



# State of the Environment

SUPPLEMENTARY  
REPORT  
2010-2011

# Mayor's Message

Welcome to Rockdale City Council's State of the Environment Report for the period from 1 July 2010 to 30 June 2011. This report provides valuable information about the state of our local environment. It also includes details of Council's initiatives to address environmental issues and improve our environment.

Over the past year Council has undertaken a number of projects to protect and enhance our natural environment, including installation of water quality improvement devices, bushland restoration activities, and implementation of actions to reduce use of resources such as water and energy. Council also continues to maintain its accredited Environmental Management System for its depot and outdoor operations.

Council continues to be committed to responding to climate change through the monitoring and management of Council's energy use, participation in the Sydney Coastal Councils Group Coastal Inundation Project, and the monthly meetings of the Climate Change and Environment Advisory Committee, convened by Councillor Lesa de Leau. This committee is attended by Councillors and key staff to discuss environmental issues and to progress sustainability opportunities for the City of Rockdale.

Assisting our community to live more sustainably is a key goal. To achieve this, Council offered a wide range of education programs in 2010-11 including tours of our wetlands, workshops about protecting bushland and waterways, and environmental education demonstrations to schools and residents to increase awareness of the need to reduce environmental impacts.

All of these actions are detailed in our continually evolving Environment Plan. You can view this plan on our website at [www.rockdale.nsw.gov.au](http://www.rockdale.nsw.gov.au)

The challenge to incorporate more sustainable environmental practices into all our activities continues. We all have a part to play in protecting and enhancing our local environment.

I am pleased to present the State of the Environment Supplementary Report for 2010-11.

Yours faithfully



**Councillor Bill Saravinovski**  
Mayor



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## Appendix I - State of the Environment Report Scorecard 2010-2011

# I. Introduction

Environmental management is integral to Council's core business. This is primarily because Council is responsible for a wide range of operational and regulatory matters including planning and development control; operation and maintenance of infrastructure such as parks, roads, community facilities; and development and implementation of environmental policies and programs.

It is also Council's responsibility to manage and reduce environmental impacts in accordance with the charter set out in the *Local Government Act (NSW) 1993 (Section 8)*. In recognition of the important role local government plays in environmental management, local councils in NSW are required by the *Local Government Act 1993* to produce a State of the Environment (SoE) Report.

SoE reporting provides Council with the opportunity to assess the condition of the local environment, the human impacts on the environment, and report on the actions of Council and our community to address environmental issues. The information contained in SoE reports also provides the necessary foundation for strategic environmental planning and the development of local environmental policies and programs.

SoE reports are based on a 'state-pressure-response' model. Information is provided on the 'state' or condition of the environment for each environmental sector (air, water, noise etc.), the 'pressures' that human activities place on their immediate environment, and the 'responses' taken to address these pressures.

This report is a 'supplementary' SoE report, covering the period July 2010 to June 2011. 'Comprehensive' SoE reports are prepared every four years, within 12 months of the Council election. The most recent comprehensive report was prepared for the year 2008-09. Comprehensive SoE reports are required to incorporate the necessary baseline and background information, while the annual supplementary reports are to outline any relevant changes in the local environment that occurred over the past year.

From 2012 there will be changes to the current reporting in the SoE. A new planning and reporting framework for NSW local government has been introduced, and one of the main aims of the new framework is to ensure a strategic and integrated approach to planning and reporting by local councils. For SoE reporting this means all reports will be comprehensive reports, and are now due every four years. SoE reports will report on the achievement of environmental objectives as measured by their indicators of performance. These environmental objectives and indicators of performance come from Rockdale City Council's 'City Plan 2011-2025'. The first SoE report of this kind will be produced in 2012 and will report on the period 2009 to 2012.

This style of reporting will enable the community to clearly see the effect Council's actions are having on achieving environmental objectives.

# 2. Land and Built Environment

## LAND USE AND DEVELOPMENT

The majority of land within the City of Rockdale is used for residential purposes, although there are a number of important industrial and commercial precincts and areas of open space. In the period 1 July 2010 to 30 June 2011, 625 Development Applications were approved and 393 Construction Certificates were determined. This is a decrease of 51 development applications since the last reporting period. There has also been a decrease of 12 Construction Certificates determined over the reporting period. In addition, 68 applications were lodged for Complying Development.

Major development applications continue to be seen in key commercial centres and in areas near public transport. A development application has been approved in the Bonar Street Precinct that proposes a residential development of 225 dwellings. A new Concept Plan for Discovery Point, a key development precinct in Wolli Creek Development Area, was approved as a major development under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

As part of the NSW planning reform, the NSW Department of Planning and Infrastructure released the State Environmental Planning Policy (SEPP) Exempt and Complying Development Codes in 2009, which makes provision for small scale development to be carried out as Complying Development. The Codes were further amended in February 2011 to cover housing development on lots as small as 200m<sup>2</sup>. As expected, the number of complying development certificates issued in this reporting period was significantly increased.

Council is currently waiting for the final approval of a new city wide plan, the draft Rockdale Local Environmental Plan (LEP) 2011. The draft LEP was prepared in accordance with the NSW Government's Standard Instrument and informed by a series of background studies including the Land Use Strategies and the Built Form Capacity Analysis. Council, following the adoption of the draft LEP, approved the draft Rockdale Development Control Plan (DCP) 2011 which supports the draft LEP and provides further planning controls for development. It applies to all land in the City and replaces the current system of more than 50 Council DCPs, Codes and Policies. The draft LEP and DCP, once approved, will become a new planning framework that delivers the vision for the City of Rockdale and implements the objectives, and dwelling and employment targets of the Sydney Metropolitan Strategy. It is anticipated that the draft LEP and DCP will take effect from late 2011.

A Rockdale Town Centre Masterplan is currently being developed to identify the desired future character and role of the centre and to develop a strategy for the delivery of desired outcomes. The draft Masterplan is scheduled to be placed on exhibition in early 2012.

## CONTAMINATED LAND

Council has an important role to play in the management and prevention of contaminated land. The areas prone to land contamination within the City of Rockdale include former waste disposal and industrial sites.

Council adopted a Contaminated Land Policy in June 1999 which was updated in September 2000. The Policy establishes Council's obligations as well as procedures for the identification of potential land contamination, its management within the planning and development control framework, and the recording of related information. The policy was further reviewed and updated in 2009 to provide more transparent information contained in the Section 149 Certificate. The planning certificate now includes an extra notation which identifies any contamination report received and being assessed by Council.

Land contamination continues to be an issue in an area of West Botany Street near Spring St and Lynwen Crescent, Banksia. Part of Council's response is an inclusion in the draft Rockdale LEP 2011 to rezone a group of residential properties for medium density developments. The objective of this proposed rezoning is to enable redevelopment of the land which would also provide for remediation of affected properties.

## TRAFFIC AND TRANSPORT

The City of Rockdale contains major transport corridors in the Sydney region. Traffic from south and south-west Sydney heading to the CBD, Port Botany and Sydney Airport passes through the City. All the major roads through the City of Rockdale are congested to varying degrees during peak hours and journey times may be slow off-peak when kerbsides are used for parking. This is increasing delays for bus services, while passenger rail services are filled to capacity, placing further pressure on the road network.

A relatively high proportion of traffic through Rockdale is heavy vehicles, including container trucks heading to and from Port Botany, other large trucks servicing industrial areas, and smaller trucks and commercial vehicles distributing goods from the port, airport and other areas.

As Sydney's population grows, transport demands will also increase. Although the State Government is responsible for managing major roads and operating public transport services, Council still has an important role to play by promoting sustainable transport.

Council is preparing an Integrated Transport Plan that includes advocacy, policy and localised infrastructure improvements. As part of the draft Transport Strategy, Council has recently prepared a parking strategy for the City with the aim of managing parking supply and demand in a way that balances sustainable transport with the need to promote the viability of local centres. The recommended planning controls for new development have been incorporated into the draft Rockdale DCP 2011.

Traffic and transport pressures include:

- ◆ Port Botany expansion - the proposed expansion of Port Botany would result in a range of impacts including more trucks, associated transport noise over longer periods of time and disturbances alongside rail corridors.
- ◆ Sydney Airport Master Plan 2009 forecasts average annual growth rates over the planning period are 4.2 per cent for passengers and 2.0 per cent for passenger aircraft movements. Dedicated freight aircraft movements are forecast to increase to 10,400 in 2029 which represents an annual average growth rate of 1.3 per cent.
- ◆ The Roads and Traffic Authority (RTA) released the M5 Transport Corridor Study in early 2010 for public comment. There are many areas of concern including the lack of a long term, sustainable transport strategy for the area, the lack of improvement to freight access to Port Botany, the impact of any extension on the wetlands in the northern section of the City, the promotion of private vehicle travel over more sustainable transport options, the impact on the City's roads and centres and issues with air quality.
- ◆ F6 freeway corridor - In 2003, the then Department of Transport and the Roads and Traffic Authority jointly commissioned the F6 Corridor Public Transport Use Assessment study. The NSW Government has decided that the F6 Corridor (which has been in place since 1951) be retained to provide capacity for possible future transport use and/or open space. Such uses could include a road, a bus way, a cycleway, light rail and/or heavy rail. The Government, however, has no immediate plans for any transport project in the F6 Corridor.

Close liaison with St George regional councils on localised traffic and transport issues has continued. Council has also continued to lobby NSW Government transport authorities over forward planning of regional transport and to remedy current transport deficiencies. An important role for the Council is advocating at other levels of Government and amongst transport service providers to ensure continual improvements, infrastructure provision and the minimisation of community harm arising from development.

# 3. Water

## State

The highly urbanised nature of the City of Rockdale results in heavy pressures on waterway health. These pressures are classified as 'diffuse sources' (e.g. urban runoff) or 'point sources' (e.g. industrial discharges or sewage overflows). During rainfall events impervious surfaces such as buildings, paving and roads allow the flow of a significant volume of water as runoff, which enters the stormwater system. All of this stormwater ends up in a receiving water body such as creeks or rivers and eventually flows into Botany Bay. The land area drained by a river or body of water is known as the catchment. Within the City of Rockdale there are two main catchments that flow into Botany Bay - the Cooks River and the Georges River. These two catchments are further divided into ten sub catchments (Figure 3.1).

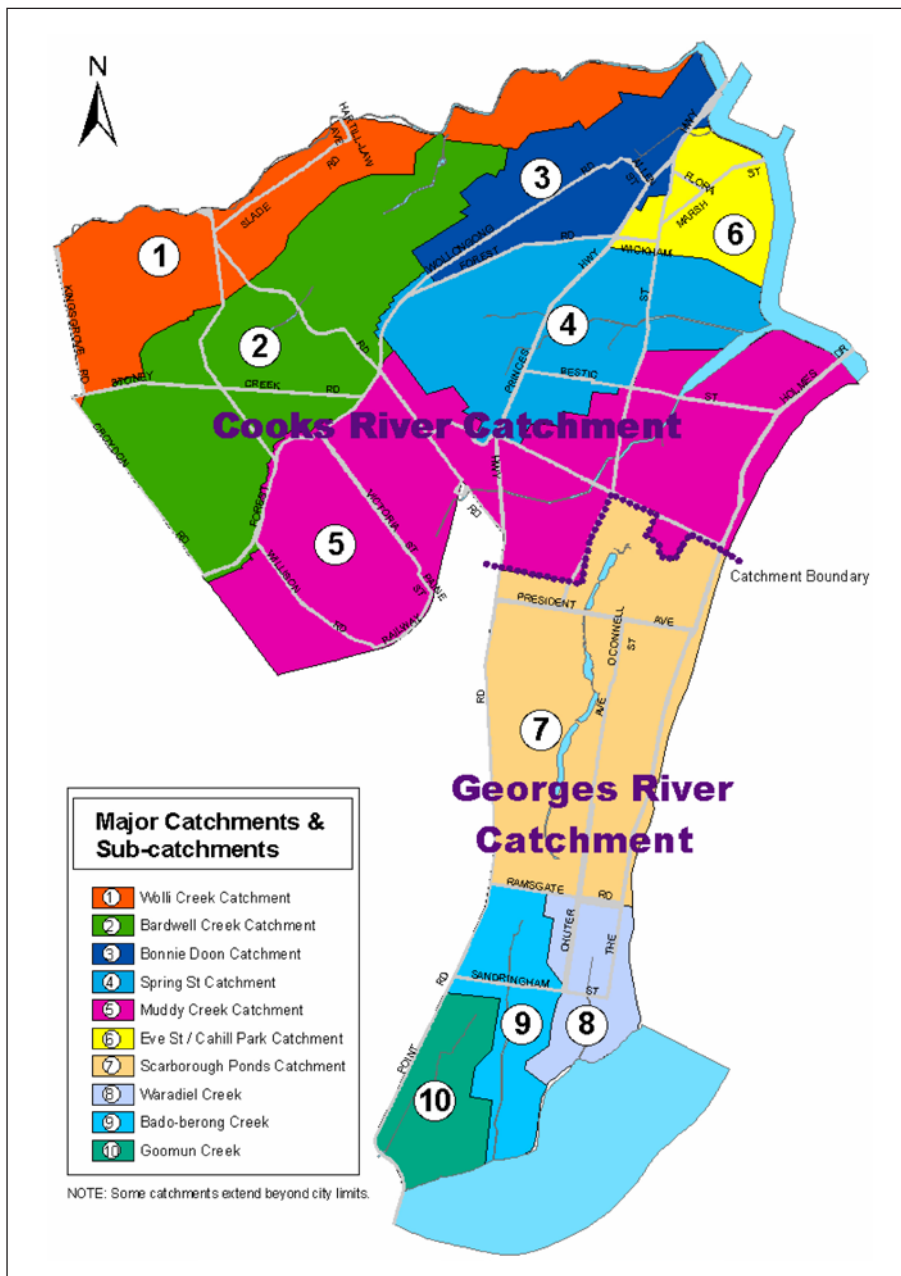


Figure 3.1 Major catchments and sub catchments in the City of Rockdale.

## **WATERWAYS**

### **Cooks River**

The Cooks River is a major waterway in the City of Rockdale and drains a catchment area of just over 100 km<sup>2</sup>. Of the 13 Councils located in the catchment, the City of Rockdale has the second largest proportion of the Cooks River catchment (19.9%), after the City of Canterbury. Two thirds (66%) of the City of Rockdale is part of the Cooks River catchment (ie its stormwater flows into the Cooks River). The Cooks River originates in Bankstown and flows 23 km east to discharge into Botany Bay just south of Sydney Airport. The major tributaries of the Cooks River are Wolli Creek, Bardwell Creek, Muddy Creek, Alexandra Canal, Cup and Saucer Creek, Cox's Creek and Freshwater Creek.

The Cooks River catchment is highly urbanised and has a history of intensive land use ranging from residential to heavy industry. Little remains of the original vegetation. Residential land use is the predominant zoning within the catchment and the highest portion of residential developments is detached low density dwellings. The major portion of industrially zoned land is concentrated in the Port Botany area, along Alexandra Canal within Tempe and the southern portion of Strathfield Council area. Thin corridors of open space line the Cooks River and many of its tributaries. Wolli Creek, Bardwell Creek, and Muddy Creek each flow through the City of Rockdale.

### **Wolli Creek**

Wolli Creek is a tributary of the Cooks River and rises in Beverley Hills adjacent to Canterbury Golf Course. Wolli Creek takes the form of a concrete lined channel downstream of Kingsgrove Road to Bexley Road. The lower portion of the creek to the Cooks River is largely in a 'natural' state forming a defined but winding watercourse through the Wolli Valley. The creek continues in an east-north-easterly direction, gradually widening until it enters the Cooks River at Tempe Railway Bridge. A small concrete weir at Turrella separates the estuarine part of Wolli Creek from the upper freshwater reaches. The sub catchment of Wolli Creek is 15.5 km<sup>2</sup> and is primarily residential with small industrial areas adjoining the creek at Turrella.

### **Bardwell Creek**

Bardwell Creek is the major tributary of Wolli Creek and is a sub catchment of around 6.4 km<sup>2</sup>. The upper reaches of Bardwell Creek are in Hurstville and drain in a north easterly direction through the suburbs of Hurstville, Bexley North, Bardwell Park and Turrella. The creek flows through Bexley Golf Course in a narrow concrete lined drain and passes under Stoney Creek Road. Downstream of Eilerslie Road, the creek runs in a semi-natural watercourse. The Creek joins Wolli Creek as it passes under the Railway Bridge near Hannam Street, Arncliffe.

### **Muddy Creek**

Muddy Creek is the last tributary of the Cooks River before it discharges into Botany Bay. Muddy Creek drains stormwater runoff from the suburbs of Carlton, Kogarah, Rockdale, Banksia, Brighton Le Sands and Kyeemagh. This catchment is 5.7 km<sup>2</sup> in area. Muddy Creek takes the form of a concrete lined channel from Hurstville to Bestic Street, Rockdale.

### **Botany Bay**

Rockdale City Council is located on the foreshores of Botany Bay stretching from Kyeemagh in the north to Sans Souci in the south. The bay is a roughly circular body of water approximately 8-9 km in diameter. The Cooks River discharges into Botany Bay in the northwest corner and the Georges River enters in the southwest corner. Scarborough Ponds also discharges directly into Botany Bay near Florence Street, Ramsgate Beach.

Overall the catchment of Botany Bay is approximately 1,100 km<sup>2</sup>. Since European settlement, the Bay has undergone substantial changes. Roughly half of the shoreline and bed of Botany Bay has been sacrificed to meet the needs of aircraft and shipping developments. Major engineering modifications commenced in the 1950s, changing the physical characteristics of the Bay.

## Georges River

The Georges River is a major waterway and forms the southern boundary of the City of Rockdale. The river rises 5 km southeast of Appin, near Campbelltown and winds for 96 km until it reaches Botany Bay. The Georges River catchment is approximately 920 km<sup>2</sup> and is highly urbanised. It includes the following land uses: residential, industrial manufacturing, waste disposal, market gardens, army firing range, mining, commercial fishing operations, and a nuclear research facility. The catchment, however, also retains some large areas of natural bushland.

The Georges River is divided into three main sections: the upper river (the freshwater section from Appin to the weir at Liverpool), the middle river (from the Liverpool weir to Salt Pan Creek) and the lower river (Salt Pan Creek to Botany Bay). The southern part of the City of Rockdale is located in the lower section of the Georges River catchment, where the river discharges into Botany Bay.

There are three main waterways in Rockdale's portion of the Lower Georges catchment: Waradiel Creek, Badoberong Creek and Goomun Creek. Waradiel Creek discharges into Sandringham Bay on the Georges River, Badoberong Creek drains into the Georges River at Riverside Drive, and Goomun Creek passes under Rocky Point Road and discharges into Kogarah Bay.

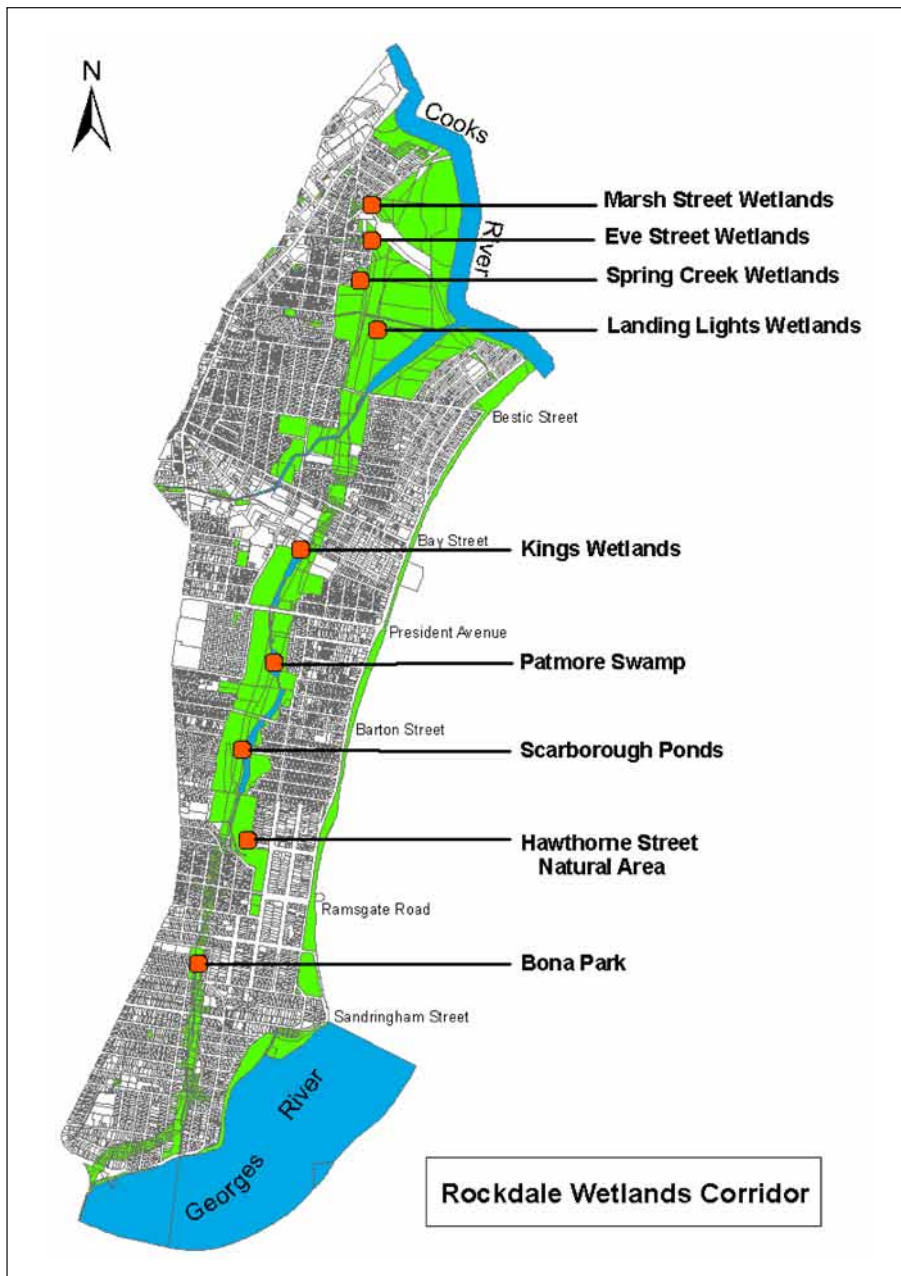


Figure 3.2 Rockdale City Wetlands Corridor.

## Rockdale Wetlands and Recreation Corridor

Wetlands are areas of land inundated with water on a temporary or permanent basis. They are important for nutrient recycling, improving water quality, flood mitigation and providing habitat. The Rockdale Wetlands and Recreation Corridor is a significant area of wetlands and open space that forms an almost continuous link from the Cooks River in the north to the Georges River in the south.

The original wetlands in the Rockdale City area have been extensively modified due to past landfill activities and urban development. Figure 3.2 shows the remaining wetlands found along the corridor. The wetlands corridor plays an important role during major rainfall events and is split into three drainage catchments:

- ◆ North - Muddy Creek and Eve Street wetlands; tidal and estuarine flowing north into Cooks River.
- ◆ Central - Predominately wetlands - Kings Wetland, Patmore Swamp and Scarborough Ponds, draining east into Botany Bay.
- ◆ South – Bado Berong Creek which drains south into the Georges River.

## WATER QUALITY

At a number of sites within the City of Rockdale surface water quality sampling is undertaken by Streamwatch groups. In 1999 and 2007-08, Council undertook water quality studies within the Rockdale City area.

Water quality testing has found that a number of waterways have high levels of nitrogen and phosphorous. The presence of nitrogen and phosphorous in waterways is likely to be the result of organic waste breaking down such as plant matter, detergents and fertilisers and is typical of highly urbanised catchments.

The high level of nutrients in Australian waterways is a problem because Australian waterways in their natural state are generally low in nutrient content. Consequently, the organisms living in the waterways have adapted to low nutrient conditions.

Council undertakes site specific water quality sampling when required, for example, in response to odour complaints or the aesthetics of wetlands. In the 2010-11 year water quality studies were performed at a number of sites in response to community feedback about odours and nuisance aquatic plant growth at Bado Berong Creek and Bicentennial Ponds. These are discussed below in this report.

### Water Quality Complaints

During 2010 -11 Council received 28 complaints from the community about water related issues. Most complaints were directly related to ground water issues and general surface water quality. The Office of Environment and Heritage (OEH), formerly known as Department of Environment, Climate Change and Water (DECCW), also received nine reports of water pollution incidents occurring in the City of Rockdale which is the same as the previous year. The water incident complaints received by Council were largely in relation to stormwater pollution incidents.

## GROUNDWATER

Groundwater in the broad sense is all water that occurs below the land surface, and it plays an important role in maintaining healthy waterways, rivers and wetlands. Groundwater is also an ongoing source of water during seasonally dry periods.

Previous research undertaken by the Sydney Coastal Councils Group has identified that the City of Rockdale is dominated by coastal sand beds. Coastal sand beds contain significant groundwater resources because they have a subsurface characterised by sandy material that is highly permeable and porous. They are also very vulnerable to contamination.

## BEACHWATCH

The OEH completes water quality testing at swimming enclosures in Botany Bay and the Lower Georges River as part of its Beachwatch program.

OEH now reports under the new National Health and Medical Research Council's Guidelines for Managing Risks in Recreational Waters (2008). Unlike the previous guidelines (which reported percentage compliance), the new guidelines report a Beach Suitability Grade from Very Good through to Very Poor. The Beach Suitability Grade is determined from a combination of microbial water quality data and a sanitary inspection of the swimming location.

### Beach Suitability Grades

The Beach Suitability Grade provides an assessment of the suitability of a swimming location for recreation over time. There are five grades:

- ✦ Very Good – Location has generally excellent microbial water quality and very few potential sources of faecal pollution. Water is considered suitable for swimming for almost all of the time.
- ✦ Good – Location has generally good microbial water quality and water is considered suitable for swimming for most of the time. Swimming should be avoided during and for up to one day following heavy rain at ocean beaches and for up to three days at estuarine sites.
- ✦ Fair – Microbial water quality is generally suitable for swimming, but because of the presence of significant sources of faecal contamination, extra care should be taken to avoid swimming during and for up to three days following rainfall or if there are signs of pollution such as discoloured water, odour, or debris in the water.
- ✦ Poor – Location is susceptible to faecal pollution and microbial water quality is not always suitable for swimming. During dry weather conditions, ensure that the swimming location is free of signs of pollution, such as discoloured water, odour or debris in the water, and avoid swimming at all times during and for up to three days following rainfall.
- ✦ Very Poor – Location is very susceptible to faecal pollution and microbial water quality may often be unsuitable for swimming. It is generally recommended to avoid swimming at these sites.

The Beach Suitability Grade is determined from a combination of microbial assessment (water quality measurements gathered over previous years) and sanitary inspection (identification and rating of potential pollution sources at a beach) using the matrix below.

### Microbial Assessment Category

The Microbial Assessment Category is determined from the 95th percentile of a dataset of at least 100 Enterococci data points. There are four Microbial Assessment Categories (A to D).

### Sanitary Inspection Category

The aim of a sanitary inspection is to identify all potential sources of faecal contamination at a swimming site and assess the risk to public health. It is a qualitative assessment, and, to some degree, correlates with the microbial water quality data. Sources considered in the Sanitary Inspection include: bather sheds, toilet facilities, stormwater discharges, sewage treatment plant discharges, sewage overflows and chokes, on-site wastewater systems, wastewater re-use, river discharges, lagoon/lake discharges, boats and animals. Through the sanitary inspection process, beaches are categorised to reflect the likelihood of faecal contamination. There are five categories, ranging from Very Low to Very High.

Table 3.1 Beach Classification Matrix.

		Microbial Assessment Category			
		A ( $\leq$ 40 cfu*/100mL)	B (41-200 cfu/100mL)	C (201-500 cfu/100mL)	D ( $>$ 500 cfu/100mL)
Sanitary Inspection Category	Very Low	Very Good	Very Good	Follow Up	Follow Up
	Low	Very Good	Good	Follow Up	Follow Up
	Moderate	Good	Good	Poor	Poor
	High	Good	Fair	Poor	Very Poor
	Very High	Follow Up	Fair	Poor	Very Poor

\*cfu – colony forming unit

The 2011 year saw an improvement at Brighton le Sands Baths as the Beach Suitability Grade changed from Fair in 2010 to Good in 2011, and the Sanitary Inspection Category dropped from High to Moderate (see Table 3.2). There has been a slight improvement at this site since 2000 which is likely to be due to the improved management of stormwater in the area.

The five other locations maintained the same results with all having a beach suitability grade of 'Good' except for Kyeemagh Baths which was rated as being 'Poor'.

Table 3.2 Beachwatch results for Botany Bay and the Lower Georges River for 2010-11.

Site Name	Year	Sanitary Inspection Category	Microbial Assessment Category	Beach Suitability Grade
Kyeemagh Baths	2011	High	Category C	Poor
Brighton le Sands Baths	2011	Moderate	Category B	Good
Monterey Baths	2011	Moderate	Category B	Good
Ramsgate Baths	2011	Moderate	Category B	Good
Dolls Point Baths	2011	Moderate	Category B	Good
Sandringham Baths	2011	Moderate	Category B	Good

A copy of the complete 2010-2011 State of the Beaches Report can be found at:  
[www.environment.nsw.gov.au/beach/reportann.htm](http://www.environment.nsw.gov.au/beach/reportann.htm)

## FLOODING

Due to the low lying topography of parts of the City of Rockdale, there are a number of land parcels identified within the City of Rockdale that are at risk of flooding. These are highlighted in Figure 3.3.



Figure 3.3 Flood affected areas in Rockdale City.

## WATER USE

Water consumption for Rockdale City Council facilities has increased in comparison to the previous year: 76,628 kilolitres in 2009-10, rising to 78,990 kilolitres in 2010-11. One of the main facilities where water consumption has remained higher than the industry average is Bexley Pool. Council is currently examining upgrade options for this pool and this will enable drastic improvements in the water efficiency of this site.

# Pressures

## STORMWATER

Stormwater runoff continues to be a major source of pollution to local waterways. The majority of urban catchments have been developed with a high proportion of hard impervious surfaces such as concrete pavements, bitumen roads and buildings. This has decreased the land's capability to soak up rainwater, increasing the likelihood of flooding, reducing groundwater infiltration and causing poor water quality.

There are thousands of gully pits in the City of Rockdale that collect stormwater runoff from roads and pollutants which are transported via a network of pipes and channels into the main receiving waters of the Cooks River, Botany Bay and Georges River. The major pollutants and their sources are shown in Table 3.4.

Table 3.4 Major pollutants and their sources in the City of Rockdale.

Pollutant	Sources	Examples	Impact
Oil, Grease, Petroleum	Road surfaces, commercial & industrial processes, service stations, motor repair shops & marina activities	Oil, petrol	Toxic to aquatic organisms
Nutrients	Fertilisers, detergents	Phosphorus, nitrogen, fertilisers from garden & golf courses	Excessive growth of aquatic vegetation; algal blooms
Toxic Material	Pesticides & Herbicides	Garden & agricultural products	Accumulate in food chain, toxic to organisms
Metals	Discharge from industry & vehicle emissions (particularly lead) from road surface runoff	Lead, mercury, zinc & copper	Concentrate in sediments & bio accumulate in living organisms
Bacteria & Viruses	Sewage overflows, defective sewage systems, animal faeces	Faecal coliforms & Faecal streptococci	Sickness & infections in bathing waters; seafood unsafe
Sediments	Building sites	Sand, sediment, cement	Destroy habitats by smothering plants & animals living on bottom of waterway
Inorganic Litter	Roads, parks, shopping centres	Fast food packaging, plastics, aluminium cans, paper & cigarette butts	Aesthetically unpleasant & can entangle wildlife causing death
Organic Litter	Parks, roads, bushland	Leaves, twigs & garden waste	Decreases sunlight penetration in water & destroys habitats

## SEWER OVERFLOWS

The sewerage system in Sydney is managed by the Sydney Water Corporation. The Southern and Western Suburbs Ocean Outfall Sewer (SWSOOS) collects sewage from the City of Rockdale for treatment and discharge at the Malabar deep ocean outfall. Sewer overflows have significant impacts on water quality. A sewer overflow point is a structure which has been deliberately designed to operate as a safety valve on a sewerage system to relieve pressure by allowing excess wastewater to overflow at a planned location. Sewer overflows occur due to the overloading of sewers through illegal connections, cracked pipes and infiltration from rain. They contain suspended solids, nutrients, pathogens and toxicants which are harmful to human health and aquatic ecosystems when they enter waterways.

## FLOODING

A problem faced by a number of sub-catchments in the City of Rockdale is the poor condition and capacity of the existing stormwater infrastructure, much of which is over 50 years old. The infrastructure was built to cater for a lower level of development and to historical standards or within budgetary constraints at the time. Flooding in the past has caused considerable loss of property and damage to homes in parts of the City.

An emerging pressure is future flooding impacts resulting from an increase in extreme rainfall events, due to climate change impacts. This is coupled with future inundation impacts from sea level rise. This issue is further discussed in the Atmosphere section of this report.

## DEVELOPMENT

### Cooks Cove

The Cooks Cove development will result in the construction of a technology park in the northern section of the City of Rockdale as well as the relocation of the Kogarah Golf Course and a number of sporting fields. The development site is bounded by Cooks River and Muddy Creek to the east, Marsh Street to the north, West Botany Street to the west and Bestic Street to the south. This development will impact on the Rockdale Wetlands Corridor, particularly the Spring Street and Landing Lights wetlands. No additional progress was made on the future of the development of this site during 2010-11.

### Port Botany

The Sydney Ports Corporation is continuing to work on the expansion of Port Botany to provide additional trade capacity with the construction of Terminal 3. Marine construction works will involve dredging of approximately 7.8 million cubic metres of marine sand and sediments to reclaim 60 hectares of terminal land. The expansion is being constructed adjacent to the existing Patrick terminal and the first berth will be ready for use in 2012.

## GROUNDWATER

Due to the low lying topography and coastal nature of the City of Rockdale, sea level rise may impact on Rockdale's groundwater quality (eg salinity). In addition there are areas in the City of Rockdale where the quality of groundwater is poor. Increasing pressures on groundwater occur during extended periods of dry weather when the use of existing bores on properties increases.

# Responses

## STORMWATER

Council has continued to reduce water pollution by preventing waste from entering waterways and removing waste from our waterways. Council records the type of waste material removed from our waterways to help us better understand how to control pollution at source. The first level of response is to collect waste, thus preventing it from entering the waterways. The second level of response is to collect illegally dumped material and carry out routine litter picking and footpath cleaning. In addition, Council actively prevents materials from entering waterways by installing Gross Pollutant Traps (GPTs). Council removes the trapped rubbish in these traps at regular intervals, and more frequently after heavy rainfall.

During 2010-11 a number of activities and Water Sensitive Urban Design (WSUD) initiatives were also undertaken to manage stormwater and improve water quality in Council's waterways.

### **Bexley North Rain Garden, Gilchrist Park**

In 2010-11 Council, in conjunction with the Cooks River Sustainability Initiative, constructed a 150 m<sup>2</sup> rain garden in Gilchrist Park, Bexley North (Figure 3.4). Rain gardens are specially designed, mass planted sunken gardens that filter pollutants from stormwater through different layers of soil. The layers in Gilchrist Park rain garden are sandy loam, crushed glass and graded gravel. Plants in the basin also help to absorb the excess nutrients typically found in stormwater. In this rain garden, treated cleaner stormwater is then collected by perforated pipes under the basin and piped to Wollie Creek.

Rain gardens also help to reduce erosion that can be caused by the large volume of stormwater flowing from hard surfaces after rain. This is achieved by temporarily storing the water and allowing it to slowly drain into surrounding creeks and river systems. Rain gardens, planted with hardy native plant species, are also able to withstand long periods without water, as well as providing habitat for native fauna, such as birds and frogs. This rain garden will treat approximately 6,000 kilolitres of water each year.



Figure 3.4 – Photo of Gilchrist Park Rain Garden in Bexley North. An example of water sensitive urban design in practice to improve the quality of stormwater.

## **Bado Berong Creek**

A water quality study was completed in 2010-11 to provide insight into the reasons for sulphurous odours occurring around this waterway. The study has shown that Bado Berong Creeks water quality relies on tidal movement of the water for flushing. Water with low oxygen levels and subsequent odour generation is likely to be experienced after a rain event flushes down poorer quality water from upstream. Management actions that have resulted from this study for improving the odour and water quality will be implemented in the future.

Furthermore, a WSUD treatment system is being designed, using infiltration pipes and a gross pollutant trap, for Bona Park, in Sans Souci. Works on the installation of the pipes and GPT will be concluded in 2011-12, which will improve the quality of water discharging into Bado Berong Creek. This project is funded by the Lower Georges River Sustainability Initiative.

## **Waradiel Creek**

Council has completed the installation of drainage pipes in Alice Street, Sans Souci, between Alfred Street and Chuter Avenue, with the assistance of grant funding made available by the OEH under the Floodplain Management Program. The drainage improvements will reduce the incidents of localised flooding in Alice Street.

A WSUD treatment system is also being designed using infiltration pipes and a gross pollutant trap, for Peter Depena Reserve in Dolls Point. Works on the installation of the pipes and GPT will be concluded in 2011-12, which will improve the quality of water discharging into Waradiel Creek. This project is funded by the Lower Georges River Sustainability Initiative.

## **Scarborough Ponds**

Two mechanical mixers in the ponds were serviced and remained in operation throughout most of 2010-11. The aim of the mixers is to gently mix the oxygen-rich surface waters with the oxygen-depleted lower waters and sediments, thus improving the water quality and controlling temperature inversion problems. The mixers operate 24 hours per day 7 days per week. Since their installation in 2004 there have been no occurrences of temperature inversions which have previously resulted in mass fish kills, hydrogen sulphide gas emissions, and turbid waters.

## **Bicentennial Ponds**

A water quality monitoring study was conducted at this site in 2010-11 to identify the cause of fugitive odours and nuisance aquatic plant growth. Preliminary results show that high levels of organic matter and stormwater pollution are entering the wetland which is contributing to low oxygen levels in the water. A further study was conducted at this site in 2010-11 to develop recommendations for improvement of the water quality, and to determine how best to repair the vandalised weir at the exit to the ponds that has changed the water levels in the pond. Management actions to improve the condition of this wetland have been identified by these studies and will be implemented in the future.

## **Wolli Creek Riparian Management Plan**

Council, in partnership with Canterbury Council, Rail Corp, OEH (National Parks) and the Wolli Creek Preservation Society, commissioned the development of a riparian management plan for Wolli Creek. This plan will identify key recommendations to be undertaken to help protect the ecological values of this important asset.

## **Spring Street Wetland**

In 2010-11 a water quality monitoring study commenced for the Spring Street wetland to identify the cause and effective management actions of existing odour issues. The study is currently in progress.

## **Flood Studies**

A pipe drain and overland flood study of the Bonnie Doon catchment is nearing completion. This study will enable Council to develop flood mitigation strategies for the catchment, including a program of future drainage works and improvements.

## **Flood Education**

Council has developed a Flood Safe Guide for Rockdale in conjunction with the State Emergency Service. The Flood Safe Guide will be distributed to affected properties in Rockdale to advise on flood preparedness and flood education. The consultant working on the project will be undertaking follow up surveys with affected properties following its distribution. Improvements to Council's website will also be initiated to complement the information in the Flood Safe Guide and improve flood awareness through the local government area.

## **Street Sweeping**

Council has continued preventative action such as street and gutter sweeping to reduce pollutants entering local waterways. In 2010-11 this has involved sweeping a total of 22,000 km of road way. As a result, 1,062 tonnes of litter, leaf and other materials such as tyre rubber, heavy metals and dust were collected.

## **WATER SENSITIVE URBAN DESIGN (WSUD) ACTION PLAN**

Council has been involved in constructing WSUD projects for a number of years. In conjunction with the Lower Georges River Sustainability Initiative, Council assessed the organisation's capacity to comprehensively adopt WSUD across Council operations. As a result of this assessment it was clear that a more strategic approach was required and culminated in the development of a WSUD Action Plan for Council. This Plan was adopted by Council's Executive team in 2010 to guide Council's work to achieve sustainable urban water management across Council operations into the future. The plan outlines required improvements to management practices as well as a list of proposed works for the future.

Council continues to update and implement actions from the WSUD Action Plan to improve the quality and natural flows of water making their way into waterways and ultimately into Botany Bay. In 2010-11 some of the actions completed were the consolidation of WSUD principles into the draft Rockdale Development Control Plan (DCP) 2011, the provision of specialised stormwater modelling training to key staff, and the acquisition of specialised modelling software to assist key staff to identify and implement WSUD principles into Council projects.

## **ESTUARY MANAGEMENT**

Rockdale City Council continued to contribute to the development of the Georges River Estuary Management Plan through its involvement in the Georges River Combined Councils Committee (GRCCC). Estuary Management Plans provide councils with the means to improve environmental health and estuary condition, rehabilitate degraded areas, improve public access and amenity, and obtain funding to carry out works. The Estuary Management Plan is anticipated to be completed in 2011/12.

## **Lower Georges River Sustainability Initiative**

The Lower Georges River Sustainability Initiative (LGRSI) is a project that was formed by the Georges River Combined Councils Committee (GRCCC) to encourage innovative water quality improvement projects. It has an emphasis on projects that exhibit a combination of best practices, the right technical support, leadership and community involvement. The initiative is assisted by the NSW Government with funding by the Environmental Trust through its Urban Sustainability Program. The initiative began in 2009 with \$2 million being committed to a combination of capacity building and on-ground works for Hurstville, Kogarah, Rockdale and Sutherland Shire Councils. Rockdale City Council hosts the Project Manager for the LGRSI.

During 2010-11 the LGRSI activities have been focused on implementation of the Project Business Plan. Plans have been developed for Water Sensitive Urban Design (WSUD) on-ground projects in each of the four participating LGAs, and a WSUD Action Plan has been developed by each council to guide future WSUD adoption. The LGRSI is funding three on ground WSUD projects in Rockdale, including one at Bona Park, Sans Souci; one at Peter Depena Reserve, Dolls Point; and one at Scott Park, Sans Souci. The first two have been mentioned above and the third is discussed in the Biodiversity Chapter.

Five community-based *getting greener!* projects have also commenced and a feature of four of these projects is a focus on food sustainability, either in terms of local produce or permaculture based home food production. In addition Oatley Flora and Fauna have been promoting birds in local backyards through explanatory workshops and provision of suitable bird-friendly shrubs for workshop participants.

### **Georges River 'Riverhealth' Monitoring Program**

The Georges River 'Riverhealth' monitoring program continued in 2010-11 monitoring the condition of a section of Bado Berong Creek at Scott Park in Sans Souci. This location is one of many that are monitored in the Georges River catchment. The site contains an endangered ecological community, salt marsh community and remnant Bangalay Sand Forest. While the site received an overall poor rating through the Riverhealth program, the water quality at the site was graded as A+. The lower overall result reflected the lack of native vegetation, as is typical of urban parklands. Rockdale City Council is currently undertaking restoration works at this site – see Chapter 5: Biodiversity.

### **River Keeper**

As part of the Georges River Combined Council Committee (GRCCC), Council continued to assist the River Keeper in removing floating debris that accumulates along the river foreshore.

In 2010-11 the River Keeper program collected 32,802 kilograms of rubbish from the Georges River, including 1,986 kilograms from the City of Rockdale.

## **COOKS RIVER FORESHORES WORKING GROUP**

In 2010-11 Rockdale City Council was an active member of the Cooks River Foreshore Working Group (CRFWG). The CRFWG was an association of Cooks River Catchment councils working at the officer level to improve the health and amenity of the Cooks River, its foreshores and catchment environment. Through its participation in this Working Group, Council was involved in a number of projects to improve the health of the Cooks River. One of the key outcomes of 2010-11 as part of the Cooks River Sustainability Initiative was the creation of a Cooks River Alliance. Further information on this is provided below.

### **Cooks River Enviro Workers (CREW)**

Modelled on the successful Georges River clean up program run by the Georges River Keeper, CREW brings a team of trained volunteers from the Periodic Detention Program of the NSW Department of Corrective Services to the River almost every weekend to remove litter, dumped materials and other debris from the Cooks River, riverbanks and foreshores.

In 2010-11, the CREW project removed an estimated 16,130 kilograms of litter from the waterway, banks and foreshores of the Cooks River, across multiple local government areas. 71 syringes were also removed and disposed of safely. Over the seven years since CREW began in July 2004, CREW volunteers have removed more than 175,000 kilograms of litter and small debris, 22,000 kilograms of dumped materials and large debris, and 837 syringes from the Cooks River and its riverbank and foreshores.

### **RiverScience**

RiverScience is a scientific research program monitoring the ecological health of the Cooks River and its main tributaries. It uses a number of ecological indicators to measure the river health, including the extent and composition of macroflora (eg salt marsh, sea grass and mangroves) and aquatic invertebrates (eg oysters, barnacles and crabs), as well as various sediment characteristics.

The fifth round of annual monitoring, completed in December 2010, found that:

- ◆ Crab abundance is varied compared to previous years but overall numbers have increased slightly at most sites.
- ◆ A slight increase in barnacle cover was evident at the sites further upstream.
- ◆ As found in previous years species diversity is greatest within the estuarine sections of the river declining with distance upstream.

- ◆ Benthic (sediment-dwelling) invertebrates have shown an increase in both the abundance (number of animals) and richness (number of families), but this richness is largely due to the increased diversity of bristleworms which thrive in polluted environments.

Overall, the main tributaries of the Cooks River catchment remain in poor health. The next round of monitoring is expected to be undertaken in December 2011.

### **Cooks River Sediment Sampling**

Rockdale, Canterbury and Murrumbidgee Councils were successful in receiving a grant from the Estuary Management Program in late 2008 to undertake sediment sampling in the Cooks River. This project examined:

- ◆ Current levels of contamination versus historic level of contamination.
- ◆ Mobility of heavy metals.
- ◆ Development of a sediment monitoring protocol.
- ◆ Risk assessment of future contamination/impacts from the mobilisation of heavy metals.
- ◆ Communication of results.
- ◆ Identification and prioritisation of actions to improve river health.

The University of NSW completed the sampling and analysis of the sediment in 2009-10 and the final report published in 2011 shows:

- ◆ The level of contamination overall is highly unsatisfactory and suggests that the entire volume of bed sediments in the lower Cooks River is severely contaminated to several metres depth.
- ◆ The source of the contamination has been the various industrial, commercial and residential land uses in the catchment.
- ◆ Under the present conditions the sediments within the channel and the associated contaminants are likely to remain undisturbed and so the greatest concern is the potential mobilisation of contaminated sediments associated with any remediation works.
- ◆ There are generally lower levels of heavy metal contaminants in the surface sediments than at depth. This may imply that current catchment management strategies are having success in reducing the level of contamination of the river.

### **Cooks River Estuarine Vegetation Management Plan**

The Cooks River Estuarine Vegetation Management Plan builds on best practice guidelines for the management of salt marsh and mangrove vegetation communities. The plan considers the long term management of salt marsh and mangroves along the estuarine foreshore of both the Cooks River and Wolli Creek, from the upper tidal limits at Georges River Road, Enfield to the mouth of the Cooks River at Botany Bay. It makes recommendations for areas for future rehabilitation and management, and highlights the importance of continued collaboration and an integrated approach with all foreshore stakeholders to improve on ground rehabilitation projects.

To promote the value of the Cooks River Estuaries, an estuary tour was held in September 2010 for interested residents from Murrumbidgee, Canterbury and Rockdale City Councils highlighting the importance of essential ecosystems, such as mangroves and saltmarsh that line the tidal fringes of the lower Cooks River.

### **Cooks River Sustainability Initiative**

In 2010-11 the Cooks River Sustainability Initiative (CRSI) was completed. This project was the largest and most ambitious initiative by the CRFWG. It aimed to improve the health of the Cooks River; conserve water resources, and establish the Cooks River Catchment as a leader in best practice catchment management with a genuine focus on engagement and partnership with the local community and all stakeholders.

As part of this project Council constructed the Gilchrist Park Rain Garden and developed the Upper Wolli Creek Sub-Catchment Management Plan. The plan identified future projects to improve water quality within the Cooks River catchment, reduce water usage, and engage with the community on Cooks River initiatives.

One of the key successes of this project has been the development of a Cooks River Alliance. The Cooks River Alliance will be an association of Cooks River Catchment councils implementing a strategic plan for the Cooks River Catchment. The Cooks River Alliance has been proposed as the preferred option for building on the success of the CRFWG and addressing critical gaps in current resourcing, council staff capacity and regional leadership.

The fundamental objective of the Cooks River Alliance is to define catchment standards for natural resource and water management, and to aid member councils to achieve those standards by harnessing strategic and political support, providing technical support, building council staff capacity, actively seeking external funding for projects, and coordinating activities within the catchment.

### **Streamwatch in Bardwell Valley and Wolli Creek**

Bardwell Valley Bushcare Volunteers and Wolli Creek Preservation Society are continuing to regularly test Bardwell and Wolli Creeks as part of the Streamwatch program.

There are four groups testing on a monthly basis. The sites tested are:

- ✦ Wolli Creek - Turrella Reserve weir.
- ✦ Wolli Creek – Bexley North.
- ✦ Bardwell Creek - Ellerslie Rd weir.
- ✦ Bardwell Creek – Coolibah Reserve.

During 2010-11 the Streamwatch groups identified fewer incidents of sewage spills partly as a result of repair work by Sydney Water to pipes that Council has identified as having problems.

## **CATCHMENT MANAGEMENT**

Council staff members continue to work with the Sydney Metropolitan Catchment Management Authority (SMCMA), which was established to develop and deliver a regional approach to natural resource management in the Sydney region.

### **Cooks River Urban Water Initiative**

This Initiative is an Australian Government funded project aiming to improve the environmental quality of the Cooks River. Coordinated by the Sydney Metropolitan CMA, the initiative funded a series of projects in collaboration with local councils, agencies and environmental community groups. In 2010-11 funding was used to extend the riparian buffer along one edge of the Eve Street Wetland, Arncliffe, included the planting of 10,000 tube stock over approximately a half hectare area. Weeds were also targeted to improve the buffer to the wetland and create further habitat opportunities. Eve Street Wetland is a valuable saltmarsh wetland recognised in the Directory of Important Wetlands Australia and is listed as an endangered ecological community under the NSW *Threatened Species Conservation Act 1995*.

The total value of the Cooks River Urban Water Initiative is \$2 million funded under the Australian Government's Water for our Future program. In 2010-11 the Cooks River Urban Water Initiative concluded.

### **Botany Bay Coastal Catchment Initiative (BBCCI)**

This program seeks to achieve long term protection of the surface waters of Botany Bay, its estuaries and catchment. The ultimate goal of the BBCCI is to develop and implement an agreed water quality improvement plan for the Bay and its catchment.

A key output of the program in 2010-11 was the development of the Botany Bay & Catchment Water Quality Improvement Plan (WQIP), which was released in May 2011. The main objective of the Botany Bay & Catchment WQIP is to set targets for pollutant load reductions (in terms of total nitrogen [TN], total phosphorus [TP] and total suspended sediment [TSS]) required to protect the condition of Botany Bay, its estuaries and waterways.

In addition, it is expected that the Plan will be a tool for raising awareness and promoting behaviour changes amongst individuals and organisations. The plan has been developed with considerable input from the local community and other key stakeholders in the Catchment. The Plan and other outputs of the Program can be downloaded from [www.sydney.cma.nsw.gov.au/bbcci](http://www.sydney.cma.nsw.gov.au/bbcci)

Another important component of the Program was the development of a water quality decision support system (DSS), which is now operational. It was used to test scenarios for the development of the Botany Bay & Catchment WQIP and has been designed so that it can also be used by local councils. The DSS allows them to examine the costs and benefits of different scenarios for implementing the Botany Bay & Catchment WQIP in their sub-catchments or local government area.

The Program also installed a network of real-time water quality monitoring stations around the catchment. Two are located in the Rockdale area: one is down stream of where Alexandra Canal joins the Cooks River; and the other is where the Georges River enters Botany Bay. These buoys monitor water quality every 15 minutes and transmit the data to a website ([www.sydney.cma.nsw.gov.au/bbcci/monitoring-network.html](http://www.sydney.cma.nsw.gov.au/bbcci/monitoring-network.html)) where the previous two weeks of collected data can be viewed. The following parameters are being measured in real-time at each site: temperature, salinity, turbidity (visibility in the water), chlorophyll-A (an indicator of algal growth), dissolved oxygen (essential for aquatic life) and light penetration. The results from the monitoring assist Councils to identify future water quality improvement projects for the waterway.

The Program co-funded water quality improvement projects with councils and land managers around the catchment. In total 11 projects were funded between December 2009 and June 2011, with total value of all these projects being \$3.2 million. The 11 projects will result in the stormwater runoff from more than 220 hectares of urban area receiving some form of treatment before it enters the waterways. One of these projects was located at Rockdale Park and is treating stormwater prior to it entering Muddy Creek.

## **WATER CONSERVATION**

Throughout 2010-11, Council continued its focus on water conservation, undertaking community education and implementing measures to conserve water in Council's own practices. To reduce water consumption from Council operations, in April 2004 Council joined Sydney Water's 'Every Drop Counts' program for businesses. As part of this program Council's top water using properties were identified and audited to explore options for reducing water use. An assessment of Council's water management practices has also been undertaken as part of the Program. In 2007 Council was given a maximum 5 star rating, the first public sector organisation to achieve this rating.

In 2010-11 Council has:

- ◆ Continued to record and monitor water consumption and cost, investigate anomalies in water use and report this information to Council's executive staff.
- ◆ Maintained regular meetings with Councils Water Management Team to raise issues relating to water consumption and quality, and to allocate responsibility to investigating such issues. The team is multi-disciplinary and includes staff from the executive and operations areas.
- ◆ Conducted a technical review of the Water Savings Action Plan (WSAP) 2006 which identifies the new top ten highest water using properties owned by Council, and recommends water management actions to inform the upcoming WSAP 2011. The actions implemented from the WSAP 2006 saw the annual water consumption at Councils top ten water consuming sites drop from 28,799 kilolitres in 2006, down to 23,416 kilolitres in 2009-10. This is a reduction of 19% or 5,383 kilolitres, the equivalent of over two Olympic sized swimming pools. The WSAP 2006 will be replaced by the WSAP 2011 in late 2011.

# 4. Atmosphere

The atmosphere is essential to all life on Earth and plays a critical role in regulating weather and climate. Council continues to work towards the goal of reducing the emission of atmospheric pollutants and greenhouse gases.

## 4a. Air Quality

### State and Pressures

Air quality can be considered at three scales - global, regional and local. All three of these levels of air quality are interconnected. At the global scale the main issues are depletion of the ozone layer and climate change caused by greenhouse gas emissions. At the regional level it is photochemical smog and fine particle pollution. At the local level, the major air pollutants include carbon monoxide, sulphur dioxide and air toxics such as benzene.

Air pollution can cause a wide range of health symptoms, from coughing, wheezing and shortness of breath, to more serious impacts for those with pre existing respiratory and cardiac conditions, such as asthma attacks, hospital admission and premature death. It has been estimated that air pollution from motor vehicles alone accounts for more than 500 early deaths in the Sydney Region per annum and over 1000 hospital admissions.

Motor vehicles are a major source of locally borne air pollutants in the City of Rockdale.

### AIR QUALITY IN EASTERN SYDNEY

The Office of Environment and Heritage has a number of air quality monitoring stations throughout Sydney. The closest monitoring station to the City of Rockdale is located in Earlwood.

In 2010-11 the total number of exceedances of the air quality index was 10, compared with 27 from last year (however many of these previous years exceedances are due to spikes from the dust storm experienced in September 2010). For the suspended fine particles present in the air (measuring visibility) there were 9 exceedances of the standard, with 6 of these times being in May 2011. The only other exceedance was once in February 2011 for particulate matter measuring less than 10micrometres ( $PM_{10}$ ). All other air quality parameters remained below the standards which is a significant improvement from last year that saw exceedances in ozone limits also.

Air quality monitoring data and reports are available online at:  
[www.environment.nsw.gov.au/AQMS/hourlydata.htm](http://www.environment.nsw.gov.au/AQMS/hourlydata.htm)

# Responses

## MOTOR VEHICLES

Council undertakes a number of initiatives to help reduce reliance on private transport. This includes improving cycleways, walking paths and bus stops as well as lobbying for improved public transport. Further information on these initiatives is outlined in the Transport section (Chapter 2) of this report.

## REGULATION AND ENFORCEMENT

Council enforces the ban on the backyard burning of refuse and other offences under the *Protection of the Environment Operations Act (1997)* and investigates complaints received regarding other sources of air pollution. In addition, Council's development assessment process provides an opportunity to reduce negative impacts on air quality by applying strict conditions to developments. There appears to be an improved appreciation in the community in relation to the personal and environmental benefits of air pollution control, based on the information Council is receiving from the community about air pollution.

## ODOUR MANAGEMENT OF RETAIL FOOD BUSINESSES

Emissions from food shops have been an ongoing issue for Councils across the region. Emissions include smoke containing volatile organic compounds, particulate matter, odour, nitrous oxides, carbon monoxide and greenhouse gas emissions. Council investigates these premises as required.

## DEVELOPMENT NEAR RAIL CORRIDORS AND BUSY ROADS

Traffic on major roads and railway corridors impact on air quality and generate noise and vibration. In December 2008 the State Government gazetted the "Development near rail corridors and busy roads: Interim guideline" to support specific rail and road provisions of State Environmental Planning Policy (Infrastructure) 2007. These guidelines include design considerations that can be incorporated to reduce the impact of poor air quality and noise on people living and working near transport corridors. These guidelines have been considered by Council when preparing the draft LEP and DCP, and when assessing development applications.

## TREE PLANTING

Trees improve air quality by absorbing polluting gases and odours and filtering air particles. Council has continued its tree planting programs and more detail on tree planting programs is provided in the Biodiversity Chapter (Chapter 5) of this report.

## M5 FREEWAY

The Roads and Traffic Authority continues to undertake ambient air quality monitoring at sites in the Wolli Creek Valley for the M5 East Freeway – one of the busiest roads passing through the City of Rockdale. The air quality limits were set by the NSW Minister for Planning, when approval for the project was granted in 1997.

## 4b. Climate Change

### State and Pressures

Climate change (also commonly referred to as the enhanced greenhouse effect) is the result of changes in our weather patterns because of an increase in the Earth's average temperature. This is caused by increases in greenhouse gases in the Earth's atmosphere. These gases soak up heat from the sun, and instead of the heat leaving the Earth's atmosphere, some of it is trapped, making the Earth warmer.

The trapping of greenhouse gases is a natural process within the atmosphere. However, human activities to create energy such as the burning of fossil fuels (including coal, oil and natural gas) are speeding up this process causing excess gases to be trapped within the earth's atmosphere. This is known as the enhanced greenhouse effect. Since the industrial revolution, fossil fuels have been consumed at an increasing rate, and the concentration of carbon dioxide and other greenhouse gases within the atmosphere has increased.

### Responses

#### **COUNCIL'S CORPORATE EMISSIONS**

Council is committed to reducing its greenhouse gas emissions and therefore its contribution to climate change. For many years Council was an active member of the international Cities for Climate Protection Program. This program helped local government to identify, monitor and manage its greenhouse gas emissions. While this program has now finished Council continues to report its energy consumption through Council's Energy Savings Action Plan.

#### **Energy Savings Action Plan**

In 2005 the NSW Government passed legislation that required the State's top 200 energy users and all councils with a population greater than 50,000 to prepare Energy Savings Action Plans. Council submitted its first plan in the 2005-06 financial year and has submitted a review each year since. Rockdale City Council's Energy Savings Action Plan focuses on Council's top 10 energy using sites and includes energy use data and actions to improve management practices and reduce energy consumption.

The latest Energy Saving Action Plan review in 2009-10 found that Council's energy consumption at its top ten sites has decreased slightly from the previous year although no significant energy savings actions were completed in the 2009-10 financial year.

#### **COMMUNITY EMISSIONS**

Each year Council undertakes a number of initiatives to encourage the wider community to reduce greenhouse gas emissions. In 2010-11 this included:

#### **Fridge Buy Back Program**

The Fridge Buyback program encourages residents to get rid of their second fridge to save energy and money (and therefore reduce future greenhouse gas emissions). The scheme involves the collection and removal of the fridge for residents as well as the recycling and degassing of the fridges. In 2010-11 Council promoted this program to residents through the community newsletter, on Council's website and at community events. This has resulted in the collection of 124 fridges in 2010-11 and 408 fridges in total since the program began in 2006, reducing future greenhouse gas emissions by 3,264 tonnes and recycling approximately 36 tonnes of metal. In the Rockdale local government area, 6% of the estimated second fridges in homes have been collected, meaning many more residents with second fridges may benefit from this program.

## Home Power Savings Program

The NSW Government's Home Power Savings Program provides low income households with a power assessment by an energy expert to identify ways to save power in the home and a power savings kit. It is estimated that there are 22,000 households in NSW that could save up to 20% on their power bills by taking advantage of this program. As with the fridge buy back scheme the Home Power Savings Program was promoted through Council's various media avenues.

## Energy Watch

Council is continuing the Energy Watch initiative launched in May 2010, which enables residents to measure the true power usage of their appliances and electronic devices, with special Power Usage Meters available for loan from Rockdale City Library. The meters measure how much power appliances use when they are on standby or when in use. This information will indicate to householders what appliances are the big power users and will help them identify which appliances are more energy efficient. Householders will also be able to calculate how much unnecessary power is consumed when appliances are left on standby rather than being switched off at the power point.

The Power Usage Meters are available for loan to Council's Rockdale City Library members. The Meters are available at Council's six library branches located throughout the City and can be borrowed for up to two weeks at a time.

## Cycleways

During 2010-11 Council extended Rockdale's cycleway network and constructed the following cycleways:

- ◆ Cook Park Kyeemagh – 400 metre long recreational cycleway and a 400 metre commuter cycleway. Total length of new cycleways in this section = 800 metres.
- ◆ Cook Park Monterey – 340 metre long recreational cycleway between Scarborough Street and Culver Street.
- ◆ Kyeemagh Boat Ramp Facility, Kyeemagh – 300 metre long recreational cycleway around the refurbished facility.

The total length of new cycleways constructed in 2010-11 was 1,440 metres.

To further promote cycling a community bike week event 'On Ya Bike' was held in 2011 at Peter Depena Reserve, Dolls Point. The event promoted not only the health benefits of cycling but also the environmental benefits of using a bike instead of the car.

In April 2011 a week-long bicycle count was conducted on the shared pedestrian path / cycleway in Brighton Le Sands waterfront opposite Ramsgate Road east of The Grand Parade, Ramsgate. This count showed that the average volume of cycling traffic was 188 bikes per 24 hours, with an average speed of bicycles being 18 kilometres per hour. This indicates an active usage of this bike route by cyclists.

In 2010-11 Council undertook a study in conjunction with Kogarah Council to develop an east-west cycleway network linking Botany Bay to Oatley Park. Rockdale and Kogarah Councils are now investigating undertaking the implementation of the routes identified in the Study over the next 5 to 10 years with the first stage to be an east-west on-road section between Botany Bay to Kogarah Bay along Alice Street and The Promenade.

## Walking Trails

In 2010-11 Council created a 300 metre long pedestrian-only pathway through Cook Park in Monterey to separate pedestrians from cyclists. As part of the Desalination Project, Sydney Water constructed a 400 metre long pedestrian/cycleway in Cook Park, Kyeemagh including three new access ways onto the beach.

## CLIMATE CHANGE ADAPTATION

Rockdale City Council recognises that the impacts of climate change will have a significant effect on its operations as well as the broader community. In 2008-09 the Sydney Coastal Councils Group partnered with the CSIRO to undertake research into regional approaches to managing climate vulnerability in the Sydney region. As part of this project, climate change vulnerability assessment and mapping for the whole Sydney region was completed. This mapping included the City of Rockdale. Due to Rockdale's coastal location, highly urbanised nature and demographic profile, the mapping identified that Rockdale is highly vulnerable to climate change impacts. To help address this Council is identifying the extent to which climate change will affect the City of Rockdale as well as some measures that it can implement to help adapt to the impacts of climate change.

In addition Council has applied for NSW Government funding to review a number of existing flood plans and the review will consider some of the impacts of climate change.

### **Sea Level Rise Policy**

The NSW Government has released a Sea Level Rise Policy Statement. The Policy Statement includes sea level planning benchmarks which have been developed to support consistent consideration of sea level rise in land-use planning and coastal investment decision-making. The adopted benchmarks are for a rise relative to 1990 mean sea levels of 40 centimetres by 2050 and 90 centimetres by 2100. This policy will help guide Councils planning decisions in the future.

# 5. Biodiversity

Biodiversity is the variety of all species of living organisms. It includes all species of plants, animals and micro organisms, the genes they possess and the ecosystems they form. There are three levels of biodiversity which include genetic, species and ecosystem diversity. Genetic diversity is the variety of genetic information in all individual plants, animals and micro organisms. Species diversity refers to the variety of species on Earth. It is usually a measure of the number of species (richness) and their relative abundance for a given area at a given point in time. Ecosystem diversity refers to the variety of habitats, biotic communities and ecological processes. An ecosystem consists of plant, animal, fungal and micro organism communities and the associated non living environment interacting as an ecological unit.

## State and Pressures

The amount of land that sustains native plants and animals in the City of Rockdale has been progressively reduced since European settlement. Despite being heavily urbanised the City of Rockdale has some important bushland and wetland areas remaining. The main areas include:

- ◆ Wolli Creek Valley
- ◆ Bardwell Valley
- ◆ Stotts Reserve
- ◆ Frys Reserve
- ◆ Rockdale Wetlands Corridor, including Marsh Street Wetland, Eve Street Wetland, Spring Street Wetland, Landing Lights Wetland, Kings Road Wetland, Hawthorne Street Natural Area, Patmore Swamp, Scarborough Ponds and Scott Park.

## FLORA

Over 250 native plant species occur in the City of Rockdale and thirteen (13) vegetation communities have been identified. Details of these communities were outlined in the most recent Comprehensive State of the Environment Report (2008-09).

## FAUNA

### Reptiles

The majority of reptile species within the City are restricted to the areas of retained vegetation with available water sources and ground cover habitat. The backyards of houses may also play a key role in providing suitable habitat for these species.

### Birds

Birds are the most diverse and significant animal group to occur in the City of Rockdale. The availability of foraging and roosting habitat throughout the City is provided by the trees and shrubs within the City's parks, reserves and streets. A substantial lack of tree hollows for breeding and connectivity for small birds is, however, evident. In addition, habitat for small birds that use the shrub layer is lacking throughout much of the City, as many open space areas consist of a mown grass under-storey with sparse mature trees. Therefore, foraging habitat for the smaller bird species has been mostly eliminated.

## Amphibians

The habitat available for amphibians varies across the City of Rockdale. The Scarborough Ponds area provides important shelter and breeding habitat and, as part of the M5 development, a relocated and re-established Green and Golden Bell Frog habitat was created adjoining Kogarah Golf Course.

## Mammals

The habitat available for mammal species is poor throughout the majority of the City. However, areas such as Hawthorne Street Reserve, Bardwell Valley Parklands, Stotts Reserve and the scattered edges of waterways with riparian vegetation, provide foraging habitat.

## Fish

No detailed fish surveys have been completed in the City of Rockdale. However, almost twenty different fish species have been recorded in Scarborough Ponds demonstrating the importance and diversity of this particular area for fish breeding and habitat requirements. The NSW Department of Primary Industries (Fisheries) identifies a number of key waterways and wetlands in the City of Rockdale as key fish habitat.

## Invertebrates

A detailed study of invertebrate diversity has not been undertaken in the City of Rockdale.

## THREATENED SPECIES AND COMMUNITIES

In NSW, threatened species are listed under the *Threatened Species Conservation Act 1995* (TSC Act), which is administered by the OEH. The protection of threatened fish and marine vegetation, however, is the responsibility of the NSW Department of Primary Industries (Fisheries) under the *Fisheries Management Act 1994*. In addition the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Federal legislation that protects federally listed threatened species, migratory species, World Heritage Areas, RAMSAR wetlands, and other areas of importance.

### Threatened Flora

A total of four threatened flora species are known to occur within the City of Rockdale:

- ◆ *Acacia pubescens* (Downy Wattle)
- ◆ *Acacia terminalis* (Sunshine Wattle)
- ◆ *Syzygium paniculatum* (Magenta Lilly Pilly)
- ◆ *Tetratheca juncea*

### Threatened Fauna

Based on the result of the NSW Wildlife Atlas (administered by the OEH) and the Biodiversity Survey undertaken by Conacher Travers (2006), 18 terrestrial threatened fauna species have been recorded in the City of Rockdale. The City also attracts a number of species of migratory birds which are classified under the international migratory bird treaties between Australia and China and Japan. These are known as the China – Australia Migratory Bird Agreement (CAMBA) and the Japan – Australia Migratory Bird Agreement (JAMBA). The high diversity of threatened bird species is the result of Rockdale's eastern boundary bordering Botany Bay which offers suitable habitat for shorebird foraging and nesting.

# Response

## BIODIVERSITY STRATEGY

In 2006-07 Council completed a Biodiversity Strategy, which provides Council with a practical approach to address its responsibilities in the enhancement, protection and management of biodiversity. In conjunction with the preparation of the Strategy, a detailed survey of Rockdale's biodiversity was undertaken. The resulting strategy provides Council with information on:

- ◆ Biophysical characteristics of the City of Rockdale.
- ◆ Details on the threatened flora and fauna species, and Endangered Ecological Communities found in the City (outlined earlier in this chapter).
- ◆ Actions that address threats to biodiversity, bush land management, pest management and hydrological management.

Rockdale City Council is currently implementing many of the actions identified in the Strategy including:

- ◆ Establishment of buffer zones left around bushland sites and riparian zones to allow for mulching and natural regeneration.
- ◆ Maintenance of fore-dune restoration work at Cook Park through the planting of endemic dune stabilisation species.
- ◆ Installation of improved trash gates on drainage outlets into a number of parks to control debris carried by drains.
- ◆ Weed removal and bush regeneration particularly within Hawthorne Street Reserve, Bardwell Valley and Scarborough Ponds.

In 2010-11 Council undertook a number of biodiversity projects, which are described below.

## HAWTHORNE STREET NATURAL AREA

The Hawthorne Street Natural Area is one of the most significant natural sites in the St. George region, and contains two Endangered Ecological Communities; Bangalay Sand Forest and Kurnell Dune Forest. Tonbridge Creek runs through the Natural Area and, according to a study in 1999 by the NSW Fisheries Office of Conservation, was identified as an important nursery ground for native juvenile fish. Due to industrial development in the outer parts of Botany Bay reclaiming significant areas of natural habitats, Tonbridge Creek is one of the few remaining juvenile fish habitats for Botany Bay. It is also the second most important fish breeding site in Botany Bay.

In 2010-11 Council consolidated previous works in the Hawthorne St Natural Area by conducting and continuing bush regeneration works in the Reserve. Previous project works funded through the Federal Government's Caring for Our Country Program included:

- ◆ Bush regeneration.
- ◆ Reintroduction of native endemic species.
- ◆ Habitat enhancement.
- ◆ Active and ongoing weed removal including the removal of weed trees.
- ◆ Upgrade of pathways to reduce erosion.
- ◆ Closure and rehabilitation of existing informal tracks.
- ◆ Installation of interpretive signage.

The current works concentrate on bush regeneration and establishment of vegetation along Hawthorne St. This will not only increase the area of bushland but will also discourage people from using inappropriate tracks in this

reserve. Such tracks increase erosion, fragment habitat and increase the risk of weed invasion. It is estimated that a further two years of primary bush regeneration work is needed to return the bush in the Hawthorne St Natural Area to a state where only ongoing light maintenance is needed.

A team of trainee aborists from the Ryde TAFE School of Arboriculture removed several Pinasta Pine trees from within the bushland at the reserve. These well established weed trees heavily impact the surrounding bush through the continuous fall of pine needles that create a thick matt on the ground surface. This removal program continues an ongoing collaboration between Rockdale City Council and the Ryde TAFE School of Arboriculture.

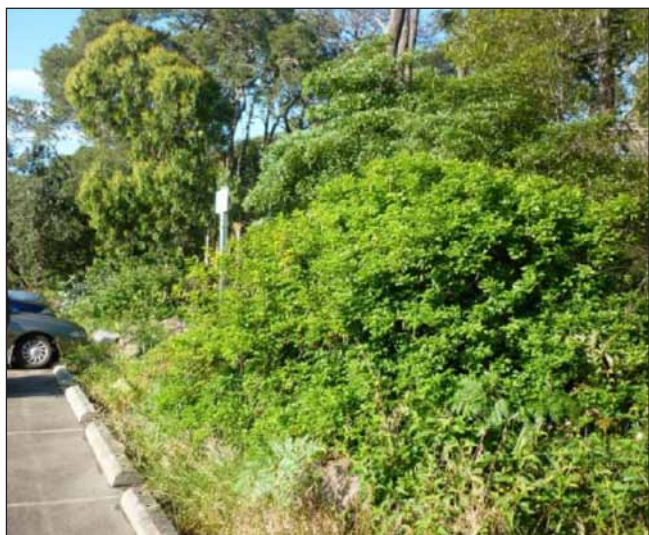


Figure 5.1 – ‘Before’ and ‘after’ photos of weed management works at Hawthorne St Natural Area in November and December 2010.



Figure 5.2 – ‘Before’ and ‘after’ photos of weed management works at Hawthorne St Natural Area in November and December 2010.

## BARDWELL VALLEY

In 2009-10 Council engaged a bush regeneration contractor to clear weeds from an area on the northern side of the valley. These works continued throughout the 2010-11 year and are aimed at consolidating areas of good bushland on either side and below the contract area.



Figure 5.3 - 'Before' and 'after' photos of weed management works at Bardwell Valley in February 2011 and August 2011.



Figure 5.4 - 'Before' and 'after' photos of weed management works at Bardwell Valley in March 2011 and August 2011.

Previous works in the valley included riparian restoration and maintenance works. The works included:

- ◆ Removal of exotic vegetation along 200 metres of the northern and southern banks of Bardwell Creek.
- ◆ Bank stabilisation.
- ◆ Planting to enhance the water quality of the creek, provide habitat and stabilise creek banks.
- ◆ Protection of areas that have already been rehabilitated from weed invasion.

## AQUATIC WEED MANAGEMENT STRATEGY

In 2010-11, Rockdale City Council developed an Aquatic Weed Management Strategy. This Strategy identifies the extent and types of weeds impacting on Council's key internal waterways and prioritises areas and weeds where works are needed to reduce the impact of aquatic weeds on the City's biodiversity and waterways. Once this document is finalised key recommendations will be incorporated into Council's work programs.

## SCARBOROUGH PONDS RESTORATION WORK

In 2010-11 Council began undertaking a targeted weed control program at Civic Ave Reserve, Monterey (also known as northern Scarborough Ponds or Patmore Swamp). This program commenced in July 2010 and since then 1139 hours of various bush regeneration works have been completed, resulting in:

- ◆ Significant progression on noxious weed removal targeting Lantana, Green Cestrum, Small Coral Trees, Blackberry, Castor Oil, Pampas grass, *Ludwigia peruviana*, and terrestrial Alligator weed.
- ◆ Collection and propagation of local seed of 5 species for revegetation.
- ◆ Identified sites for revegetation in key areas and planned for site preparation (herbicide of woody weeds and securing of local stock for planting).
- ◆ Monthly photographic monitoring of the site.

The key areas were targeted including the Melaleuca Stand, Common Reed Stands, vegetation along tracks, Swamp Mahogany Forest, Bracken Stand, the waterway, and the Reed Land.

These works will continue into 2011-12 to ensure a significant reduction in weeds, and improve the native habitat through revegetation of key areas with native plants, and frog habitat creation.

## SCOTT PARK SALT MARSH

In response to the finding of the Riverhealth program (discussed in Chapter 3: Water) Council received funding from the Lower Georges River Sustainability Initiative (LGRSI) - a NSW Environmental Trust program - to undertake work at this important wetland. This work will include increasing the density and diversity of native vegetation within the site, removal of some introduced plant species, increasing the natural buffer between the salt marsh and the parklands, and removal of a number of mangrove seedlings that impact on the integrity of the salt marsh. The project will also include a small community planting event and wetland tour in late 2011.

## COOLIBAH RESERVE WEED MANAGEMENT PROJECT

As part of Council's noxious weed control program, a grant was obtained from the Sydney Metropolitan Catchment Management Authority to control weeds at Coolibah Reserve in Bardwell Park. This project aims to protect the natural environment and improve faunal habitat and water quality by removing noxious weeds and revegetating the riparian zone.

## NOXIOUS WEEDS

In late 2008 Rockdale City Council secured the employment of a part time Noxious Weeds Officer in conjunction with Ashfield and Canterbury Councils. The primary role of this position is to raise community and Council staff awareness on weed related issues.

Activities to date include: community workshops on weeds, training of Council gardening volunteers on weed identification, skilling Council staff on weed related issues, reviewing Council's weed policy documents, development of educational resources for the community and Council staff, undertaking on ground weed assessment, contacting relevant businesses such as nurseries and aquariums to raise weed awareness and representing Council at events.

The officer also attended the Sydney Central Weeds Committee meetings to advocate Council's position on weed management and to develop regional approaches to weed management.

During 2010-11, Council received and acted on 12 noxious weed complaints that arose from community concerns.

## **GREENING ROCKDALE – STREET TREE AND PUBLIC PLACE PROGRAM**

The draft Street Tree Master Plan Report for the City was used as a guiding document for planting approximately 175 new street trees throughout the city, the majority of which were native species.

## **KYEEMAGH BOAT RAMP RESERVE – LANDSCAPE IMPROVEMENTS**

Council was successful in seeking a matching grant from the NSW Department of Planning and Infrastructure's Metropolitan Greenspace Program to construct an off-road shared cycle link around the perimeter of the reserve, connected to the existing off-road regional foreshore path. The new cycle link will remove the safety conflicts for cyclists and pedestrians who previously negotiated vehicular and boat maneuvering in the car park and around the boat ramp. The path is scheduled for construction in late 2011.

## **TREE MANAGEMENT**

Council's principal regulation relating to trees is the Tree Preservation Order, which was adopted by Council in 2001. The Order aims to protect trees in the City of Rockdale, while retaining a property owner's common law rights to remove a nuisance created by overhanging branches. The cutting down, ringbarking, topping, lopping, removing, injuring or wilful destruction of any tree to which the Order relates is prohibited, except when consent from Council has been obtained beforehand.

Council has also adopted a Tree Management Policy which gives guidance to residents, applicants and Council Officers in the application of Council's adopted Tree Preservation Order.

In 2010-11 a total of 529 new applications were received for pruning or removal of trees located on private property. Of these, approximately 93% were approved. Some applications for work approved varied from what was applied for; for example Council may approve pruning instead of complete removal of a tree. A total of 504 permits were issued under the Tree Preservation Order, including permits for multiple works and reissue of expired permits. Council also assessed trees for protection, removal or pruning in relation to 180 development applications.

There were 1,433 requests received by Council's Tree Management Team for pruning or removal of trees located in streets and parks. The majority of the removed trees were replaced with indigenous species, including *Tristaniopsis laurina*, *Elaeocarpus eumundii*, *Elaeocarpus reticulatus*, *Cupanopsis*, *Banksia integrifolia* and *Banksia serrata*, *Harpulia pendula*, *Calodendron capensis*, *Callistemon sp* and *Ceratopetalum sp*. Council must take into account the location of powerlines and community safety issues when choosing species to plant in particular areas.

## **BIODIVERSITY EDUCATION**

Rockdale City Council recognises the importance of involving and empowering the community by developing and implementing programs which highlight the importance of Rockdale's biodiversity. In 2010-11 a number of biodiversity education events were held, including:

### **Bardwell Valley Open Day**

In conjunction with the Bardwell Valley Bushcare Volunteers, Council hosted a second Open Day at Bardwell Valley on 28 November 2010. Activities included bush regeneration, guided bushwalks, a native animal show, bush tucker BBQ and educational displays. The aim of the day was to share knowledge about the Bardwell Valley, promote its ecological significance and reinforce the importance of protecting our natural areas. Over 60 people attended the event.

## Rockdale Wetlands Tour

Two wetland tours were hosted in January and February 2011. The tours started at the north end of the wetland corridor at Eve Street wetland through to the inter-tidal wetland at Ramsgate, highlighting the importance of these significant ecological sites in providing habitat to a diverse number of species, including the threatened Green and Golden Bell Frog and migratory birds.

## Science of the Surf

The Science of the Surf talk was held in January 2011. The talk presented by Dr Rob Branda explained how to 'read' a beach including identifying rips and wave types to maximize individual safety while at the beach.

## Birdwatcher's Breakfast

This was a new event for Rockdale and was held in January 2011 at the Eve St wetlands. Tour leader Andy Burton identified wetland and urban bush land bird species in and around the wetland including general discussions on urban ecology.

## Gilchrist Park Rain Garden Opening

In March 2011 Council officially opened its second rain garden at Gilchrist Park in Bexley North. The public were invited to the opening day which included planting of the rain garden, educational displays, a native animal show, and BBQ.

## Stotts Reserve Bushcare

A new Stotts Reserve Volunteer Bushcare Group was launched and had its first official working day on 25 June 2011 supported by the Wollie Creek Preservation Society and Rockdale City Council. The day was well attended by volunteers and council officers. The bushcare group now regularly meets on a monthly basis in the reserve and continues to attract volunteers.

## ARNCLIFFE M5 BELL FROG MANAGEMENT COMMITTEE

The Green and Golden Bell Frog (*Litoria aurea*) (shown in Figure 5.5) is the only actively managed endangered species in the City of Rockdale. This species was once widely dispersed across Sydney and in the Rockdale wetlands but has undergone a catastrophic decline since the 1960s. Original habitat for this species has been lost and it now only survives in purpose built breeding ponds (constructed by the RTA) at Arncliffe. The frogs also move out from the ponds to forage on the Kogarah Golf Course at night.



Figure 5.5 - Green and Golden Bell Frog. Photo courtesy of Dr Arthur White.

The Management Committee undertakes constant monitoring of the frog population – one night each month a survey is carried out where frogs are caught, weighed, measured, fitted with an identification microchip, checked for signs of injury or disease and released. Tadpole surveys are also done and water levels in the ponds are managed to maximise frog breeding and tadpole survival. If frog numbers decline, contingency measures are enacted to further protect the remaining frogs and to facilitate further breeding. Without this level of active management, the Arncliffe population of this endangered species could potentially be lost.

Rockdale City Council acknowledges the invaluable contribution made by Dr Arthur White to the Management Committee.

## THREAT ABATEMENT PLANS

The OEH is required to prepare and implement threat abatement plans to manage key threatening processes. Public authorities, such as councils, are to take action to implement measures included in a threat abatement plan for which they are responsible and must not make decisions that are inconsistent with the provisions of a threat abatement plan. A council identified in a threat abatement plan as responsible for implementation must report on actions taken to implement measures in its annual report.

While Rockdale City Council has not been identified as responsible for implementing any specific threat abatement measures, Council has identified that the following threat abatement plans are of interest to Council when undertaking works to protect local biodiversity:

- ◆ Predation by the Red Fox Threat Abatement Plan
- ◆ Predation by the Plague Minnow Threat Abatement Plan
- ◆ Bitou Bush and Boneseed Threat Abatement Plan
- ◆ Removal of Large Woody Debris from NSW Rivers and Streams Threat Abatement Plan (NSW Department of Primary Industry).

## RECOVERY PLANS

### **Downy Wattle (*Acacia pubescens*)**

Council is referred to in the Recovery Plan for *Acacia pubescens*. This is a small wattle that is found on the Bardwell Valley Golf Course. The Recovery Plan requires that Plans of Management are prepared and implemented, including actions to protect sites of *Acacia pubescens*. Council has developed the Bardwell Valley Plan of Management, which is currently under review. Appropriate actions will be included to protect sites containing *Acacia pubescens*.

### **Green and Golden Bell Frog (*Litoria aurea*)**

Council is referred to in the Draft Recovery Plan for the Green and Golden Bell Frog, which is yet to be finalised. However, the Management Plan for the Green and Golden Bell Frog Key Population of the Lower Cooks River was finalised in August 2008. Actions in this plan have been incorporated into Council's Environment Plan. Council addresses actions to protect the frog population in a number of ways, for example; assessing development applications, and waterway maintenance.

## VOLUNTEERS

Rockdale City Council recognises the important and invaluable contribution that volunteers make in creating and enhancing the natural environment of the City of Rockdale.

### **Wolli Creek Preservation Society**

Wolli Creek forms a northern boundary for Rockdale LGA from Kingsgrove to the Cooks River. Community

bushcare work in this area is primarily undertaken by the Wolli Creek Preservation Society (WCPS). This society is committed to the conservation, enhancement and expansion of the regionally significant bushland in the Wolli Creek and Bardwell Creek catchments.

In 2010-11 the WCPS continued its many activities to protect and enhance the area and to raise awareness of its natural values. Activities undertaken include, bush regeneration, planting, bird surveys, bat counts, talks, guided walks for adults and for schools, and kayak trips on the creek. Five bushcare groups continued to be organised by the Society. A new grant was obtained in 2010-11 from the Commonwealth Government for continued bush regeneration work in NW Illoura Reserve while continuing State grants and unfunded arrangements supported restoration at Wolli Bluff, Jackson Place saltmarsh, Undercliffe Track, Bray Ave wetland, Paperbark Creek and Johnston St. While these works occur outside of the City of Rockdale they help restore important habitat for fauna (particularly birds and bats) found within the City of Rockdale.

In June 2011 the WCPS and Council, with local volunteers, launched a sixth Wolli bushcare group operating in Stotts Reserve within the City of Rockdale. New volunteers are always welcome for a variety of activities. WCPS can be contacted via [info@wollicreek.org.au](mailto:info@wollicreek.org.au) and PO Box 270 Earlwood, NSW 2206.

### **Stotts Reserve Bushcare Group**

The drive to form the Stotts Reserve Bushcare group came from local residents and with support from Council and the WCPS. A very successful inaugural working day was held on the 25 June 2011 with an initial volunteer group of 25. This bushcare group continues to be coordinated by the WCPS with support from Council in the form of publicity, training and funding. The group meets monthly and has a paid supervisor from the National Trust to act as a mentor and trainer to the volunteers.

This group works exclusively in Stotts Reserve, a remarkably diverse and healthy patch of bushland in the middle of Bexley North. The bushcare group will be primarily involved in weed maintenance activities with the potential for some minor bank restoration work.

### **Bardwell Valley Bushcare Group**

The Bardwell Valley Bushcare group has been meeting for many years to enhance the natural environment of the Bardwell Valley parklands and has a core group of very experienced volunteers. This group also has a strong relationship with the WCPS and a long involvement with Council. Council has been widely publicising bushcare and bushcare training within the LGA with the result that several new volunteers have joined the Bardwell group in 2010-11. The Bardwell group primarily works in Binnamittalong Gardens area of the valley. This area is home to over 250 plant species including the threatened plant species *Acacia pubescens*. Approximately 400 hours of bushcare work is performed by volunteers in Bardwell Valley Parklands each year. Most of the hours were performed in bush regeneration, revegetation and rubbish removal. Additional volunteer hours involved providing information and training, liaising with Rockdale City Council staff, and supporting council events. Contact details: Kath Wade on [kathwadel@optusnet.com.au](mailto:kathwadel@optusnet.com.au). Previous experience is not required.

### **Scarborough Ponds South Bushcare Group**

The Scarborough Ponds South Group has been working for many years and has a core group of very experienced and knowledgeable volunteers. Contact details: Arthur White at [1arthur@tpg.com.au](mailto:1arthur@tpg.com.au)

A bushcare training day and volunteer drive is planned for September 2011, with the aim of establishing a regular bushcare group for the Patmore Swamp (north Scarborough Ponds area). Contact details: Rockdale City Council's Environmental Strategist on 9562 1756.

### **Council Support for Volunteers**

Council's bush regeneration team provides assistance to bushcare volunteer projects as part of their work program through the provision of material support through the supply of native trees, gloves and additional materials as required.

# 6. Waste Management & Minimisation

Waste management and minimisation has become an important community issue. The Sydney region produces over 3 million tonnes of solid waste each year; more than half of this waste derived from commercial, industrial, construction and demolition activities. Diminishing landfill facilities close to Sydney has resulted in the NSW Government establishing a waste avoidance and resource recovery target of 66% reduction of waste going to landfill by the end of 2014.

The *Waste Minimisation and Management Act 1995* was introduced to assist in implementing actions to achieve the 66% waste reduction target. The OEH has published a framework to better manage waste and to achieve waste avoidance, and resource recovery on a regional basis.

## State and Pressures

The community of the City of Rockdale is growing in wealth and disposable income, as well as increasing in population. These attributes will increase the amount of waste produced. The quantity of domestic waste which is separated by householders as recyclable material is measured by two performance indicators: the diversion rate (the proportion of recycling in the total waste stream), and mass of recycled material per person per annum. The measures for Rockdale are outlined below (Table 6.1), and indicate a general increase in the amount of recyclable materials recovered over the recorded time period and a slight but steady increase in the amount of waste collected in 2010-11.

Table 6.1 Waste and recycling collection records 2000-2011 for City of Rockdale.

Year	Pop <sup>n</sup>	Garbage (tonnes)	Recycling (tonnes)	Total (tonnes)	Garbage kg / capita	Recycling kg / capita
2000/01	90,810	22,730	7,877	30,617	250.3	86.74
2001/02	92,869	22,443	7,447	29,890	241.66	80.19
2002/03	93,490	22,388	8,465	30,853	239.47	90.54
2003/04	94,115	22,893	9,148	32,041	243.24	97.2
2004/05	95,036	23,070	9,336	32,406	242.75	98.24
2005/06	95,341	23,541	9,489	33,030	246.91	99.53
2006/07	98,000	24,924	10,867	35,791	254.33	110.89
2007/08	98,588	27,731	9,826	37,557	281.28	99.67
2008/09	99,081	28,523	9,437	37,960	287.88	95.25
2009/10	100,447	29,009	8,863	37,872	288.80	88.24
2010/11	103,164	29,676	9,240	38,916	287.66	89.57

The net mass of waste generated per capita has remained relatively stable for several years. Residents disposed of 288 kg per person per annum to landfill in 2010-11. The amount of garbage generated was 29,676 tonnes and amount of waste recycled was 9,240 tonnes – almost 24% of waste generated is being recycled. There has been no reduction in the total waste stream mass although this will only be achieved when there have been reductions in the mass of packaging on consumable items, and the use of more recyclable materials in consumable items universally.

Council also collected 613 tonnes of illegally dumped material and 1,179 tonnes of litter from the City's parks and shopping centres in 2010-11.

# Responses

## WASTE SERVICE

Council provides a comprehensive waste service to domestic residences, as summarised below:

- ✦ Twice weekly household garbage collection from home units – shared 240 litre bins and 1,100 litre bins
- ✦ Weekly household collection for single dwellings - 240 litre bin
- ✦ Weekly collection of co-mingled recycling for multi unit dwellings - shared 240 litre bins
- ✦ Fortnightly collection of co-mingled recycling for single dwellings - 240-litre 'yellow lidded' bin for paper, plastic bottles, steel and aluminium cans, etc.
- ✦ Weekly on call waste pick up service for any solid wastes such as furniture, appliances large or small, small amounts of building material, etc.
- ✦ Four street pick up services/year for green waste, white goods and mixed general waste
- ✦ Monthly drop-offs for garden waste at Council's depot
- ✦ Free mulch back service (on call) for garden waste to be mulched on site and given to the residents in a reusable bag for their gardens.

A service providing sharps drop-off facilities and sharps container supply and collection is also arranged by Council at local participating pharmacies. Consumers who use sharps are advised of the service and participating pharmacies by the Area Health Service and pharmacists.

## WASTE CONTRACTS

Council has adopted the 'St George Regional Councils Waste Contract', a joint agreement for waste disposal and collection with Kogarah and Hurstville Councils. The three Councils have collectively agreed to participate in the contract which is worth \$120 million over the next ten years. This joint activity will save the Councils a total of \$46 million in waste collection fees in comparison to previous contracts.

## WASTE AVOIDANCE AND RESOURCE RECOVERY STRATEGY

In June 2007 Council adopted a Waste Avoidance and Resource Recovery Strategy (WARRS). The Strategy outlines milestones which Council will achieve over the next 13 years and is guided by best practice approaches with the principles of ecologically sustainable development. In addition, in June 2009 Council's Waste and Cleansing Services Department finalised a Waste Education Strategy which aims to influence and change people's behavioural practices through waste and litter education programs.

## RECYCLING

Through a regional recycling contract, Council has achieved better recycling outcomes, extending the range of products collected and improving the disposal cost and outcomes. Council is also trialling recycling programs at sporting events and the outcomes of these trials will be used to inform and implement recycling programs at public events in the City of Rockdale.

Council developed a Waste Not Development Control Plan for the construction industry. This plan incorporates information on waste recycling opportunities for construction and demolition sites. In addition Council requires the submission of Waste Management Plans as part of development assessment process for all new works involving construction, excavation and demolition; above and in ground swimming pools; or any works over \$20,000. A Waste Management Plan is a brief outline of the waste likely to be produced as a result of a proposed development, with details of how those wastes will be managed. Builders and developers can save money on tipping fees by avoiding, reusing and recycling 'waste' materials.

## ILLEGAL DUMPING AND LITTER

Illegally dumped waste continues to be an issue across the City. Council provides a service to remove illegally dumped waste on public lands across the City and is continually seeking effective methods of reducing this form of waste.

To reduce the impact of litter on our stormwater system and waterways, Council provides street sweeping, both mechanical and manual and a street litter bin service. Litter bins are placed mainly in commercial areas and reserves and are emptied by a regular waste collection service. A mechanical beach cleaning rake collects litter and weed from the beaches and manual litter picking is undertaken in parks and high activity commercial areas.

## WASTE EDUCATION

Waste education is an important component of waste management. In recognition of this, Council has developed a waste education strategy. This strategy aims to educate and empower the community to minimise waste. To help achieve this Council ran a number of waste education programs in 2010-11 including:

### Clean Up Australia Day

A number of school, business and community clean up sites were registered in the City of Rockdale. Council supplied tools, gloves and all the safety gear for volunteers to use, as well as a BBQ for all of the volunteers who worked on the day at Kyeemagh beach. This year approximately 4,000 kilograms of rubbish was collected from the Rockdale City Council area as a result of this initiative. Registrations for the day included:

- ◆ 20 registered sites in total with schools registering 9 of those sites.
- ◆ Of the 9 schools taking part there was a total of around 2,000 children getting their hands dirty for the cause.
- ◆ Approximately 300 registered volunteers for the Sunday cleanup.

### Mobile Muster

Council established five collection points in the City of Rockdale where residents can responsibly dispose of their mobile phones and appliances. These collection points have resulted in approximately 100 mobile phones being diverted from landfill where toxic substances leach into the groundwater and non-renewable materials are lost.

### Composting and Worm farm workshops

A workshop was held to teach residents about the joys and benefits of home composting and wormfarming with practical displays and hands on demonstrations to show them how composting and wormfarming can incorporate the 3 R's of waste management (Reduce, Reuse, Recycle).

### Waste Education for Schools

Many different and varying waste and environmental education classes, sessions and workshops were held across all schools in the Rockdale area. These included the following topics:

- ◆ The 'Drain Is Just for Rain' program which broadly covers areas of waste management, noise pollution and water pollution issues.
- ◆ Composting - these were specific detailed sessions provided to schools on composting where a compost system was built and set up on the school grounds and all the students were taught how to use and maintain it to eliminate food waste from the school.
- ◆ Worm farming - these were specific detailed sessions on wormfarming where a wormfarm system was built and set up on the school grounds and left with the school to maintain to eliminate food waste from the school.
- ◆ Recycling - these were detailed and specific to recycling where the students were taught to recycle everything that was available to be recycled from the school. Prior to these sessions many schools only recycled paper and everything else was sent to landfill. Afterwards the school was set up with a fully co-mingled recycling service and additional yellow lid recycling bins were given to the school to cope with the additional material.

# 7. Environmental Amenity

## NOISE

### Traffic Noise

Road traffic continues to be a significant source of noise within the City of Rockdale, which is a result of the City being a major transport thoroughfare to and from the Sydney CBD, Sydney Airport and Port Botany Shipping Terminal.

### Aircraft Noise

Aircraft movement generates a significant amount of noise for residents of the City. The continuing increase in residential density results in more people exposed to aircraft noise in this area. In 2010-11, there were 1,466 complaints from 156 complainants to Airservices Australia. This is a significant increase in complaints (63% higher than last year) and a slight increase in complainants in comparison to the previous financial year. Monitoring of the number of complaints of aircraft noise is undertaken by Airservices Australia who publish regular noise and flight path monitoring reports, which are available on their website at: [www.airservices.gov.au](http://www.airservices.gov.au).

### Domestic and Commercial Noise

Council's authorised officers respond to numerous complaints which are mostly of a neighbourhood nature. Council received 642 domestic noise complaints in 2010-11. These included complaints concerning common domestic noise, barking dogs, noise from other animals and birds, air conditioners, intruder alarms and loud music. Complaints about noise, such as the playing of music emanating from inside residences to other residences, are tending to increase due to the closer proximity of newly constructed domiciles. The increase in the number of air conditioners being installed has added to noise complaints received by Council. Other less common complaints relate to commercial activities such as working in contravention of approved hours of development consent, construction site noise, and excessively noisy equipment.

The OEH (formally EPA) 'Industrial Noise Policy' continues to assist Council with the assessment of noise from commercial and industrial sources. The OEH 'Noise Guide for Local Government' assists Council with the management of both commercial and domestic noise.

## SAFER CITIES

Rockdale City Council strives to provide a safe and clean living environment for the community. To be able to provide this type of environment to the community, Council works continuously at building stronger partnerships with local authorities and organisations to implement successful programs and outcomes. Council continues to work to improve communication channels between the community and Council, so Council can be kept up to date on current safety issues and trends.

In 2010-11, the Safer Cities Program has seen Council liaise with key stakeholders such as police, businesses and the local communities to work co-operatively to prevent crime. Rockdale City Council in conjunction with the St George Local Area Command has run a number of Safety Programs including Operation Clempett.

Council has researched and monitored the incidence and trends in crime, and consulted with the community so that efforts to reduce crime can be effectively implemented. Council has undertaken a number of safety audits of priority public sites and developed action plans to prevent crime through improved environmental design and other community initiatives. The use of environmental planning powers to prevent crime by enforcing all Development Applications meet with DCP 67 Crime Prevention through Environmental Design has also been promoted.

It has been identified that the City of Rockdale has a number of areas that are prone to illegal dumping. In its efforts to stamp out illegal dumping, Council is using a variety of methods to catch environmental vandals. The program has been named Operation Eradicate, one of these methods includes the use of a portable CCTV system. Operation Eradicate was developed by Council's Community Services Unit and is being delivered in partnership with Council's Regulation Team, Waste Services and the NSW Police Department.

A number of Rapid Deployment Cameras have been deployed into identified hot-spots in 2010-11. By deploying cameras into these hot-spots, Operation Eradicate aims to stop illegal dumping throughout the LGA as well as to improve Community Safety. These cameras have been funded through the Safer Cities Budget.

Working jointly with the NSW Police Department, Council has implemented graffiti abatement strategies to reduce the reoccurrence of graffiti and prevent crime. By implementing these strategies Council has reduced the amount of graffiti by 5,435 square metres removed in 2010-11 (Table 7.1).

Graffiti has been removed from private, commercial, utilities buildings and Council properties. More than half of this amount is from private and commercial buildings. The graffiti abatement strategy reflects Council's strong commitment to keeping the City of Rockdale 'graffiti free'.

Table 7.1 - Graffiti removed during the 2010/2011 period.

<b>Suburb</b>	<b>Job Count</b>	<b>Square Metres of Graffiti Removed</b>
ARNCLIFFE	53	31
BANKSIA	18	185
BARDWELL PARK	25	64
BARDWELL VALLEY	12	42
BEXLEY	131	421
BEXLEY NORTH	48	194
BRIGHTON	71	429
CARLTON	107	214
DOLLS POINT	21	88
KINGSGROVE	80	280
KOGARAH	115	319
KYEEMAGH	22	37
MONTEREY	43	186
RAMSGATE	79	294
ROCKDALE	283	1851
SANDRINGHAM	16	43
SANS SOUCI	89	388
TURRELLA	13	30
WOLLI CREEK	12	49

For more information on Community Safety information and tips visit Rockdale City Council's website at [www.rockdale.nsw.gov.au](http://www.rockdale.nsw.gov.au).

# 8. Heritage

The City of Rockdale possesses a number of unique built, natural and cultural (Aboriginal and non-Aboriginal) features which are considered to be significant contributors to local, state and national heritage. These features hold significance for a variety of reasons, including historic value, aesthetic value, architectural, technical or social value. Whilst buildings remain the most common type of heritage item within the City of Rockdale, a number of natural features are also included on Council's Heritage Schedule.

The promotion of natural and cultural heritage conservation within the City of Rockdale is undertaken through a range of projects. Council's website contains information about heritage within our City, identifying common architectural styles and links to detailed maps showing the distribution of Victorian, Federation, Californian Bungalows, Between the Wars, and Post-war Period Dwellings across the City. The website also contains a list of all heritage items within the City which are listed in the current Rockdale LEP, the benefits of heritage listing, concessions for owners of heritage items, and links to other heritage websites such as the NSW Heritage Office website.

Council has prepared an assessment of architectural styles across the City, as well as preparing information sheets on all heritage-listed properties which can provide useful information for owners of heritage items.

Council conducted a review of its existing Heritage Inventory as part of the preparation of the draft Rockdale LEP 2011. The outcome of this review is that more thorough and up to date information is available on the City's heritage items. Duplicate listings, anomalies, and inaccuracies, as well as items no longer considered to be of heritage significance were also identified, and the Environmental Heritage Schedule in the draft Rockdale LEP 2011 was amended accordingly.

The Heritage Inventory review report contained a number of recommendations to improve heritage management in the City of Rockdale. To implement these recommendations Council successfully applied to the Heritage Branch for funding for a part time Heritage Advisor. This position will be filled in 2011-12.

# 9. Environmental Management

## ROCKDALE CITY COUNCIL ENVIRONMENT PLAN

Rockdale City Council aims to protect the natural environment of our City and integrate the principles of ecologically sustainable development into all of its activities. In 2003 Council adopted an Environment Policy and following this, adopted the Rockdale City Council Environment Plan which provides direction for Council to implement sustainability initiatives into the LGA and Councils own daily operations. The Environment Plan is a continually evolving strategic document, serving as a blueprint for the City to move towards a more sustainable city. The transition to becoming a 'sustainable city' involves long term planning to rethink the way we live, use resources, and do business. Implementation of the Environment Plan is the responsibility of all units of Council and responsible officers have been identified for each action.

Monitoring and reporting on the progress of the Environment Plan is an important step. The implementation and monitoring of the Plan is overseen by the Environmental Strategy Team and many of the actions reported in the State of the Environment Report originated from the Environment Plan.

## CLIMATE CHANGE AND ENVIRONMENT ADVISORY COMMITTEE (CCEAC)

Council also has a formal Climate Change and Environment Advisory Committee that meets on a monthly basis to discuss environmental and sustainability issues and opportunities, and how best to manage and pursue them. Councillors and key Council staff along with relevant presenters are invited to attend these meetings to raise and discuss specific topics.

Some topics raised for discussion at these meetings in 2010-11 include:

- ◆ Sustainable transport options in the Rockdale LGA.
- ◆ The Cooks River Alliance.
- ◆ State Government coastal planning guidelines.
- ◆ Waste management.
- ◆ Development of Council's key environmental event.
- ◆ Energy efficiency projects.

## ENVIRONMENTAL IMPACT OF COUNCIL ACTIVITIES

Council continues to improve its own environmental performance by providing ongoing training for staff through information sessions and distribution of information in staff newsletters and bulletins. Examples of staff education initiatives and events held in 2010-11 include:

- ◆ Ride to Work Day – Council staff participated in this national event aimed at promoting the environmental and health benefits of cycling.
- ◆ Environmental Risk Assessment Training to ensure that staff are up to date on how to properly conduct environmental risk assessments prior to starting any works.
- ◆ Green with Env-E – Council has worked in conjunction with TAFE NSW to develop a 6 module online learning tool designed to equip Council staff with skills to perform their roles in accordance with Council's environment policy. The 6 modules cover topics such as ecologically sustainable work practices; managing energy use and waste; and compliance with environmental legislation which will provide staff with a greater understanding of how to protect the environment. Over 15 staff members undertook the Green with Env-E training in 2010-11 and this training will occur annually.

Environmental auditing of operational staff continues, ensuring that correct procedures are followed and staff environmental practices are regularly reviewed. Council's Works Depot and Nursery have an Environmental Management System which is accredited under the international standard ISO14001. To maintain this accreditation, Council is regularly audited by an independent auditor to assess the quality of Council's Environmental Management System. The Environmental Management System ensures we are aiming to continually improve our environmental practice.

## **ENVIRONMENTAL AND SUSTAINABILITY EDUCATION**

Council conducted a range of educational and community engagement activities of a broader environmental and sustainability nature.

### **EnviroWorks - Green Living for our Future**

EnviroWorks is a five week course free to St George residents and covers a range of topics including waste minimisation, detox your home, green cleaning, energy efficiency, sustainable transport, composting, worm farming, water efficiency and bush regeneration. Courses include a tour of the Lucas Heights Waste and Resource Recovery Facility. The program's aim is to provide practical solutions to residents to reduce their ecological footprint. The St George Councils ran four courses over the year attended by 100 residents. This program continued through 2010-11 and will continue into 2011-12.

### **School Eco Projects**

Council continued its school's environmental education program in 2010-11. The School Eco Projects program is designed to assist schools in taking environmental initiatives which will benefit the whole school. Projects offered include the establishment of a no-dig garden, a compost bay, storm water drain stenciling, or tree planting in the school grounds. Further details of this education program are listed in Chapter 6 – Waste Management and Minimisation.

### **No Dig School Vegetable Gardens**

Workshops are held at vegetable gardens that are built on school grounds to provide the kids and staff with edible vegetables that they grow themselves. These workshops were held at schools in Bexley North, Moorefield, Carlton, and Kyeemagh.

### **Green Noticeboard**

Council has continued to maintain a notice board in its foyer to promote environmental events, workshops and sustainability tips to the community.

## **REGIONAL EVENTS**

Clean Up Australia Day is a national program that Rockdale City Council supports residents and schools to participate in annually. Details of this event held in 2010-11 can be found in Chapter 6 - Waste Management and Minimisation.

# Appendix I

## State of the Environment Report Scorecard 2010-2011

Indicators	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
<b>Land</b>												
No. development and building approvals	1940, 1010 <sup>1</sup>	1,157	1,154	2,080	1,128	1,022	707	782	782	642	676	625
No. construction certificates determined		763	723	629	624	458	304	360	243	391	405	393
No. complying development certificates				12	23	36	32	38	38	31	38	68
No. sites regulated under the Contaminated Land Management Act	6 <sup>2</sup>	6 <sup>2</sup>	10 <sup>2</sup>	0	0	2	2	2	2	2	2	2
<b>Water</b>												
No. water complaints to Council	53	45	75	47	68	37	52	62	18	18/100 <sup>3</sup>	17	28
No. of water incidents reported to DECCW	-	-	-	-	54	58	45	20	15	18 <sup>4</sup>	9	9
Water usage within City of Rockdale (kL)	9,790,202	9,987,528	9,945,799	10,189,873	9,170,702	8,721,066	8,864,367	8,760,513	7,191,163	8,696,368	N/A	N/A
Council water usage (kL)	-	-	-	-	-	-	-	-	57,194	65,090	76,628	78,990
No. of rainwater tanks installed (based on Sydney Water rebates)				1	18	41	89	95	76	42	N/A	N/A
No. treatment devices installed by Council	84	11	2	5	18	4	4	6	5	4	3	1
No. of premises with DECCW discharge licences	4	4	4	10	8	7	7	7	5	1	1	1
Percentage of catchment area covered by stormwater devices	-	-	-	-	-	-	-	-	15-20%	25%	29%	30%
<b>Atmosphere</b>												
No. Air Quality Index exceedances	4	13	16	14	12	6	18	11	1 <sup>6</sup>	6	27 (20 of these for nephelometer, which is a new measure for 2009/10)	10
No. air pollution complaints to Council	25	32	43	53	46	30	64	62	48	88	62	63
No. air pollution incidents reported to DECCW	-	-	-	-	19	3	9	7	7	19 <sup>4</sup>	-	3
Electricity consumption within the City of Rockdale (MWh)	n/a	409,291	n/a	553,518 <sup>7</sup>	n/a	564,964 <sup>7</sup>	544,275 <sup>7</sup>	440,865 <sup>8</sup>	440,097 <sup>8</sup>	447,375 <sup>8</sup>	389,399 <sup>15</sup>	N/A
Council greenhouse gas emissions (tonnes)									69,316.53	N/A	N/A	N/A
Kms of cycleways through the City									51	62.4	63.64	64.9
Registered vehicles in the LGA (RTA)									53,323	57,778	58,774	60,061
No. of Council fleet vehicles <sup>13</sup>									132	128	115	121



Indicators	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
<b>Biodiversity</b>												
No. threatened species under Threatened Species Conservation (TSC) Act	1	1	1	1	10	20	20	21	21	22	22	22 (18 fauna + 4 flora)
No. of migratory species												20
No. endangered ecological communities under the TSC Act					4	6	6	7	7	7	7	7
No. Tree Preservation Order applications received					616	597	540	568	635	611	519	529
No. Tree preservation order permits issued	1,172	1,150	1,100	1,040	724, 323 <sup>10</sup>	681, 209 <sup>10</sup>	610	532	600	567	547	504
No. of noxious weeds complaints to Council	20								6	7	11	12
<b>Waste</b>												
Tonnes domestic waste generated	22,341	22,730	22,443	22,388	22,893	23,070	23,541	24,924	27,731	28,523	29,009	29,676
Tonnes domestic waste recycled	7,683	7,877	7,447	8,465	9,148	9,336	9,489	10,867	9,826	9,437	8,863	9,240
Waste to landfill per capita (kg)	247.35	250.3	241.66	239.47	243.24	242.75	246.91	254.33	281.28	287.88	288.80	287.66
Waste recycled per capita (kg)	85.06	86.74	80.19	90.54	97.2	98.24	99.53	110.89	99.67	95.25	88.24	89.57
Tonnes of engineering waste diverted from land fill									n/a	Concrete: 800T Asphalt: 1500T Sand/soil: 400T	Concrete 1,800T Asphalt 3,300T Sand/Soil 2,000T	Concrete 736T Asphalt 3,300T Sand/Soil 2,000T
Amount of litter collected from GPTs (tonnes)									49.761	N/A	72.11	152.44
Amount of illegal dumped waste collected (tonnes)									568.7	606	356	617
Total corporate paper use (A4/A3 reams)									4,316.6 <sup>11</sup>	3653 (A4) 140 (A3)	3031 (A4) 199 (A3)	3250 <sup>11</sup>
<b>Amenity</b>												
No. noise complaints to Council	406	337	149	231	342	310	159	101	54	114 + 472 <sup>12</sup>	130 475*	76 642 <sup>12</sup>
No. noise complaints from Rockdale City residents to Airservices Australia	1,750	1,673	1,048	452	515	233	307	207	948 <sup>13</sup>	230	898	1466
No. noise incidents reported to DECCW					1	10	6	6	3	3 <sup>4</sup>	4	4
<b>Heritage</b>												
No. sites registered with the Aboriginal Sites Register	4	4	4	4	4	4	4	4	4	4	4	4
No. heritage sites registered with National Estate	5	5	5	5	5	5	5	5	5	5	5	5
No. items on the State Heritage register of NSW	11	11	11	11	11	11	11	11	11	11	11	11
No. local heritage items in Council's Local Environment Plan	111 built & 32 natural	111 built & 32 natural	209 built & 36 natural	209 built & 36 natural	220 built & 36 natural	220 built & 36 natural	230 built & 36 natural	230 built & 36 natural	230 built & 36 natural	230 built & 36 natural	230 built & 36 natural	203 built & 34 natural

<sup>1</sup> Changes were made to the NSW Environmental Planning and Assessment Act. These figures represent development applications and construction certificates.

<sup>2</sup> The Unhealthy Building Land Act has been repealed. These figures represent the number of contaminated sites subject to Section 35 notices under the Act.

<sup>3</sup> Previously this indicator only recorded water quality complaints. From 2008-09 this indicator incorporates stormwater complaints as well. Number of complaints received directly related to water quality has remained stable from last year (18).

<sup>4</sup> Pollution incidents reported to the NSW Department of Environment, Climate Change and Water (DECCW) where the DECCW is the Appropriate Regulatory Authority.

<sup>5</sup> Compliance with data year-round, past results indicate compliance during summer only.

<sup>6</sup> The Regional Pollution Index form of reporting was replaced in 2007-2008 by the Air Quality Index measure which is explained in the Atmosphere chapter of this report.

<sup>7</sup> Energy Australia supplied data by postcode, which does not follow local government boundaries. Actual energy use would be significantly lower than this figure.

<sup>8</sup> Energy Australia data based on Rockdale City Council actual local government boundary.

<sup>9</sup> Two (2) of these flora species are presumed to be extinct within the City of Rockdale.

<sup>10</sup> The number of DAs with a condition of consent placed regarding tree preservation instead of issuing a Tree Preservation Order. Previously, a TPO has been issued along with the condition of consent, an unnecessary double-up.

<sup>11</sup> Indicator did not differentiate according to paper size.

<sup>12</sup> Barking dog complaints was a new indicator from 2008-09.

<sup>13</sup> It must be noted that a significant number of these complaints were made by the same complainants.

<sup>14</sup> Includes only the number of passenger vehicles.

<sup>15</sup> Ausgrid Average Electricity Consumption by LGA, this data does not include high voltage customers and supply to services such as public lighting and bus shelters. The total figure for Rockdale includes Non-Residential Medium-Large Sites (>160,000 kWh pa), Non-Residential Small Sites (<160,000 kWh pa) and a residential amount that was derived by multiplying the average yearly Rockdale household energy consumption of 5.787kWh/year by the number of households 40,529.

\* This information is only available April the following year of question.