



STATE OF THE ENVIRONMENT 2008



KIAMA MUNICIPAL COUNCIL
your council, your community

Executive Summary

A State of the Environment (SoE) Report for the Kiama Municipality is prepared for each financial year as a statutory requirement of the *Local Government Act 1993*. This report is a supplementary report for the period 1 July 2007 - 30 June 2008.

Each chapter of the report details the condition of, and pressures on the local environment. It also outlines the current and potential future responses to the identified environmental issues. The report contains a chapter for each of the following environment themes: *Land, Water, Noise, Biodiversity, Waste, Air and Cultural Heritage*. There is also a chapter called *Sustainable Communities*, which includes Headline Sustainability Indicators, measuring progress towards sustainability, and details the actions of Council to protect and enhance environment and promote healthy lifestyles. The final chapter, *Summary of Existing and Potential Future Activities*, provides an outline of all potential strategies that are identified within each theme chapter, placed within the framework of Council's Strategic Goals.

During the 2007-2008 reporting period, Council has undertaken a number of initiatives that address issues identified within the previous SoE Reports, which are summarised below for each environmental theme.

Land

- Council continued the review of the *Local Environmental Plan 1996*, with the aim of exhibiting the draft Kiama Local Environment Plan by the end of 2008 or early 2009.

Water

- Council's top eleven water using facilities have shown a saving of 9,707 kL/yr in water consumption, when compared to last years figures. The total water savings in comparison to the 2002-2003 baseline figures, have totalled 33,183 kL. This is a fantastic achievement, and a testament to the positive actions that have been adopted through the *Water Savings Action Plan*.
- Council continued work on two projects within the Minnamurra Estuary - bank stabilisation work as part of the NSW Estuary Program and stormwater pollutant control and riparian management from a grant obtained through the Southern Rivers Catchment Management Authority.
- Council continued the implementation of the Water Saving Action Plan for its operations, focusing on the high water using facilities. This included the continued employment of data loggers to detect leaks occurring at Council's top eleven water using facilities, the installation of a 3000 litre water tank to Stage 2 of the Independent Living Units at Bluehaven, the renovation of an amenities block at Seven Mile Beach Holiday Park, replacing the single flush cisterns with dual flush systems, and the installation of an additional two 15,000L rain water storage tanks at the Council Works Depot.

- As part of the Catchment Caretakers Grant, in conjunction with the Southern Rivers Catchment Management Authority, 31 Rapid Stormwater Filtration (RSF) units were fitted into stormwater drains in the two target areas of Surf Beach and Jamberoo. In addition, a Continuous Deflective Separation Unit (CDS Unit) was installed in the Surf Beach Catchment to treat runoff from part of the northern subcatchment.
- For the fifth consecutive year, households in Kiama used the least water in the Sydney, Blue Mountains and Illawarra Local Government areas.
- Ongoing educational and participational projects including focussing of Clean Up Australia Day 2008 on the Kiama Harbour and its surrounds.
- Council supported the Jamberoo Valley, Kendalls Beach, Lands Edge, Werri Lagoon CVA and Gerringong and Gerroa Streamwatch Water Monitoring Networks.

Noise

- Council continued to address noise pollution under the *Protection of the Environment Operations Act 1997*.

Biodiversity

- Rehabilitation projects were continued at Spring Creek Wetlands, Jerrara Dam and Robert East Reserve.
- The Roadside Vegetation Management Plan is being implemented. The primary objective of the plan is to protect the good quality remnant vegetation and to identify areas for revegetation and corridor enhancement.
- Council staff participated in the planting of 2000 trees along Ooaree Creek, Gerringong, as part of a joint initiative through the Southern Rivers Catchment Management Authority and Conservation Volunteers Australia.
- The Minnamurra Estuary Restoration group undertook tree planting on the Minnamurra Headland as part of grant funded works.
- Council supported Kiama High School students, as they undertook weeding and tree planting programs throughout Kiama Municipality as part of National Tree Day celebrations.
- Local Weed Control Programs for private landholders and government agencies have continued to be given high priority with 113 property inspections being undertaken over the past 12 months within the Kiama LGA.
- All Council lands previously known to be infested with Class 2 weeds[^] were inspected at least twice by 30 April 2007. No Class 2 weeds were recorded on Council owned lands over the past 12 months.

- Vacant Crown Land funding of \$2,710.00 was received to undertake weed control work at Werri Beach and Walkers Beach cliff line reserves, and at Seven Mile Beach. An additional \$5,000.00 was received under the Defeating the Weed Menace program to control Lantana at Jerrara Dam arboretum where it is impacting on the biodiversity of threatened species and communities at this site.
- The two major water catchments, namely Crooked River and Minnamurra River, were inspected along their length to ensure no new (aquatic) weed incursions

Waste

- A total of 59.54% of all waste received at the Minnamurra Waste and Recycling Depot was reused or recycled. This is an increase of 8.48% from the previous years figures.
- From July 2007 – June 2008 a total of 2,275.82 tonnes was recovered from green waste kerbside collection; an increase of 33.95% to previous year's results. This was due to the new green waste service being in place for a full year.
- In April, Council closed its Materials Recovery Facility and all recycling is now transported to WSN (Waste Service NSW) in Chullora, Sydney for sorting and recycling.
- Council supported the Annual Clean Up Australia Day focusing on Kiama Harbour, Schools Clean Up Australia Day and 8 Council staff participated in Business Clean Up Day cleaning up the surrounding areas of Council's Administration Building and Black Beach.
- To cater for the large number of residents that are single dwellers with small gardens, dog owners and/or to supplement existing composting systems with a home garden, Council investigated other forms of composting other than worm farm and compost heaps. Through its investigations, the Bokashi Bucket was trialled. In September 2007, Council offered the Bokashi Bucket to all its residents at a subsidised price of \$70. At June 2008, 92 buckets have been sold.
- Council supported Cards 4 Planet Ark program, Return of Used Medicines campaign and Clean Up Australia's Mobile Phone campaign.
- In March, 2008, Council trialled a "Second Hand Saturday" event at Gerringong. "Secondhand Saturday" is a giant community garage sale that will be supported by Kiama Council and is followed by a bi-annual area clean up. The event was a great success with 61 registered sites, approximately 3,000 people through the gates and raising \$700 for the invited host, Gerringong Surf Club. Similar events are now planned for the future.
- Continuation of the "Responsible Waste Kits" program aimed at holiday rental accommodation properties. This program allows Council to liaise with local Real Estate Agents who provide lists of holiday accommodation rental properties (approx. total of 175 properties) that they manage and allows us to

keep up to date with the distribution of Responsible Waste Kits for new listings. Kits include, waste calendars, bin stickers, “No Junk Mail” stickers, key rings and magnetised recycling posters for fridges.

- In September 2007, Council installed “Cartridges 4 Planet Ark” collection boxes within the Council Administration building for empty toner cartridges, toner/ink bottles and ink jet cartridges sourced from Council operations.
- In September, 2007, Kiama Council entered an agreement with Agsafe Limited to enable Council to conduct the drumMuster program at the Minnamurra Recycling Depot. This national program allows for the collection and recycling of empty, cleaned non-returnable crop production and on-farm animal health containers.

Air

- Council completed Milestone 3 of the Cities for Climate Protection Program – *The Greenhouse Local Action Plan for Kiama Municipality*. This plan sets Emissions Reduction Goals for both Council operations and the community.
- In December 2007, Council adopted a *No Burn* Policy within the Kiama Municipality. Under Part 2, Schedule 8 of the Protection of the Environment Operations (Clean Air) regulation 2002, and through authority delegated by the Department of Environment and Climate Change (DECC), Kiama Council is required to regulate outdoor burning in the Municipality.
- During this reporting period, Council purchased one an electric bike for use of staff on short trips around the Municipality. And, as a result of the success of last year’s One STOP CLIMATE CHANGE Shop, a second electric bike was donated to Council.
- An education program was undertaken to encourage the uptake of more 4 cylinder cars by Council staff. Approximately 33% of Council’s motor vehicle fleet is now comprised of 4 cylinder vehicles, and 70% of the commercial vehicles are now diesel.
- Council changed all trucks and plant to B20 Biodiesel, and continued to embrace the usage of E10 fuel in the Council fleet vehicles.

Heritage

- The Kiama Heritage Review Project continued as part of the development of a new Local Environment Plan. This involved the review of the current listing of Heritage buildings and sites and the identification of additional buildings to be considered for future Heritage listing.

Sustainability

- Six community projects were funded by Council's Sustainable Living Grants Program, addressing environmental, health and/or waste minimisation issues.
- Kiama Council's Environment and Health Team celebrated World Environment Day 2008, the theme of which was *CO2 - Lets Kick the Habit*. On the day, the team handed out a free Climate Change checklist fridge magnet and packets of vegetable seeds to the Kiama community.
- Planning and implementation continued on the three Urban Sustainability Grants obtained from the NSW Environmental Trust. These grants support and promote sustainable living practices on both a united regional scale and at a local municipal level. These included the Sustainable Illawarra Project, Business Treading Lightly and Sustainable Kiama Grants.
- The Illawarra Sustainability Roadmap project, part of the Sustainable Illawarra Grant, was progressed during the reporting period. This regional project, in conjunction with Shellharbour and Wollongong Councils, targets organisational sustainability across all areas of Council's operations. The Action Plan component of the Roadmap, which develops indicators and targets was drafted during the reporting period.
- The Kiama Public Health Plan was implemented, including projects such as Good Sports, Smoke Free Sporting Grounds, and various environmental projects.

During this reporting period, the Headline Sustainability Indicators showed varying trends.

Beach water quality was generally excellent with Jones, Bombo and Werri Beach showing 100% compliance, whilst Surf Beach was 97% compliant with the relevant guidelines.

River and Estuary Water Quality, was not monitored by Council during this reporting period.

Waste to landfill per capita has again decreased, and is well within the sustainable zone.

Air Quality reporting changed during this reporting period and could not be compared using the previous system.

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Chapter 1: Introduction

1.1 Kiama Municipality

The Municipality of Kiama is located on the south coast of New South Wales bordered by the Local Government Areas of Shellharbour, Shoalhaven and Wingecarribee. The area has a diverse range of physical environments, including beaches, rainforests and rural landscapes that attract a large tourist base each year. The Kiama Municipality is shown in Map 1.

The Australian Bureau of Statistics indicated that the estimated resident population figure for the Kiama Municipality at 30th June 2007, was 20,095 people. It is estimated that the population will increase to 21,384 in 2009 and 23,115 in 2019. Although there has been a constant increase in population in the area in the past, the percentage of population growth has declined over the last 20 years, with only 6.3% growth between 1996 and 2001 (Kiama Municipal Council, 2004a).

1.2 Relevant Council Strategic Goals

Kiama Municipal Council's *Management Plan 2008-2011* (Kiama Municipal Council, 2008a) outlines Council's Strategic Goals, in the following six areas: Sustainable Environment; Quality Facilities, Services and Infrastructure; Community Cohesion and Wellbeing; A Vibrant and Diverse Economy; Good Governance; and Sound Financial and Resource Management. The specific goals for Sustainable Environment and Community Cohesion and Wellbeing are outlined due to their particular relevance to this report.

Sustainable Environment

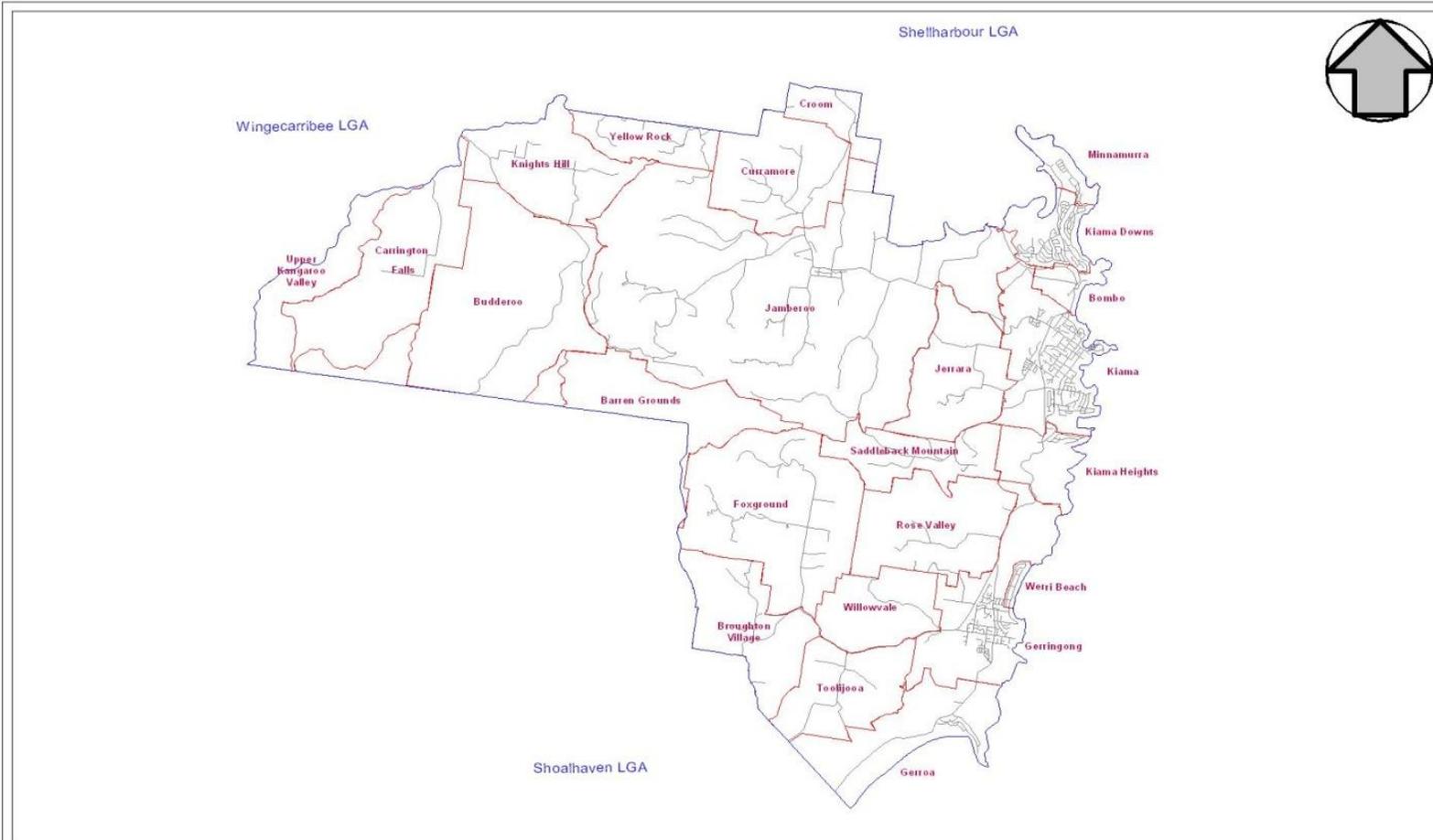
Council's goal is that "*Kiama will have high quality natural, rural, town and village environments and landscapes sustained and enhanced for the present and the future*".

Kiama Municipal Council will:

- Protect, enhance, manage and monitor the area's landscapes, places of heritage significance, and natural environments;
- Control and plan development of our built environment for the wellbeing of the community;
- Manage and reduce the environmental impacts of all activities on air, water and land systems;
- Promote environmental awareness through educational programs; and
- Provide leadership by demonstrating environmental excellence in all Council activities and policies.

Community Cohesion and Wellbeing

Council's goal is that the "*community will have an enhanced quality of life and that it will have promoted access, equity and social justice*".



KIAMA LGA

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Map 1: Kiama Local Government Area

Kiama Municipal Council will:

- Contribute to the health, safety and well being of the community;
- Involve the community and relevant stakeholders to plan, develop and facilitate access to services and resources;
- Promote awareness and understanding of cultural diversity;
- Recognise and support the value of cultural heritage; and
- Value and promote creativity in the community.

1.3 State of the Environment Reporting

A State of the Environment Report for the Kiama Municipality is prepared for each financial year as a statutory requirement of the *Local Government Act 1993*. The report details the condition of, and pressures on, the local environment and outlines the current and potential future responses to the identified issues. A comprehensive report is prepared every four (4) years, within 12 months of the election of any new Council. Supplementary reports are prepared for the other years, to update the information provided in the previous comprehensive report. This report is a supplementary report for the period 1 July 2007 - 30 June 2008.

The broad aims and objectives of the State of the Environment Report are to:

- Educate and inform the community, Council, Government and industry about the condition of our environment;
- Assess the progress towards achieving environmental goals and standards;
- Assess the progress towards achieving ecologically sustainable development; and
- Identify important environmental issues.

This report includes chapters which addresses each of the following environmental themes, as required by the *Local Government Act 1993*:

- Land;
- Water;
- Noise;
- Biodiversity;
- Waste;
- Air; and
- Heritage (Aboriginal and Non-Aboriginal)

Each of these theme chapters contains four (4) sections:

- State - outlines the condition of the environmental theme;
- Pressures - outlines the human and natural pressures on the environmental theme;
- Responses - includes the relevant local actions of Council, other levels of Government and the community, that address the environmental theme;
- Potential Future Activities - identifies possible actions that Council could undertake to address the identified issues.

Chapter 9: Sustainable Communities includes Headline Sustainability Indicators, to measure the progress towards sustainability, and details the current strategies of Council to address sustainability within the Municipality, including both strategies to protect the environment and promote healthy communities. It also includes details on those activities and programs that cover a range of themes and are consequently not included in a single theme chapter.

A new chapter has been included in this SoE Report - *Chapter 10: Summary of Existing and Potential Future Activities*. This Chapter provides a summary of existing future activities identified in the Management Plan 2008-2011 and potential future activities. These activities are also listed at the end of each relevant theme chapter. The potential future activities are outlined according to the relevant Council Strategic Goals to enable simple insertion into Council's Management Plan 2008-2011.

This report can be read in conjunction with previous Kiama Municipal Council *State of the Environment* Reports, the *New South Wales State of the Environment Report 2003* (Department of Environment and Conservation, 2003) and the *Australian State of the Environment 2001 Report* (Environment Australia, 2001).

Chapter 2: Land

2.1 State

2.1.1 Landuse Planning

The existing Kiama *Local Environmental Plan (LEP) 1996* is the main instrument used by council for land-use planning and development decisions. The LEP is currently being reviewed, with the aim of exhibiting the draft Kiama LEP by the end of 2008 or early 2009. The LEP provides landuse zones that indicate what is permitted or restricted within certain areas of land and what conditions apply. Table 1 lists the zones and the area of land to which they apply.

Table 1: Local Environmental Plan 1996 Zones

Zone	Area in hectares (% of total area)
Rural	8560.3 (33.2)
1a Rural A	8560.3
Residential	789.4 (3.06)
2a Residential A	727.2
Residential Land subject to Sydney Water	26.4
2b Residential B	35.8
Business	31.7 (0.12)
3a General Business	23.3
3b Special Business (Heritage)	2.3
3c Neighbourhood Business	2.0
3d Business (Tourist related)	4.2
Industrial	105.0 (0.41)
4b Extractive Industrial	83.0
4c Light Industrial	22.1
Special Uses	150.0 (0.58)
5a Special Uses	53.0
5b Special Uses (railways etc.)	97.0
Recreation	387.1(1.50)
6a Existing Recreation	357.8611
6b Private Recreation	29.2
6c Proposed Recreation	0.1
Rural Environmental Protection	10495.3 (40.7)
7b Rural Environmental Protection Zone – Estuarine Wetlands	361.2
7b1 Rural Environmental Protection Zone – Wetlands Buffer	13.5
7d Rural Environmental Protection Zone – Scenic	1309.9
7e Rural Environmental Protection Zone – Hinterland	8524.1
7f Rural Environmental Protection Zone –Foreshore Protection	265.9
7l Rural Environmental Protection Zone - General	20.8
National Park	4931.7 (19.1)
8a National Parks	4931.7
Roads	209.9 (0.81)
9a Proposed Arterial Road	9.2
Arterial Road	200.7
Deferred	97.4 (0.38)
Deferred Zone	97.4
Total	25758.1 (100)

Environmental Protection Zones are designed to manage and protect environmental assets such as scenic areas, foreshores and wetlands, and these zones carry certain development restrictions.

An overlay to the zones is the areas classified as High Conservation Value. The LEP describes the objectives of such areas and what is permissible within the areas. High Conservation Areas occur on approximately 26% of the Municipality.

There are three National Parks/Nature Reserves within the Municipality, namely Seven Mile Beach National Park, Budderoo National Park and Barren Grounds Nature Reserve.

2.2 Pressures

2.2.1 Development

Figure 1 shows the number of development approvals that Council granted for residential dwellings and for commercial and industrial activities from 1999-2008.

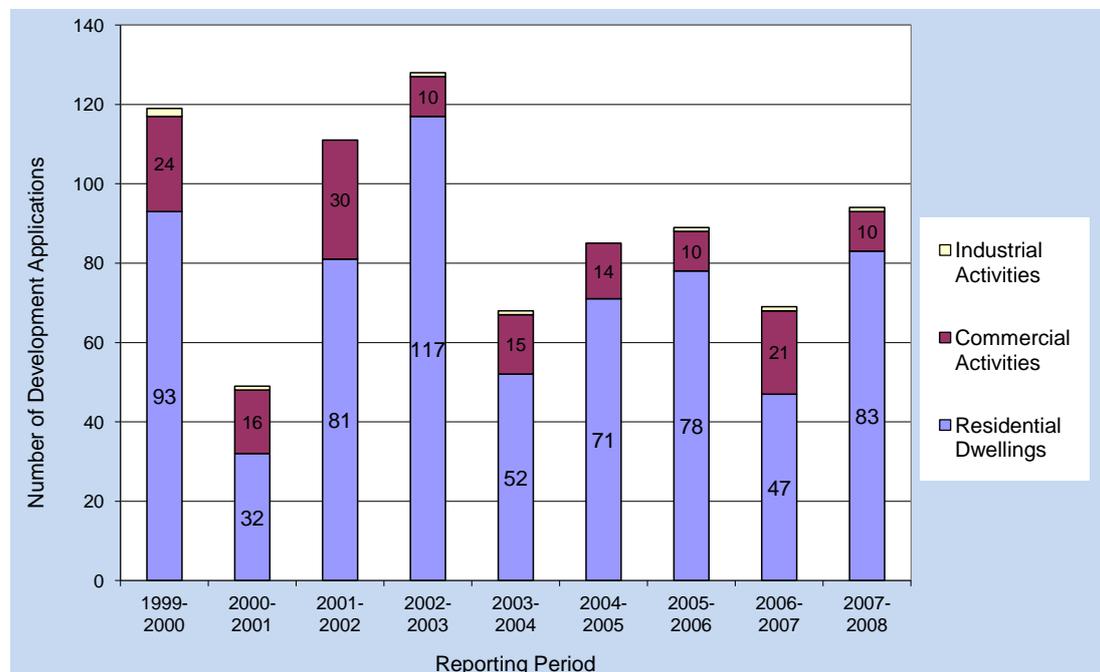
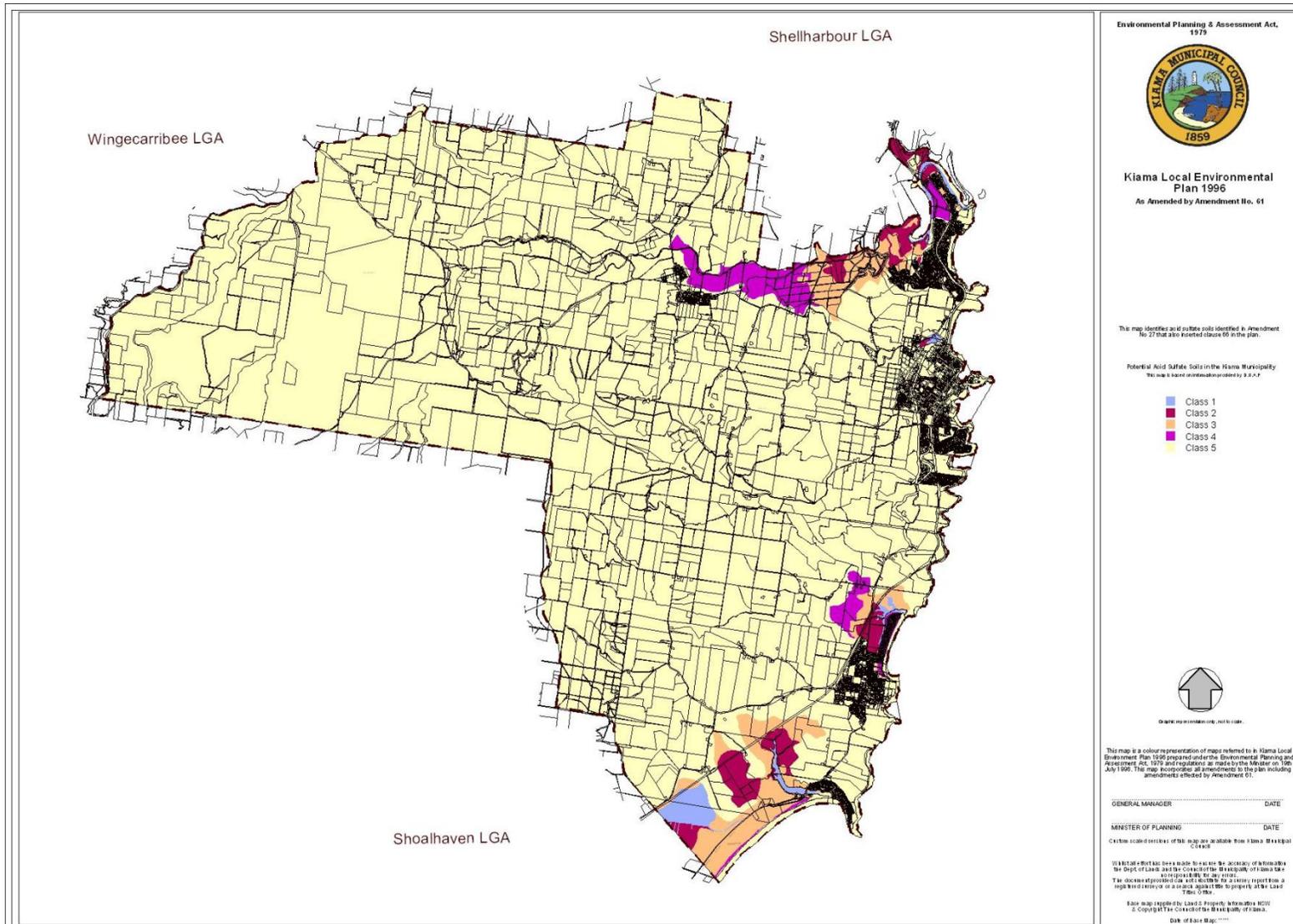
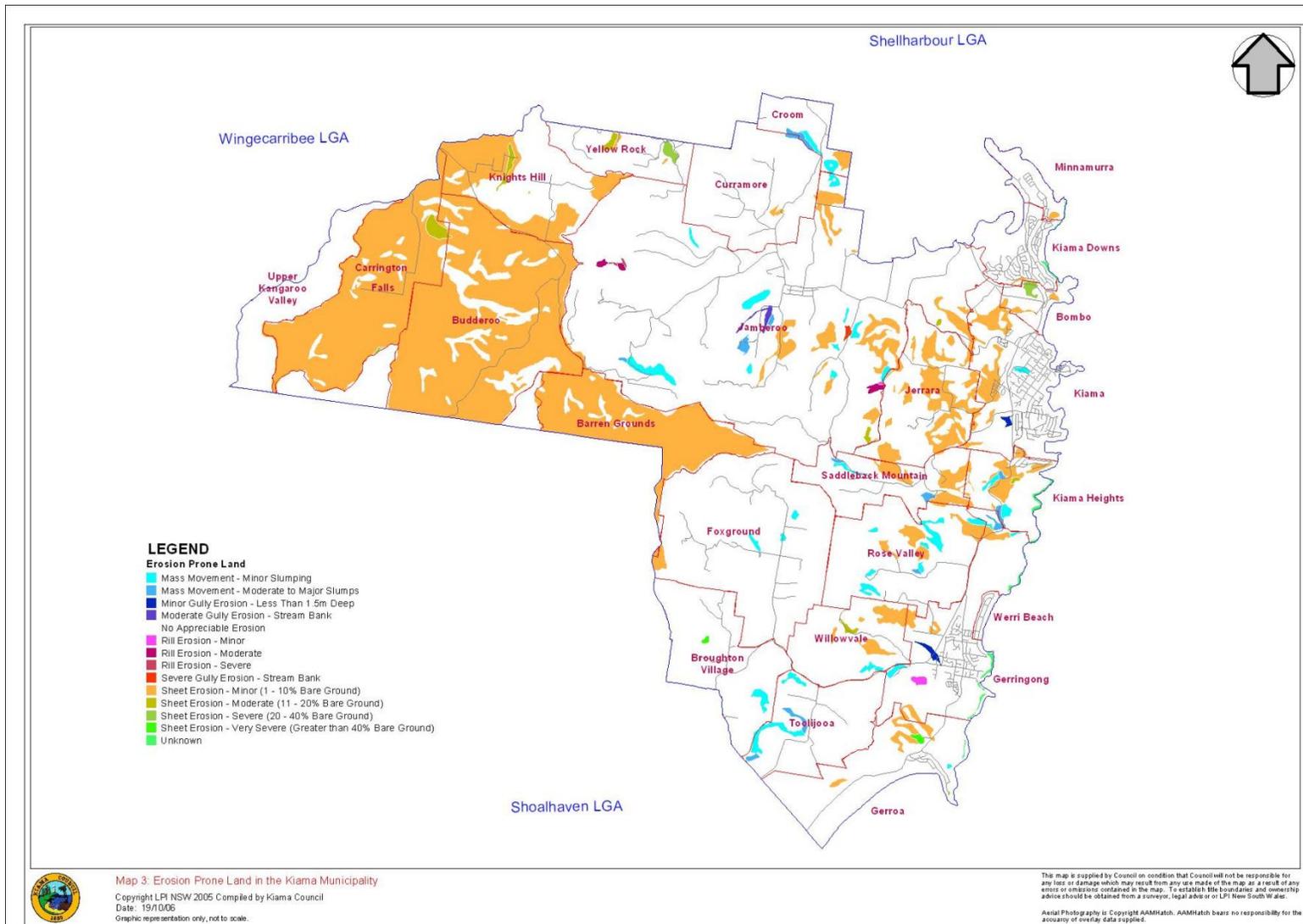


Figure 1: Development Approvals for Residential Dwellings, Commercial and Industrial Activities

2.2.2 Acid Sulfate Soils

A number of locations in the Kiama Municipality have been identified and mapped by the NSW Government as potential acid sulfate soil prone area. Disturbance or exposure of acid sulfate soil can occur as a result of excavation or drainage. Such soils are a major constraint to any activity or development that involves disturbance of the soil. Potential acid sulphate soils may be found around Minnamurra River and Floodplain, Spring Creek Wetland area, Werri Lagoon and Ooaree Creek Floodplain, Crooked River and Blue Angle Creek (including wetland areas), as shown in Map 2.





Map 3: Erosion Prone Land in the Kiama Municipality

2.2.3 Erosion and Sedimentation

Erosion, caused by either wind or water, is common in areas that have been cleared of vegetation, are on steep slopes, or are close to waterways. Soil erosion by water also causes the additional problem of sedimentation of waterways, as soils are washed into creeks and stormwater drains during rain. Wind erosion is of particular concern within sand dune and beach environments. Areas of erosion prone land are shown in Map 3.

2.2.4 Contaminated Land

When land that has previously been used for industrial, commercial or rural purposes is reclaimed for more sensitive uses, such as housing, there is the risk that the land may be contaminated. The degree to which the land has been contaminated as a result of the former activity must be determined and any necessary remediation should be carried out. A list of activities that have the potential to cause land contamination can be found in Council's *Development Control Plan No. 37 – Contaminated Land*.

2.3 Responses

2.3.1 Landuse Planning Initiatives

Work continued on the Kiama Local Environmental Plan (LEP) Review project during the year with the aim of exhibiting the draft Kiama LEP by the end of 2008 or early 2009.

The project has been significantly delayed by planning system reforms and in particular by amendments implemented by the Minister for Planning to the Standard LEP template in January 2008. The Standard LEP affects the format and content of all new LEPs.

The draft Kiama LEP has been re-written to respond to:

- the changes required by the revised the Standard LEP template, and
- submissions received from government agencies and public authorities on the preliminary draft LEP distributed for comment in October 2007.

The revised draft LEP is expected to be submitted for Council's approval in July 2008. After Council's approval, the draft plan must then be approved by the Department of Planning before it is exhibited for public comment.

The draft LEP process from here involves the following steps:

- Council's approval of the draft LEP.
- The review and approval of the draft LEP by the Department of Planning.
- The issue of Section 65 Certificate by the Department of Planning to enable public exhibition.
- Exhibition of the draft LEP.
- Consideration of submissions by Council and amendments as appropriate.
- Submittal of the draft LEP to the Department of Planning for consideration and approval by the Minister for Planning.

The timing of the exhibition of the draft LEP will be conditional upon the timing of the issue of the Section 65 Certificate.

No Development Control Plans or other planning policies were developed or adopted during the period. The strategic planning project priority was directed to the review of the Kiama LEP.

2.3.2 Illawarra Regional Strategy

The Department of Planning has adopted the *Illawarra Regional Strategy*, outlining the region's new housing, employment growth, natural resources and cultural heritage over the next 25 years. The Strategy includes actions to address the natural environment, natural hazards, water, energy and waste, rural landscape and rural communities and cultural heritage.

The following outlines some example actions within these priority areas (Department of Planning, 2006):

The Natural Environment:

- conservation of *Melaleuca amillaris* (Tall Shrubland) in the Shellharbour/Kiama hard rock resource area;
- offsetting the loss of native vegetation;
- identification of significant aquatic habitat and riparian buffers to be included in LEPs;
- incorporation of water sensitive urban design principles in developments;
- incorporation of the *Strategic Assessment of Riparian Corridors* into planning; and
- zoning of *SEPP 14 Coastal Wetlands* and *SEPP 26 Littoral Rainforests* areas as environmental conservation.

Natural Hazards:

- Councils to conduct flood investigations with regard to the risks of climate change and prepare *Floodplain Management Plans*; and
- LEPs to make provision for adequate setbacks in areas of coastal-erosion risk and ocean-based inundation in accordance with *Coastal Zone Management Plans*.

Water, Energy and Waste:

- Councils to identify and zone land for wastewater treatment/recycling, energy, waste avoidance and resource recovery infrastructure;
- Councils will encourage reduction in demand for potable water in new subdivisions and encourage water and energy conservation measures in new commercial and industrial developments;
- Locally generated and/or renewable energy projects will be supported; and
- Councils will encourage waste avoidance and resource recovery in demolition and building work.

Rural Landscape and Rural Communities:

- No new residential or rural residential zones will be supported on rural land unless part of an agreed structure plan or settlement strategy; and
- Location of non-compatible uses in core productive agricultural areas shall be limited.

Cultural Heritage:

- statutory heritage lists will be reviewed;
- LEPs will include provisions to protect the character of towns and villages and adjoining cultural and natural landscapes; and
- Councils will review adequacy of cultural heritage studies with local Aboriginal representatives and the DEC when preparing new LEPs.

The Strategy identifies indicative habitat corridors that could potentially be enhanced, including a Regional Corridor based on the Department of Environment and Conservation's *Illawarra Escarpment Plan* (Department of Planning, 2006).

Kiama Municipal Council recommended in a submission to the Department of Planning that this corridor should be modified to incorporate an extension of the regional habitat corridor following the escarpment through the Shellharbour and Kiama Local Government areas and extending into the Shoalhaven Local Government area. In addition, Council has recommended that a second indicative habitat corridor should also be considered along the Minnamurra River Valley and its wetland. It was suggested that a more thorough study on regional climate change impacts should be prepared for inclusion in the first 5 year review of the Illawarra Regional Strategy, using the Kiama Region's report prepared for Kiama Council by the CSIRO in 2005 as a guide (see Chapter 7: Air for more information on this report).

2.3.3 BASIX – The Building Sustainability Index

The Building Sustainability Index (BASIX) was developed by the Department of Planning and is a web-based planning tool for Councils and proponents of residential dwellings to assess the potential performance of their development against a set of sustainability indices, currently including energy conservation and water conservation.

Since 1 October 2005, BASIX has applied to all new dwellings meaning that development applications for new dwellings in the Kiama Municipality require the submission of a BASIX certificate. From 1 October 2006, BASIX will apply to residential alterations and additions, which are valued at \$100,000 or more (from 1 July 2007, the value drops to \$50,000) and where a swimming pool (or pool and spa) with a capacity greater than 40,000 litres is being installed (NSW Department of Planning - a). A required target must be achieved for water conservation and energy conservation. The water conservation target is 40 and the energy conservation target was previously 25, but from 1 July 2006, the energy target varied according to type and location of the dwelling. In the Kiama Municipality, it increased to 40 for detached and semi-detached buildings (and less for buildings with 3 or more stories)

(NSW Department of Planning - b). These ratings can be achieved through design choices such as:

- Rainwater tanks connected to toilet and garden irrigation systems.
- 3A Rated toilet suites
- 3A rated shower heads
- Floor and ceiling insulation
- Using compact fluorescent light globes
- Native vegetation to landscape areas
- Shading to windows
- Solar hot water systems
- Appropriate aspect for suitable solar aspect

2.3.4 Acid Sulfate Soils

The Kiama LEP 1996 addresses acid sulfate soils, with a requirement that certain types of development within acid sulfate soils prone areas require development consent. A soils assessment and preparation of a management plan is also required.

There were no development applications within acid sulfate soils area identified within the LEP amendment during the last six reporting periods (there was one during 2001-2002).

2.3.5 Erosion and Sedimentation

Council places conditions on development approvals to ensure measures are taken to minimise erosion and sedimentation. Council's Environmental Health Officers and Ranger Services Officers investigate complaints received relating to erosion and sedimentation. Clean Up Notices, Prevention Notices or Penalty Infringement Notices for water pollution offences may be issued by these officers under the *Protection of the Environment Operations Act 1997*. During the reporting period, there were no cautions were issued at building sites for inappropriate sediment controls (two were issued in 2006-2007, three were issued in 2005-2006, two were issued in 2004-2005, four during 2003-2004, two during 2002-2003 and three during 2001-2002).

Some vegetation clearing requires consent from Council under the Tree Preservation Order. Some developments that involve vegetation clearing or that are near waterways require approval from the NSW Department of Environment and Climate Change (DECC). There were 2 such developments requiring DECC approval during the reporting period.

2.3.6 Contaminated Land

All land that is likely to have a significant risk of harm to the environment and human health must be registered with the NSW Department of Environment and Climate Change.

All development applications and re-zonings must consider whether the land in question has been subject to a potentially contaminating activity, in accordance with *Development Control Plan No. 37 – Contaminated Land*. If after investigation, it is

found that the land is contaminated, it must be remediated prior to further development.

Council also places conditions on development approvals to ensure measures are taken to minimise the likelihood of contamination from potentially contaminating activities.

Council's Environmental Health Officer and Ranger Services Officers also investigate complaints received relating potentially contaminating activities and may issue Prevention Notices or Penalty Infringement Notices under the *Protection of the Environment Operations Act 1997*.

During the 2006/07 reporting period Council adopted a Pesticides Notification Plan that was prepared in accordance with the requirements of the Pesticides Amendment (Notification) Regulation 2005.

The aim of this Plan is to meet the community's general right to know about pesticide applications made to public places. The Plan allows members of the community to take action to avoid contact with pesticides, if they wish. It does not mean that the community is at any great risk or harm from pesticides and ensures that pesticides that are applied at public places is undertaken in a safe, responsible manner, without harm to the community or the environment.

The Pesticides Notification Plan applies to public reserves, parks and gardens, playgrounds, sporting fields and ovals, road verges, laneways and pathways, drains and easements, golf courses (owned or controlled by Council), Caravan/Holiday Parks, cemeteries and swimming pool grounds.

2.3.7 Contaminated Land Management

During the reporting period, site investigations continued for the development of a rehabilitation plan for the former Gasworks site in Shoalhaven Street, Kiama. A rehabilitation plan will be required to be completed and submitted to the Department of Environment and Climate Change.

2.4 Potential Future Activities

Existing Future Activities in the Management Plan 2008-2011

- Prepare and/or implement plans to improve the environment and report on activities undertaken and grants received (including Kiama *Local Environmental Plan Review* - investigate biodiversity certification, review riparian lands and Areas of High Conservation, incorporate heritage);
- *Protection of the Environment Operations Act* implementation;
- Community Lands Management:

- Prepare and review Plans of Management for the following reserves: Nobles Estate- Werri Headland, Cedar Grove Estate, Turpentine Reserve, Bailey's Island, Willow Gully and neighbourhood parks;
- Continue the development of educational reserve sites at Spring Creek Wetlands, Jerrara Dam Arboretum, and Bonaira Native Gardens.
- Strategic Town and Rural Planning – Exhibit and adopt Kiama Local Environmental Plan for urban and rural lands;
- Strategic Town and Rural Planning – Prepare, exhibit and adopt a single *Development Control Plan* for the Local Government Area.
- Environmental Assessment - Assess all Council works activities under Part 4 and Part 5 of the EP and A Act as required;
- Contaminated Lands Management – Finalise site investigation and rehabilitation plan, and pursue grant funding, for the Gasworks site in Shoalhaven St, Kiama;
- Implement the *Pesticide Notification Plan* (2009/2010 and 2010/2011) (H, M & L as per Plan timeframes);

Potential Future Activities Beyond 2009-2010

(H – High Priority, M - Medium Priority, L – Low Priority)

- Ongoing implementation of the *Pesticide Notification Plan* (2009/2010 and 2010/2011) (H);
- Prepare and/or implement plans to improve the environment and report on activities undertaken and grants received (2009/2010 and 2010/2011) (H);
- *Protection of the Environment Operations Act* implementation (2009/2010 and 2010/2011) (H);
- Prepare and review Plans of Management for Community Reserves (2010/2011) (H);
- Monitor implementation of Development Control Plans for the Kiama Municipality (2009/2010) (H);
- Assess all Council works activities under Part 4 and Part 5 of the EP and A Act as required (2009/2010 and 2010/2011) (H);
- Monitor implementation of Kiama Local Environmental Plan 2006 (2009/2010 and 2010/2011) (H);

Chapter 3: Water

3.1 State

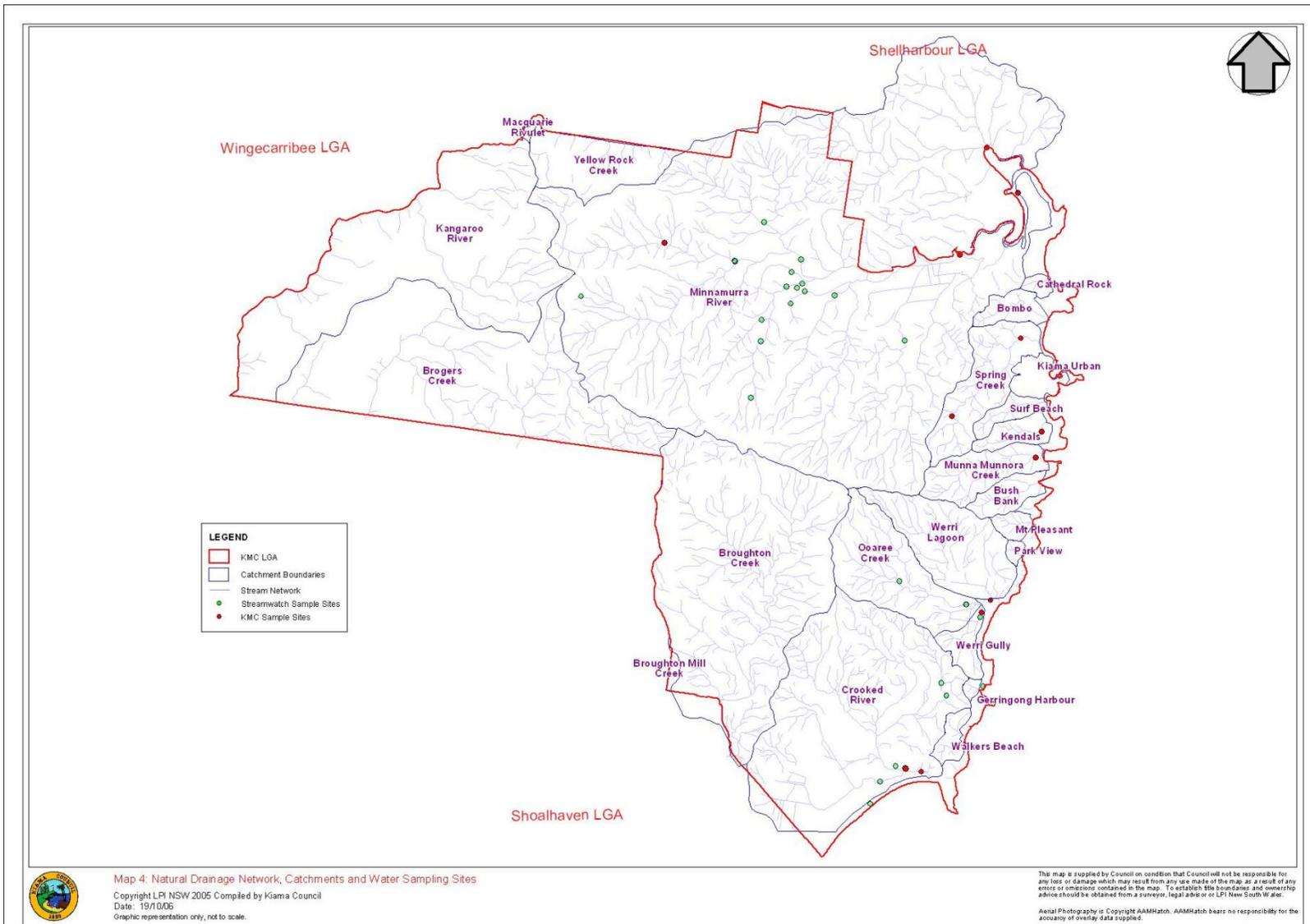
The Kiama Municipality has a number of river and creek systems that are part of large catchments, such as the Macquarie Rivulet, Minnamurra River, Werri Lagoon, Crooked River and Shoalhaven River catchments, as well as numerous small streams draining directly to the ocean. These rivers and catchments are shown on Map 4.

3.1.1 Monitoring at Council Waste Disposal Depots

Council undertakes quarterly groundwater and surface water monitoring in and around its Waste Disposal Depot at Minnamurra and at the site of the former Gerroa Waste Disposal Depot which is currently being remediated. This monitoring is being conducted in accordance with NSW Department of Environment and Climate Change Licences. The aim of this monitoring is to identify any impacts that the facilities may have on the surrounding waterways so that remediation can be undertaken if necessary.

3.1.2 Sydney Water Streamwatch Water Monitoring

Landcare Illawarra, Sydney Water Streamwatch and Council have formed a partnership to involve residents in water testing in the many catchments in the Kiama Municipality. There are over 30 participants from 5 separate networks, including the Jamberoo Valley, Kendalls Beach, Lands Edge, Gerringong – Gerroa, and Werri Lagoon Streamwatch Water Monitoring Networks. Testing was undertaken at 22 different sites during 2007-2008. The data collected by these groups has a summary of results presented in Table 2. The sampling sites are shown on Map 4. More information can be found at www.streamwatch.org.au.



Map 4: Natural Drainage Network, Catchments and Water Sampling Sites

Table 2. Streamwatch % of results within ANZECC Water Quality Guidelines.
 0-24% red (very poor), 25-49% yellow (poor), 50-74% green (fair), 75-100% blue (good-excellent).
 (Source: Sydney Water Streamwatch, 2008)

	Testing site	Water quality parameter							Gambusia
		pH	Turb	EC	AP	Faecal coliforms			
						Drinking (0 CFU/ 100ml)	Primary (150 CFU/ 100ml)	Secondary (1000 CFU/ 100ml)	
Jamberoo Community Streamwatch Group (including Jamberoo Golf Course)	Hyams Creek, Jamberoo Golf Course at Frogs Hollow								N/A
	Hyams Creek @ Causeway								N/A
	Jamberoo Creek @ 6 th Tee								N/A
	Jamberoo Creek above town								N/A
	Minnamurra River @ Golf Course								N/A
	Stumps Creek, 16 th Hole Dam								N/A
	Turpentine Creek @ Nth Curramore Rd								N/A
	Upper Minnamurra River near Golf Course								N/A
Gerringong Gerroa Streamwatch Group	Blue Angle Creek @ Seven Mile Beach Caravan Park			N/A					N/A
	Crooked River upstream of Gerroa Shores Caravan Park			N/A					N/A
	Gerringong Boat Harbour Ocean Baths			N/A					N/A
	Ooaree Creek @ Fern Street			N/A					N/A
	Rose Valley Creek, Rose Valley Road			N/A	N/A				N/A
	Werri Lagoon, 115 Renfrew St			N/A					N/A
Kendalls Beach Streamwatch Group	Rocklow Creek, Princes Highway			N/A					N/A
	Rocklow Creek, upstream of Minnamurra River junction			N/A					N/A
	Bonaira Creek Lagoon, south Kendalls Beach			N/A					N/A
	Minnamurra River tributary (unnamed creek), Thornett Way wetlands			N/A					N/A
Lands Edge Coastal Interpretation Centre	Primrose Hill Creek, North Bombo Beach			N/A		N/A	N/A	N/A	N/A
Werri Lagoon CVA Streamwatch Group	Ooaree Creek, near riffle zone, Rose Valley					N/A	N/A	N/A	N/A
	Ooaree Creek, Joe Chittick's property cattle crossing					N/A	N/A	N/A	N/A
	Ooaree Creek, upstream of cattle crossing on Joe Chittick's property					N/A	N/A	N/A	N/A

3.1.3 Beachwatch Monitoring

Sydney Water Corporation and the Department of Environment and Climate Change undertake monitoring of beach water quality at Boyd's Jones, Bombo, Surf and Werri Beaches under the Beachwatch Program. From 1999-2008, most beaches monitored in the Kiama Municipality have generally recorded 100% compliance with Beachwatch criteria for both faecal coliforms and enterococci. The compliance for 2007-2008 is shown in Table 3, including the ranking of each beach in relation to the 18 Illawarra beaches that are sampled.

Table 3: Compliance and Ranking of Kiama Beaches for Summer 2007–2008
(Source: Department of Environment and Climate Change, 2008a)

Site	Compliance (%)		Overall ranking (out of 41)
	Faecal Coliforms	Enterococci	
Boyd's Jones Beach	100	100	1
Bombo Beach	100	100	1
Surf Beach, Kiama	100	97	2
Werri Beach	100	100	1

Figures 2 and 3 show the range of bacteria levels at all Illawarra Beaches during summer 2007-2008. These results show that the beaches of the Kiama Municipality are among the cleanest in the Illawarra.

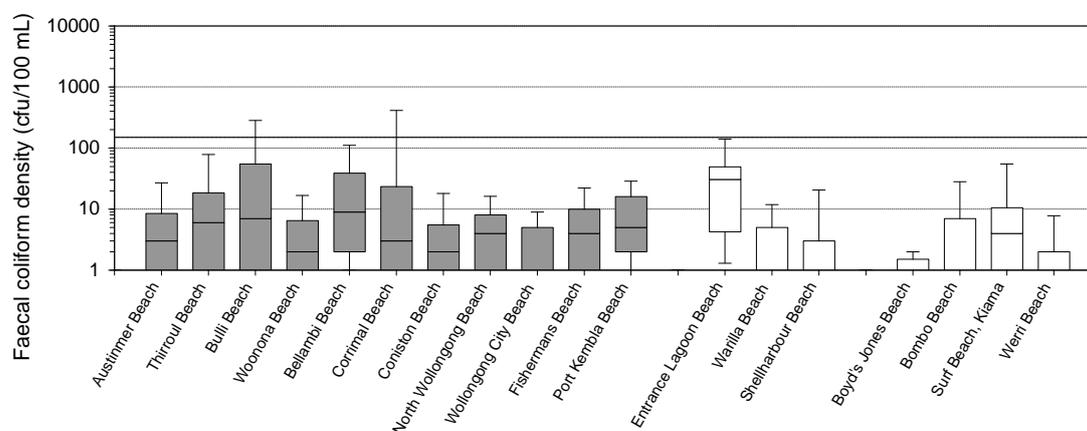


Figure 2: Range of Faecal Coliform Levels at Illawarra Beaches During Summer 2007-2008
(Source: Department of Environment and Climate Change, 2008a)

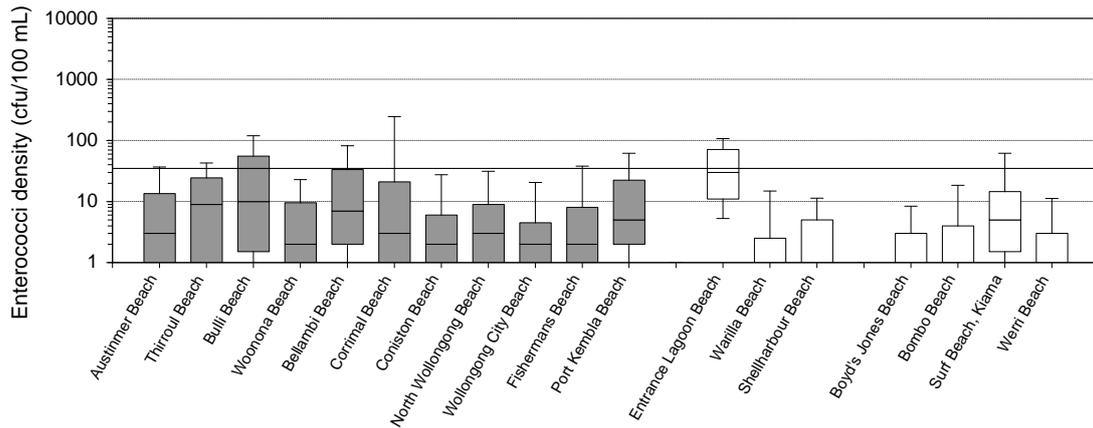


Figure 3: Range of Enterococci Levels at Illawarra Beaches During Summer 2007-2008
(Source: Department of Environment and Climate Change, 2008b)

3.1.5 Water Consumption

Due to the drought conditions over the past few years, Sydney Water Corporation introduced Level 1 mandatory water restrictions in October 2003, Level 2 mandatory restrictions in June 2004 and Level 3 mandatory restrictions in June 2005. Dam water storage levels in the Sydney Water Catchment have increased from 53.1% at the previous reporting period (end of June 2007), to 66.6% at the end of this reporting period in June 2008 (see Table 4). This increase in storage due to recent rainfalls, caused an easing of Level 3 mandatory restrictions to allow vehicle and house washing with a hose fitted with a trigger nozzle from June 19th, 2008. (Sydney Water Corporation – a).

Table 4: Dam Water Storage Levels
(Source: Sydney Water Corporation – a)

Date	Dam Water Storage Levels
November 2002 (Voluntary water restrictions introduced)	67.4%
October 2003 (Level 1 mandatory water restrictions introduced)	59.0%
End of June 2004 (Level 2 mandatory restrictions introduced 1 June)	47.9%
End of June 2005 (Level 3 mandatory restrictions introduced 1 June)	38.3%
End of June 2006	41.8%
End of June 2007	53.1%
End of June 2008	66.6%

Water consumption in the Kiama Municipality by property type is shown in Table 5. The Residential usage figures, (based on the combined data from houses and units/flats), in the Kiama Municipality used less water, when compared to areas in the Sydney Water region – using only 145,000 litres per household annually. The Sydney wide annual average consumption for households was 186,000 litres (Sydney Water Customer website, 2008).

Water consumption for Council's operations is shown in Figure 4. The amount of water consumed by the top 11 water using facilities is shown in Table 6. These facilities consumed almost 70% of the total volume of water in the baseline year of 2002-2003 (determined for the Water Saving Action Plans) and have specific action

plans to address this water use in the adopted Water Saving Action Plans (see Section 3.3.8 for more information).

Table 5: Water Consumption by Property Type in the Kiama Municipality
(Source: Sydney Water website, 2008)

Property Type	Total Consumption (kilolitres)	Average (kilolitres)
Commercial	271,294	1098
Houses	1,015,363	155
Units/Flats	124,417	95
Industrial	6,766	260
Other	125,497	678
Total	1,543,337	2286

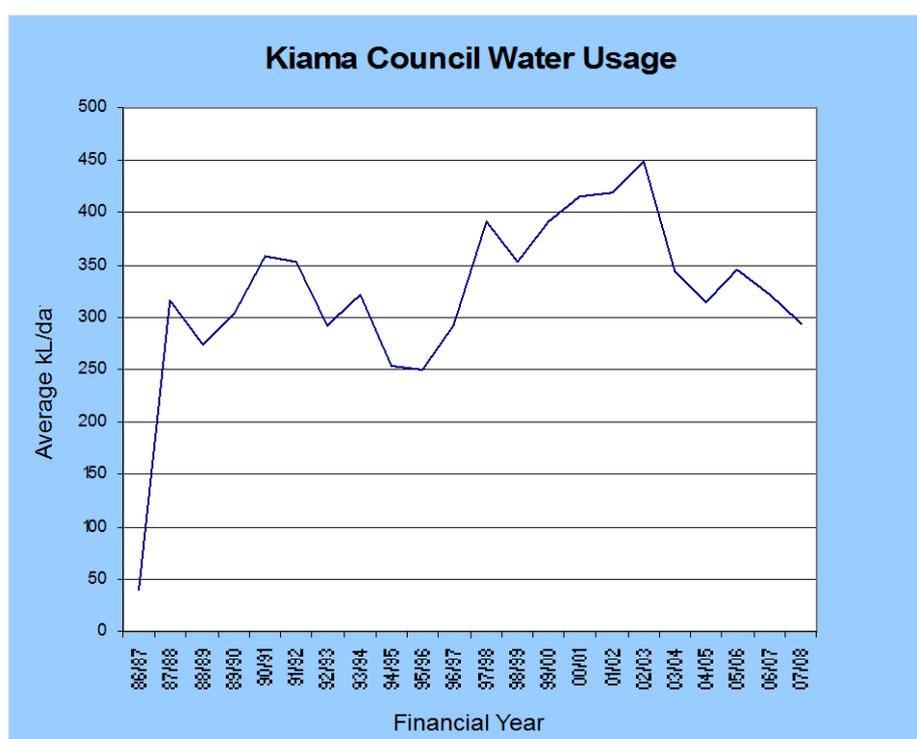


Figure 4: Total water consumption for Kiama Municipal Council 1986-2007
(Source: Planet Footprint Sept 2008)

Table 6: Top Water Using Council Properties 2007-2008
Source: Water Saving Action Plans (Kiama Municipal Council, 2006 and Planet Footprint Sept 2008)

Rank	Site	Water Consumption (kL/yr)	
		2002-2003	2007-2008
1	Seven Mile Beach Holiday Park*	22,468	12499
2	Werri Beach Holiday Park	15,856	9568
3	Blue Haven Retirement Village (Nursing home and hostel)	11,158	9741
4	Kiama Leisure Centre*	11,121	8551
5	Surf Beach Holiday Park	11,092	8032
6	Kiama Sports Complex	8,815	2008
7	Kiama Harbour Holiday Cabins	8,231	6553
8	Blue Haven Retirement Village	8,028	10506
9	Kendall's Holiday Park	7,911	10402
10	Kiama Showground	7,088	1956
11	Kiama Council Works Depot	3,938	2707
Total		115,706	82523

The ongoing water savings for these properties is testament to the Water Savings Action Plan that Council has been implementing. A saving of 9707kL for the 2007/2008 year in comparison to the 2006/2007 reflects the value of this initiative. The measures undertaken this reporting period include:

- ❖ Fixing of leaks detected by data loggers, that have been installed on the water meters of these properties;
- ❖ The fitting of a 3000 litre water tank to Stage 2 of the Independent Living Units.
- ❖ Renovating an amenities block at Seven Mile and replacing the single flush cisterns with dual flush systems.
- ❖ The Council Works Depot installed an additional two 15,000L rain water storage tanks.

It should be noted, that the increase in water consumption at the Kendall's Beach Holiday Park, can be attributed to an increase in the number of cabins, which have now replaced areas that were previously campsites. The increase in water consumption for the Blue Haven Retirement Village from the baseline data can be attributed to the completion of Stage 5 of the development, which also incorporates rainwater reuse for toilet flushing.

The restrictions placed on the watering of playing fields, have also contributed greatly to the declining consumption rates.

3.2 Pressures

Water quality can be affected by drought conditions, stormwater runoff from roads and residential, industrial, commercial and agricultural activities, as well sewerage overflows and on-site sewerage systems.

3.2.1 Stormwater Runoff

The urban stormwater system has been constructed to carry rainwater that falls on hard surfaces in urban areas to the local waterway. Similarly, rain falling in rural areas will naturally drain to the local waterway. This runoff can carry a range of pollutants, which impact on local water quality and aquatic life.

All different types of land uses within the Municipality can have an impact upon water quality through stormwater runoff. These include:

- Residential land uses - stormwater runoff from residential properties and within recreational areas such as parks and playing fields can include litter, detergents from activities such as washing the car, garden fertilisers, sediment and dog faeces;
- Industrial and commercial activities - runoff from car parking areas, forecourts of premises and within loading docks can include litter, oils from vehicles, detergents and chemical spills;

- Construction activities - runoff from building sites may contain soil and sediments as well as building products such as concrete slurry and material fragments;
- Agricultural activities - runoff may contain sediments, animal faeces and chemicals used in agricultural activities;
- Roads – runoff may contain litter, oils and sediments, and there is the potential for chemical or fuel spills.

3.2.2 Sewerage Treatment Plants

Provision of sewerage is the responsibility of Sydney Water Corporation. There are two Sewage Treatment Plants (STPs) in the Kiama Municipality, at Bombo and Gerroa (details shown in Table 7).

The Jamberoo Sewage Scheme is now complete and properties have begun to connect to the scheme. Construction of this scheme has involved property works including the installation of collection tanks, construction of the township’s reticulation system, construction of a sewage pumping station in Jerrara Road, construction of the eight kilometre transfer main linking the system to the Bombo STP and construction of a bio-solids tanks and mechanical works at the Bombo STP.

Table 7: Sewerage Treatment Plants in the Kiama Municipality
(Source: Sydney Water Corporation - b)

Treatment plant	Treatment level	Discharge (ML/day)	Equivalent estimated population	Discharge location
Gerringong-Gerroa	Tertiary (additional Phosphorus removal & ozonation, microfiltration, activated carbon & disinfection)	0.7	11,000	Reused for on-site agricultural irrigation. Excess is discharged to sand dune systems, once sand dunes reach capacity excess is discharged to Crooked River.
Bombo	Secondary & denitrification & disinfection	3.6	13,300	Shoreline -Headland north of Bombo Beach.

Sydney Water is encouraging remaining property owners who have not already connected, to connect to the sewerage system as quickly as possible to realise the environmental and public health benefits of the scheme. To date, more than 92 per cent of property owners have connected to the scheme.

Sewerage overflows, and bypasses of one or more process units, in the sewerage system can occur during wet weather, caused by flows that exceed the capacity of the system. Overflows result in untreated or partially treated effluent being discharged into waterways or the ocean. The extent of their effect depends on the volume and frequency of the overflows.

Dry weather overflows also may occur, usually due to blockages and/or damage to the sewerage infrastructure by tree roots or debris, pump failure at a pumping station or power failure at a treatment plant (Sydney Water Corporation - c).

Sydney Water Corporation is required to notify Council when any dry or wet weather overflows or bypasses occurs leading to the discharge of untreated or partially treated effluent. There were four wet weather overflows at the Bombo STP compared to nine for the previous reporting period (see Table 8). Council has not been notified of any overflows in the new Gerringong-Gerroa Sewerage Scheme since it commenced in 2002.

Table 8: Sewage Overflows/Bypasses in the Bombo Sewage Treatment Plant Catchment Area
(Barr, G, 2008 pers comm.)

Year	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008
Wet Weather Overflows	8	4	2	10	6	9	4
Dry Weather Overflows	-	3	9	3	5	5	0
Total	8	7	11	12	11	14	4

3.2.3 On-site Sewage Management Systems

There is the potential for effluent to enter the waterways from the on-site sewage management systems (OSSMS) that are still operating within the Municipality. These systems are used to treat and dispose of 'black water' (toilet waste) and/or 'grey water' (water from showers, sinks and washing machines) in areas where a sewage service is not available.

There are approximately 857 systems currently operating in the Municipality. When systems are not maintained or operated correctly, this can result in untreated effluent entering drains and waterways. Council has been implementing a program of OSSMS inspections (see below in Section 3.3.6) to determine if each system is operating correctly and identify any possible risks to human health and the environment.

3.3 Responses

3.3.1 Development Control for Water Quality and Water Conservation

Development control conditions are placed on development approvals for industrial and commercial activities to ensure water pollution is minimised or prevented and to promote stormwater reuse. From 1 July 2005 the Building Sustainability Index (BASIX) came into effect in the Kiama Municipality. BASIX is a web-based planning tool for Councils and proponents of residential dwellings to assess the potential performance of their development against a set of sustainability indices, including water conservation and stormwater. For water, a BASIX rating of 40 for water conservation applies, potentially reducing potable water consumption by 40%. More information about BASIX can be found in Chapter 2: Land.

Some developments that involve vegetation clearing or that are near waterways require approval from the NSW Department of Environment and Climate Change. There were 2 developments that required such approval during the reporting period (there were 6 during the 2006-2007 period, 4 during the 2005-2006 period, 14 during 2004-2005, 28 during 2003-2004, 22 during 2002-2003 and five during 2001-2002).

3.3.2 Enforcement

Council's Environmental Health Officers and Ranger Services Officers investigate complaints received by Council relating to water pollution, and the Department of Environment and Climate Change investigates complaints regarding water pollution from scheduled premises and activities. Clean Up Notices, Prevention Notices or Penalty Infringement Notices for water pollution offences may be issued by these officers under the *Protection of the Environment Operations Act 1997*. The number of complaints received is shown in Table 9. The number of complaints recorded during the last reporting period was slightly higher than last year.

Table 9: Complaints relating to Water Pollution (Council and the DECC)

Type of Complaint	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008
Water pollution complaints to DEC	9	6	7	10	11	16	6	7
Spill complaints to DECC	-	2	-	1	4	1	3	2
Water Pollution Complaints to Council	5	4	23	18	43	28	4	10
Total Water Pollution Complaints	14	12	30	29	58	45	13	19

During the reporting period, no cautions were issued at building sites for inappropriate sediment controls (two were issued 2006-2007, three were issued in 2005-2006, two during 2004-2005, four during 2003-2004, two during 2002-2003 and three during 2001-2002).

3.3.3 Stormwater Management Plan

Kiama Municipal Council reviewed its *Stormwater Management Plan (SMP)* in 2003 in accordance with the requirements of Section 12 of the *Protection of the Environment Administration Act 1991*. The SMP has the following purposes:

- To satisfy the requirements of Kiama Council under Section 12 of the *Protection of the Environment Administration Act 1991*;
- To establish a framework to guide current and future stormwater management planning in the Kiama Local Government Area;
- To collate and concisely present the most relevant information that will aid informed stormwater management for the Kiama Local Government Area; and
- To suggest actions that will minimise environmental impacts from stormwater runoff.

There are a range of strategies contained within the reviewed SMP, within seven sections (for the full list of actions, please refer to SMP – Kiama Municipal Council, 2003a):

- Mitigation of future stormwater impacts;
- Mitigation of stormwater impacts from current developments: Minnamurra/Kiama Downs Stormwater Catchment;
- Mitigation of stormwater impacts from current developments: Kiama Stormwater Catchment;

- Mitigation stormwater impacts from current developments: Gerringong-Werri Stormwater Catchment;
- Mitigation of stormwater impacts from current developments: Jamberoo Stormwater Catchment;
- Mitigation of stormwater impacts from current developments: Gerroa stormwater catchment;
- Mitigation of stormwater impacts from current developments: all catchments.

The major achievements are shown below. For a full list of strategies implemented, please refer to previous SoE Reports.

- ✓ design work for structural measures for Surf Beach was completed;
- ✓ a program to investigate measures required to prevent pollution from slipway boat maintenance and boat refuelling was initiated;
- ✓ stormwater education campaign was developed as part of the *Stormwater pollutant control and riparian management in the Minnamurra Estuary* project (see Section 3.3.5 for more information); and
- ✓ a monitoring program of waterways to determine water quality was conducted (see Sections 3.1.1, 3.1.3 and 3.1.4 for more information).
- ✓ bank stabilisation work was undertaken along the foreshores of the Minnamurra River.

3.3.4 Crooked River Estuary Management Plan

The *Crooked River Estuary Management Plan* (CREMP) was prepared in 2003. The Plan provides a comprehensive and integrated set of strategies to restore, protect and conserve the natural resources of Crooked River estuary and to ensure its use is ecologically sustainable in the long term.

The issues were grouped into management areas within the Estuary Management Plan, for which certain objectives were determined. The management areas are outlined below (for the full list of actions, please refer to CREMP – Kiama Municipal Council, 2003b):

- Water Quality;
- Nature Conservation;
- Sedimentation;
- Entrance Conditions and Flooding;
- Foreshore Access;
- Public Infrastructure; and
- Cultural Heritage.

The major achievements are shown below. For a full list of strategies implemented, please refer to previous SoE Reports.

- ✓ A *Water Sensitive Urban Design Policy* was adopted and implemented to incorporate water sensitive urban design for new urban areas (see Section 3.3.7 for more information);

- ✓ Streamwatch Community Monitoring was promoted and supported (see Section 3.1.3 for more information);
- ✓ Landcare projects conducted by volunteers were supported, including Streamwatch monitoring, feral animal eradication project, and Conservation Volunteers Australia projects (see Sections 3.1.3 and 5.3.8 for more information); and
- ✓ As part of the LEP review, riparian corridor management is being included and the inclusion of the Crooked River Estuary as a 'sensitive' environment is being considered, along with other areas throughout the Municipality.

3.3.5 Minnamurra River Estuary Management Plan

The *Minnamurra River Estuary Management Plan* (MREMP) aims to achieve a coordinated approach to management, implementation and monitoring so as to preserve, enhance and develop in a sustainable manner the ecological, scenic, agricultural, mineral resource, tourism and recreational values of the estuary.

The plan includes seven main management issues which are outlined below (for the full list of actions, please refer to MREMP – Panayotou, 2003):

- Riverbank erosion and sedimentation;
- Water quality;
- Conservation;
- Road transport corridors;
- Entrance Stability;
- Land use management; and
- Recreation.

The major achievements are shown below. For a full list of strategies implemented, please refer to previous SoE Reports.

- ✓ *Bank Stabilisation Project* - Council was successful in obtaining a grant from the NSW Estuary Management Program from the Department of Environment and Climate Change, and \$20000 from the Southern Rivers Catchment Management Authority to undertake further bank stabilisation works adjacent to the Charles Avenue Reserve, which has been identified as a high priority project in the Estuary Management Plan. Council has also contributed \$20000 of its own funds towards this work. The project was a continuation of previous works in the area and involved stabilising the toe of the bank using large rocks, reshaping the bank and planting with low growing native plants. The stabilisation works are now completed in that part of the estuary.
- ✓ *Stormwater pollutant control and riparian management in the Minnamurra Estuary* - Council was also successful in obtaining a \$19,830 from the Southern Rivers Catchment Management Authority's Coastal Protection Program - Estuary and Coastal Lakes Incentives. This estuary project is currently underway and will address the following:

- Control of storm water pollutants including sediment, which are reaching the Minnamurra Estuary via the residential catchment of Charles Avenue, Minnamurra; and
- Removal of weeds and replanting with riparian species at the Minnamurra boat ramp reserve on the South Eastern shore at Riverside Drive and on the Southern Headland at John Oates Reserve, Charles Avenue.

This was achieved through:

- Placement of 6 enviropods at stormwater drains along Charles Avenue Minnamurra to trap pollutants including sediment;



Enviropod in Charles Ave, Minnamurra

- Weed management, planting and protection of mangroves and riparian species on South East shore at Riverside Drive, Minnamurra and southern headland at John Oates Reserve, Charles Avenue; and



Volunteers from the Minnamurra Estuary Restoration Group planting shrubs on the Minnamurra Headland

- Stormwater education targeting builders and developers and residents in lower Minnamurra catchment.

✓ *Stormwater Pollutant and Riparian Management in the Minnamurra Estuary (Stage 2 Grant)* – Council was again successful in obtaining a second grant of \$11,800 from the Southern Rivers Catchment Management Authority’s Coastal Protection Program - Estuary and Coastal Lakes Incentives. This estuary project is currently underway and will address the following:

- Protection of the mangroves and riparian species in the vicinity of Trevethan Reserve and the Minnamurra boat ramp, Riverside Drive, Minnamurra.

This was achieved through:

- A clean up of the mangrove area around Trevethan Reserve, Riverside Drive, Minnamurra, as part of Cleanup Australia Day 2007;
- Community education and involvement, via a local newsletter and the formation of a community based environment group;
- Weeding and replanting of mangroves at the Minnamurra boat ramp at Trevethan Reserve, Riverside Drive, Minnamurra; and the
- Installation of bollards at the Minnamurra boat ramp at Trevethan Reserve, Riverside Drive, Minnamurra, to restrict vehicle access into mangrove area.



Bollards installed at the Minnamurra Bridge to protect mangroves from boat and vehicle movements.

Previously,

✓ *Geomorphology of the Minnamurra River Estuary* - This project was undertaken by University of Wollongong PhD student Kate Panayotou, due to a need for sediment quality and quantity data was identified as part of the *Minnamurra River Estuary Management Study and Plan*. The overall findings were:

- As estuaries evolve there is a reduction in accommodation space and channels become confined and intertidal environments become more extensive;

- The reason why the estuary has acceptable trace metal concentrations is that the estuary has good tidal flushing;
 - Dominant force in the estuary has changed from wave processes to tidal and fluvial processes;
 - Estuary entrance is still influenced by all three processes and undergoes cyclical change of gradual pattern of accretion and erosion. However, the estuary mouth is highly unlikely to close as it is protected by Minnamurra Headland and Stack Island and influenced by processes dominant enough to maintain entrance opening;
 - Patterns and rates of sedimentation over 8000 years provided context for contemporary changes and management;
 - Sedimentation rates are higher now but 90% of the estuary is infilled therefore approximately 90% of sediment load is bypassing and not depositing in the estuary; and
 - Despite drought conditions the Minnamurra River estuary has remained open lending support to fact that wave-dominated estuaries can change into river-dominated status.
- ✓ As part of the LEP review, the revision of the ‘environmental protection’ and ‘high conservation area’ zoning classifications using vegetation mapping is being investigated.

3.3.6 Catchment Caretakers Grant

This project brings together structural and educational strategies to address water quality in two areas of the Kiama Municipality – Jamberoo township and the Surf Beach Catchment, Kiama. The reasons for selecting these catchments is that they have not yet been targeted in previous Catchment Caretakers (stormwater pollution) programs and have been identified for action within Council’s Stormwater Management Plan Review 2003.

Jamberoo township previously had no stormwater treatment devices, with runoff draining to the Minnamurra River. The Surf Beach Catchment is one of the main catchment areas in the centre of Kiama, and is a popular recreation area for both visitors and residents. There were no stormwater treatment devices in operation within the catchment and so the runoff from the catchment is discharged to the beach with no treatment.

Council implements several projects relating to water quality, such as water quality monitoring through Streamwatch, riparian restoration, butt littering, plastic bags, and annual litter clean ups. This project aligns with the work already being done by, installing structural pollution control devices in some pollution hotspot areas (based on water quality data).

The project involves the installation of 31 Rapid Stormwater Filtration (RSF) units in stormwater drains in the two target areas (14 in Surf Beach and 17 in Jamberoo). These units have been installed in other areas of the Municipality as part of previous Catchment Caretakers projects with much success. In addition a Continuous

Deflective Separation Unit (CDS Unit) was installed in the Surf Beach Catchment to treat runoff from part of the northern subcatchment. These actions were undertaken during the reporting period.



Council staff installing the CDS unit at Surf Beach, Kiama.

Suitable treatment of runoff from the remainder of the northern catchment is presently being investigated and will be subject to future funding.

In conjunction with these structural devices, the project will involve local community members and school students by encouraging expanded involvement in Streamwatch Water Monitoring and litter clean ups and educational displays at tourist times and at Council events. Drains with RSF unit will also be labelled with an appropriate message.

3.3.7 On-site Sewage Management System Program

The management of domestic waste water and sewage is important for the health of the community and for the natural environment. All on-site sewage management systems that operate in the Municipality have been risk classified based on their proximity to water ways, soil types and flood risk.

Council inspects each risk category accordingly to ensure they are operating effectively and have no adverse impacts on human health or the environment.

Council adopted an *On-Site Sewage Management Strategy* in October 2004. The purpose of this Strategy is to:

- Protect and enhance the quality of public health and the long term environment of the Kiama Municipality by pursuing best practice in on-site sewage management;
- Encourage and support land holders in adopting a sustainable approach through best practice on-site sewage management and recycling of waste water; and

- To establish and notify of a monitoring regime aimed at auditing all systems, refining the risk assessment scheme, and a systems enhancement program (Kiama Municipal Council, 2004b).

During the 2007/2008 reporting period, 348 On Site Sewage Management Systems were inspected. Of these, 330 were satisfactory, whilst 18 required remediation.

3.3.8 Water Sensitive Urban Design Policy

Water Sensitive Urban Design aims to incorporate principles such as stormwater source control, stormwater and wastewater re-use, potable water demand reduction and the utilisation of natural flow paths and drainage measures with pervious surfaces.

Council has developed a *Water Sensitive Urban Design Policy* for urban and rural development to ensure that building design and development incorporates effective water and soil management measures to implement such principles. It includes good stormwater management principles and encourages rainwater harvesting and reuse to reduce reliance on potable water supply. This policy was adopted by Council in July 2005 and provides an important linkage to the *Development Control Plan No. 32 – Kiama Development Code* and the *Stormwater Management Plan*.

3.3.9 Water Saving Action Plans

As a requirement of the New South Wales Government's *Metropolitan Water Plan - Meeting the Challenges - Securing Sydney's Water Future*, which was released in October 2004, all Councils are required to prepare a *Water Saving Action Plan* for their operations, focusing on the high water using facilities.

During the 2006 – 2007 reporting period, Council's plan was adopted by the NSW Department of Energy, Utilities and Sustainability for approval.

The Plan includes separate *Water Saving Action Plan* for the current 11 sites that have the highest water usage:

- Seven Mile Beach Holiday Park;
- Werri Beach Holiday Park;
- Blue Haven Nursing Home and Hostel;
- Kiama Leisure Centre;
- Surf Beach Holiday Park;
- Kiama Sports Complex;
- Kiama Harbour Cabins;
- Blue Haven Retirement Village;
- Kendalls Beach Holiday Park;
- Kiama Showground; and
- Kiama Works Depot.

There is also a section that outlines strategies that can be investigated and/or applied across the whole of Council's operations and facilities, including both structural and educational strategies.

A Water Conservation Reduction Target of 40% reduction by 2010 has been set, based on baseline consumption of the financial year 2002-2003. A Water Conservation Working Party has been established involving relevant staff to oversee the implementation and monitoring of the Action Plans.

During the reporting period, the following actions were implemented or commenced:

- ❖ Ongoing metering of the highest usage sites to detect leakages;
- ❖ Renovation of the amenities block at Seven Mile Beach Holiday Park included replacement of the single flush cisterns with dual flush cisterns;
- ❖ Connection of a 3000L water tank to Stage 2 of the Independent Living Units at Blue Haven.
- ❖ The Council Works Depot installed an additional two 15,000L rain water storage tanks.

3.3.10 Sydney Water Corporation's WaterFix Program

Sydney Water Corporation launched the Residential Retrofit Program in 2000, offering householders the opportunity to have a qualified plumber install water-efficient fittings and fixtures in their homes and repair minor leaks. In 2006, the program was re-launched under a new name, WaterFix, offering an enhanced range of water efficient products for new participants.

Program evaluations have shown that participating households save an average of 20,900 litres of water per year. Table 10 shows the number of participants in these programs since they commenced. The table also shows the number of participants in Sydney Water Corporation's other water saving programs: Do It Yourself kits, rainwater tank rebates, and washing machine rebates.

Table 10: Number of Households Participating in Sydney Water Corporation Programs
(Source: Sydney Water Customer Website, 2008)

Program	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	Total
DIY Kits	0	0			452	115	134	50	751
RainWater Tank Rebate	0	0	8	29	147	280	240	143	847
Washing Machine Rebate	0	0	2	34		39	245	288	608
WaterFix	115	547	21	284	39	278	260	87	2755
Love Your Garden	-	-	-	-	-	-	51	36	87
Total	115	547	31	347	638	712	879	604	5048

3.4 Potential Future Activities

Existing Future Activities in the Management Plan 2008-2011

- Prepare and/or implement plans to improve the environment and report on activities undertaken and grants received (including review of the Stormwater Management Plan, Minnamurra stormwater pollutant control and riparian management project, water quality monitoring);
- *Protection of the Environment Operations Act* implementation;
- *Stormwater Management Plan* – Implement street sweeping and stormwater pit cleaning schedule.
- *Stormwater Management Plan* – Implement Catchment Caretakers Stormwater Education Grant Program for Jamberoo and Kiama Catchments.
- *Minnamurra River Estuary Management Plan* – Pursue DECC to prepare a plan for the stabilization and rehabilitation of the River channel upstream of Swamp Road, and obtain funding for projects identified in the Estuary Management Plan.
- Implement program to ensure premises are connected to the sewer in the Gerringong, Gerroa and Jamberoo Townships.(H)
- Implement educational programs and activities supported by Council in relation to aquatic systems;
- Implement projects as identified in the Water Savings Action Plan.

Potential Future Activities Beyond 2008-2009

(H – High Priority, M - Medium Priority, L – Low Priority)

- Ongoing implementation of the *Water Savings Action Plan* (2009/2010 and 2010/2011) (H, M & L as per Plan timeframes);
- Prepare and/or implement plans to improve the environment and report on activities undertaken and grants received (2009/2010 and 2010/2011) (H).
- *Protection of the Environment Operations Act* implementation (2009/2010 and 2010/2011) (H).
- *Minnamurra River Estuary Management Plan* – Implement rehabilitation plan for the River upstream of Swamp Road. (2009/2010 and 2010/2011) (H).

- Continue to implement a Clean Waters Program, including involvement of community volunteers, and addressing stormwater education and water quality issues, building on the Minnamurra Estuary Project (H);
- Seek funding assistance for priority water conservation projects (H);
- Seek funding for stage 3 of the *Stormwater pollutant control and riparian management in the Minnamurra Estuary Project* (M);



The Minnamurra Cubs, part of the Minnamurra Estuary Restoration Group, helped with the tree planting morning at Minnamurra Headland

Chapter 4: Noise

Noise may be generally defined as unwanted or offensive sound, which can cause annoyance and affect sleep patterns and can therefore have an impact on our health. The *Protection of the Environment Operations Act 1997* defines offensive noise as:

“Noise, by reason of its level, nature, character or quality, or the time at which it is made, or any other circumstance is above a specified level or is considered (or is likely) to be harmful or interfere unreasonably with the comfort of a person who is outside the premises.”

The gradual increase in background noise caused by the cumulative effect of increasing number of noise sources and/or increasing density of development can also be a concern.

4.1 State

Council monitors noise pollution in the local environment through the documentation of the nature and type of noise complaints received. These complaints are shown below in Table 11 and Figure 5.

The most common environmental issue that Council and the Department of Environment and Climate Change are contacted about is noise. The main noise pollution issue that Council is contacted about is barking dogs.

Table 11: Complaints relating to Noise Pollution
(Rail Infrastructure Corporation, Council and the DECC)

Type of Complaint	2000	2001	2002	2003	2004	2005	2006	2007
	-	-	-	-	-	-	-	-
	2001	2002	2003	2004	2005	2006	2007	2008
Industrial Noise Complaints to the DECC	2	11	9	15	19	13	8	0
Rail Noise Complaints to RailCorp	1	0	0	-	3	0	-	10
Industrial Noise Complaints to Council	3	3		5	0	0	0	0
Commercial Noise Complaints to Council	-	1		6	7	7	5	2
Residential Noise Complaints to Council	9	10	17*	3	23	11	8	11
Construction Noise Complaints to Council **	-	-		6	5	2	3	1
Council Plant Vehicle Noise to Council **	-	-		6	3	1	4	0
Animal Noise complaints to Council	63	45	37	27	32	31	49	65
Total Noise Complaints	78	70	63	68	92	65	77	89

*The breakdown of complaints to Council (ie industrial, commercial, residential) was not available for this reporting period.

** This category of complaints was not recorded separately in earlier reporting periods.

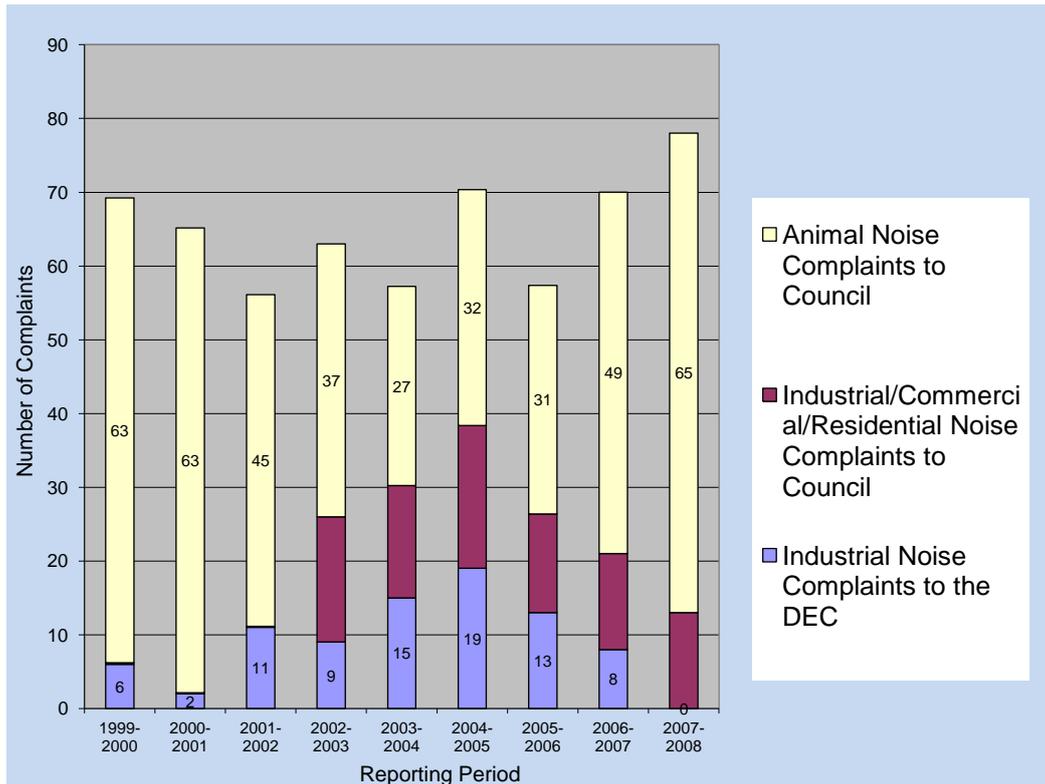


Figure 5: Noise Complaints within the Kiama Municipality

4.2 Pressures

4.2.1 Road and Rail Noise

Road noise is likely to increase as traffic levels increase and the amount residential development near to main roads and railways grows. Currently, residential areas in Minnamurra, Gainsborough, Kiama Downs, Kiama, South Kiama, Gerringong and Gerroa are close to main roads and parts of the residential areas of Minnamurra, Kiama Downs, Kiama, South Kiama and Gerringong are near to the railway line.

While there was a noise impact during the construction of the North Kiama Bypass, the road is complete and it will result in noise reduction within the Minnamurra, Gainsborough and Kiama Downs areas.

RailCorp is undertaking three Pollution Reduction Programs, all of which relate to noise. Details of these programs are contained in RailCorp's Environment Protection Licence 12208, which is available at:

<http://www.environment.nsw.gov.au/prpoeo/licences/L12208.pdf>

4.2.2 Industrial and Commercial Noise

Kiama Municipality does not have a large area devoted to industrial activities, however where residential areas adjoin industrial areas, there is the potential for

impacts from noise of operations. Business, or commercial, areas constitute only a small portion of Kiama Municipality, but can be a source of offensive noise, mainly from air conditioning and deliveries during early hours.

4.2.3 Residential Noise

As shown in Table 11 and Figure 5, noise from residential sources is the most common noise complaint in the Kiama Municipality, including barking dogs (the most common), music, garbage and recycling services, building construction and lawn mowing and gardening activities. With a growing population, increased development and new residential block sizes generally being smaller than the traditional block, it is expected that the amount of noise complaints in residential areas may also grow.

4.3 Responses

4.3.1 Development Control

Development control conditions are placed on development approvals for industrial and commercial activities to ensure noise pollution is minimised or prevented. For industrial premises the *NSW Industrial Noise Policy* applies, providing guidelines for large industrial developments, including guidance on measuring and assessing noise from small commercial and industrial premises regulated by councils. The *NSW Environmental Criteria for Road Traffic Noise* includes criteria for assessing road traffic noise from road developments (Department of Environment and Conservation, 2004).

4.3.2 Enforcement

Council's Environmental Health Officers and Rangers investigate complaints received by Council relating to noise pollution, and the Department of Environment and Climate Change investigates complaints regarding noise pollution from scheduled premises, under the Protection of the Environment Operations Act 1997 and the Protection of the Environment Operations (Noise Control) Regulation 2000. The Police also have jurisdiction over noise pollution and can address complaints relating to residential noise sources such as car sound systems, car and house alarms and noisy neighbours.

In June and July 2007, the Department of Environment and Climate Change NSW (DECC) sought community comment on the proposed Protection of the Environment Operations (Noise Control) Regulation 2007. The aim of the review was to update the Regulation and provide simple, straightforward and enforceable noise controls that match community expectations.

The new Regulation commenced on 1 March 2008 and controls noise from motor vehicles and marine vessels and sets community standards on acceptable noise intrusion in homes from appliances such as intruder alarms, music amplifiers, air conditioners and powered garden tools. A few provisions commence later to give the community time to make any necessary changes. (See <http://www.environment.nsw.gov.au/resources/noise/0870infoarticles.pdf>)

Nuisance Dog Orders can be issued under the *Companion Animals Act 1998* when the noise is the result of a dog, requiring the owner to prevent the behaviour causing the noise problem. There were no Nuisance Dog Orders for barking dogs issued within the reporting period.

Within residential areas, restrictions on some domestic noise sources exist, such as power tools, swimming pool pumps, musical instruments, amplified sound equipment, domestic air conditioners and vehicles. These noise sources have restricted hours of operation and even outside the restricted hours, additional restrictions can be placed on their use if they cause offensive noise (see Table 12). There are also restrictions on car and house alarms. Information on these restrictions can be found on the DECC website at: <http://www.environment.nsw.gov.au/resources/noise/0870infoarticles.pdf>

Table 12: Hours of Restricted Use of Certain Equipment
(adapted from Tables 4 and 6, Department of Environment and Conservation, 2004).

Type of noise	Times during which restrictions apply
Power tools and swimming/spa pool pumps (POEO (Noise Control) Regulation, clause 50)	Before 8.00 am or after 8.00 pm on Sundays and public holidays Before 7.00 am or after 8.00 pm on any other day
Musical instruments and electrically-amplified sound equipment (POEO (Noise Control) Regulation, clause 51)	Between midnight and 8.00 am on any day
Air conditioners (POEO (Noise Control) Regulation, clause 52)	Before 8.00 am or after 10.00 pm on weekends or public holidays Before 7.00 am or after 10.00 pm on any other day
Motor vehicle used on residential premises (except when entering or leaving) (POEO (Noise Control) Regulation, cl. 15) Refrigeration unit fitted to a motor vehicle (POEO (Noise Control) Regulation, cl. 16)	Before 8.00 am or after 8.00 pm on any Saturday, Sunday or public holiday Before 7.00 am or after 8.00 pm on any other day

4.4 Potential Future Activities

Existing Future Activities in the Management Plan 2008-2011

- *Protection of the Environment Operations Act* implementation.

Potential Future Activities Beyond 2008-2009

(H – High Priority, M - Medium Priority, L – Low Priority)

- *Protection of the Environment Operations Act* implementation (2009/2010 and 2010/2011) (H);

Chapter 5: Biodiversity

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

5.1 State

5.1.1 Ecosystem Diversity - Ecological Communities

Vegetation mapping of the Kiama Local Government Area was undertaken by Kevin Mills and Associates during 2003-2004. The maps have since been digitised and included in Council's Geographic Information System. Accompanying the mapping was the report *The Natural Vegetation in the Municipality of Kiama New South Wales* (Kevin Mills and Associates, 2006a). The vegetation communities are shown in Map 5.

Under the NSW *Threatened Species Conservation Act 1995*, Kiama Local Government Area is identified as containing the Endangered Ecological Communities listed in Table 13, which is adapted from the vegetation report (Kevin Mills and Associates, 2006a). These communities are shown in Map 6. Map 7 shows the Core Conservation Areas identified by Kevin Mills in the vegetation report.

Littoral Rainforest is also protected under *State Environmental Planning Policy (SEPP) No. 26 – Littoral Rainforests*, which identifies and makes provision for the protection of littoral (coastal) rainforest in New South Wales. SEPP No. 26 identifies patches of littoral rainforest near the Crooked River, Gerroa. Two stands, nos. 175J and 175K, occur between the Seven Mile Beach Road and Blue Angle Creek. Three small adjacent stands, no. 175A, are identified on the headland above Shelly Beach, north of Gerroa. However, the community behind Seven Mile Beach is actually much more extensive than mapped in SEPP No. 26 (Kevin Mills and Associates, 2006a).

State Environmental Planning Policy No 14 - Coastal Wetlands identifies and makes provision for the protection of coastal wetlands in New South Wales. Wetlands along the Minnamurra River, Spring Creek in Kiama and Ooaree Creek in Rose Valley, are identified in the Policy, but none are identified on the Crooked River, even though the river contains wetlands (Kevin Mills and Associates, 2006a).

5.1.2 Species Diversity - Flora

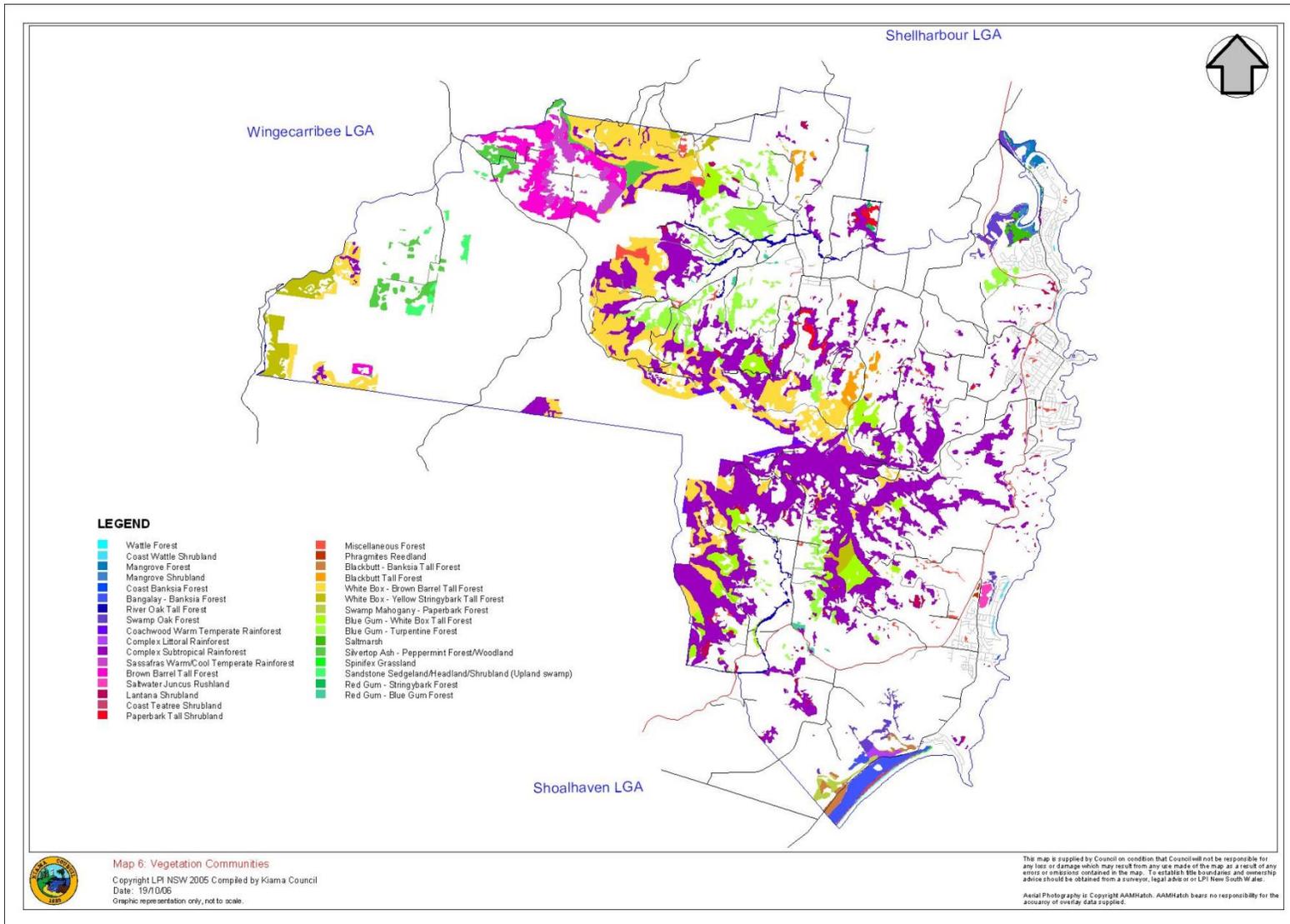
According to the Atlas of NSW Wildlife (Department of Environment and Climate Change – a; <http://wildlifeatlas.nationalparks.nsw.gov.au/wildlifeatlas/watlas.jsp>), there are 452 known native flora species within the Kiama Local Government Area. The Atlas of NSW Wildlife indicates that eight plant species within the Kiama Local Government Area are listed as threatened species in Schedules 1 and 2 of the NSW *Threatened Species Conservation Act 1995* (TSC Act 1995), as shown in Table 14. These plant species are also listed as threatened under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999).

Table 13: Endangered Ecological Communities in the Kiama Municipality
(Kevin Mills and Associates, 2006)

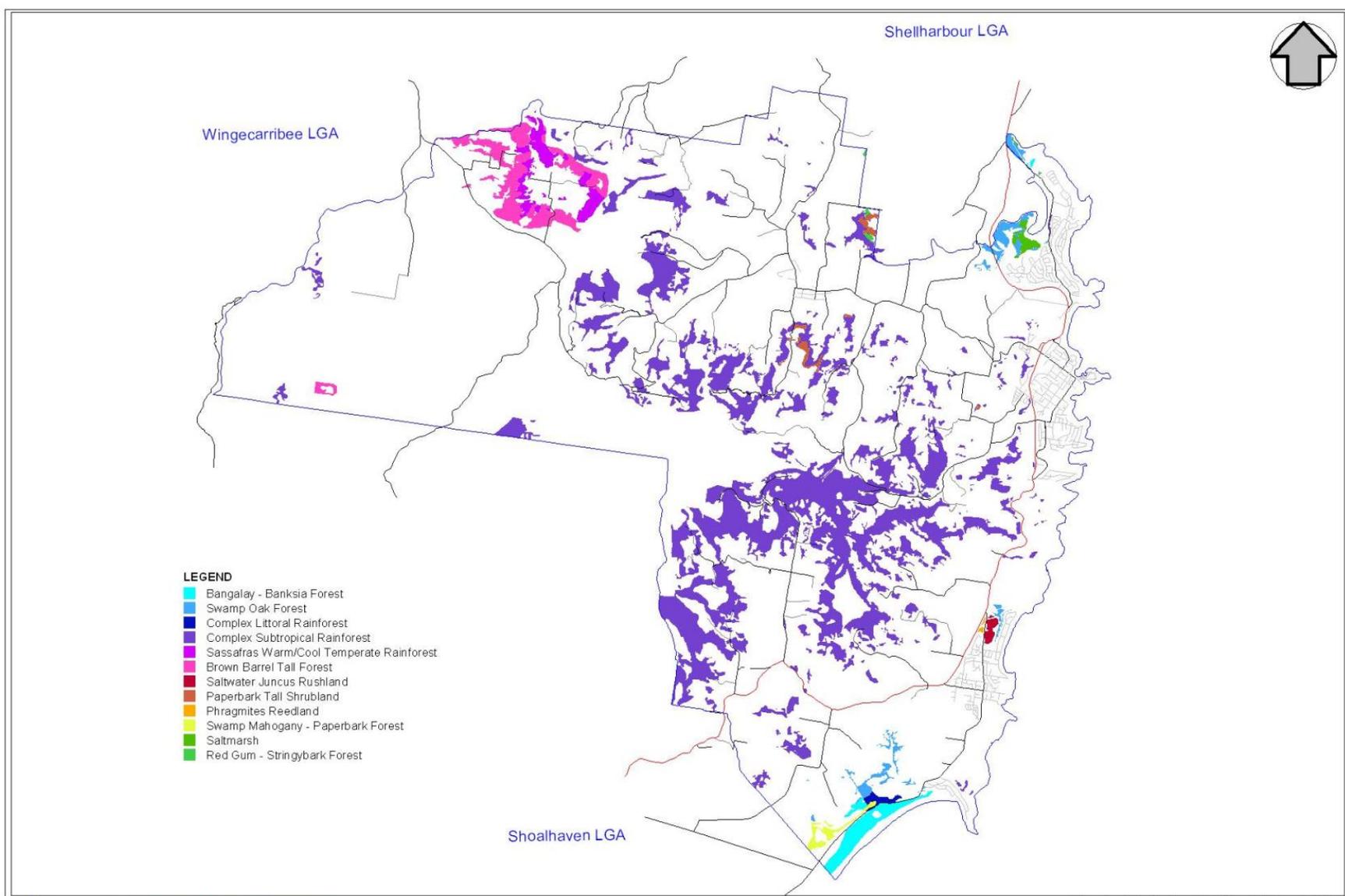
Endangered Ecological Community	Kiama Vegetation Map Equivalent	Site Example in Kiama
Rainforests		
Robertson Rainforest	1.7 Sassafras Warm/Cool Temperate Rainforest (DOR-WRF)	Knights Hill area
Illawarra Sub-Tropical Rainforest	1.1 Complex Subtropical Rainforest (COM-SRF)	Extensive on escarpment slopes
Littoral Rainforest	1.2 Complex Littoral Rainforest (COM-LRF) 1.6 Simple Littoral Rainforest (SIM-LRF)	Seven Mile Beach Area
Eucalypt Forest/Woodlands		
Illawarra Lowland Grassy Woodlands	2.7 Red Gum – Blue Gum Forest (TER-SAC) 2.8 Red Gum – Stringybark Forest (TER-EUG)	Hills northeast Jamberoo
Robertson Basalt Tall Open Forest	2.11 Brown Barrel Tall Forest (FAS-CYP)	Knights Hill area
Bangalay Sand Forest	2.9 Bangalay – Banksia Forest (BOT-BAN)	Seven Mile Beach, Minnamurra River area
Shrublands		
<i>Melaleuca armillaris</i> Tall Shrubland	5.1 Paperbark Tall Shrubland (MEL-ARM)	Hill tops around Jamberoo
Wetlands (Fresh and Saline)		
Freshwater Wetlands on Coastal Floodplains	6.4 Spike-rush Sedgeland (ELE-SOG) 7.3 Phragmites Reedland (PHR-RDL)	North of Gerringong, Spring Creek
Coastal Saltmarsh	7.4 Saltmarsh (SAR-SUA) 7.5 Saltwater Juncus Rushland (JUN-SAL)	Around Minnamurra River, Crooked River, Werri Lagoon
Swamp Sclerophyll Forest on Coastal Floodplains	2.9 Bangalay – Banksia Forest (BOT-BAN) (possibly in part) 6.1 Swamp Mahogany – Paperbark Forest (ROB-MEL)	Crooked River Area
Swamp Oak Floodplain Forest	4.2 Swamp Oak Forest (CAS-GLA)	Minnamurra River, Crooked River, Werri Lagoon
Grasslands		
<i>Themeda</i> grassland on seacliffs and coastal headlands	8.2 Kangaroo Grass Grassland (THM-GRL)	Minnamurra Point and Black Head (Gerroa)

Table 14: Threatened Flora Species

Common Name	Species Scientific Name	Legal Status TSC Act 1995	Legal Status EPBC Act 1999
White Flowered Wax Plant	<i>Cynanchum elegans</i>	Endangered	Endangered
Illawarra Irene	<i>Irenepharsus trypherus</i>	Endangered	Endangered
Not known	<i>Pterostylis pulchella</i>	Vulnerable	Vulnerable
Carrington Falls Grevillea	<i>Grevillea rivularis</i>	Endangered	Endangered
Illawarra Zieria	<i>Zieria granulata</i>	Endangered	Endangered
Pink Rice-flower	<i>Pimelea spicata</i>	Endangered	Endangered
Illawarra Socketwood	<i>Daphnandra sp.C</i>	Endangered	Endangered
Carrington Falls Pomaderris	<i>Pomaderris walshii</i>	Critically Endangered	Critically Endangered



Map 5. Vegetation Communities

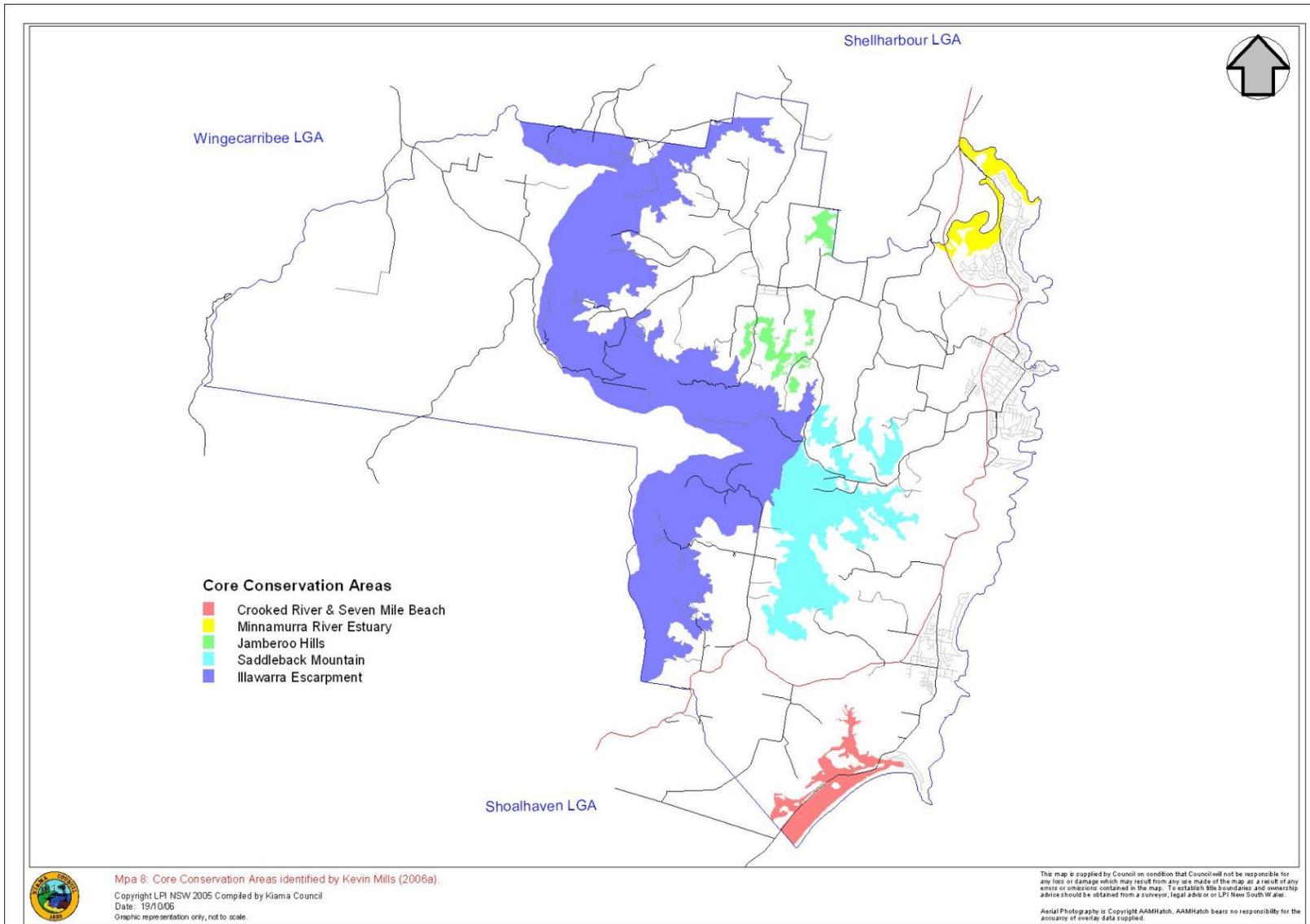


- LEGEND**
- Bangalay - Banksia Forest
 - Swamp Oak Forest
 - Complex Littoral Rainforest
 - Complex Subtropical Rainforest
 - Sassafras Warm/Cool Temperate Rainforest
 - Brown Barrel Tall Forest
 - Saltwater Juncus Rushland
 - Paperbark Tall Shrubland
 - Phragmites Reedland
 - Swamp Mahogany - Paperbark Forest
 - Saltmarsh
 - Red Gum - Stringybark Forest



Map 7: Endangered Ecological Communities
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Map 7: Core Conservation Areas Identified by Kevin Mills (2006)

5.1.3 Species Diversity - Fauna

According to the report *The Fauna of Kiama: Municipality of Kiama, South Coast, New South Wales* (Kevin Mills and Associates, 2006b), which compiled lists of fauna from a variety of sources, there are 496 species occurring in the Municipality, including mammals, birds, frogs, reptiles and freshwater and estuarine fish.

The Atlas of NSW Wildlife indicates that 37 animal species within the Kiama Local Government Area are listed as threatened species in Schedules 1 and 2 of the NSW *Threatened Species Conservation Act 1995* (TSC Act 1995). Some of these animal species are also listed as threatened under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999). An additional 23 threatened species have been listed by Kevin Mills and Associates Pty Limited (2006b) which have not been identified in the Atlas as occurring in the Municipality. These additional species include threatened fish (listed under the *Fish Management Act 1994*), some marine mammals and oceanic birds, and species that have only been recorded a small number of times. All of these species are shown in Table 15.

Table 15: Threatened Fauna Species

Common Name	Species Scientific Name	Legal Status TSC Act 1995	Legal Status EPBC Act 1999	Source
Threatened Mammals				
Australo-African Fur-seal	<i>Arctocephalus pusillus</i>	Vulnerable		# ^
Eastern Bent-wing Bat	<i>Miniopterus schreibersii</i>	Vulnerable	Conservation Dependent	# ^
Eastern False Pipistrelle	<i>Falsistrellus tasmaniensis</i>	Vulnerable		# ^
Eastern Freetail Bat	<i>Mormopterus norfolkensis</i>	Vulnerable		^
Eastern Pygmy Possum	<i>Cercartetus nanus</i>	Vulnerable		# ^
Greater Broad-nosed Bat	<i>Scoteanax rueppellii</i>	Vulnerable		# ^
Grey Headed Flying Fox	<i>Pteropus poliocephalus</i>	Vulnerable	Vulnerable	# ^
Humpback Whale	<i>Megaptera novaeangliae</i>	Vulnerable	Listed migratory species	# ^
Koala	<i>Phascolarctos cinereus</i>	Vulnerable		^
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	Vulnerable	Vulnerable	# ^
Large-footed Myotis	<i>Myotis adversus</i>	Vulnerable		#
Long-nosed Potoroo	<i>Potorous tridactylus</i>	Vulnerable	Vulnerable	# ^
Southern Brown Bandicoot	<i>Isodon obesulus</i>	Endangered	Endangered	# ^
Southern Right Whale	<i>Eubalaena australis</i>	Vulnerable		#
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	Vulnerable	Endangered	# ^
Yellow-bellied Glider	<i>Petaurus australis</i>	Vulnerable		# ^
Yellow-bellied Shearwater Bat	<i>Saccolaimus flaviventris</i>	Vulnerable		#
Threatened Amphibians				
Giant Burrowing Frog	<i>Heleioporus australiacus</i>	Vulnerable	Vulnerable	# ^
Green and Golden Bell Frog	<i>Litoria aurea</i>	Endangered	Vulnerable	# ^
Littlejohn's Tree Frog	<i>Litoria littlejohni</i>	Vulnerable	Vulnerable	# ^
Red-crowned Toadlet	<i>Pseudophryne australis</i>	Vulnerable		# ^
Threatened Fish				
Grey Nurse Shark	<i>Carcharias taurus</i>	Endangered*	Critically Endangered	#
Great White Shark	<i>Carcharodon carcharias</i>	Vulnerable	Vulnerable	#

^ Listed in the NSW Atlas of NSW Wildlife (DECC)

Listed in Kevin Mills and Associates (2006b)

* Status under the NSW *Fish Management Act 1994* (DPI)

Table 15: Threatened Fauna Species (continued)

Common Name	Species Scientific Name	Legal Status TSC Act 1995	Legal Status EPBC Act 1999	Source
Threatened Terrestrial Birds				
Australasian Bittern	<i>Botaurus poiciloptilus</i>	Vulnerable		# ^
Barking Owl	<i>Ninox connivens</i>	Vulnerable		# ^
Black Bittern	<i>Ixobrychus flavicollis</i>	Vulnerable		# ^
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>	Endangered		# ^
Bush Stone Curlew	<i>Burhinus grallarius</i>	Endangered	Endangered	^
Eastern Bristlebird	<i>Dasyornis brachypterus</i>	Endangered	Endangered	# ^
Gang Gang Cockatoo	<i>Callocephalon fimbriatum</i>	Vulnerable		^
Glossy Black-Cockatoo	<i>Calyptorhynchus lathami</i>	Vulnerable		# ^
Ground Parrot	<i>Pezoporus wallicus</i>	Vulnerable		# ^
Masked Owl	<i>Tyto novaehollandiae</i>	Vulnerable		#
Olive Whistler	<i>Pachycephala olivacea</i>	Vulnerable		# ^
Osprey	<i>Pandion haliaetus</i>	Vulnerable	Listed migratory species	#
Pied Oystercatcher	<i>Haematopus longirostris</i>	Vulnerable		# ^
Powerful Owl	<i>Ninox strenua</i>	Vulnerable		# ^
Regent Honeyeater	<i>Xanthomyza phrygia</i>	Endangered	Endangered	#
Rose-crowned fruit-Dove	<i>Ptilinopus regina</i>	Vulnerable		#
Sooty Owl	<i>Tyto tenebricosa</i>	Vulnerable		# ^
Sooty Oystercatcher	<i>Haematopus fuliginosus</i>	Vulnerable		# ^
Square-tailed Kite	<i>Lophoictinia isura</i>	Vulnerable		# ^
Swift Parrot	<i>Lathamus discolor</i>	Endangered	Endangered	# ^
Superb Fruit-Dove	<i>Ptilinopus superbus</i>	Vulnerable		#
Turquoise Parrot	<i>Neophema pulchella</i>	Vulnerable		# ^
Threatened Oceanic Birds				
Black-browed Albatross	<i>Thalassarche melanophrys</i>	Vulnerable	Vulnerable	# ^
Black-winged Petrel	<i>Pterodroma nigripennis</i>	Vulnerable		#
Flesh-footed Shearwater	<i>Puffinus carneipes</i>	Vulnerable		#
Gould's Petrel	<i>Pterodroma leucoptera</i>	Vulnerable	Endangered	#
Grey Ternlet	<i>Procelsterna cerulea</i>	Vulnerable		#
Kermadec Petrel	<i>Pterodroma neglecta</i>	Vulnerable	Vulnerable	#
Little Shearwater	<i>Puffinus assimilis</i>	Vulnerable		#
Northern Giant-Petrel	<i>Macronectes halli</i>	Vulnerable	Vulnerable	#
Providence Petrel	<i>Pterodroma solandri</i>	Vulnerable		#
Red-tailed Tropicbird	<i>Phaethon rubricauda</i>	Vulnerable		#
Sooty Albatross	<i>Phoebastria fusca</i>	Vulnerable	Vulnerable	#
Sooty Tern	<i>Sterna fuscata</i>	Vulnerable		#
Southern Giant-Petrel	<i>Macronectes giganteus</i>	Vulnerable	Endangered	#
Shy Albatross	<i>Thalassarche cauta</i>	Vulnerable	Vulnerable	#
White-bellied Storm-Petrel	<i>Fregetta grallaria</i>	Vulnerable	Vulnerable	#
Wandering Albatross	<i>Diomedea exulans</i>	Endangered	Vulnerable	# ^
White Tern	<i>Gygis alba</i>	Vulnerable		#

^ Listed in the NSW Atlas of NSW Wildlife (DECC)

Listed in Kevin Mills and Associates Pty Limited (2006b)

* Status under the NSW Fish Management Act 1994 (DPI)

5.1.4 Wetlands

According to the report *The Natural Vegetation in the Municipality of Kiama New South Wales*, the Minnamurra River contains the saline wetland communities of Mangrove Forest, Mangrove Shrubland, Saltmarsh and Saltwater Juncus Rushland. Crooked River contains Swamp Mahogany-Paperbark Forest and Saltmarsh. Werri Lagoon contains Phragmites Reedland and Saltwater Juncus Rushland. The freshwater wetlands of Spike-rush Sedgeland, Fresh Juncus Rushland and Cambungi

Reedland are found around farm dams and sometimes across low-lying floodplains (Kevin Mills and Associates Pty Limited, 2006a).

5.2 Pressures

The main threats for both flora and fauna are habitat loss and fragmentation due to vegetation clearing, predation by feral and domestic animals, inappropriate fire regimes, overgrazing of habitat areas by stock, disturbance of stream banks, pollution and weed invasions.

5.2.1 Key Threatening Processes

The NSW *Threatened Species Conservation Act 1995* defines a threatening process as “a process that threatened, or may have the capability to threaten, the survival or evolutionary development of species, populations or ecological communities”, and lists Key Threatening Processes in Schedule 3 of the legislation. The NSW *Fisheries Management Act 1994* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* also list key threatening processes. These processes are listed in Table 16, with those processes that have been newly listed during the reporting period identified with an asterisk (Department of Environment and Climate Change - b, Department of Primary Industries - a and Department of Environment and Heritage).

Table 16: Key Threatening Processes
Listed Under the NSW *Threatened Species Conservation Act 1995*, the NSW *Fisheries Management Act 1994* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

Key Threatening Process	Legislation
Alteration of habitat following subsidence due to longwall mining	TSC Act
Alteration to the natural flow regimes of rivers, streams and their floodplains and wetlands	TSC Act
Anthropogenic Climate Change	TSC Act
Bush Rock Removal (as defined and described in the final determination of the Scientific Committee to list the threatening process)	TSC Act
Clearing of native vegetation (as defined and described in the final determination of the Scientific Committee to list the threatening process)	TSC Act
Competition and grazing by the feral European Rabbit <i>Oryctolagus cuniculus</i> (L.)	TSC Act
Competition and habitat degradation by Feral Goats, <i>Capra hircus</i> Linnaeus 1958	TSC Act
Competition from feral honeybees <i>Apis mellifera</i> L.	TSC Act
Death or injury to marine species following capture in shark control programs on ocean beaches	TSC Act
Entanglement in or ingestion of anthropogenic debris in marine and estuarine environments	TSC Act
Exotic Vines and Scramblers	TSC Act
Forest Eucalypt Dieback	TSC Act
Herbivory and environmental degradation caused by feral deer	TSC Act
High frequency fire resulting in the disruption of life cycle processes in plants and animal and loss of vegetation structure and composition	TSC Act
Importation of Red Imported Fire Ants <i>Solenopsis invicta</i>	TSC Act
Infection by Psittacine Ciroviral (beak and feather) Disease affecting endangered psittacine species and populations	TSC Act
Infection of native plants by <i>Phytophthora cinnamomi</i>	TSC Act
Infection of frogs by amphibian chytrid fungus causing the disease chytridiomycosis	TSC Act
Invasion and establishment of the Cane Toad	TSC Act
Invasion of native plant communities by exotic perennial grasses	TSC Act
Invasion, establishment and spread of Lantana (<i>Lantana camara</i> L. <i>sens. Lat</i>)	TSC Act
Invasion and establishment of Scotch Broom (<i>Cytisus scoparius</i>)	TSC Act
Invasion of native plant communities by <i>Chrysanthemoides monilifera</i> (Bitou Bush)	TSC Act

Invasion of the yellow crazy ant	TSC Act
Introduction of the Large Earth Bumblebee, <i>Bombus terrestris</i> (L.)	TSC Act
Loss and/or degradation of sites used for hill-topping (mating) by butterflies	TSC Act
Loss of Hollow-bearing Trees	TSC Act
Predation by European Red Fox <i>Vulpes Vulpes</i> (Linnaeus, 1758)	TSC Act
Predation by <i>Gambusia holbrooki</i> Gerard, 1859 (Plague Minnow or Mosquito Fish)	TSC Act
Predation by the Feral Cat, <i>Felis catus</i> (Linnaeus, 1758)	TSC Act
Predation by the ship rat <i>Rattus rattus</i> on Lord Howe Island	TSC Act
*Predation, habitat degradation, competition and disease transmission by Feral Pigs (<i>Sus scrofa</i>)	TSC Act

* processes newly listed during 2007-2008

5.2.2 Weeds

Under the NSW *Noxious Weeds Act 1993*, weeds can be declared noxious. Many plants can be classed as weeds, however, only those plants that have a detrimental effect or cause serious economic loss to agriculture or the environment, and providing there is a reasonable and enforceable means of control, are considered as candidates for declaration as noxious weeds. There are currently 86 weeds declared noxious in the Illawarra District Noxious Weeds Authority (IDNWA) control area, which includes Kiama, Shellharbour and Wollongong Local Government Areas (Department of Primary Industries - b). These are shown in Table 17. According to the *Noxious Weeds Act 1993*, noxious weeds are classified using the following classes:

- Class 1: noxious weeds are plants that pose a potentially serious threat to primary production or the environment and are not present in the State or are present only to a limited extent;
- Class 2: noxious weeds are plants that pose a potentially serious threat to primary production or the environment of a region to which the order applies and are not present in the region or are present only to a limited extent;
- Class 3: noxious weeds are plants that pose a serious threat to primary production or the environment of an area to which the order applies, are not widely distributed in the area and are likely to spread in the area or to another area;
- Class 4: noxious weeds are plants that pose a threat to primary production, the environment or human health, are widely distributed in an area to which the order applies and are likely to spread in the area or to another area; and
- Class 5: noxious weeds are plants that are likely, by their sale or the sale of their seeds or movement within the State or an area of the State, to spread in the State or outside the State.

A noxious weed that is classified as a Class 1, 2 or 5 noxious weed is referred to as a 'notifiable weed'.

During the reporting period, the Illawarra District Noxious Weeds Authority, representing the local government area of Kiama, has continued to develop and implement an active noxious weed control program throughout the Kiama Municipal Council area, including:

- Eleven (11) Regional Management Plans were endorsed - Serrated Tussock, St Johns Wort, Lantana, Lantana (Biocontrol), Aquatic Noxious Weeds,

African Lovegrass, Bitou Bush, Giant Parramatta Grass, Groundsel Bush, Gorse and Blackberry. All plans were funded as requested except for St Johns Wort, African Lovegrass and Blackberry.

Local Weed Control Programs for private landholders and government agencies have continued to be given high priority with 113 property inspections being undertaken over the past 12 months within the Kiama LGA.

- 2 Nurseries and aquaria outlets were also inspected over the past year.
- The two (2) major water catchments, namely Crooked River and Minnamurra River were also inspected along their length to ensure no new (aquatic) weed incursions.
- Improved co-operation between stakeholders is being addressed through representation on four (4) regional committees.
- Education and publicity activities have continued to be given high priority through ongoing utilisation of the media and participation in community events. Two (2) displays were held over the last 12 months with three (3) media releases, one (1) talk to a staff training group, and three (3) electronic media interviews.
- Operational programs have continued to be maintained, expanding as time and resources permit, thereby complementing the inspectorial program and allowing the Authority to continue to lead by example.
- All Council lands previously known to be infested with Class 2 weeds[^] were inspected at least twice by 30 April 2007. No Class 2 weeds were recorded on Council owned lands over the past 12 months.
- All Council lands with infestations of Class 3 weeds^{^^} were inspected and treated at least once over the last 12 months.
- 61% of all rural roads and 31% of public reserves were inspected and treated for one or more noxious weed by 30 June 2007. A further 7% of public reserves were inspected however no noxious weeds were identified. Two (2) non rural roads were also treated for noxious weed infestations.
- 14ha of heavy infested or otherwise inaccessible Bitou Bush at Warri Beach and Walkers Beach cliff line reserves were controlled by aerial spraying.
- Specifically, all Bitou Bush on Council controlled lands was inspected and treated by 30 October 2006. All known Gorse, Serrated Tussock, and Giant Parramatta Grass infestations were inspected and treated twice by 30 June 2007. Known St Johns Wort and African Lovegrass infestations were controlled by 30 November 2006.

- Vacant Crown Land funding of \$2,710.00 was received to undertake weed control work at Werri Beach and Walkers Beach cliff line reserves, and at Seven Mile Beach. An additional \$5,000.00 was received under the Defeating the Weed Menace program to control Lantana at Jerrara Dam arboretum where it is impacting on the biodiversity of threatened species and communities at this site.
- Two new noxious weed incursions were inspected and treated by 30 June 2008. Spiny Burr Grass and Glory Lily were sprayed at Seven Mile Beach and Werri Beach respectively.

^ Class 2 weeds include Salvinia and Alligator Weed.

^^ Class 3 weeds include Giant Parramatta Grass, Gorse, Groundsel Bush, St Johns Wort, Mysore Thorn and Water Hyacinth.

Table 17: Noxious Weeds in the Illawarra District Noxious Weeds Authority Control Area.

Common name	Scientific name	All of NSW Declaration	Category
African boxthorn	<i>Lycium ferocissimum</i>		4
African feathergrass	<i>Pennisetum macrourum</i>	A	5
African love grass	<i>Eragrostis curvula</i>		4
African turnipweed	<i>Sisymbrium runcinatum</i>	A	5
African turnipweed	<i>Sisymbrium thellungii</i>	A	5
Alligator weed	<i>Alternanthera philoxeroides</i>		2
Anchored water hyacinth	<i>Eichhornia azurea</i>	A	1
Annual ragweed	<i>Ambrosia artemisiifolia</i>	A	5
Arrowhead	<i>Sagittaria montevidensis</i>	A	5
Artichoke thistle	<i>Cynara cardunculus</i>	A	5
Athel tree	<i>Tamarix aphylla</i>	A	5
Bear Skin Fescue	<i>Festuca gautieri</i>	A	5
Bitou bush	<i>Chrysanthemoides monilifera subspecies rotunda</i>		4
Black knapweed	<i>Centaurea nigra</i>	A	1
Blackberry	<i>Rubus fruticosus (aggregare. species)</i>	A	4
Boneseed	<i>Chrysanthemoides monilifera subspecies monilifera</i>		4
Bridal creeper	<i>Asparagus asparagoides</i>	A	5
Broomrapes	<i>Orobanche spp.</i>	A	1
Burr ragweed	<i>Ambrosia confertiflora</i>	A	5
Cabomba	<i>Cabomba caroliniana</i>	A	5
Cayenne snakeweed	<i>Stachytarpheta cayennensis</i>	A	5
Chilean needle grass	<i>Nassella neesiana</i>		4
Chinese violet	<i>Asystasia gangetica subspecies micrantha</i>	A	1
Clockweed	<i>Gaura lindheimeri</i>	A	5
Clockweed	<i>Gaura parviflora</i>	A	5
Corn sowthistle	<i>Sonchus arvensis</i>	A	5
Dodder	<i>Cuscuta species (except native Species C. Australia, C. tasmanica and . Victoriana)</i>		5
East Indian hygrophila	<i>Hygrophila polysperma</i>	A	1
English broom	<i>Cytisus scoparius</i>		See Scotch broom
Espartillo	<i>Achnatherum brachychaetum</i>	A	5
Eurasian water milfoil	<i>Myriophyllum spicatum</i>	A	1
Fine-bristled burr grass	<i>Cenchrus brownii</i>	A	5
Fountain grass	<i>Pennisetum setaceum</i>	A	5
Gallon's curse	<i>Cenchrus biflorus</i>	A	5
Giant Parramatta grass	<i>Sporobolus fertilis</i>		3

Glaucous starthistle	<i>Carthamus glaucus</i>	A	5
Golden thistle	<i>Scolymus hispanicus</i>	A	5
Gorse	<i>Ulex europaeus</i>		3
Groundsel bush	<i>Baccharis halimifolia</i>		3
Harrisia cactus	<i>Harrisia spp.</i>	A	4
Hawkweed	<i>Hieracium spp.</i>	A	1
Horsetail	<i>Equisetum spp.</i>	A	1
Hymenachne	<i>Hymenachne amplexicaulis</i>	A	1
Karoo thorn	<i>Acacia karroo</i>	A	1
Kochia	<i>Kochia scoparia</i>	A	1
Lagarosiphon	<i>Lagarosiphon major</i>	A	1
Lantana	<i>Lantana species</i>		4
Lantana	<i>Lantana species</i>	A	5
Long-leaf willow primrose	<i>Ludwigia longifolia</i>	A	5
Mexican feather grass	<i>Nassella tenuissima</i>	A	1
Mexican poppy	<i>Argemone mexicana</i>	A	5
Miconia	<i>Miconia spp.</i>	A	1
Mimosa	<i>Mimosa pigra</i>	A	1
Mossman River grass	<i>Cenchrus echinatus</i>	A	5
Mysore thorn	<i>Caesalpinia decapetala</i>		3
Onion grass	<i>Romulea species</i> (includes all <i>Romulea</i> species and varieties except <i>R. rosea</i> var. <i>australis</i>)	A	5
Oxalis	<i>Oxalis species and varieties</i> (includes all <i>Oxalis</i> species and varieties except the native species <i>O. chnoodes</i> , <i>O. exilis</i> , <i>O. perennans</i> , <i>O. radicata</i> , <i>O. rubens</i> , and <i>O. thompsoniae</i>)	A	5
Pampas grass	<i>Cortaderia spp.</i>		4
Parthenium weed	<i>Parthenium hysterophorus</i>	A	1
Pond apple	<i>Annona glabra</i>	A	1
Prickly acacia	<i>Acacia nilotica</i>	A	1
Prickly pear	<i>Cylindropuntia species</i>	A	4
Prickly pear	<i>Opuntia species except O. ficus-indica</i>	A	4
Red rice	<i>Oryza rufipogon</i>	A	5
Rhus tree	<i>Toxicodendron succedaneum</i>	A	4
Rubbervine	<i>Cryptostegia grandiflora</i>	A	1
Sagittaria	<i>Sagittaria platyphylla</i>	A	5
Salvinia	<i>Salvinia molesta</i>		2
Sand oat	<i>Avena strigosa</i>	A	5
Scotch broom	<i>Cytisus scoparius</i>		4
Senegal tea plant	<i>Gymnocoronis spilanthoides</i>	A	1
Serrated tussock	<i>Nassella trichotoma</i>		4
Siam weed	<i>Chromolaena odorata</i>	A	1
Smooth-stemmed turnip	<i>Brassica barrelieri subspecies oxyrrhina</i>	A	5
Soldier thistle	<i>Picnemon acarna</i>	A	5
Spotted knapweed	<i>Centaurea maculosa</i>	A	1
St John's wort	<i>Hypericum perforatum</i>		3
Texas blueweed	<i>Helianthus ciliaris</i>	A	5
Water caltrop	<i>Trapa species</i>	A	1
Water hyacinth	<i>Eichhornia crassipes</i>		3
Water lettuce	<i>Pistia stratiotes</i>	A	1
Water soldier	<i>Stratiotes aloides</i>	A	1
Willows	<i>Salix spp.</i> (includes all <i>Salix</i> species except <i>S. babylonica</i> , <i>S. x reichardtii</i> , <i>S. x calodendron</i>)		5
Witchweed	<i>Striga species</i> (includes all <i>Striga</i> species except native species and <i>Striga parviflora</i>)	A	1
Yellow burrhead	<i>Limnocharis flava</i>	A	1
Yellow nutgrass	<i>Cyperus esculentus</i>	A	5

Class 1: State Prohibited Weeds;

Class 2: Regionally Prohibited Weeds;

Class 3: Regionally Controlled Weeds;
Class 4: Locally Controlled Weeds;
Class 5: Restricted Plants.
A: All of New South Wales Declaration

5.2.3 Bushfire

Bushfire is also a significant threat to biodiversity. According to the Kiama/Shellharbour District Rural Fire Service, there were 12 vegetation fires in the Kiama and Shellharbour areas within the reporting period, which was less than the 17 last year and considerably less than previous years (17 in 2005-2006, 24 in 2004-2005, 62 in 2003-2004, 46 in 2002-2003, 154 in 2001-2002) (Suters, G. 2008).

5.2.4 Tree Lopping or Removal

Removal of trees, or major portions of trees, can have major impacts on biodiversity. Tree lopping is prohibited under Council's *Tree Preservation Order*. This Order states that no tree, specified by the Order, shall be ring-barked, cut-down, topped or lopped, injured or removed without prior Council approval and is dependent on its size and/or land zone under the *Local Environmental Plan 1996*. However, Council will approve for a tree to be lopped or removed if there is a concern for safety.

During the reporting period, there were 383 permits issued to remove or prune trees. This was less than last year's 480 permits, and significantly less than the 520 issued in 2005-2006, and the 560 issued in 2004-2005. There was also one court prosecution and three penalty infringement notices issued in regard to tree lopping and removal.

5.2.5 Road Crossings as Fish Barriers

The Department of Primary Industries (Conservation and Agriculture) has implemented an Environmental Trust Project: "*Reducing the Impact on Road Crossings on Aquatic Habitat in Coastal Waterways – Southern Rivers, NSW*" to identify and prioritise all road crossings that were acting as fish passage barriers within the Southern Rivers Catchment Management Authority area. This study assessed and prioritised barriers in terms of their impact on aquatic biodiversity, benefits should the structure be remediated and the ease of structure remediation (Department of Primary Industries, 2006).

The study identified Kiama Local Government Area as having 16 potential fish passage obstructions, including bridges, culverts and causeways. The study recommends that 10 of these should be remediated, including two high priority sites:

- Frys Creek at Minnamurra Falls Road which is a bridge/causeway – it recommends that the causeway be removed and the footings of the bridge be reinstated; and

- an unnamed tributary to Crooked River at the Princes Highway which is a culvert pipe – it is recommended a low flow channel and remove debris (Department of Primary Industries, 2006).

5.3 Responses

5.3.1 Development Control

Council's existing LEP 1996 provides for specific measures to control the impact of human activities upon local biodiversity within designated High Conservation Value Areas and land within Rural Environmental Zones 7b (Estuarine Wetlands), 7b1 (Wetland Buffer), 7d (Scenic), 7e (Hinterland), 7f (Foreshore Protection) and 7l (General). The LEP is currently being reviewed and is looking at more innovative planning controls to help protect the natural and built environment.

The NSW *Threatened Species Conservation Act 1995* provides for the protection of threatened species and their habitats, including threatened species of plants and animals and endangered 'populations' and 'ecological communities'.

The Schedules to the Act list the threatened species, populations and ecological communities and key threatening processes, as determined by a special Scientific Committee (see above in the Section 5.1: State for the threatened species and communities listed under this Act in the Kiama Local Government Area).

This legislation was reviewed in 2004 with the amendment aiming to establish better frameworks and processes so that landholders, developers, farmers, community groups and government agencies can more effectively contribute to protecting the State's biodiversity.

The Threatened Species Conservation Amendment Act 2004 puts greater emphasis on land-use planning which focuses on the protection and restoration of native vegetation and threatened species habitat and can allow Council LEPs to be certified under the Biodiversity Certification Program (Department of Environment and Conservation – c)

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* focuses on 'matters of environmental significance' and puts in place an environmental assessment and approvals process (Australian and New Zealand Environment and Conservation Council, 2001). Matters of environmental significance include threatened animal and plant species and ecological communities, which are listed by the Commonwealth Minister for the Environment on the advice of a specialist committee (Department of Environment and Heritage).

Proposed developments in the Kiama Municipality that are likely to have a significant impact on matters of national environmental significance must be referred by the proponent to the Department of Environment and Heritage for Commonwealth approval in addition to a development approval by Council. Council is also obliged to refer an action that itself proposes to take if it is likely to have a significant impact on

matters of national environmental significance (Department of Environment and Heritage).

5.3.2 Threatened Species Recovery Plans

Council is a member of the Illawarra Regional Threatened Flora Recovery Team which is convened by the NSW Department of Environment and Climate Change. The Regional Recovery Team is developing and reviewing Recovery Plans for six threatened flora species within the Illawarra Region: Pink Rice-flower (*Pimelea spicata*), Illawarra Granulata (*Zieria granulata*), White Flowered Wax Plant (*Cynanchum elegans*), Illawarra Greenhood Orchid (*Pterostylis gibbosa*), Illawarra Socketwood (*Daphnandra Sp C*), and Illawarra Irene (*Irenepharsus trypherus*). During the reporting period, a Recovery Plan has been prepared for *Pimelea spicata*.

Previously, the NSW Department of Environment and Climate Change prepared and implemented Recovery Plans for listed threatened species, populations and ecological communities, and Threat Abatement Plans for key threatening processes. As the number of listed species, communities and processes increases, it was instead decided to prepare a *Priorities Action Statement* (PAS). The PAS combines strategic reform with specialist recovery and threat abatement actions.

Under each strategy, actions are listed which aim to recover each threatened species and abate each threat. These are further categorised into high, medium and low priority actions (The Department of Environment and Conservation, 2006). The PAS can be searched online by type of species, threatening process or by geographic areas at http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/pas_lga.aspx. There are 19 recovery strategies and 5 threat abatement strategies listed in the draft PAS that refer to threatened species within the Kiama Local Government Area, including 272 priority actions (Department of Environment and Climate Change – d).

5.3.3 Native Vegetation Act 2003

The *Native Vegetation Act 2003* aims to end broad scale clearing, to protect the health of our land, rivers and wildlife. The Act gives power to local Catchment Management Authorities to make decisions about how to best manage native vegetation. The system is based on voluntary agreements between landholders and Catchment Management Authorities called Property Vegetation Plans (PVPs).

The new system includes the use of a computer modelling program called the *PVP Developer*. The PVP Developer weighs up the positive and negative aspects of different management plans and activities, allowing farmers to make practical decisions based on the best scientific information available. Experts from the local Catchment Management Authority use this tool and their professional judgement when assessing clearing proposals. Farmers are then eligible for funds to help with conservation initiatives such as revegetation plans, salinity strategies and soil erosion control (NSW Government, 2005).

5.3.4 Supply of Trees

During the reporting period, Council had 4 plant sales and issued approximately 500 plants.

5.3.5 Roadside Vegetation Management Plan

With funding received from the Roads and Traffic Authority Roadside Environment Committee via the Southern Rivers Catchment Management Authority, Council prepared a Roadside Vegetation Management Plan. The primary objective of the plan is to protect the good quality remnant vegetation and to identify areas for revegetation and corridor enhancement.

Development of the plan required vegetation surveys and an assessment of the existing roadside vegetation to determine areas of low, medium and high quality conservation value and also threatened species. The assessment was done generally in accordance with the guidelines produced by the NSW Roadside Environment Committee. The management plan developed from the surveys and guidelines will then determine the future management of the roadside vegetation. Training of all staff was undertaken, with maps and a summary of the document issued to specific staff.

5.3.6 Council Rehabilitation Projects

Council Rehabilitation Projects

Council has continued to implement rehabilitation projects within parks, reserves and beaches within the Municipality. During the reporting period, bush regeneration and removal of noxious weeds was undertaken at:

- Spring Creek Wetlands: Removal of major infestation of Madiera vine around Jamberoo Road pond and replanting of native species plus on-going planting to increase biodiversity elsewhere in reserve;
- Jerrara dam: Lantana clearing and replanting with native species. implementation of the Recovery plan for *Zieria granulata* & *Daphnanadra micrantha*, on-going planting to increase biodiversity elsewhere in reserve; and
- Robert East Reserve: Implementation of the Recovery plan for *Zieria granulata*

5.3.7 Other Rehabilitation Projects in the Kiama Municipality

Community Rehabilitation Projects

Many community groups have undertaken a range of rehabilitation projects throughout the Municipality. These active environmental groups, include Bombo Headland Landcare, Bombo Outlook Landcare, Byrne's Run Landcare, Foxground Landcare, Gerroa Environment Protection Society, Jamberoo Mountain Landcare,

Jamberoo Valley / Minnamurra River Landcare, Minnamurra Environment Group, Seven Mile Beach Dunecare, Spring Creek Environment Group, Upper Minnamurra Rivercare, Wallaby Hill Landcare, Wallace Creek Landcare and Werri Beach Dunecare.

Feral Animal Control – Landcare Illawarra Project

Landcare Illawarra has been working on a Feral Animal Control Program with funding from the National Landcare Program. The program has covered a large portion of the Municipality including Foxground, Toolijooa, Broughton Village, Gerroa, Gerringong and surrounds. The aim of the program was to implement humane and effective methods of controlling feral animals, including trapping, shooting and baiting.

From the period of May 2005 to the end of October 2006, 136 landholders were involved in a Pest Animal Control Program that covered 3126 hectares. During this period 171 fox, 7 deer, 19 goats and 1 feral cat were culled. Some 45 landholders conducted a further cull using recreational hunters, which covered another 2894 hectares. This saw the eradication of 148 foxes, 2 deer, 38 goats and 10 feral cats. There were 37 landholders that did not participate, leaving an area of 848 hectares which was not managed for pest control. (Mathie, B. pers comm.2007)

Following up from this program during the 2007-2008 reporting period, fourteen landholders in the Lower Foxground area took part in two nights of fox control, where 16 foxes were culled. In upper Foxground, a program of feral animal control targeting mainly foxes, but also deer and goats was also undertaken.

Continuation of such feral animal control programs has been secured by grant funding from Kiama Council and the Southern Rivers Catchment Management Authority obtained with the assistance of Landcare Illawarra. The area bounded by Barren Grounds Nature Reserve through to Upper Foxground and the eastern side of Foxground Road will be targeted for goat and deer control.

Funding has also been obtained through the Threatened Species Network Community Grant, from the Worldwide Fund for Nature, Australia, to undertake research on quoll activity in five different locations in Foxground. (Mathie, B. pers comm.2008)

The success of such control programs, can be largely attributed to the conscientious efforts of a combined community approach, and the specialist skills of the contractor employed to undertake the culling. Assistance from Kiama Council's Ranger Services and GIS staff is also much appreciated.

Feral animal control in the Jamberoo area was also undertaken by the Moss Vale Rural Lands Protection Board during the reporting period.

Foxground Landcare Group – Madeira Vine Eradication

The Foxground Landcare Group has had the eradication of Madeira Vine in their sights for the past couple of years. With funding obtained from the Environmental

Trust Grants extending into 2007, they have continued their agenda of making Foxground, a Madeira Vine free zone. (Mathie, B. pers comm 2008)

In its second year of the project, the group has concentrated on two Council owned sites. The weeding work is being undertaken on the hairpin bend leading down to Broughton Creek causeway, and also at the old highway next to Kimberley Park. Council's contribution to this project is gratefully acknowledged.

Gerringong Gerroa Community Engagement Project – Landcare Illawarra Project

Landcare Illawarra has developed a project that encourages resources, including labour, to be shared through a local Landcare network. The Gerringong Gerroa Community Engagement Project includes partners Landcare Illawarra, Council, Southern Rivers Catchment Management Authority, Berry Primary School, Kiama Primary and High Schools, Boolarng-Nangamai Aboriginal Studio, Gerringong Garden Club, Kiama Community Services Association and Ratepayers Association, Werri Beach Dunecare, Gerringong Lions Club, Gerringong Community Streamwatch Conservation Volunteers Australia, and Kiama Council. These partners share resources between themselves and with individuals for many environmental projects. The contact for this group is Mike Swanson on 4256 9599. (Plunkett-Cole, N, 2007)

Werri Lagoon/Ooaree Creek Project – SRCMA/CVA

Ooaree Creek is a major tributary of Werri Lagoon -a wetland of State significance - and is located on an active dairy farm at Rose Valley, Gerringong. On-ground conservation work has been occurring in this area since 2006 under the Revive Our Wetlands Program, funded by BHP Billiton and the Southern Rivers Catchment Management Authority (SRCMA), and the SRCMA's River Rehabilitation Program.

Work has included the installation of an off-creek watering system for stock, in-stream erosion control works and mechanical removal of the densely growing weed species Coral Tree, along a 2 km length of the creekline to prepare for revegetation with native species. These works will improve water quality of the creek and lagoon, control erosion and add to biodiversity. The Coral Trees have contributed to major erosion (incision) of the creek bed by excluding the range of native plant species that would have originally stabilised the creek banks.

Conservation Volunteers Australia (CVA) have coordinated volunteers to undertake a range of on-ground conservation works in this area under the Revive Program since 2006. This culminated in a huge planting event in May 2008 - when approximately 2000 local native species were planted by 200 volunteers over a 2 week period!

Some of these volunteers had been involved in the seed collection on the site since 2006 with the plants propagated by a local nursery in time for the event. Many were dedicated regular CVA volunteers. Others were Conservation and Land Management students from Yallah Tafe, University of Wollongong Students, Kiama Council staff, Kiama High School students and many members of the local Landcare Group, Werri Beach/Gerringong Dunecare, as well as other members of the local community.

Many thanks to all the volunteers that assisted with this huge planting event, and to CVA for co-ordinating them. Thanks also to Jo Chittick, the dairy farmer

and property owner, for his dedication to improving the condition of Ooaree Creek, and to the cause for conservation. (Nikki Plunkett-Cole, SRCMA 2008)



Photo: Some of the Kiama Council staff taking part in the Ooaree Creek tree planting.

Revive Werri Lagoon – Conservation Volunteers Project

At this critical time of drought, dwindling water resources and increasing awareness of the impact of climate change, the role of wetlands to our environment has never been more important. Revive our Wetlands is the largest national wetlands revival program in Australia, developed by Conservation Volunteers Australia and BHP Billiton. Here in the Kiama Municipality, Revive our Wetlands has undertaken significant conservation work at Werri Lagoon.

Werri Lagoon at the northern end of Werri Beach, Gerringong, comprises an extensive lowland swamp and estuarine lagoon covering an area of 46 hectares. The catchment of the lagoon is mainly farmland, with some urban areas around the southern side. Werri Lagoon is protected under SEPP 14 (wetlands of State significance) and includes an area of Coastal Saltmarsh adjoining the Western boundary of the lagoon which has been declared as an endangered ecological community under the Threatened Species Conservation Act 1995 (NSW).

Working in partnership with the Southern Rivers Catchment Management Authority, the Werri Beach Dunecare Group, Kiama Municipal Council, local farmers and residents, in 2008 Revive our Wetlands has facilitated over 150 volunteers working in the Werri Lagoon catchment on 3 days per month. The work undertaken has so far has included planting of over 2000 native plants (which have had a 70% survival rate) along the banks of Ooaree Creek, Streamwatch water quality monitoring, removal of over 4400m of invasive weeds, seed collection and photopoint monitoring,

Over the next year, the Revive our Wetlands program will continue revegetation work by planting 500 plants, controlling weeds, collecting 500g of seeds and establishing two further water monitoring sites. In addition, the program will pursue wetland education opportunities for local primary and secondary schools either within the classroom or onsite at Werri Lagoon. To get involved, or for more information, go to www.conservationvolunteers.com.au, or email: wollongong@cva.org.au, or phone 02 42289246. (Rhind, S. 2008)

5.4 Potential Future Activities

Existing Future Activities in the Management Plan 2008-2011

- Prepare and/or implement plans to improve the environment and report on activities undertaken and grants received (including Threatened Species Recovery Plan actions);
- Tree Preservation - Assess applications for tree removal or pruning in accordance with Council's *Tree Preservation Order*;
- Noxious Weed Management - Provide funding for the operation of the IDNWA;
- Noxious Weed Management - Control noxious weeds through the implementation of the IDNWA Programs;
- Ensure the ongoing implementation of the *Roadside Vegetation Management Plan*.
- Implement educational programs and activities supported by Council in relation to biodiversity;
- Community Lands - Continue the development of educational reserve sites at: Spring Creek Wetlands, Jerrara Dam Arboretum and Bonaira Native Gardens.

Potential Future Activities Beyond 2009-2010

(H – High Priority, M - Medium Priority, L – Low Priority)

- Ongoing implementation of the *Roadside Vegetation Management Plan*. (2009/2010 and 2010/2011) (H, M & L as per Plan timeframes);
- Prepare and/or implement plans to improve the environment and report on activities undertaken and grants received (2009/2010 and 2010/2011) (H);
- Tree Preservation - Assess applications for tree removal or pruning in accordance with Council's *Tree Preservation Order* (2009/2010 and 2010/2011) (H);

- Noxious Weed Management - Provide funding for the operation of the IDNWA (2009/2010 and 2010/2011) (H);
- Noxious Weed Management - Control noxious weeds through the implementation of the IDNWA Programs(2009/2010 and 2010/2011) (H);
- Review and implement the relevant recovery strategies listed in the Department of Environment and Climate Change's draft *Priority Action Statement* that refer to threatened species and threatening processes on Community Land (H);
- Community Lands - Continue the development of educational reserve sites at: Spring Creek Wetlands, Jerrara Dam Arboretum, and Bonaira Native Gardens (2009/2010 and 2010/2011) (M).
- Support and participate in Landcare Illawarra, Conservation Volunteers Australia and Southern River Catchment Management Authority projects within the Kiama Municipality (M);
- Undertake education programs on biodiversity issues including riparian management and threatened species (M);
- Where possible, provide plants, promotion and/or funding to landholders and schools to undertake bush regeneration projects (L);
- Conduct workshops for Community Groups and interested residents on appropriate topics such as backyard biodiversity, propagation and indigenous sites (L).



Chapter 6: Waste

6.1 State

Kiama Municipal Council operates the Minnamurra Waste Disposal and Recycling Centre. The facility includes a Materials Recovery Facility for the sorting of recyclable materials from the domestic recycling collection service and a Revolve Recycling Centre incorporating green waste mulching and compost processing scrap metal, waste paper, oils and glass recycling. In April, Council closed its Materials Recovery Facility and all recycling is now transported to WSN (Waste Service NSW) in Chullora, Sydney for sorting and recycling.

A Closure Plan has been completed and implemented along with a quality assurance and submitted to the Department of Environment and Conservation for approval.

Ongoing maintenance has continued at the Gerroa Waste Disposal Depot including weeding, mowing, watering and planting.

A ten year Waste Strategic Plan for Waste Facilities and Services is being developed for the Kiama Municipality to identify future waste, recycling collection services and disposal options.

6.2 Pressures

6.2.1 Pressures from Waste Generation

The amount and type of waste generated by the community, places pressure on the available landfill space. Both population growth and the behaviour contribute to this ongoing pressure. There is therefore a need to reduce the amount of waste going to landfill, through waste avoidance and recycling and reuse facilities.

The estimated total waste (green waste, putrescibles and recycling) generated during the reporting period was 10,775.45 tonnes, of which 6,415.41 tonnes, or 59.54%, was recycled. (See Figure 6 for comparison with previous years).

This figure is higher than previous reporting periods which testament to the education programs in place.

During the 2007-2008 reporting period, the total waste disposed of at the Shellharbour City Council facility was 4,360.04 tonnes made up of the following:

• Urban/Rural garbage collection service	3236.64
• Streets/Parks/Reserves/Commercial waste	1007.54
• Litter/Waste collection from Footpaths/Parks/Reserves	31.74
• Urban Kerbside Clean Up Waste	112.36

During the reporting period, 6,415.41 tonnes of materials were recycled at the Minnamurra Waste and Recycling Facility consisting of the following types and tonnages:

• Commercial Recycling	353.45
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- Drop Off Centre Recycling 14.79
- Kerbside Recycling 2212.96
- Rural Recycling 128.91
- Steel 211.00
- Green Waste Drop Off 1218.48
- Green Waste Kerbside Collection 2275.82

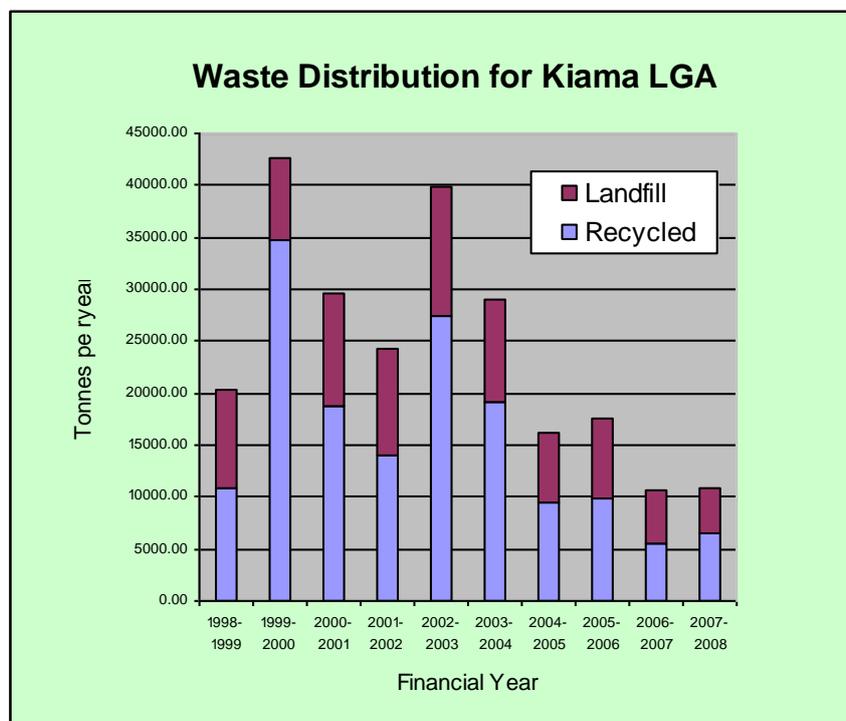


Figure 6: Waste Recycled/Reused and Disposed to landfill 1998 to 2008

6.2.2 Pressures from Waste Management

The Minnamurra, and the former Gerroa, Waste and Recycling Depots are located within sensitive areas close to wetlands and beaches and there are potential impacts such as ground water contamination, odour, greenhouse gas emissions, weeds, noise and feral animals as a result of the operation of the facilities. The closure and rehabilitation of these facilities have now been completed with ongoing maintenance to both sites continuing.

6.2.3 Illegal Waste Disposal

Illegal dumping of waste such as building and demolition waste, greenwaste, household items, household rubbish, abandoned cars, and general litter has an impact on both visual amenity and the natural environment. Environmental impacts include reduced water quality, threats to biodiversity through weed and pest invasion, and the risk of soil contamination.

During the reporting period, Council investigated thirteen littering and illegal dumping complaints.

6.3 Responses

6.3.1 Development Control

The *Development Control Plan (DCP) No 25 – Planning for Less Waste* was adopted by Council in March 2004. The DCP focuses on the building and demolition industries and aims to reduce the demand for waste disposal facilities in Kiama Municipality. The objectives of the plan are:

- To maximise reuse and recycling of building and construction materials and minimise disposal of materials;
- To encourage selective and/or complete deconstruction of buildings rather than outright demolition;
- To facilitate improved project planning and management with the aim of delivering efficient use of resources, efficient building techniques and minimisation of waste; and
- To foster the principles of Ecologically Sustainable Development.

Development applications must include a Waste Minimisation and Management Plan, and a Waste Compliance Certificate is required to be submitted as a condition of consent outlining quantities of materials reused, recycled or disposed.

During the reporting period, statistics were recorded regarding building and construction waste from the 107 finalised development applications that were required to submit Waste Minimisation and Management Plans. The total estimate tonnage of waste disposed of recycled or reused on or off the construction sites was 4323.07 tonnes. Of this 2708.50 tonnes (62.65%) was reused or recycled and 1614.57 tonnes (37.35%) was disposed to landfill including asbestos.

This represents an increase of over 50% in the amount of materials recycled when compared to the previous reporting period. These figures only cover developments over \$5,000 and do not include exempt development (see Table 18).

Table 18: Tonnes Reused, Recycled or Disposed to Landfill - Building and Construction Waste

Material Type and Fate	Total Tonnage
On-site Reused Timber	9.73
On-site Reused Bricks	51.41
On-site Reused Fill	718.69
On-site Reused Green Waste	13.0
Off-site Recycled Timber	3.00
Off-site Recycled Bricks	59.78
Off-site Recycled Concrete	699.00
Off-site Recycled Fill	1339.46
Off-site Recycled Green Waste	26.58
Off-site Recycled Metals	10.47
Off-site Recycled Plaster Board	6.45
Off-site Recycled Other	195.89
Disposed to Landfill	1511.69
Disposed Contaminated Material - "Asbestos"	166.23
TOTAL ON-SITE REUSED	330.83
TOTAL OFF-SITE RECYCLED	2377.67
TOTAL DISPOSED	1614.57

6.3.2 Benefits of Recycling

The total amount of recyclables collected by Council from the urban and rural residential sector for 2007-2008 was 2341.87 tonnes. This represents a 4.43% increase on the 2006-2007 figure of 2238.23 tonnes.

A further 579.24 tonnes of recyclable materials were recycled from commercial premises (353.45 tonnes) and 225.79 tonnes including scrap steel (211 tonnes) was recycled at the Minnamurra Waste and Recycling Centre.

A total of 3494.3 tonnes of green waste was diverted from landfill. 2275.82 tonnes of green waste was collected from the fortnightly urban kerbside service and a further 1218.48 tonnes was received at the Minnamurra Green Waste Recycling Centre.

When the total recycled tonnage figure is entered into the Department of Environment and Conservation's *Environmental Benefits of Recycling Calculator* (Department of Environment and Climate Change, 2006 - e), it shows that this amount of recycling has the following benefits with regard to landfill space, greenhouse gases and energy and water savings .

For the 6415.41 tonnes of total waste recycled, this equates to:

- 17,679 m³ of landfill space saved;
- 3,221 tonnes CO² equivalent total greenhouse benefits;
- 774 cars being removed from the road;
- 106,844 gigajoules of energy savings;
- 494.7 households' annual electricity requirements;
- 106,261 megalitres of water savings (42.5 Olympic swimming pools or 1,932 backyard swimming pools).

For 3494.3 tonnes of green waste diverted from landfill this equates to:

- 9,629 m³ of landfill space saved;
- 1,755 tonnes CO² equivalent total greenhouse benefits;
- 421 cars being removed from the road;
- 58,195 gigajoules of energy savings;
- 269.4 households' annual electricity requirements;
- 57,878 megalitres of water savings (23 Olympic swimming pools or 1052 backyard swimming pools).

6.4 New Waste Projects

6.4.1 The Bokashi Bucket – New composting system

To cater for the large number of residents that are single dwellers with small gardens, dog owners and/or to supplement existing composting systems with a home garden, Council investigated other forms of composting other than worm farm and compost heaps. Through its investigations, the Bokashi Bucket was trialled due to its claims that it could cater for all organic waste including meat, dairy and dog waste.

The Bokashi Bucket is a revolutionary fermentation process that turns kitchen waste into a rich soil conditioner. This unique composting system uses the EM (Effective Micro-Organism) Bokashi to create the ideal conditions for airtight composting.

The system was trialled for three-months using a variety of organic materials including fruit/vegetable peelings, meat, dairy generated from the staff lunch room.

As the bucket is airtight, there are no insect problems and the fermentation process prevents any odour. The size of the bucket has been designed to suit the average household, and in most cases will take about 3 - 4 weeks to fill.

A one year supply agreement was entered into with Bokashi Composting Australia, a Sydney based company. An initial order of 200 Bokashi Buckets and 200kg of Bokashi grain was purchased to onsell to residents of the Kiama municipality. Available in September, 2007, the starter kits consist of 1 x 20 litre Bokashi Bucket, an information brochure an 1kg of Bokashi in a re-useable container and will be made available for the subsidised price of \$70 to residents of the Kiama Municipality only. Residents need to present their rates notice for proof of identity when purchasing the Bokashi Bucket from Minnamurra Recycling Centre.

Residents will also be able to purchase the Bokashi grain from Council on a “swap ‘n go’ basis, by returning their empty container to Council, and, for a small fee have it replaced with a container filled with 1kg of Bokashi grain.

The liquid from the Bokashi Bucket can be diluted at a rate of 1:100 (or more) to produce an excellent liquid fertiliser. You can even pour the liquid down your sink drains to keep it biologically healthy! The remaining fermented solids can be used in the garden as they breakdown quickly and have a beneficial effect on nearby plants.

“The Bokashi Bucket allows Council to provide another option for residents to reduce waste going to landfill thereby minimising costs and environmental impact”, stated Josephine St John .

At Council’s One STOP Climate Change Shop in June 2007, the Bokashi Bucket was demonstrated and a survey from this event indicated that 56 out of 135 local residents were interested in purchasing the Bokashi Bucket.

This initiative supports Council’s goal of providing a sustainable environment and reducing the environmental impacts of waste and to provide leadership by demonstrating environmental excellence. As at June 2008, 92 buckets have been sold



6.4.2 Cartridges 4 Planet Ark

In September 2007, Council installed “Cartridges 4 Planet Ark” collection boxes within the Council Administration building for empty toner cartridges, toner/ink bottles and ink jet cartridges sourced from Council operations.

Up to 80% of imaging consumables are thrown to landfill each year. Cartridges 4 Planet Ark was launched to capture and recover these potentially hazardous wastes. From September 2007 – June 2008, 90kgs has been collected from Council’s Administration Building offices.



6.4.3 Second Hand Saturday

"Secondhand Saturday" is a giant community garage sale that is developed and implemented by Kiama Council and is followed by a bi-annual area clean up.

The purpose of the event is not only good for community spirit, it assists in reducing the amount of cleanup material going to landfill, by promoting reuse of items, which is beneficial to our environment.

Council cleanups are scheduled twice a year. To co-incide with these clean ups, a “Second Hand Saturday” will be held one – three weeks prior. It would provide residents with the opportunity to discard items which do not normally go into the waste bin yet are worthy enough to be sold, thereby reducing the amount of clean up materials going to landfill and a means of raising money. Second Hand Saturday would also minimise the mess the “pickers” create when they roam the streets rummaging through clean up piles. Evidence has shown, from previous Second Hand Saturday events hosted by other local councils within NSW, there was a 50-75% reduction of waste going to landfill from previous council clean ups.

Gerringong was the first area to trial this event. This event co-incided with Clean Up Australia Day, being held on Saturday, 1 March.

The venue for this event was held in the Werri Beach carpark located next to the Gerringong Surf Club. The Gerringong Surf Club have been invited to host the event. Council promoted the hosts' involvement through advertising associated with the event, provided the venue and associated waste services (ie. Skip bin for excess waste) and assisted with all administrative matters.

There was no charge to register a site nor the general public, rather, a gold coin donation at the gate with all proceeds going to the host association.

Residents within garbage zones 7 and 8 (east and west of Fern Street, Gerringong) were invited to participate through letter drops and local print media/radio. Residents needed to register their interest with Council to ensure numbers are maintained and to provide a point of contact should the event be postponed/cancelled. Council provided each participant with a comprehensive flyer providing details on what they need to do, types of materials (stressing secondhand goods only), contact details, venue etc.

This project would also assist waste services staff by the reduction of waste needing to be collected from Council kerbside clean ups.

This project is in accordance with the 07-08 Management Plan, A Sustainable Environment. One of its objectives is to manage and reduce the environmental impacts of all activities on air, water and land systems. Waste minimisation and Recycling projects program states to develop and implement policies and projects to reduce, recycle and minimise waste from Council facilities, activities and events.

This project also forms part of the Kiama Public Health Plan under Strengthening Community, Community Connection 1.3 and 1.4, Information Provision 2.3 and under Health of the Environment, Waste Management 17.2.



6.4.4 Cigarette Butt Littering Program

This project was as a result of Kiama Council's successful submission for funding to the independent Butt Littering Trust. Kiama Council's received \$18,500 grant funding in November 2007 to conduct a Butt Littering Program within the Kiama CBD. During this reporting period, Council installed additional stainless steel ashbins and "message pavers" at identified key smoker hotspots within the main streets of Kiama.

Left over monies were then spent on pit traps, called Enviropods (at-source stormwater entry-pit pollutant traps) installed in Manning Street as part of the street's recent makeover. These traps capture gross pollutants such as litter and organic matter, preventing them flowing through the stormwater system into Black Beach.

6.4.5 Compostable Doggie Bags for Off Leash Areas

To address the problem of dog faeces in parks, reserves and along walk ways is the provision of the means to pick up the offending material and the disposal of same on the spot!

At each of Council's off leash areas, dispensers were installed with doggie bags that were free to users of the off leash area. To align ourselves with our aim to reduce the use of plastic, Council investigated and trialled two types of compostable doggie bags to be used in dispensers.

The first type trialled, was the BioBag Dog-Waste Bags. These bags are 100% biodegradable, are made from cornstarch and do not contain any polyethylene-based ingredients. They are as natural as dog waste and decompose within 40 days in a well-functioning composting environment. By comparison, it takes more than 100 years for normal plastic bags to decompose. After the trial (approx. 9 months) users complained that when the bags were dispensed they are hard to open. This was a result of the bag being "stretched" whilst being torn off the dispenser, thereby causing the bag to create a seal to its opening.

It was then decided to trail another compostable, biodegradable bag. The DogTidy Company bag, uses the TDPA oxo-biodegrading technology developed by EPI of Vancouver, Canada. The black bags with pictorial instructions for use feature carry/tying handles and a gusset to allow a wide spread of the hand inside the bag. They are totally biodegradable.

These bags have been in use for approximately five months and reports from users have indicated that this type of bag is the preferred choice.



6.5 Ongoing Waste Projects

6.5.1 Holiday Accommodation “Responsible Waste Kits”

This project was initiated in December 2005 and is reviewed every six months in liaison with real estate agents located within the Kiama municipality.

It was identified there were several waste issues associated with holiday accommodation properties within the Kiama municipality. Predominately, the issues were:

- there was insufficient garbage bin capacity for peak holiday periods;
- full bins were not being placed out for collection on designated collection days;
- and bins were not returned to property when emptied.

The ongoing program aims to:

- Increase visitors awareness about the need to recycle;
- Encourage visitors to effectively recycle using the system correctly;
- Put the onus back onto the property owner to ensure correct size bin for the property to cover peak holiday periods; and
- Inform the real estate agents of their responsibility in managing the bins for these properties.

In consultation with the local real estate agents, a comprehensive “Responsible Waste Kit” was developed for each of the holiday accommodation properties consisting of a Waste and Recycling Calendar (magnetised), a “What to Recycle?” A3 poster (magnetised), Recycle Bin Sticker to be placed on the top of the lid of the yellow recycling bin, and a “No Junk Mail” sticker, to be placed on the property’s letter box to prevent unwanted junk mail spilling onto the property. The reduction of junk mail also gives the appearance that the property is occupied. Also included was “Kiamasphere” Key Tag which can be attached to the property’s keys as reminder to tenants to – Avoid, Reduce, Reuse and Recycle!

6.5.2 Clean Up Australia Day 2008

The annual Clean Up Australia Day was held on Sunday 2 March 2008. The event attracted approximately 1500 participants with 28 sites registered. Overall, 1.06 tonnes of rubbish collected which was a 29% decrease from the previous year's figures. This indicates that the Kiama municipality is a cleaner place to live!

For Clean Up Australia Day 2008, Kiama Council focussed on the Kiama Harbour. This was the third year that Council has invited divers sourced from Windang Dive and Spear Fishing to volunteer their time to clean up the Harbour. Although the amount of waste collected from the harbour decreases each year it is still a hot spot for litter.

More than 30 volunteer divers from Windang Dive and Spearfishing, took to the water to clean up the harbour. The divers reported the harbour to be in excellent condition with items such as beer bottles, aluminium cans, plastic bags and the ever present shopping trolley comprising most of the 6m³ of rubbish collected.



Windang Dive and Spearfishing Club members doing their bit for Clean Up Australia Day 2008

Business Clean Up Day was held on Tuesday, 26 February, 2008 and it was the third year Kiama Municipal Council elected to form a group to become involved in this event. The area nominated for clean up was behind the Council Administration Building, surrounding streets and Black Beach.

The 8 staff members who volunteered for the event collected a total of 15 bags (220kgs) over a total area of approximately 1.5km. Items collected included food packaging, plastic bags and cans.



Some of the Council staff who participated in Business Clean Up Day

Schools Clean Up Australia Day was held on Friday 29 February, 2008 with all primary schools participating in cleaning up areas directly surrounding the schools premises.

Program is promoted on the Kiama Council website.

6.5.3 Planet Ark “Cards for Planet Ark” Christmas Card Recycling Program

Each year, from Boxing Day till the end of January, Kiama Municipal Council supports the Planet Ark “Cards 4 Planet Ark” Christmas Card Recycling Program. This program is promoted through the Kiama Independent newspaper, informing residents on how they could recycle their unwanted cards and envelopes by obtaining free “Cards 4 Planet Ark” postage-paid recycling envelopes from Australia Post or from Council’s Administration building. These envelopes could then be posted free at any post box or placed in the specially marked Planet Ark recycling bins located in all Coles Supermarkets.

All cards collected are then made into new packaging or ‘SAFE’ toilet tissue. This recycling process saves trees and dramatically reduces waste. The program was also promoted to all staff within the Council Administration Offices.

Program is promoted on the Kiama Council’s website.

6.5.4 Mobile Phone Recycling Program

For the past 5 years, Kiama Council has been involved in the recycling of mobile phones through the Clean Up Australia and the Aussie Recycling Program. Easy to use satchels are available for residents at Council’s Administration Building front counter with every phone collected donating \$3 to the Clean Up Australia Day foundation.

Program is promoted on the Kiama Council’s website.

6.5.5 Return of Used Medicines Campaign

Since 1998 the Return Unwanted Medicines (RUM) Project has provided for the collection and disposal of unwanted and out-of-date medicines from consumers across Australia.

The RUM Project is funded by the Commonwealth Department of Health & Ageing.

It is supported by many pharmaceutical and consumer bodies including the Pharmacy Guild of Australia, the Pharmaceutical Society of Australia, Council on the Ageing (COTA), and Environmental Health Australia. Consumers can return medicines to any pharmacy at any time.

Over 400 Tonnes of unwanted and out of date medicines are collected every year Australia wide.

Kiama Council support s this program and promotes it on the Council website.

6.5.6 Land and Sea – Plastic Free

The *Land and Sea – Plastic Free Program* builds on the Kiama Pelican Story Project and aims to actively involve all sectors of the community, including visitors, in ongoing programs to promote the use of alternatives to plastic shopping bags. A sub-committee of the Tidy Towns Committee was formed, including representatives from Council, the Tidy Towns Committee, Kiama and District Chamber of Commerce, Kiama Independent and Kiama Markets. The *Land and Sea – Plastic Free Strategy* has been prepared and endorsed by the Plastic Bag Free Committee. This strategy includes several programs for implementation by the relevant organisations, such as surveys of businesses and community, acknowledgment of retailers using alternatives, community presentations, Kiama Markets plastic bag free days and promotional activities as part of Council and community events.

6.5.7 The Kiama Pelican Story Project

The Kiama Tourist Information Centre at Kiama Harbour, encourages visitors to our area to stay ‘plastic bag free’ by continuing to sell the Pelican calico bags as an alternative for \$2 per bag.

6.5.8 Butt Bins

The Kiama Tidy Towns Committee and Council have continued to promote the proper disposal of cigarette butts by providing free ‘Butt Bins’ at the Council Administration Building and Depot, Kiama Visitors Centre, various shops throughout the Municipality and at several Council events. The ‘Butt Bins’ are made of recycled film canisters and beer bottle tops.

6.6 Potential Future Activities

Existing Future Activities in the Management Plan 2008-2011

- Prepare and/or implement plans to improve the environment and report on activities undertaken and grants received (including Clean Up Australia Day participation);
- Complete Waste Depot rehabilitation at Gerroa and continue closure plan maintenance at Minnamurra Tip;
- Continue to operate Minnamurra Recycling and Green Waste Facility operations;
- Assist with the implementation of Business Treading Lightly Grant;
- Assist with the implementation of the Illawarra Regional Sustainability Roadmap;
- Implementation of Sustainable Kiama Communities Project (waste minimisation, composting, worm farming etc);
- Develop *Hire of Council Facilities Waste and Recycling Policy*
- Waste and Recycling Collection Services, Policies and Programs.

Potential Future Activities Beyond 2008-2009

(H – High Priority, M - Medium Priority, L – Low Priority)

- Prepare and/or implement plans to improve the environment and report on activities undertaken and grants received (2009/2010) (H);
- Participate in regional expressions of interest and tender for regional residual and organics alternative waste treatment facility (2009/2010) (H);
- Monitor both Gerroa and Minnamurra Tip sites in accordance with closure plan requirements (2009/2010) (H);
- Review commercial garbage and recycling services to ensure operators have sufficient waste services in place (H);
- Develop *Special Events Waste and Recycling Policy* (H);
- Develop and implement public place recycling facilities at sporting grounds and key parks and reserves (H).
- Develop and implement Second Hand Saturday Recycling and Reuse Events in line with bi-annual kerbside clean up service (H).

- Investigate the feasibility of a Composting Facility to be located at the Minnamurra Site, including food waste collection, hydroponic growth area, community food garden and education facility (M);
- Review Resident Clean Up Collection Program, including consideration of alternatives such as a tipping voucher system (M).

Chapter 7: Air

Air pollution is the presence of chemicals in the atmosphere in quantities and duration that are harmful to human health and the environment, including the climate. The air quality of the Kiama Municipality can be affected by local, regional and global sources and is therefore an issue that crosses local Council boundaries.

7.1 State

7.1.1 Local and Regional Air Quality

There are a range of sources of air pollution that have an impact on local and regional air quality such as motor vehicles, fire, solid fuel heaters, industrial and commercial emissions and agricultural activities. These sources produce pollutants that can include lead, particulate matter, carbon monoxide, odour, sulphur dioxide, nitrogen oxides, photochemical smog and ozone. These are described in more detail in Council's *Local Air Quality Management Plan* (Kiama Municipal Council, 2001).

The Department of Environment and Climate Change (DECC) monitors the air quality throughout the Greater Metropolitan Region from Newcastle to Albion Park. There are currently no monitoring stations within the Kiama Municipality. There are now three monitoring stations within the Illawarra Region, at Albion Park, Kembla Grange and Wollongong.

In June 1998, there were two major changes in relation to air quality and how it is reported:

1. national standards were set for how air quality is measured (using five criteria air pollutants)
2. national reporting process was introduced.

The five pollutants measured under the 1998 national standards are ozone, carbon monoxide, sulfur dioxide, nitrogen dioxide and air particles.

In 2002 the NSW DECC began reporting on these pollutants to the national body. The NSW DECC updated the old Regional Pollution Index (RPI) in 2008. This new index, the Regional Air Quality Index (RAQI), is based on the five criteria pollutants (as per national standards) plus visibility (as per a standard set by NSW) at all sites in the NSW DECC air quality monitoring network. This now replaces the Regional Pollution Index (RPI) that was reported on in previous State Of The Environment Reports.

The new RAQI combines all the daily data from the three monitoring stations in the Illawarra and uses the highest reading for the calculations. A new categorisation scheme is now used to indicate how an AQI relates to relevant NSW standards: National Environment Protection Measure (NEPM) or NSW standards:

VERY GOOD 0-33	GOOD 34-66	FAIR 67-99	POOR 100-149	VERY POOR 150-199	HAZARDOUS 200+
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An AQI of 100 corresponds to the relevant NEPM standard for criteria pollutants or the relevant NSW standard for visibility. Hence, when the AQI is reported as UNHEALTHY or VERY UNHEALTHY it indicates that the determining pollutant levels have reached or exceeded the relevant standard or goal. (DECC website accessed October 2008 <http://www.environment.nsw.gov.au/aqms/aboutaqi.htm>)

Illawarra Regional Air Quality Index data for the reporting period is shown in Figure 7, and Figure 8 shows a comparison of RAQI data since 1999.

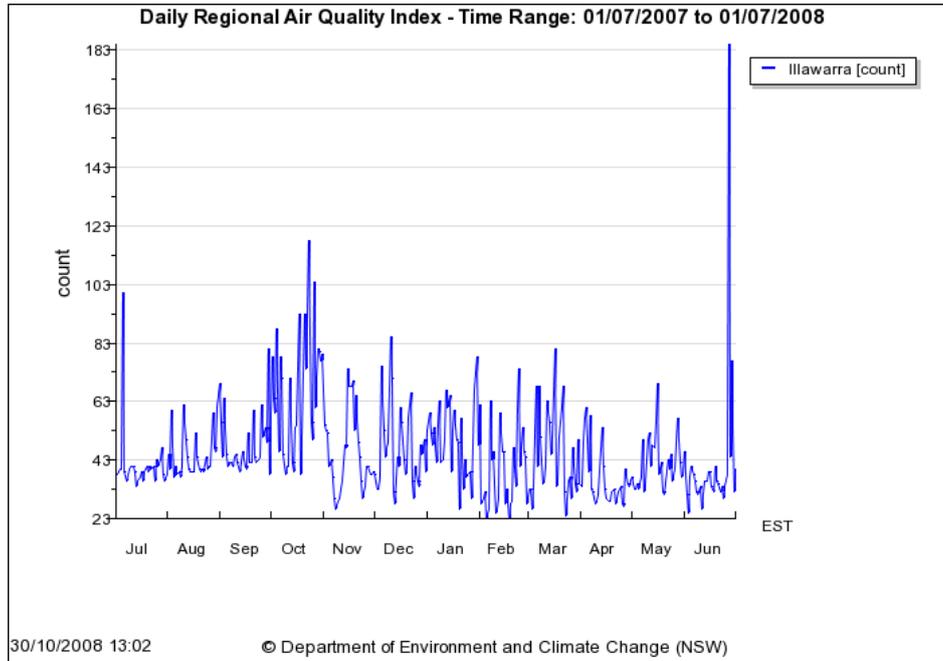


Figure 7: Regional Air Quality Index data for the Illawarra Region July 2007 to June 2008

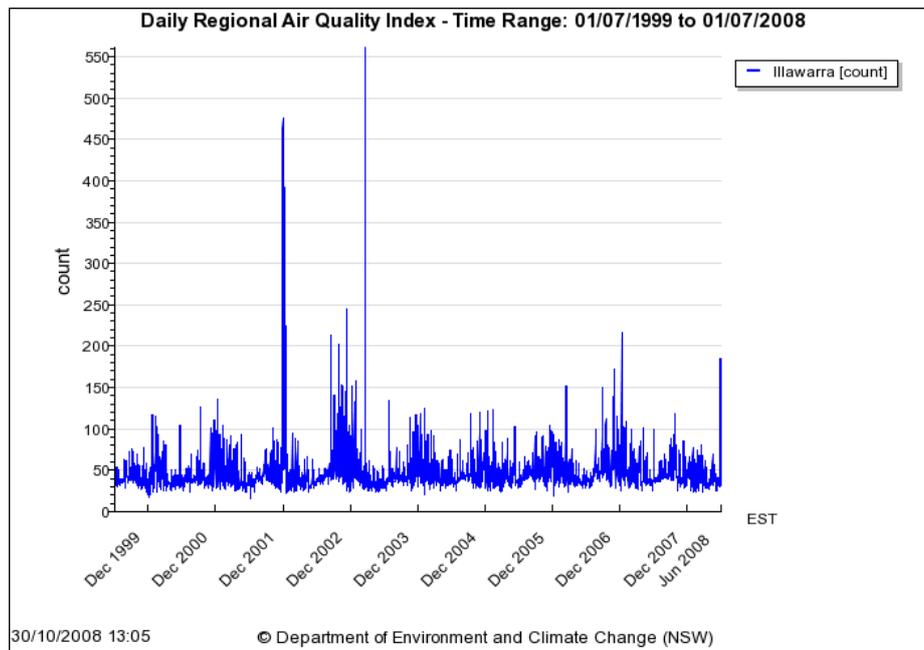


Figure 8: Comparison of Regional Air Quality Index for the Illawarra Region for the period July 1999 to June 2008.

During the 2007/2008 reporting period, the RAQI count exceeded 100 in the Illawarra region on four occasions.

DECC now also have a system where you can receive air quality updates via SMS or email (or both) to let you know if the RAQI is over the recommended health levels. This is particularly useful for people with asthma, cystic fibrosis or other lung conditions, as it gives them the 'heads up', so they can make decisions about the amount of time they spend outdoors that day exercising etc. You can register for this free service at <http://www.environment.nsw.gov.au/aqms/subscribe.htm> (Salter, D. pers comm 2008)

The number of complaints relating to air pollution in the Kiama LGA is shown in Table 19. The number of complaints have increased since the last reporting period.

Table 19: Complaints relating to Air Pollution to Council and the DEC

Type of Complaint	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008
Burning Complaints to Council	6	15*	6	5	4	3	6
Commercial Complaints to Council	1		-	-	-	2	19#
Dust Complaints to Council	1		4	-	-	4	6
Odour Complaints to Council	-		4	6	6	2	20
Odour Complaints to DEC	4	-	-	-	-		^
Industrial Air Complaints to DEC	4	5	21	7	1	1**	2
Other Air Complaints to DEC	2	-	-	1	-		0
Total Air Complaints	18	20	35	19	11	12	53

*The breakdown of complaints to Council (ie burning, commercial, building sites, odour) was not available for the 2002-2003 reporting period

** The breakdown of complaints to DECC was not available for the 2006-2007 reporting period.

^ Air and Odour are classed in one category and the total complaints for 2007-2008 reporting period are 2, both of which are industrial.

The figure for Commercial complaints is extracted from the total Dust and Odour complaints .

7.1.2 Global Air Quality

There are two main global air quality issues: depletion of the ozone layer and the enhanced greenhouse effect. While stratospheric ozone concentrations have stabilised significantly since the 1980s and the concentration of ozone-depleting substances in the atmosphere is decreasing, the concentration of greenhouse gases in the atmosphere is still an urgent and significant problem, caused by activities such as the burning of fossil fuels (primarily oil, coal and natural gas) and land clearing.

The enhanced greenhouse effect is causing climate change globally and will have local impacts. According to a CSIRO study on the *Potential Impacts of Climate Change on the Kiama Local Government Area*, commissioned by Council as part of the review of Council's LEP, it is predicted that the following climate changes may occur in the Kiama area: increased temperatures, decreased rainfall, increased evaporation, more warm days and hotspells, fewer cool days and cool spells, changes to wind patterns, and an increase in the intensity and frequency of extreme daily rainfall events. Such changes are predicted to have an impact on agriculture, water

availability, biodiversity, bushfires, human health and infrastructure (CSIRO Australia, 2005).

According to a greenhouse gas inventory of the year 2001-2002 conducted as part of the Cities for Climate Protection Program (CCP™) in 2004, the dominant source of greenhouse gas emissions from Council’s operations is from Council owned buildings, which contributed 42.9% of emissions. Contributions from the other Council sources included vehicle fleet (21.1%), waste (14.7%) and streetlights (11.3%) (shown in Figure 8). The dominant sources of emissions from the Municipality as a whole in the inventory year of 1996 was from the residential sector (32.7%) and the transportation sector (31.6%). Contributions from the other sources were industrial (13.5%) and waste (11.4%) and commercial (10.8%) (shown in Figure 9).

If Council and the community do not act to reduce these emissions, it is predicted that by 2010, emissions in the Kiama Municipality will increase 47.4%, with the greatest growth in emissions predicted to occur in the transportation, residential, and commercial sectors.

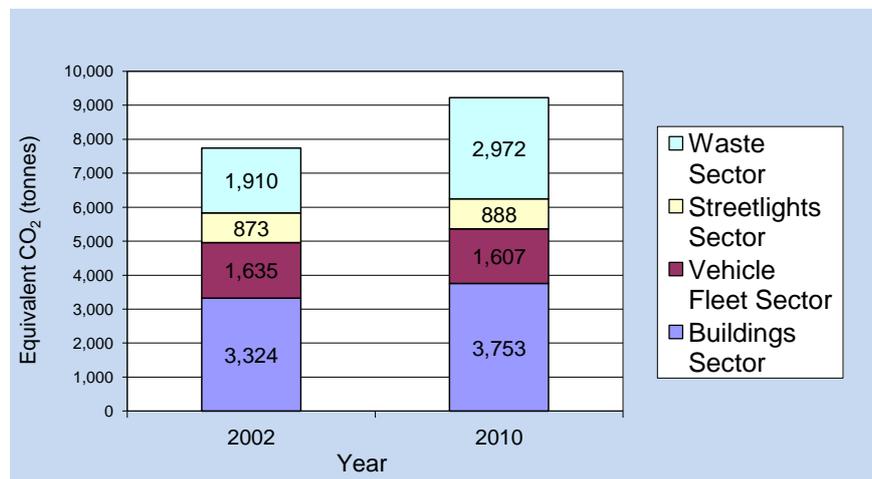


Figure 9: Council Greenhouse Emissions 2002 and Forecasted Emissions 2010

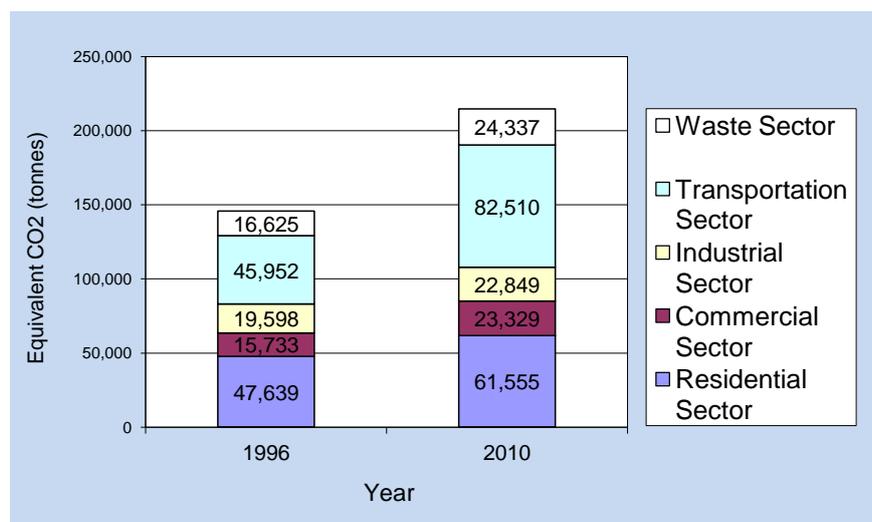


Figure 10: Community Greenhouse Emissions 1996 and Forecasted Emissions 2010

7.2 Pressures

There is pressure on the air quality of the Kiama Municipality from a variety of activities and sources throughout the residential, commercial, industrial, rural and transport sectors. The activities that impact on air quality can include the use of solid fuel heaters, burning of household refuse, motor vehicle use, vegetation clearing, waste disposal, dust from unsealed roads and construction, energy consumption and direct emissions of chemicals or odour from industrial and rural activities. Fires also place pressure on local and regional air quality.

Emissions from motor vehicles are a major pressure on air quality. The 2003 Annual Average Daily Traffic recorded on the Princes Highway at Bombo (station 07.804) was 29,713, which is increase of 945 from the 2000 figure of 28,768 (Roads and Traffic Authority, 2004). A large proportion of this figure would be through traffic. The latest figure on vehicle registrations in the Kiama Municipality show that in 2007, there were 17,713 vehicles registered, which was an increase of 273 vehicles since 2006 (Roads and Traffic Authority, 2007) See Table 20.

Table 20: Vehicle Registration in the Kiama Municipality 1998-2007
(Roads and Traffic Authority, 1999- 2007)

Year	Number of Vehicles	Increase since previous year	% Increase since previous year
1998	13,918		-
1999	14,374	456	3.3%
2000	14,774	400	2.8%
2001	15,099	325	2.2%
2002	15,588	489	3.2%
2003	16,012	424	2.7%
2004	16,411	399	2.4%
2005	16,621	210	1.3%
2006	17,440	819	4.7%
2007	17,713	273	1.6%
Total increase 1998-2007	3,795		24.2%
Average Annual Increase	421.7		2.7%

According to the Roads and Traffic Authority Local Government Area Vehicle Registrations report (Roads and Traffic Authority, 2005), as of 30 June 2007, 67.7% of registered vehicles in the Kiama Municipality were fuelled by unleaded petrol, 3% by leaded petrol, 8.7% by diesel, and only 2% by LPG or LPG/petrol and 18.6% by other fuel types (or unknown).

Bushfire and hazard reduction burns also place pressure on the air quality. According to the Department of Environment and Conservation (2003), bushfires are responsible for most of the occasions which high levels of particle pollution are recorded. This is supported by the majority of Regional Pollution Index readings that are “high” being recorded during the November to March.

The number of fires within the Kiama Local Government Area is shown below in Table 21. There were slightly less fires during the last reporting period than compared to 2005-2006.

Table 21: Fires in the Kiama and Shellharbour Local Government Areas during 1998-2008
(Danaskos, H. 2008)

Type of Incident Subdivision Name	1998/ 1999	1999/ 2000	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	2007/ 2008	Total Incidents
Fires and Explosions: Other	3	0	0	0	0	0	0	0	0	0	4
Building Fires	11	3	3	13	10	11	2	8	5	3	79
Fires in buildings confined to non-combustible containers	0	4	16	4	5	5	3	3	3	7	50
Special structure fires	0	2	5	7	9	0	3	7	12	2	47
Outside storage fires	14	3	2	2	1	0	0	0	0	0	38
Mobile property type fires	9	6	8	12	3	6	4	11	3	4	71
Vegetation and other outside fires	18	11	42	23	13	21	5	27	28	10	233
Small vegetation fire	0	1	1	2	0	0	1	1	0	1	7
Outside rubbish fire	5	5	9	6	12	19	20	21	19	13	137
Explosions not as a result of fire	1	0	0	0	0	0	0	1	0	0	2
Total	61	35	86	69	53	62	38	79	70	40	668

7.3 Responses

7.3.1 Local Air Quality Management Plan

Council adopted the Kiama Municipal Council *Local Air Quality Management Plan* (LAQMP) in 2001. Kiama Municipality, through the LAQMP, is committed to establishing and maintaining clean air for its community. The LAQMP sets out broad strategies that will assist Council to achieve its environmental goals (Kiama Municipal Council, 2001).

There are a range of strategies contained within the LAQMP, falling under seven overall objectives as outlined below:

- Implement a local and regional approach to air quality management;
- Educate, inform and involve the Community in air quality and its management;
- To improve energy efficiency within the Council area;
- To reduce the impact of air pollution for vehicle emissions;
- To reduce air pollution from industry and other sources;
- To monitor the impacts of air quality within the Municipality; and
- To encourage and undertake activities that will have positive impacts of air quality (Kiama Municipal Council, 2001).

During this reporting period, Council purchased one electric bike for Council staff to use on short trips around the Municipality. As a result of the success of last year's World Environment Day *One STOP CLIMATE CHANGE Shop*, a second electric bike was donated to Council by Zuma Bikes, who were very pleased to sell seven bikes as a result of their stall at the 'shop'.

An education program was also undertaken to encourage the uptake of more 4 cylinder cars by Council staff. Approximately 33% of Council's motor vehicle fleet is now comprised of 4 cylinder vehicles, and 70% of the commercial vehicles are now diesel. We have also changed to B20 Biodiesel for all Council trucks and plant.



Mayor Sandra McCarthy receiving the electric bike from Zuma Bikes

A review of the LAQMP plan will be included in the development of the Cities for Climate Protection Local Action Plan during 2007-2008 (see section 7.3.2). For a detailed list of actions implemented previously, refer to SoE Report 2004 (Kiama Municipal Council, 2004).

7.3.2 Cities for Climate Protection Program

In 2003, Council has joined the international greenhouse gas reduction program called the Cities for Climate Protection (CCP™) Program. The CCP™ program is aimed at assisting local Councils to deal with greenhouse gas issues within their locality. Milestone 1 of the CCP™ Program was completed in 2004. The process provided valuable baseline data of both Council and Community greenhouse gas emissions and forecasts of estimated emissions in 2010 if no pro-active action is taken (see Section 7.1.2 for results of the Milestone 1 Inventory).

In November 2005, Council achieved Milestone 2, which involved committing to greenhouse gas emission targets of 15% for community emissions and 20% for council emissions by 2010.

Work continued on Milestone 3 of the Greenhouse Local Action Plan (Kiama Municipal Council, 2008a) and is due to be finalised and adopted by Council in late 2008. The Action Plan describes the Municipality's greenhouse emissions inventory, reduction goals and provides a step-by-step program of actions to achieve these targets.

7.3.3 Development Control

Development control conditions are placed on development approvals for industrial and commercial activities to ensure air pollution is minimised or prevented. From 1 July 2005 the Building Sustainability Index (BASIX) came into effect in the Kiama Municipality. BASIX is a web-based planning tool for Councils and proponents of residential dwellings to assess the potential performance of their development against a set of sustainability indices, including energy conservation. For energy, a BASIX rating of 25 for energy conservation will apply, potentially reducing greenhouse gases by 25%. This target increased in July 2006 to 40 for energy conservation, to achieve a 40% reduction in greenhouse gases. More information about BASIX can be found in Chapter 2: Land.

7.3.4 Enforcement

Council's Environmental Health Officers and Ranger Services Officers investigate complaints received by Council relating to air pollution. The Department of Environment and Conservation investigates complaints regarding air pollution from scheduled premises and activities and smoky vehicles. Notices or Penalty Infringement Notices for air pollution offences may be issued by these officers under the *Protection of the Environment Operations Act 1997*.

7.3.5 Cycleways

Cycleways promote physical activity as well as improved air quality through alternative transport options. On and off-road cycleways are shown in Council's *Cycleway Plan* which is a strategic plan incorporates engineering, educational and encouragement strategies and lists cycleway projects as priorities for implementation (Kiama Municipal Council, 2005b). The priorities for proposed cycleway projects have also been reviewed and are listed below in the preferred order of implementation:

- Minnamurra River Crossing;
- Gainsborough to Jamberoo Stage 1
- Gainsborough to Jamberoo Stage 2, Swamp Road to Jamberoo (Kiama Municipal Council, 2005b).
- Fern Street to Miller Street via pathway across Millers Flat;
- Crooked River Road, Crooked River to Municipal boundary;

The completed sections of cycleway for the reporting period include Pacific Avenue, Warri Beach Cycleway Stage II (- approx 1km of off road pathway) and Newing

Circuit to North Kiama By-pass cycleway completed (- approx 1km partly off road pathway and on road route).

7.3.6 Kiama Council *No Burn* Policy

In December 2007, Council adopted a *No Burn* Policy within the Kiama Municipality. Under Part 2, Schedule 8 of the Protection of the Environment Operations (Clean Air) regulation 2002, and through authority delegated by the Department of Environment and Climate Change (DECC), Kiama Council is required to regulate outdoor burning in the Municipality.

Council will only consider applications to burn piles of vegetation that relate to properties over one acre that perform agricultural operations, or for burning in accordance with the Bush Fire Hazard Reduction Certificate under the Bush Fire Act. The Council approval is only for permission to make pollution and is not a fire permit. During the Bush Fire Danger Period from October 1 to March 31, a permit must also be obtained from the Rural Fire Service, prior to any burning taking place.

Council will not consider applications to burn piles of vegetation from Urban (Residential) and Rural (Residential) rural residential classified as a 1 acre lot.

Council is required to consider issuing an approval using Section (6G) 3 which states; before granting approval the local Council must take into account the following matters :

- The impact on local air quality and amenity;
- Feasibility of reuse, recycling or other alternative means of disposal;
- Any opinions of the sector of the public likely to be affected by the proposed approval.

Kiama Council's Scheduling only allows for the burning of vegetation.

7.4 Potential Future Activities

Existing Future Activities in the Management Plan 2008-2011

- Prepare and/or implement plans to improve the environment and report on activities undertaken and grants received (including Cities for Climate Change Milestone 3 – action plan development);
- *Protection of the Environment Operations Act* implementation;
- Implement educational programs and activities supported by Council in relation to air;
- Provide Coastal Walking Track from Kiama Heights to Werri Lagoon;
- Construct the cycleway over the Minnamurra Bridge, subject to RTA agreement.

Potential Future Activities Beyond 2008-2009

(H – High Priority, M - Medium Priority, L – Low Priority)

- Prepare and/or implement plans to improve the environment and report on activities undertaken and grants received (2009/2010 and 2010/2011) (H);
- *Protection of the Environment Operations Act* implementation (2009/2010 and 2010/2011) (H);
- Cities for Climate Change Milestone 3 – seek funding for priority projects (H)
- Construct Stage 1 Jamberoo Valley shared pathway.

Chapter 8: Heritage

8.1 Heritage Listings

8.1.1 Aboriginal Heritage

In NSW Aboriginal places are administered under the *National Parks and Wildlife Act 1974*, *Heritage Act 1977*; and *Environmental Planning and Assessment Act 1979*.

The Department of Environment and Conservation (DEC) maintains a register of identified Aboriginal Heritage sites throughout the state, known as the Aboriginal Heritage Information Management System (AHIMS). There are 60 known Aboriginal sites currently recorded in the Kiama Municipality and within these sites, 97 site features were recorded, as shown in Table 22 (see <http://www.nationalparks.nsw.gov.au/npws.nsf/Content/What+information+can+you+obtain+from+AHIMS> for more information and limitations of this register).

Table 22: Aboriginal Heritage Information Management System Record for the Kiama Municipality

Site Feature	Number within Kiama Municipality
Aboriginal Ceremony and Dreaming	1
Art (Pigment or Engraved)	7
Artefact	41
Burial	1
Earth Mound	18
Grinding Groove	4
Potential Archaeological Deposit	3
Shell	19
Stone Arrangement	2
Modified Tree (Carved or Scarred)	1
TOTAL	97

All Aboriginal sites are protected under the *National Parks and Wildlife Act 1974*, regardless of their inclusion in the register, and it is an offence to damage or destroy them without the prior permission of the Director-General of the DEC.

The NSW Heritage Council is required under the *Heritage Act 1977* to keep a register, known as the State Heritage Register (SHR), of both Aboriginal and Non-Aboriginal places of significance. Listing on the SHR means that a place is protected and that the approval of the Heritage Council is required for any changes or demolitions.

At a national level, the Department of the Environment and Heritage (DEH) has one site listed in the Register of the National Estate as an Aboriginal place, located in Jamberoo, but the register does not have any specific details on the site. A new national heritage system commenced in 2004 introduced the National Heritage List, which records natural, Aboriginal and Non-Aboriginal places with outstanding heritage value to the nation. There are currently no Aboriginal sites in Kiama recorded in this register.

8.1.2 Non-Aboriginal Heritage

Non-Aboriginal Heritage inventories have been conducted in the Kiama Municipality in 1987, 1994 and 2000-2002.

Non-Aboriginal Heritage Items of national significance are listed by the DEH in the Register of the National Estate and National Heritage List. Items of State significance are listed in the NSW State Heritage Register. Items of regional significance are listed in Schedule 1 of the *Illawarra Regional Environmental Plan No. 1* (1986) and amendments, as well as *Illawarra Regional Environmental Plan No 2 – Jamberoo Valley 1987*. Heritage items of local heritage significance are listed in Schedule 2 of Kiama’s *Local Environmental Plan 1996*. The following Table 23 lists heritage items in the Kiama Municipality identified in the above noted registers.

Table 23: Kiama Municipality Heritage Items and Listings

Item	Location	Listing
Bombo Headland quarry geological site	Bombo	AHC(R), SHR, REP No.1, LEP
Jamberoo Valley	Jamberoo	AHC(I)
Hartwell House and former Coachhouse	Farmer St, Kiama	AHC(R), REP No.1, LEP
Former Infants School	Minnamurra & Shoalhaven Sts, Kiama	AHC(R), REP No.1, LEP
Scots Presbyterian Church	Shoalhaven St, Kiama	AHC(R), SHR, REP No.1, LEP
Terrace Houses	24-40 Collins St, Kiama	SHR, REP No.1, LEP
Terrace Houses	42-44 Collins St, Kiama	SHR, REP No.1, LEP
Cottages	3a,3, 2-10 Collins Lane, Kiama	REP No.1, LEP,
Masonic Temple	46 Collins St, Kiama	SHR, REP No.1, LEP
Manning Street Group -Former CBC Bank (No.18) -Westpac Bank (Bank of NSW) (No 32) -Uniting Church (No. 48) -Grand Hotel (No. 49) -ANZ Bank includes stables, rear garden and fences (No 33) -Council Chambers, Pine Trees at rear -Post Office grounds and Pine trees (No 11)	Manning St Kiama	REP No.1, LEP CBC Bank - SHR Westpac Bank - AHC(R)
Kiama Government Building Group -Post Office and Buildings -Courthouse, grounds and trees -Police Station -Police Station Residence	Cnr Manning and Terralong St, Kiama	REP No.1, LEP Post office - AHC(R), SHR Courthouse - AHC(I) Police Station - AHC(R)
Mount Vernon	64 Bong Bong St, Kiama	AHC(I), REP No.1, LEP
Blowhole Point (Lighthouse, Ice Factory and Wharf)		REP No.1, LEP Lighthouse – AHC(R)
Cottages	43 & 38 Bong Bong St, Kiama	REP No.1, LEP, Number 43 - AHC(I)
Cottage	34 Bong Bong St	AHC(I)
Anglican Christ Church	Kiama	AHC(I), REP No.1, LEP
Public School	Churchill St, Jamberoo	AHC(R), REP No.1, LEP
Culwalla	Main Rd, 2km east of Jamberoo	SHR, REP No.1, LEP,
Minnamurra House	Minnamurra Lane, Jamberoo	AHC(R), REP No.1, LEP
Terragong House and home paddock	Jamberoo	AHC(R), REP No.1, LEP
Site of Woodstock Sawmill, Piggery, Cooperage and Butter Factory	Robertson Rd, Jamberoo	REP No.1, LEP
Dry Stone Walls	Jamberoo, Foxground, Kiama areas	AHC(I), REP No.1
Anglican Church of the Resurrection	Jamberoo	REP No.1, LEP
St Stephen’s Presbyterian Church	Allowrie St, Jamberoo	AHC(I), SHR, REP No.1, LEP,

St Mathew's Roman Catholic Church	Jamberoo	AHC(I), REP No. 1, LEP
Remains of Flour Mill, Bush Bank	Princes Highway, Kiama	AHC(R), REP No.1, LEP
Alne Bank and Stone Barn	Rose Valley	AHC(R), REP No.1, LEP
Renfrew Park	Princes Hwy, Gerringong	REP No.1, LEP
Black Head palaeontological site	Gerroa	AHC(R), REP No.1, LEP
Commercial Hotel	Allowrie St, Jamberoo	REP No.2, LEP
Frederick's Store	Allowrie St, Jamberoo	AHC(I), REP No.2, LEP
Church of England Cemetery	Tate's Hill Jamberoo	REP No.2, LEP
O'Marra's Grave, Roman Catholic Burial Ground	Jamberoo Mountain Rd	REP No.2, LEP
Kellys Cottage (also known as Minnamurra Huts)	Minnamurra Falls Rd, Jamberoo	AHC(I), REP No.2, LEP
Park Mount	Jerrara Road, Jamberoo	AHC(R), REP No.2, LEP
Former Jamberoo Dairy Factory	Factory Lane, Jamberoo	REP No.2, LEP
Antique Shop	Allowrie St, Jamberoo	REP No.2, LEP
Colewood	Mountain Rd, Druewalla, Jamberoo	REP No.2, LEP
Former Wesleyan Parsonage	Macquarie St, Jamberoo	REP No.2, LEP
Kinross Cemetery	Minnamurra Lane, Jamberoo	REP No.2, LEP
Gundarimba	Minnamurra Lane & Allowrie St, Jamberoo	REP No.2, LEP
Roman Catholic Church graveyard	Chappel St, Jamberoo	REP No.2, LEP
Aughinvar	117 Manning St Kiama	AHC(I)
Catholic Presbytery	Manning St, Kiama	AHC(I)
Dalmeny	72 Shoalhaven St, Kiama	AHC(I)
Uniting Church	Bridges St Gerringong	AHC(I)
Uniting Church	28 Fern St Gerringong	AHC(I)
Former Pilot Station Residence	Terralong St Kiama	AHC(I)
Coach House Art Gallery	Farmer St, Kiama	AHC(I)
Barren Grounds Nature Reserve	Jamberoo Mountain Rd Jamberoo	AHC(R)
Gerroa Littoral Rainforest	Gerroa	AHC(R)
Kiama Blowhole and Surrounds	Terralong St Kiama	AHC(R)
Little Blowhole Geological Site	Tingira Cr Kiama	AHC(R)
Seven Mile Beach National Park	Gerroa Rd, Shoalhaven Heads	AHC(R)
Westley Park Headland	Attunga Ave Kiama	AHC(I)
Bombo Railway Station Group	Bombo	SHR
Kiama Rail Underbridge over Princes Hwy	Terralong Street, Kiama	SHR
Kiama Railway Station Group	Kiama	SHR
Kiama Reservoir (WS0231)	Irvine Street Kiama	SHR
Kiama Reservoir (WS0232)	Irvine Street Kiama	SHR
Uniting Church Hall and Cemetery	Jamberoo	LEP
Cottage	Browns Lane, Jamberoo	LEP
St Mary's Church	Fern & Jupiter St, Gerringong	LEP
Weatherboard Cottage	127 Terralong St Kiama	LEP
Weatherboard Cottage	2-4 Railway Pde Kiama	LEP
Barroul House	Bonaira St Kiama	LEP
Formerly Grans Fudge	132 Terralong St, Kiama	LEP
Kendall House	Saddleback Mountain Rd	LEP
3, 3a Central Park	Hindmarsh Park	LEP

DEH (R) - National Estate Register listed as registered place
DEH (I) - National Estate Register listed as indicative place
DEH (I) - National Estate Register listed as indicative place
SHR – NSW State Heritage Register
REP No.1- Illawarra Regional Environmental Plan No.1
REP No.2 - Illawarra Regional Environmental Plan No.2 – Jamberoo Valley
LEP - Kiama Local Environmental Plan 1996

8.2 Pressures

Aboriginal Heritage sites are under threat by activities such as land clearing and housing development, lack of management strategies for assessing the potential impacts of such activities, and the lack of identification of sites.

Non-Aboriginal Heritage items can become degraded through re-development, weather conditions, vandalism, general poor maintenance and lack of understanding.

8.3 Responses

8.3.1 Heritage Adviser

Council utilises the services of a consultant Heritage Adviser who promotes heritage conservation, educates and advises the community with regard to heritage conservation and provides specialist support and advice to Council on heritage planning and development control activities.

8.3.2 Development Approval Process

Council has statutory responsibilities under *the Environmental Planning & Assessment Act 1979*, the *Heritage Act 1977* and the *National Parks & Wildlife Act 1979* to consider the potential impacts of any development or planning proposal on items of natural and cultural heritage which includes Aboriginal and European cultural heritage.

During the reporting period, Aboriginal Heritage Studies have been conducted for the Gerringong Cemetery Extension and the Illawarra Fly Developments. Other recent studies were carried out for the Gerringong Headland Kiama LEP (Amendment No. 40) and Elambra Estate, Gerringong sites.

8.3.3 Heritage Projects

- Kiama Heritage Review Project commenced in November 1998 and was carried out with the aid of a grant from the NSW Heritage Office. The project was assisted by a heritage consultant, with research completed in 2002-2003 for some 250 items (including currently listed items in the Kiama LEP). The exhibition of a draft LEP to update heritage provisions and heritage listings was intended to occur in the second half of 2004 subject to the prior approval of the NSW Heritage Office and the Department of Planning.

However, a need to further review the heritage inventory compiled, the commencement of the Kiama LEP Review project in June 2004, and planning system reforms in 2005-2006 have caused delays to the completion of this project. The final list of items recommended to be added to the Kiama LEP heritage schedule will be incorporated in the Kiama LEP Review, for consideration by Council in 2007.

- Council resolved in June 2000 to prepare a visual landscape study of the Kiama area. Its purpose would be to provide a landscape database to assist future planning and the assessment of development applications. The study will also examine cultural landscapes (including the area's dry stone walls) as this matter was not able to be properly investigated in the Kiama Heritage Review. This study was programmed for 2004/2005 but visual and cultural landscape issues will now be dealt with as part of the Kiama LEP Review.

8.4 Potential Future Activities

Existing Future Activities in the Management Plan 2008-2011

- Prepare and/or implement plans to improve the environment and report on activities undertaken and grants received (including Kiama Local Environmental Plan Review - incorporate heritage;
- Prepare, exhibit and adopt Kiama Local Environmental Plan for urban and rural lands;
- Review draft heritage list and provisions;
- Require applicants to provide assessment reports where areas of aboriginal heritage are potentially impacted;
- Require applicants to provide assessment reports where areas of European heritage and buildings are potentially impacted;

Potential Future Activities Beyond 2009-2010

(H – High Priority, M - Medium Priority, L – Low Priority)

- Prepare and/or implement plans to improve the environment and report on activities undertaken and grants received (2009/2010 and 2010/2011) (H);
- Require applicants to provide assessment reports where areas of European heritage and buildings are potentially impacted (2009/2010 and 2010/2011) (H);

Chapter 9: Sustainable Communities

This chapter presents the concept of sustainability and sustainable communities in the Kiama Municipality and is divided into three sections. The first section contains a set of measurable Headline Sustainability Indicators, which will assist Council and the community in following a sustainable path. The second section outlines the current strategies that Council is undertaking to move towards sustainability, including strategies to promote environmental protection and healthy communities. Similar to the theme chapters of this report, the final section lists possible future responses that Council could undertake to improve the sustainability of the community of the Kiama Municipality.

Sustainability is often used as a substitute for the term Ecologically Sustainable Development (ESD), which involves the effective integration of economic, social and environmental considerations in decision-making processes. The principles of ESD include:

- The precautionary principle, namely that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;
- Intergenerational Equity, namely that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;
- Conservation of biological diversity and ecological integrity should be a fundamental consideration; and
- Improved valuation, pricing and incentive mechanisms, namely that environmental factors should be included in the valuation of assets and services.

9.1 Headline Sustainability Indicators

While each theme chapter presents extensive data that can be monitored over time, four Headline Sustainability Indicators are presented in this chapter, with the objective to chart the overall progress of Council and to measure the effectiveness of actions and technologies at achieving a more sustainable Municipality. All of the pressures on the environment that are identified within the theme chapters have an impact on the overall sustainability of the Kiama Municipality. For sustainability to be achieved, these pressures must be counter-balanced by actions and technologies implemented throughout the community.

Each indicator graph includes a sustainable zone, based on the data in the baseline year of 1999-2000. The zone includes any result that indicates a similar or improved environment compared to the relevant baseline year. The graphs therefore indicate the move towards or away from the 'sustainable zone'.

There are currently four Headline Sustainability Indicators.

9.1.1 Headline Sustainability Indicator – Beach Water Quality

This indicator, shown in Figure 11, utilises data obtained by the Department of Environment and Climate Change and Sydney Water Corporation in the Beachwatch Program, as reported in Chapter 3: Water. This program measures faecal coliform and enterococci levels at four of the Municipality’s beaches: Jones’ Beach, Bombo Beach, Surf Beach and Werri Beach.

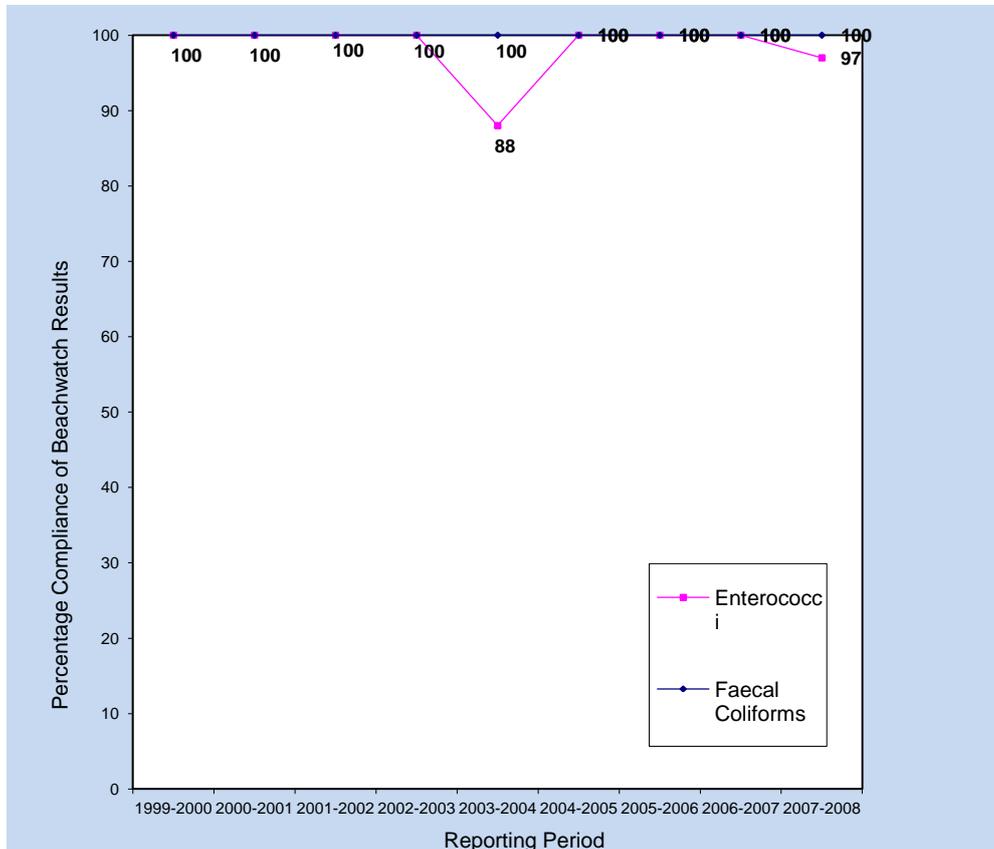


Figure 11: Headline Sustainability Indicator – Beach Water Quality

As the results in the baseline year of 1999-2000 were 100%, there is no zone of sustainability for this indicator. Sustainability is simply the line value of 100%, which was maintained in all previous reporting periods except 2003-2004, and this reporting period of 2007-2008.

9.1.2 Headline Sustainability Indicator – River and Estuary Water Quality

Unfortunately, due to Council budget cutbacks, the Water Monitoring Program was not undertaken during the 2007/2008 reporting period. It is hoping to be re-established in the 2009/2010 reporting period.

9.1.3 Headline Sustainability Indicator – Waste

This indicator, shown in Figure 12, utilises data from the Minnamurra and Gerroa Waste Disposal Depots, as reported in Chapter 6: Waste. The indicator is based on the total tonnes of waste that went to landfill during the reporting period, divided by the estimated population

of that year. The population figures are based on the population data until 2001, then the projected population for 2002 to 2006 (since the last reported census count), according to the *Kiama Social/Community Plan* (Kiama Municipal Council, 2004a) and the Australian Bureau of Statistics Census of Population and Housing.

The sustainable zone, as defined by the baseline data in 1999-2000, is any value below 0.41 tonnes per capita. This value was exceeded in previous reporting periods since the baseline year, but during the last four reporting periods, the value has fallen well within the sustainable zone. The reduction in waste received at the Minnamurra Waste and Recycling Depot during this time, is partly due to no loads over two tonnes being accepted. These are now being directed straight to the Shellharbour Waste Depot.

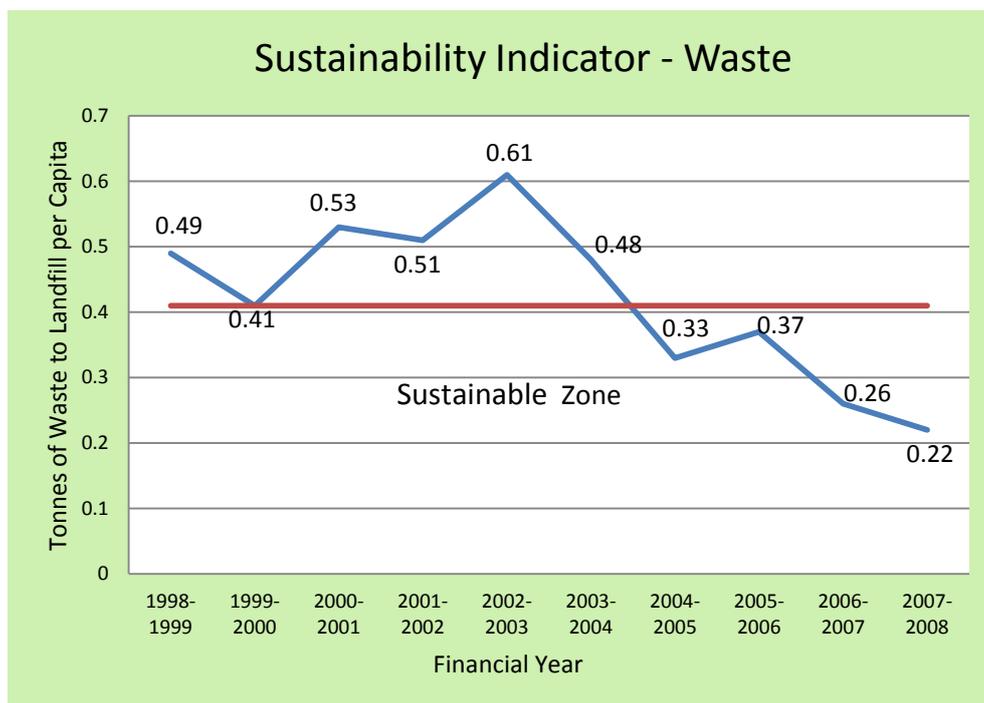


Figure 12: Headline Sustainability Indicator – Waste

9.1.4 Headline Sustainability Indicator – Air Quality

Due to the changes to air quality reporting a comparison with the existing data for this indicator is not possible. See Chapter 7.1.1 for more information.

It is hoped that there will be a time when all Headline Sustainability Indicators lie within their sustainable zones, meaning that the actions of Council and the community have resulted in less impact than the baseline year of 1999-2000. With increasing population in the area, this will be an ongoing challenge and will require sustainable living by all in the Kiama Municipality.

9.2 Sustainability Strategies

9.2.1 Urban Sustainability Grants

Kiama Council was successful in obtaining three Urban Sustainability Grants from the NSW Environmental Trust. They are to be undertaken over a period of three years.

Sustainable Illawarra Grant

This grant for \$2 million dollars, is split between Wollongong, Kiama and Shellharbour Councils. It was officially launched on June 25th, 2008, and is broken into three components:

Illawarra Sustainability Roadmap

The Illawarra Sustainability Roadmap Project is about assisting Kiama, Shellharbour and Wollongong Councils to integrate the consideration of sustainability into all decisions that are made as a local Council. Several activities are being undertaken with staff from all sections of each Council, to result in two guiding documents (Schip, A. email 2008)

- ❖ The Illawarra Sustainability Roadmap (<http://www.kiama.nsw.gov.au/environmental-services/pdf/Health-and-Environment-Section/Illawarra-Sustainability-Roadmap.pdf>) – includes a comprehensive review of each Councils' current approach to organisational sustainability and a set of sustainability indicators to measure sustainability over time.

The Illawarra Sustainability Roadmap was adopted by Kiama Council on the 20th May, 2008.

- ❖ The Illawarra Sustainability Action Plan – includes specific strategies for each Council to embed the consideration of sustainability into all Council decisions, processes, planning, reporting and operations.

Indicators and targets were being drafted as part of the Action Plan during the reporting period.

Water Sensitive Urban Design Project

The Water Sensitive Urban Design (WSUD) component of the regional NSW Environmental Trust funded Sustainable Illawarra project for Kiama Municipal Council, will see the installation of a 280,000 litre underground storage tank for the collection and re-use of stormwater runoff from the Hindmarsh Park catchment.

The stormwater harvesting project will add to previous projects in the catchment which included installation of gross pollutant traps and enviro pods in stormwater drains and a sand filter which uses permeable concrete piping to remove toxins and heavy metals.

The 280,000 litre capacity tank will provide enough water for irrigation of the Black Beach and Hindmarsh Park grounds for approximately 10 days, if drought conditions occur. The stormwater harvesting project is on track to be operational in time for the launch of the Sustainable Kiama Communities project in September 2008. (Robinson, B. email 2008)



Photo: Kiama Council staff working on the 280,000 litre capacity tank at Black Beach, Kiama

“Sustainability Begins At Home” Project

This project targets householders across the Illawarra providing environmental education on waste minimisation, better buying, backyard biodiversity, and water and energy efficiency. It will include community workshops, discount vouchers on products etc.

During the reporting period, working groups were formed amongst the officers from the three Councils, to share expertise and knowledge in forming resources and activities in the areas of Energy, Water, Waste, Better Buying and Biodiversity.

Sustainable Kiama Communities

This grant is aimed at mobilising the Kiama Community into living more sustainably, using the following strategies....

- Energy and water conservation through retrofitting, consumption monitoring.
- Recycling and reuse - composting, waste minimisation, home food gardens.
- Community co-operation with biodiversity and landcare projects.
- Stormwater pollution management – installation of drain gross pollutant traps.
- Sustainability Mapping
- Community and Business Partnerships

Business Treading Lightly (BTL)

This grants is part of the Urban Sustainability Grants Program in conjunction with the Southern Councils Group, and is directed at

- Delivery of an integrated and targeted program to improve business sustainability across the SCG region.

- Businesses will be encouraged to implement Sustainability Plans that will lead to region endorsed accreditations.
- Larger businesses including Retirement Villages and Holiday accommodation.
- Sustainability requirements for business will be incorporated into Council policy providing for continuous improvement and program longevity.
- It will include addressing such issues as rainwater usage, stormwater management, reducing waste, packaging, retrofitting etc

During the reporting period Aged Care Facilities were engaged including the signing up of five businesses with a total of 69 facilities. The Department of Environment and Climate Change provided finance for BTL to undertake a waste audit on an Aged Care Facility. BTL staff also participated in the Illawarra Sustainability Roadmap Project.

9.2.2 World Environment Day

Kiama Council's Environment and Health Team celebrated World Environment Day 2008, which was themed *CO2 - Lets Kick the Habit*. The Team roamed the streets of Kiama, Gerringong, and Jamberoo handing out free packets of vegetable seeds and a fridge magnet with a checklist of practical hints and helpful websites, to help everyone reduce their CO2 emissions.



9.2.3 Sustainable Living Grants Program 2007-2008

The Sustainable Living Grants Program has been developed by Kiama Municipal Council to fund environmental and health projects within schools and the general community. Projects funded under this program assist in the improvement of the health and wellbeing of the community and the natural environment of the Kiama Municipality.

The Sustainable Living Grants Program aims to:

- Promote and encourage participation of a wide range of members of the community in health and environmental projects that promote the sustainability of the Kiama Municipality;

- Strengthen partnerships between schools, the local community, business and Kiama Municipal Council;
- Increase awareness of local health and environmental issues facing the Kiama Municipality; and
- Assist schools, community groups and the wider community with the implementation of important local projects (or research) that promote sustainability and recognise the link between our health and the health of the environment.

The six projects funded this year, covered a range of issues including waste minimisation, water saving, cultural awareness, physical activity, and environmental rehabilitation and education. An assessment panel, consisting of Council Officers, an elected representative, Councillor Howard Jones and a community representative assessed the applications based upon the following selection criteria:

- Project will result in improved health, wellbeing and or environment;
- Addressed multiply health, environmental health, waste minimisation and environmental themes;
- Demonstrated partnerships with the wider community; and
- The project will be sustainable after the funding is provided.

The projects funding this year are as follows:

Gerringong and District Historical Society – Walk In The Past

This project encourages healthy lifestyles and cultural knowledge, by creating a Walking Tour of Gerringong, using a podcast featuring a local identity talking about each site.

Kiama Table Tennis Club

This newly formed club already has 25 members and hopes to attract more with an upgrade of equipment including tabletops, nets, surrounds and a robot! *Move It or Lose It* is their theme.

Triple Care Farm – The Chicken and the Egg

This project aims to motivate and interest the young people participating in the Drug and Alcohol Rehab Programme. Students will be encouraged to save and use fruit and veg scraps from the kitchen to feed the chickens, which will produce eggs. Some of the eggs will be returned to the kitchen, some will be sold and some will be hatched in the incubator.

Jamberoo Red Cross – Regenerating and Restoring Established Gardens at Jamberoo Public School

Restoring and regenerating the gardens at Jamberoo School with native plants in conjunction with students and other community volunteers.

Jamberoo Croquet Club – Installation of a Rainwater Tank

The installation of a 5000 litre rainwater tank on the new clubhouse currently being erected, will be used for watering the croquet club lawns and gardens, and saving the town water supply.

Landcare Little Blowhole – Interpretive Signage

Educational signage, highlighting the fauna, and the natural and cultural history of the area, including bush tucker and history from a Koori perspective.

Successful recipients will be managed by relevant Council staff and are required to provide an evaluation report at the completion of the project within 12 months.

9.2.4 Kiama Public Health Plan 2005-2008 Healthy Communities Town, Country & Coast

The Kiama *Public Health Plan*, which was adopted in 2005, covers a broad range of issues, which Council believe interact to have an impact on the health of the residents and visitors, and the environment. The plan offers a balance between the practical and theoretical, with links that draw on international, national, state and regional research, policies and best practice. The Plan has the following overall aims:

- To improve the health, wellbeing and quality of life for all residents and visitors to the Kiama Municipality; and
- To improve, protect and enhance the environment for the benefit of present and future generations.

The Plan consists of the following sections and themes:

- Strengthening Community
Priority: Community Connections
Priority: Information Provision
Priority: Partnerships
Priority: Funding & Service Provision
- Supportive Social Environment For Health
Priority: Regulatory Functions
Priority: Food & Nutrition
Priority: Physical Activity
Priority: Cancer Awareness & Prevention
Priority: Safety & Injury
- Health Of Our Environment
Priority: Regulatory and Statutory
Priority: Clean Water
Priority: Energy Efficiency
Priority: Sustainable Living
Priority: Biodiversity
Priority: Built Environment
Priority: Transport
Priority: Waste Management

The major achievements of the *Public Health Plan* during the reporting period are outlined below. Many projects are detailed in other sections of this report and the relevant section reference is included.

- Strengthening Communities

- ✓ Continued work on a New Residents Kit.
- ✓ Continued to lobby state government for additional health and police services.
- Supportive Social Environment For Health
 - ✓ Annual inspection and education programs were conducted on food premises, residential swimming pools, hairdressers and body piercing and tattooists.
 - ✓ Continued to implement the Good Sports project;
 - ✓ Continued to support the Breastfeeding Friendly Environments and Breastfeeding Awareness Week.
 - ✓ Continued to implement Smoke Free Sporting Grounds policy.
 - ✓ Continued to support of Just Walk It Walking groups.
 - ✓ Conducted research into community needs and options of Council recreation facilities and walking paths.
 - ✓ Continued to support the North Kiama Neighbourhood Centre Community Garden.
 - ✓ Participated in the Cancer Leadership Committee and related research.
 - ✓ Continued work on a map of walking paths in the Municipality.
- Health Of Our Environment
 - ✓ Participated in the regional Active Transport Hub.
 - ✓ Continued to distribute Butt Bins through out the Municipality and also to complement the Smoke Free Sporting Grounds Policy.
 - ✓ Implemented National Tree Day in conjunction with Kiama High School and Conservation Volunteers Australia.
 - ✓ Relevant Environmental Management Plans (Stormwater and Estuary Management Plans) were implemented (see Chapter 3: Water for more information);
 - ✓ The *Stormwater pollutant control and riparian management in the Minnamurra Estuary* Project continued to be implemented, with assistance from a grant from the SRCMA (see Chapter 3: Water for more information);
 - ✓ The Streamwatch Networks in Jamberoo, Kiama, Gerringong and Gerroa were supported and data was obtained for this SoE report (see Chapter 3: Water for more information);
 - ✓ Water Saving Action Plans for Council operations were implemented (see Chapter 3: Water for more information);
 - ✓ Milestone 3 of the Cities for Climate Protection Program was drafted (see Chapter 7: Air for more information);
 - ✓ The Plastic Bag Project (Land and Sea - Plastic Free) was continued (see Chapter 6: Waste for more information);
 - ✓ World Environment Day 2008 was celebrated (see this chapter for more information);
 - ✓ Clean Up Australia Day was implemented in 2008 (see Chapter 6: Waste for more information).

9.2.5 Awards Received

The Kiama Municipality won several awards during the previous reporting period:

- **Healthy Cities Illawarra Awards 2007**

- Commended for conducting the One STOP CLIMATE CHANGE Shop as part of World Environment Day 2007.

- **Streamwatch Awards 2007**

The Streamwatch Awards Ceremony demonstrates the strength of the program, the skills of the participants and the value of their contribution to the protection of our waterways.

- ✓ Outstanding Water Monitoring Group
Kendalls Beach Community Streamwatch Group

Kendall's Beach Streamwatch Group was awarded an "Outstanding Water Monitoring Group 2007" for their commitment, dedication and valuable contribution to the Streamwatch program as part of the Sydney Water Streamwatch Awards and Recognition Program. They submitted 39 data sets in 2007.

9.2.6 Southern Rivers Catchment Management Authority

The Southern Rivers Catchment Management Authority (SRCMA) plays a vital role in the management of south coast catchments from Stanwell Park in the North to the Victorian border, including the Snowy River.

SRCMA was established in 2004 by the NSW Government to ensure the protection and sustainable development of land, vegetation and water resources within the catchment. It answers directly to the Minister for Environment and Climate Change.

The SRCMA has strong partnerships in natural resource management, working closely with local communities, farmers and other land managers, Landcare, government agencies, local government, Aboriginal people, and industries within the catchment to achieve its goals.

Southern Councils Group, on behalf of Councils, and the Southern Rivers Catchment Management Authority (SRCMA) have signed a Memorandum of Understanding (MoU) to enable cooperation between Local Government and the Catchment Management Authority. The MoU seeks to establish clear working relationships with Councils that enables cooperative and coordinated pursuit of sustainable natural resource management.

During community consultations the issue that the CAP was too broad to be applicable at a sub-regional level was raised. To enable the community to see how the CAP targets will have local relevance, SRCMA identified the need to develop sub-regional plans. The drafts for the

sub-regional plans should be completed by December 2007, with consultation to Councils and the community occurring after this time. The sub-regional plans will identify and detail current and future local projects that meet the set targets of the CAP (Miners, B. 2007).

Kiama Council values the close links it has with the SRCMA and looks forward to engaging in future projects that benefit our local environment.

9.3 Potential Future Activities

Existing Future Activities in the Management Plan 2008-2011

- Prepare and/or implement plans to improve the environment and report on activities undertaken and grants received;
- Implement educational programs and activities supported by Council in relation to aquatic systems, air, biodiversity, and urban visual quality;
- Implement the programs/strategies of the Kiama Public Health Plan;
- Review and evaluate the Kiama *Public Health Plan*;
- Implement Good Sports Program.

Potential Future Activities Beyond 2008-2009

(H – High Priority, M - Medium Priority, L – Low Priority)

- To implement the programs/strategies of the Kiama *Public Health Plan* (2009/2010 and 2010/2011) (H, M & L as per Plan timeframes);
- *Public Health Plan* Annual review reported in SoE Report (H);
- Prepare and/or implement plans to improve the environment and report on activities undertaken and grants received (2009/2010 and 2010/2011) (H);
- Develop the Illawarra Sustainability Roadmap Action Plan (H);
- Implement the Sustainable Living Grants Program to fund community health, environmental and waste minimisation projects (M);
- Implement a range of appropriate Sustainable Living Workshops, for example Composting, Worm Farming, Waterwise Gardening, Energy and Water Conservation, Safe and Green Cleaning through the Sustainable Kiama and Sustainable Illawarra Projects.(M);

Chapter 10: Summary of Existing and Potential Future Activities

All of the existing and potential future activities that aim to address issues identified in this SoE Report are listed in the final section of each relevant Theme Chapter (Chapter 2-9) and are summarised below. The **existing** future activities are already planned for implementation in Council's Management Plan 2008-2011. The **potential** future activities have been identified for implementation in future years (after 2008-2009) in the Management Plan 2008-2011 or are new activities proposed based on issues raised in this SoE Report. The **potential** activities will be considered for inclusion in the Management Plan 2009-2012 or later, depending on level of priority. The activities are outlined according to the relevant Council Strategic Goal, in line with the format of Council's Management Plan.

GOAL: A SUSTAINABLE ENVIRONMENT

OBJECTIVE: Protect, enhance, manage and monitor the area's landscapes, places of heritage significance, and natural environments

Program	Activities 08/09	<u>Potential</u> Future Activities Beyond 2008/2009 (H-high priority, M-medium priority, L-low priority)	(KPI) 2008/2009	Relevant SoE Chapter/s
<u>ENVIRONMENTAL PROTECTION AND MANAGEMENT</u>				
Cities for Climate Protection	<ul style="list-style-type: none"> Implement projects to reduce Council's consumption of water, energy, waste and other natural resources as identified in the Cities for Climate Protection Action Plan. 	<ul style="list-style-type: none"> Implement projects to reduce Council's consumption of water, energy, waste and other natural resources as identified in the Cities for Climate Protection Action Plan.(H) 	<ul style="list-style-type: none"> Complete 3 milestone actions per annum. 	Land, Water, Biodiversity, Waste, Air,, Heritage Sustainable Communities
Protection of Environment	<ul style="list-style-type: none"> Investigate promote and enforce compliance with pollution control, litter reduction and environmental legislation. Implement programs to reduce litter. 	<ul style="list-style-type: none"> Investigate promote and enforce compliance with pollution control, litter reduction and environmental legislation.(H) Implement programs to reduce litter.(H) 	<ul style="list-style-type: none"> 100% of complaints actioned within 5 working days. Implement cigarette butt litter reduction program. Conduct Clean Up Australia Day, number of participants and tonnage of litter collected. 	
Environmental Monitoring	<ul style="list-style-type: none"> Promote community participation in water quality and environmental monitoring. Prepare State of the Environment Report. 	<ul style="list-style-type: none"> Promote community participation in water quality and environmental monitoring.(H) New Local Government Reporting regime to commence 	<ul style="list-style-type: none"> Number of sites monitored. Reporting requirement met. 	

GOAL: A SUSTAINABLE ENVIRONMENT

OBJECTIVE: Protect, enhance, manage and monitor the area's landscapes, places of heritage significance, and natural environments

Program	Activities 08/09	<u>Potential</u> Future Activities Beyond 2008/2009 (H-high priority, M-medium priority, L-low priority)	(KPI) 2008/2009	Relevant SoE Chapter/s
Stormwater Management Plan	<ul style="list-style-type: none"> Implement street sweeping and stormwater pit cleaning schedule. Implement Catchment Caretakers Stormwater Education Grant Program for Jamberoo and Kiama Catchments. 	<ul style="list-style-type: none"> Implement street sweeping and stormwater pit cleaning schedule 	<ul style="list-style-type: none"> Services undertaken in accordance with schedule. Drain stencilling, water quality testing and education programs completed. 	Land, Water, Biodiversity, Waste, Heritage, Sustainable Communities
Minnamurra River Estuary Management Plan	<ul style="list-style-type: none"> Pursue DECC to prepare a plan for the stabilisation and rehabilitation of the River channel upstream of Swamp Road. Obtain grant funding for projects identified in Estuary Management Plan 	<ul style="list-style-type: none"> Implementation of rehabilitation plan for the River upstream of Swamp Road.(H) Obtain grant funding for projects identified in Estuary Management Plan(M) 	<ul style="list-style-type: none"> Plan prepared by DECC. \$ value of grant funding obtained. 	
Tree Preservation	<ul style="list-style-type: none"> Assess applications for tree removal or pruning in accordance with Council's Tree Preservation Order. 	<ul style="list-style-type: none"> Assess applications for tree removal or pruning in accordance with Council's Tree Preservation Order 	<ul style="list-style-type: none"> 80% of applications assessed within two weeks of receipt. Breaches recommended for prosecution reported to Council as per Council's Policy. 	

GOAL: A SUSTAINABLE ENVIRONMENT

OBJECTIVE: Protect, enhance, manage and monitor the area's landscapes, places of heritage significance, and natural environments

Program	Activities 08/09	<u>Potential</u> Future Activities Beyond 2008/2009 (H-high priority, M-medium priority, L-low priority)	(KPI) 2008/2009	Relevant SoE Chapter/s
Community Lands Management	<ul style="list-style-type: none"> • Prepare and review Plans of Management for the following reserves: <ul style="list-style-type: none"> - Nobles Estate – Werri Headland - Cedar Grove Estate - Turpentine Reserve - Baileys Island - Willow Gully - And neighbourhood parks • Progressive implementation of actions identified in the Plans of Management. • Support and participate in Landcare Illawarra, Conservation Volunteers Australia and Southern River Catchment Management Authority projects within the Kiama Municipality 	<ul style="list-style-type: none"> • Review Plan of Management for Community Reserves.(2010/2011)(H) • Progressive implementation of actions identified in the Plans of Management.(H) • Continue to support and participate in Landcare Illawarra, Conservation Volunteers Australia and Southern River Catchment Management Authority projects within the Kiama Municipality (H) 	<ul style="list-style-type: none"> • Plans of Management prepared and adopted by Council. • Works completed on time and within budget. • Number of joint projects 	Land, Biodiversity, Water

GOAL: A SUSTAINABLE ENVIRONMENT

OBJECTIVE: Control and plan development of our built environment for the wellbeing of the community

Program	Activities 08/09	<u>Potential</u> Future Activities Beyond 2008/2009 (H-high priority, M-medium priority, L-low priority)	(KPI) 2008/2009	Relevant SoE Chapter/s
Threatened Species	<ul style="list-style-type: none"> Review and implement the relevant recovery strategies listed in the Department of Environment and Climate Change's draft Priority Action Statement that refer to threatened species and threatening processes on Community Land 	<ul style="list-style-type: none"> Continue to review and implement the relevant recovery strategies listed in the Department of Environment and Climate Change's draft Priority Action Statement that refer to threatened species and threatening processes on Community Land (H) 	<ul style="list-style-type: none"> Plans reviewed and strategies implemented. 	Biodiversity
<u>STRATEGIC AND RURAL PLANNING</u>				
Strategic Town & Rural Planning	<ul style="list-style-type: none"> Prepare Kiama LEP. Prepare, exhibit and adopt Development Control Plan. 	<ul style="list-style-type: none"> Exhibit and adopt, then monitor implementation of Kiama LEP.(H) Commence review of Kiama LEP 2008 to be completed by 2013.(2101/2011)(L) Monitor implementation of Development Control Plan.(H) 	<ul style="list-style-type: none"> Draft plan prepared. Plan exhibited and adopted. 	Land

GOAL: A SUSTAINABLE ENVIRONMENT

OBJECTIVE: Manage and reduce the environmental impacts of all activities on air, water and land systems

Program	Activities 08/09	<u>Potential</u> Future Activities Beyond 2008/2009 (H-high priority, M-medium priority, L-low priority)	(KPI) 2008/2009	Relevant SoE Chapter/s
<u>ENVIRONMENTAL QUALITY</u>				
Weed Management	<ul style="list-style-type: none"> • Provide funding for the operation of the IDNWA. • Control noxious weeds through the implementation of the IDNWA Programs. 	<ul style="list-style-type: none"> • Provide funding for the operation of the IDNWA. • Control noxious weeds through the implementation of the IDNWA Programs. 	<ul style="list-style-type: none"> • Funding provided. • Program completed and reported to Council. 	Biodiversity
	<ul style="list-style-type: none"> • In co-operation with the Southern Rivers Catchment Management Authority (SRCMA), prepare a draft Weeds Management Strategy for the Illawarra Region. 	<ul style="list-style-type: none"> • Implement the Regional Strategy. 	<ul style="list-style-type: none"> • Adoption of the Strategy. 	
Roadside Vegetation Management	<ul style="list-style-type: none"> • Ensure the ongoing implementation of the Roadside Vegetation Management Plan. 	<ul style="list-style-type: none"> • Ensure the ongoing implementation of the Roadside Vegetation Management Plan. 	<ul style="list-style-type: none"> • Staff regularly briefed on the requirements of the Roadside Vegetation Management Plan and operational measures put in place to ensure compliance. 	
Environmental Assessment	<ul style="list-style-type: none"> • Assess all Council works activities under Part 4 and Part 5 of the EP and A Act as required. 	<ul style="list-style-type: none"> • Assess all Council works activities under Part 4 and Part 5 of the EP and A Act as required.(H) 	<ul style="list-style-type: none"> • Review of environmental factors prepared for all activities under Part 5. • Development Applications submitted for all developments under Part 4. 	

Contaminated Lands Management	<ul style="list-style-type: none"> Complete further site investigations, prepare rehabilitation plan for adoption by the DECC for the Kiama Gasworks site. 	<ul style="list-style-type: none"> Commence implementation of rehabilitation works at the Kiama Gasworks site. 	<ul style="list-style-type: none"> Rehabilitation Plan completed and adopted. 	Land
WASTE MANAGEMENT				
Waste disposal facilities and environmental monitoring	<ul style="list-style-type: none"> Monitor and report environmental conditions at Gerroa and Minnamurra Tips. Maintain Closure Plan site works at Minnamurra and Gerroa Depots. 	<ul style="list-style-type: none"> Monitor and report environmental conditions at Gerroa and Minnamurra Tips. Maintain Closure Plan site works at Minnamurra and Gerroa Depots. 	<ul style="list-style-type: none"> Monitoring and reporting completed in accordance with license conditions and timeframes. Area revegetated and maintained. 	Waste
Domestic garbage, recycling, green waste and annual clean up services.	<ul style="list-style-type: none"> Provide efficient and environmentally effective domestic garbage, recycling, green waste and annual clean up services. Review residential Clean Up Collection Program and alternative option Develop and implement Second-Hand Saturday Recycling and Reuse Events. 	<ul style="list-style-type: none"> Provide efficient and environmentally effective domestic garbage, recycling, green waste and annual clean up services. Develop and implement Second-Hand Saturday Recycling and Reuse Events. 	<ul style="list-style-type: none"> Total quantity of waste collected in tonnes/kg per services. Total recyclable materials collected in tonnes/kg per services. Total quantity of green waste collected in tonnes/kg per services/ 55% of total annual waste generated from urban areas is recycled or reprocessed. Review completed May 2009. 4 events conducted annually. 	
Commercial Waste & Recycling Services	<ul style="list-style-type: none"> Provide and promote commercial recycling services. 	<ul style="list-style-type: none"> Provide and promote commercial recycling services. 	<ul style="list-style-type: none"> Number and percentage of commercial premises using services and quantity of recyclable materials in tonnes/kg collected. 	Waste

Regional Waste Management	<ul style="list-style-type: none"> • Participate in Business Treading Lightly Grant Project Years 1 and 2 • Participate in the regional management network waste minimisation and recycling projects. 	<ul style="list-style-type: none"> • Participate in Business Treading Lightly Grant Project Years 2 and 3. • Participate in the regional management network waste minimisation and recycling projects 	<ul style="list-style-type: none"> • Number of programs conducted in the Kiama Municipality. • Participation in regional expression of interest. • Number of regional waste minimisation and regional projects implemented. 	
Waste Minimisation and Recycling Projects	<ul style="list-style-type: none"> • Develop and implement policies and projects to reduce, recycle and minimise waste from Council facilities and activities. • Implement projects to reduce waste, increase recycling and reuse of materials from residential, rural and commercial premises. 	<ul style="list-style-type: none"> • Develop and implement policies and projects to reduce, recycle and minimise waste from Council facilities and activities. • Develop and implement policies and projects to reduce waste, increase recycling and reuse of materials from residential, rural and commercial premises. 	<ul style="list-style-type: none"> • Develop a 3 year project plan for waste minimisation, recycling and reuse for Council operations and facilities. • Develop, implement and evaluate 2 new projects annually at Council facilities. • Develop a 3 year project plan for waste minimisation, recycling and reuse for urban, rural and commercial areas. • Develop, implement and evaluate 2 new projects annually for urban, rural and commercial areas. 	
Waste Minimisation and Recycling Projects	<ul style="list-style-type: none"> • Undertake annual DECC waste, recycling and green waste services audit and reporting 	<ul style="list-style-type: none"> • Undertake annual DECC waste, recycling and green waste services audit and reporting. 	<ul style="list-style-type: none"> • Number of existing waste minimisation, recycling and programs implemented. • Annual audit completed in November 2008. 	Waste

GOAL: A SUSTAINABLE ENVIRONMENT

OBJECTIVE: Promote environmental awareness through educational programs

Program	Activities 08/09	<u>Potential</u> Future Activities Beyond 2008/2009 (H-high priority, M-medium priority, L-low priority)	(KPI) 2008/2009	Relevant SoE Chapter/s
<u>ENVIRONMENTAL EDUCATION</u>				
Biodiversity, Sustainability, Water and Waste Education	<ul style="list-style-type: none"> • Implement Sustainable Illawarra Grant Program – Years 1 and 2. • Implement strategies identified in the Illawarra Council Sustainability Road Map. • Implement Sustainable Kiama Communities Grant Years 1 and 2 • Implement the Biodiversity and Food Grant – Year 1 	<ul style="list-style-type: none"> • Implement Sustainable Illawarra Grant Program –Years 2 and 3. • Implement strategies identified in the Illawarra Council Sustainability Road Map. • Implement Sustainable Kiama Communities Grant Years 2 and 3 • Implement the Biodiversity and Food Grant – Year 2 	<ul style="list-style-type: none"> • Black Beach and Hindmarsh Park Stormwater Reuse Scheme implemented. • Regional sustainability website and education fact sheets established. • Sustainability Begins at Home Project Plan completed. • Number of programs implemented. • Number of participants. • % reductions in energy, water usage and waste reduction. • Number of partnerships formed. • Number of strategies implemented. • Completion of Project Plan. • Commencement of GIS sustainable mapping. • Number of participants. • % reductions in energy, water usage and waste reduction. • Number of partnerships formed. • Project plan prepared and commenced implementation. 	Land, Water, Biodiversity, Waste, Air, Sustainable Communities

Community Lands	<ul style="list-style-type: none"> • Continue the development of educational reserve sites at: <ul style="list-style-type: none"> - Spring Creek Wetlands - Jerrara Dam Arboretum - Bonaira Native Gardens 	<ul style="list-style-type: none"> • Continue the development of educational reserve sites at: <ul style="list-style-type: none"> - Spring Creek Wetlands - Jerrara Dam Arboretum - Bonaira Native Gardens 	<ul style="list-style-type: none"> • Reserves developed as per Plan of Management. 	Land
Aquatic education	<ul style="list-style-type: none"> • Implement educational programs and activities supported by Council in relation to aquatic systems 	<ul style="list-style-type: none"> • Ongoing implementation of educational programs and activities supported by Council in relation to aquatic systems(H) • Continue to implement a Clean Waters Program, including involvement of community volunteers, and addressing stormwater education and water quality issues, building on the Minnamurra Estuary Project (H); 	<ul style="list-style-type: none"> • Project Aware • Catchment Caretakers Stormwater Education in primary schools • Clean Waters program 	Water

GOAL: A SUSTAINABLE ENVIRONMENT

OBJECTIVE: Provide leadership by demonstrating environmental excellence in all Council activities and policies

Program	Activities 08/09	Potential Future Activities Beyond 2008/2009 (H-high priority, M-medium priority, L-low priority)	(KPI) 2008/2009	Relevant SoE Chapter/s
<u>SUSTAINABLE COUNCIL OPERATIONS</u>				
Pesticides Notification Plan	<ul style="list-style-type: none"> Implement the Pesticide Notification Plan 	<ul style="list-style-type: none"> Implement the Pesticide Notification Plan (H) 	<ul style="list-style-type: none"> Recommendations implemented. 	Land
Water Savings Action Plan	<ul style="list-style-type: none"> Implement projects as identified in the Water Savings Action Plan. 	<ul style="list-style-type: none"> Ongoing implementation of the Water Savings Action Plan.(H) Seek funding assistance for priority water conservation projects (H); 	<ul style="list-style-type: none"> Implement 2 new actions annually. 	Water
<u>PUBLIC HEALTH AND SAFETY</u>				
Public Health	<ul style="list-style-type: none"> Review and evaluate the Kiama Public Health Plan (2005-2008). Implement Good Sports Program. 	<ul style="list-style-type: none"> To implement the programs/strategies of the Kiama Public Health Plan (2009-2012). To incorporate the strategies of the Kiama Public Health Plan into Council's integrated reporting strategy.(2010/2011) Implement Good Sports Program. 	<ul style="list-style-type: none"> Consultations held. Issues and priorities identified. Public Health Plan updated. 10% of all sporting clubs accredited Good Sports Clubs. 	All
Cycleways and Walkways Plan	<ul style="list-style-type: none"> Construct Coastal Walking Track – Kiama Heights to Werri Lagoon. 	<ul style="list-style-type: none"> Construct Stage 1 Jamberoo Valley shared pathway, subject to RTA funding. 	<ul style="list-style-type: none"> Completion of Coastal Walking Track. 	Air
	<ul style="list-style-type: none"> Construct the cycleway over the Minnamurra Bridge subject to RTA agreement. 		<ul style="list-style-type: none"> Construction completed. 	

GOAL: COMMUNITY COHESION AND WELLBEING

OBJECTIVE: Contribute to the health, safety and wellbeing of the community

Program	Activities 08/09	<u>Potential</u> Future Activities Beyond 2008/2009 (H-high priority, M-medium priority, L-low priority)	(KPI) 2008/2009	Relevant SoE Chapter/s
<u>PUBLIC HEALTH AND SAFETY</u>				
Sewer Connection Program	<ul style="list-style-type: none"> • Implement program to ensure premises are connected to the sewer in the Gerringong, Gerroa and Jamberoo Townships. • Undertake On-site Sewage Management System inspections for compliance with legislation. 	<ul style="list-style-type: none"> • Implement program to ensure premises are connected to the sewer in the Gerringong, Gerroa and Jamberoo Townships.(H) • Undertake On-site Sewage Management System inspections for compliance with legislation.(H) 	<ul style="list-style-type: none"> • 97% of premises connected to sewer system by June 2009. • % of scheduled annual inspections undertaken. 	Water

GOAL: COMMUNITY COHESION AND WELL BEING

OBJECTIVE: Recognise and support the value of cultural heritage

Program	Activities 08/09	<u>Potential</u> Future Activities Beyond 2008/2009 (H-high priority, M-medium priority, L-low priority)	(KPI) 2008/2009	Relevant SoE Chapter/s
<u>HERITAGE</u>				
Heritage	<ul style="list-style-type: none"> • Incorporate heritage list into Kiama LEP Review • Require applicants to provide assessment reports where areas of aboriginal heritage are potentially impacted. • Require applicants to provide assessment reports where areas of European heritage and buildings are potentially impacted. 	<ul style="list-style-type: none"> • Monitor operation of Kiama LEP Heritage provisions. • Require applicants to provide assessment reports where areas of aboriginal heritage are potentially impacted.(H) • Require applicants to provide assessment reports where areas of European heritage and buildings are potentially impacted.(H) 	<ul style="list-style-type: none"> • Review completed. • Number of reports prepared. • Number of reports prepared. 	Heritage