia, was supported by SHOROC Councils through promotion of the event in the local media and direct to residents. Councils wrote to schools and businesses in their areas encouraging them to participate in Earth Hour and contribute to a reduction in greenhouse gas emissions by switching off their lights and appliances for one hour at 7.30pm on 31 March. Some of the SHOROC Councils, including Mosman and Warringah, also participated in Earth Hour by switching off their own lights in the main Council buildings. Earth Hour aimed to raise awareness of energy use and its link to climate change, and to reduce Sydney's greenhouse gas emissions by 5% in 2007.

An Inconvenient Truth

Free public screenings of Al Gore's 'An Inconvenient Truth' were organised for Manly, Mosman and

Warringah Council residents at select venues. The screening of the film garnered a fantastic response from the community with a total of 944 people attending 9 sessions across the region. The film screening aimed to raise community awareness surrounding the issues of global warming and climate change and to provide information on the causes, scientific evidence available and the environmental and social implications of climate change. Pittwater and Warringah Councils also organised presentations of 'Australia's Inconvenient Truth', an Australian adaptation of Al Gore's slide show to the local community by trained climate change messengers. Pittwater's three presentations were for 95 people including local teachers involved in the Pittwater Climate Change Learning Community Project.

Eco-Schools Grants

Each year Manly, Pittwater and Warringah Councils provide funding to schools for environmental projects as part of the Eco Schools Grant Program. Schools can apply for funding of up to \$1,500 per school (Manly), \$1,000 (Pittwater) and \$2,500 (Warringah) for the development and implementation of a wide range of environmental projects including establishment of vegetable or native gardens, installation of rainwater tanks or environmental excursions. In 2006/07, Warringah Council provided over \$52,000 to 22 local schools, and Manly is engaging with many local schools to finalise their grants. The Environment and Stormwater Special Rate (ESSR) funds the program and over the past nine years Warringah Council has given local schools over \$300,000.

8 Towards Sustainability

Dogs Big Day Out

Manly, Pittwater and Warringah separately host dog days. These events provide residents and visitors with a forum for canine social interaction. The events also provide Councils with a valuable opportunity to communicate with dog owners and raise awareness of responsible dog ownership. Warringah's seventh annual Dog's Big Day Out was held at Frenchs Forest Showground on 15 October 2006. More than 4,000 people attended on the day.

Community Ambassador Programs

Both Ambassador programs presented by Manly and Pittwater Councils allow residents to become involved with their local environment, heritage and culture. The Ambassadors programs are a community education initiative engaging local residents in their surroundings, through an educational program.

Manly Council's Ambassador Program was run during the year. Volunteers were invited to a range of workshops, presentations and events that aim to educate this core group of volunteers on local issues such as sustainable living, local flora and fauna, stormwater, catchment management, Little Penguins and coastal management. Ambassadors were encouraged to share this information with their networks and to volunteer at events that enable them to share this knowledge with the wider community. Ambassadors were encouraged to keep watch of our natural resources and were provided with training to report any circumstances that could impact on our natural environment such as pollution incidents and water restriction breaches.

Pittwater Council ran the second Coastal Ambassadors Program in 2006 with sponsorship support from Coastcare and Hanson Constructions. The program is offered regionally to Surf Life Saving Clubs on the Northern Beaches and involved 12 clubs from Manly, Warringah and Pittwater. The focus of the course is on understanding our unique coastal marine systems. Graduates develop outreach activities, and pass their knowledge on to fellow club members and beach visitors. A wide range of initiatives have been developed, including Environmental Audits of Club Facilities and development of

Environmental Management Plans to enhance sustainability of their operations. The Coastal Ambassadors Program was awarded a High Commendation in the Australian Government's Coastal Custodians Awards in December 2006.

Northern Beaches Sustainable Living Program

Warringah and Pittwater Councils have been working with the Department of Environment and Conservation on an extensive environmental education campaign since October 2005 called the 'Northern Beaches Sustainable Living Program'. The project consisted of a series of workshops and guided tours to reinforce the link between the condition of the natural environment with our choices and behaviours at home. In 2006/07, 16 sustainability workshops and 18 guided walks through natural areas in Warringah and Pittwater were run in this program. A range of topics were covered in the workshops including natural cleaning, sustainable shopping, removing weeds, eco renovations and permaculture gardening.

Humpback Whale Migration Icon Project

In June 2007, SHOROC Councils participated in the Humpback Whale Migration Icon Project to raise community awareness of the importance of whales, their migration and the threats faced by whales. Each of the SHOROC Councils adopted a whale on behalf of their respective communities, named the whale and created a banner to display and welcome the whales during their migration. The whales were given Aboriginal names with specific meaning. Warringah's whale was named 'Kiah', Manly's whale was named 'Gawura', Pittwater's whale was named 'Kira' and Mosman's whale was named 'Gamarada' by Mosman Reconciliation, meaning friend in the Sydney Aboriginal language. Mosman Council also hosted a Whale Seminar, which included a series of guest speakers from the Department of Environment and Climate Change (DECC), International Fund for Animal Welfare (IFAW), Greenpeace, and the Australian Marine Mammal Research Centre, who discussed whale ecology, migration, threats and conservation measures. The banner created by 1st Mosman Scouts was also unveiled at the seminar.



Council adopted Humpback Whales, top to bottom: 'Gawura' Manly Council, 'Gamarada' Mosman Council, 'Kira' Pittwater Council and 'Kiah' Warringah Council

Delivering Local Responses

Manly Council

Sustainability Strategy

The 2006 Manly Sustainability Strategy – For Today and Future Generations was developed to ensure that council's decision making can only result in Ecologically Sustainable Development (ESD). 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. Originally adopted in 1998, the national and state award winning Manly Sustainability Strategy was developed out of a partnership between council and the community and is reviewed every three years. Most recent review helped to re-affirm and update the community vision *"A vibrant and inclusive community, which values its heritage and works together to create a sustainable lifestyle and environment for all to enjoy"*.

Manly's Sustainability Fair

Manly's Sustainability Fair is an initiative aimed at educating local residents to become more environmentally (and socially) sustainable in the way they live. 2007 saw the inaugural Manly Sustainability Fair launched where the theme was climate change. It was held in conjunction with the Manly Food and Wine Festival on Manly's Ocean Beach.

The Fair consisted of sustainability related exhibitors from many different sectors, including Council exhibits. A free tour of a local sustainable house and a free showing of Al Gore's documentary 'An Inconvenient Truth' was offered.

The Sustainability Fair attracted hundreds of people, with very positive comments received on the day from these people and also from exhibitors at the Fair.

Evaluation forms were given to every exhibitor. Feedback was 100% positive and some exhibitors took the opportunity to suggest improvements to the Fair which are being considered in the planning for the Sustainability Fair 2008.

8 Towards Sustainability

Sustainable House Day

Manly Council partnered with The Australian and New Zealand Solar Energy Society (ANZSES) during July 2006 to promote and participate in the national Sustainable House Day by opening three sustainable houses for viewing by the public to encourage residents to adopt sustainable design features in new and existing homes.

Sea Change for Sustainable Tourism

Sea Change for Sustainable Tourism is an innovative education program and accreditation scheme that has been developed specifically to improve the triple bottom line performance of the tourism business sector in Manly. The program is just one of the strategies adopted by Manly Council to address the many management issues faced as a result of the immense popularity of Manly as a tourist destination.

Sea Change is free to local businesses and involves undertaking a complete business sustainability assessment and development and implementation of an environmental management plan (EMP). Participants are eligible for endorsement under the program's 5-star accreditation scheme - each star represents completion of one stage of the program.

Sea Change commenced in Manly in September 2005. As at the end June 2007 thirty three local operators were participating in the Sea Change program.

Sea Change for Sustainable Tourism was initially developed through a collaborative partnership between Manly Council, the University of Western Sydney and Manly Chamber of Commerce under grant funding from the New South Wales Government's Environmental Trust. Based on the successful outcomes of the program, the Environmental Trust is now pursuing dissemination of the program on a state-wide basis.



Manly's Sea Change for Sustainable Tourism accreditation awards ceremony. Source: Manly Council

Manly Environment Centre (MEC)

The Manly Environment Centre (MEC) shopfront started in 1991 as a unique combination of community, Council and local corporate sponsors. As the first national suburban environment centre it is well established as a pro-active organisation dedicated to the health of our local environment. An action and education based centre, it houses possibly the largest collection of environmental education materials accessible to the community in Australia. Thousands of free reference materials are available to the community and the MEC organises educational programs, events and projects to protect and enhance the environment. During 2006/07 these activities engaged thousands of local residents, overseas visitors, local tourists, day trippers, students and children. The MEC offers work experience opportunities for a range of overseas, regional and local students in all fields of the environment. The staff and volunteers also actively seek out the community and in the past twelve months the MEC helped inspire and lead the community towards sustainability by presenting a variety of events, talks and workshops.

Mosman Council

Sustainability Advisory Group

In March 2007, Council resolved to establish a Sustainability Advisory Group to assist Council in integrating sustainability into policy, planning, management and operational frameworks, and to provide up-to-date information and advice to Council on present and future sustainability issues and solutions. The Group structure consists of three staff, four councillors, six community members with knowledge and experience in areas of sustainability, and six professional experts in the sustainability field. The first meeting of the Group was held in early July 2007.

Greenhouse and Sustainable Purchasing Action Plan

As a component of the CCP Program, Council developed and adopted a Greenhouse and Sustainable Purchasing Action Plan. The Plan was adopted in June 2006 and actions in the Plan have been implemented since July 2006 and will continue until all actions have been completed. Actions that have been implemented include



installation of a more energy efficient econocycle air-conditioning system in the Library, purchase of 100% recycled paper for all office use across Council, lease of office equipment with ability to print/copy double-sided and consist of low power modes, staff education campaign, and the printing of sustainable transport options on Council business cards.

An Ecological Tour of Sandy Beaches

In January 2007, Dr Arthur Dye from EnviroAware presented 'An Ecological Tour of Sandy Beaches', as a component of the Summer Activities Program. The talk provided the community with interesting information and raised awareness on the natural processes that occur on our sandy beaches, and the variety of plants, animals and other organisms that make sandy beaches their home.



Organisms at Chinamans Beach. Source: Mosman Council

Schools Education

In July 2006, council finalised the Energy Efficient Schools Project, undertaken in conjunction with Manly, Ku-ring-gai and Hornsby Councils. The project involved an energy audit of two schools per local government area, a report recommending energy efficient measures that could be undertaken by the school, and schools education on energy use, its link to greenhouse gas emissions and climate change, and ways to be energy efficient in the school environment. Using seed funding from the project, each school implemented one recommendation from the report to reduce energy consumption.

Ecological Footprint

To raise awareness of sustainability in Mosman, in 2005 council conducted the Living within the Means of Nature: Ecological Footprint Project. The use of the Ecological footprint to measure the use of resources within Mosman was a successful way in which to quantify the impacts that the daily lives of Mosman residents have

upon the Environment. A booklet produced as a component of the project was distributed across the final section of Mosman in early 2007. The concept of the ecological footprint and the outcomes of the calculation and household project are still being used by council as a method of educating for sustainability.

Pittwater Council

Pittwater 2020 Strategic Plan

Pittwater is currently developing a new community driven Strategic Plan within a sustainability framework. Pittwater 2020 Strategic Plan will set out the vision and strategic direction for the future of the Pittwater LGA. The Strategic Plan will become Pittwater's guiding document and will incorporate all existing planning documents to provide an overarching strategic framework and drive all future planning and direction of both council and the community.

The process has involved extensive community consultations, including a forum in November 2005 and again in November 2006 to develop strategic goals, actions and initiatives against a range of sustainability themes. During 2006/07, a community reference group has been working with councillors and staff to pull the results of the various consultations together to create a "living document" that will directly link the community's vision and priorities with the operation of Council to ensure that these are embedded within Council operations.

Coastal Environment Centre

The Coastal Environment Centre (CEC) promotes sustainable management of the coastal zone on a regional basis through its school environmental education programs such as 'Our Coast', curriculum linked Science and Geography Fieldtrips for high schools and community environmental education programs such as Coastal Ambassadors.



Learning about endangered saltmarsh at Careel Bay with the CEC. Source: Pittwater Council

8 Towards Sustainability

The CEC engages with and educates people at the local level to equip community members with the knowledge, skills and motivation they need to manage their property, household, business and lifestyle in a more sustainable way. During 2006/07, over 13,000 people undertook environmental education and sustainable living programs through the CEC.

Pittwater Sustainability Working Party

The Pittwater Sustainability Working Party has been meeting monthly since February 2004, and was previously the Local Agenda 21 Committee of Council. The group works in partnership with Council to promote action for sustainability at the local level, through reducing environmental impacts and promoting community well-being within a sustainability framework. Projects in 2006/07 included researching and promoting mobile phone recycling, E-waste recycling, promoting climate action events, making a submission to the Australian Government's Inquiry into a Sustainability Charter, and providing input into development of Pittwater's Sustainability Plan through the community reference group.

Industry Audit and Education Program

During 2006/07 Council continued environmental inspections mainly concentrating on marinas and building sites. The major focus of the marina inspections is to prevent possible pollution from the hardstands and slipways from entering the Pittwater estuary. Council also provided successful builder education nights which mainly focused on sediment control, and responded to pollution complaints.

Warringah Council

Awards

Warringah Council won a number of awards and grants during 2006/07. In August 2006, Council was awarded Runner Up in the Partnership Category of the Keep Australia Beautiful Sustainable Cities Award for the 'Keeping Our Dam Alive' Manly Dam education program. September saw Council take out two awards with the national Silver Environs Sustainability Interface Award for the 'Protecting Our Threatened Species - Duffy's Forest Management Program', and a Highly Commended Award in the Community

Engagement category of the NSW Sustainable Water Challenge for the 'Water Is Life - Don't Waste a Drop' water conservation campaign. In 2007 Warringah's Dee Why/Long Reef Beach won the Keep Australia Beautiful Clean Beach Challenge Award for the overall Cleanest Beach in the Sydney region.

Hilltop to Headland Lecture and Workshop Series

Over 800 Warringah residents enjoyed the eleventh year of the popular Hilltop to Headland Environmental Lecture Series. This year the free lectures were each complemented by a hands-on workshop which enabled residents to really get a grip on sustainability. This Hilltop series covered a wide variety of topics including natural disasters, whale strandings, life under Long Reef, nature photography, growing food in the city, building wildlife friendly gardens, the future of water, eco renovations, amphibians and building a frog pond, green cleaning and nocturnal animals.

World Environment Day Community Expo - Sunday 27 May 2007

Over 20,000 people attended Council's second Expo and enjoyed over 80 environmental stalls and organisations, eco-themed live shows and entertainment, informative workshops, organic food and drink. Issues covered on the day included water management and conservation, native planting, organic materials, recycled clothing, alternative transport, solar power, eco-tourism and conservation volunteering. The Expo was an important partnership endeavour for Warringah Council with almost 100 local businesses and not-for-profit organisations working together to deliver the event. Feedback suggests the Warringah community is very supportive of activities that raise public awareness of sustainability issues and solutions.

World Environment Day Youth Expo 2007

The 2007 World Environment Day Youth Expo was held at James Meehan Reserve, Dee Why Beach on 23 and 24 May. The Expo aimed to assist students, teachers and school communities to understand and participate in sustainable environmental practices in all aspects of their lives. Approximately 1,500 year 5 and year 6 school students and 60 teachers attended



over the two-day period. Twenty-five different workshops were on offer, covering topics such as catchment management, bushland management, sustainable transport, renewable energy, wildlife conservation, sustainable purchasing and native gardening. Manly Council provided a Penguin Aware workshop for attendees. All students attended five of the workshops. Feedback from this event was overwhelmingly positive.



*Warringah's Community Expo was a hit with people of all ages.
Source: Warringah Council*

Manly Dam Education Program

Warringah Council's 'Keeping Our Dam Alive' education program focussing on Manly Dam was extended in May 2006 for an additional year. A specific and varied program was devised to educate local residents and visitors on why Manly Dam is such a special place, and how they can help look after the bushland and water quality of the Dam. The educational campaign included the development of new educational materials such as a 32 page booklet, an 80 page education kit for schools, new maps, posters, educational shelter, interpretive bushwalk and local area signage, community days and school excursions, early-morning bird watching walks, and after-dark spotlight walks, weed workshops, a photography competition, a new page on Council's website, quarterly newsletters, and an advertising campaign.

Warringah Environmental Education Newsletter (WEEN)

Warringah Council produces the Warringah Environmental Education Newsletter four times each year. This newsletter is a valuable source of information for schools and residents interested in sustainable living and Council's environmental education programs.

Kids Care Calendar

The Warringah Kids Care Calendar is an annual environmental art competition for primary school students in Warringah. Students are asked to design a poster to highlight how we can all work together to protect our environment and the winning artworks are featured in a 13-page calendar. The 2007 calendar was distributed to all Warringah students in years K – 6.



*Warringah Kids Calendar Competition winners 2007.
Source: Warringah Council*

Industry Audit and Education Program

During 2006/07 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.

Environmentally Sustainable Design and Management of Council's Built Assets

Council has produced a new Operational Management Standard that aims to ensure that the design and use of Council buildings and other built assets is carried out in an environmentally sustainable manner. This includes new Council assets as well as alterations or additions to existing assets and applies equally to staff and other user groups.

Environmental Sustainability Policy

Council adopted its Environmental Sustainability Policy which is designed to both recognise the existing practices that Council has in place to consider sustainability in the way Council does business and will also set a policy platform to drive continual change and improvement within the organisation in this important policy area.

9 Future Directions

This report has provided a snapshot of the condition of the SHOROC regional environment during the 2006/07 reporting year. It has identified pressures that have affected the condition of these environments and the responses that have been implemented at both a regional and local level to address those pressures.

During the development of the first regional SoE a number of challenges were encountered, such as the different methodology of all four Council's reporting techniques, which resulted in the comparisons of previous indicators being unachievable. This has been overcome through the development of a new set of environmental indicators, for which all four SHOROC Councils can provide meaningful data. This has meant, however, that no comparisons or trend analysis has been undertaken this year, to provide an indication of whether the state of the environment is improving or not. This report does, however, establish baseline data for trend analysis to be undertaken in future years.

The achievements in sustainability and leadership reported in this document have been possible through SHOROC Councils adopting an holistic approach on environmental issues and involving the community in Council-run environmental awareness programs.

Over the next year the region will continue to face the same pressures on its environment, however, the strengthening of environmental initiatives and programs of the SHOROC Councils, as well as supporting and encouraging residents to change their behaviour will lead to a higher level of sustainability for the community and environment.

10 References

Australian Bureau of Statistics, population data. www.abs.gov.au

AGL (2006-2007). Total Council Energy Use (kWh) <http://www.agl.com.au/AGLNew/default.htm>

Australian Conservation Foundation (1998-1999). Consumption Atlas
www.acfonline.org.au/consumptionatlas.

Australia International Council of Monuments and Sites (ICOMOS), (1999). The Burra Charter: the Australian ICOMOS Charter for place of Cultural Significance.

Commonwealth of Australia (1996). The National Strategy for the Conservation of Australia's Biological Diversity, Canberra: DEST.

Department of Environment and Climate Change (2007). Species, populations and ecological communities database, <http://www.threatenedspecies.environment.nsw.gov.au>.

Department of Environment and Water Resources, (2005-2006). National Pollutant Inventory, <http://www.npi.gov.au/>.

EC Sustainable Environmental Consultants – SHOROC Waste Audit (February 2006 – February 2007).

Energy Australia (2006-2007). Total Council Energy Use (kWh)
<http://www.energy.com.au/energy/ea.nsf/Content/NSW+Home>

NSW Environmental Protection Agency (2006-2007). BeachWatch Program,
<http://www.environment.nsw.gov.au/beach/>.

NSW Road and Traffic Authority (2007). NSW Local Government Area Vehicle Registrations,
<http://www.rta.nsw.gov.au/publicationsstatisticsforms/downloads/registration/>

Shore Regional Organisation of Councils (SHOROC), Region Map,
<http://www.id.com.au/shoroc/commprofile/>.

SHOROC Waste Audit (Feb 06-Feb 07). EC Sustainable Environmental Consultants.