

State of the
ENVIRONMENT
Report 2010-2011



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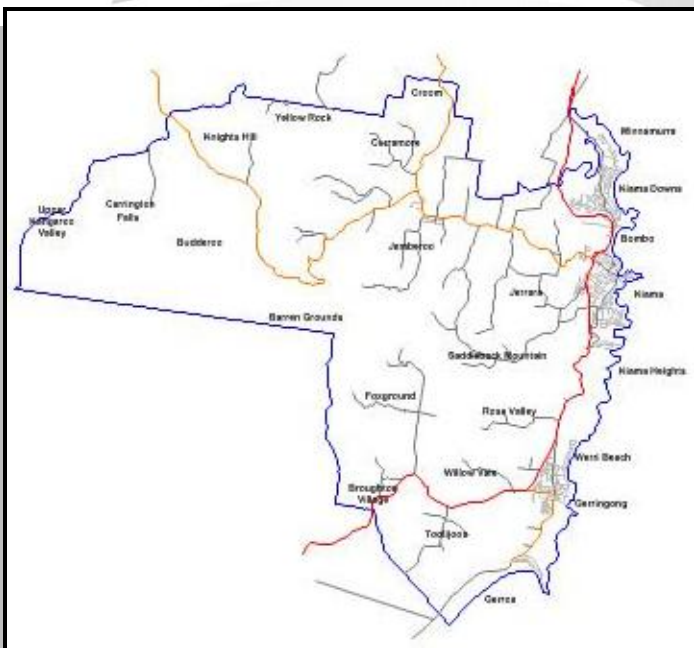
CHAPTER 1: INTRODUCTION

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 Australian Bureau of Statistics indicated that the estimated resident population figure for the Kiama Municipality at 30th June 2009, was 20,641 people. 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 5.01% growth between 1996 and 2006 (Australian Bureau of Statistics). The Census 2011 will provide updated population statistics for the next State of the Environment Report.

Kiama Local Government Area



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1.2 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 1st July 2010 – 30th June 2011.

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 three (3) sections, following the state-pressure-response framework:

- State - outlines the condition of the environmental theme;
- Pressures - outlines the human and natural pressures on the environmental theme; and
- Responses - includes the relevant local actions of Council, other levels of Government and the community, that address the environmental theme

Chapter 9, Sustainability details Council's current strategies and actions addressing sustainability within the Municipality and its own organisation and details activities and programs which may not be included in any single chapter.

CHAPTER 2: LAND

2.1 STATE

2.1.1 LAND USE 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 provides land use zones that indicate what is permitted or prohibited within those zones. The LEP also includes development controls and considerations that apply to development applications.

Table 1 lists the zones and the area of land to which they apply. 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.

The LEP identifies “areas of high conservation”, and “riparian corridors” on maps and includes special provisions to protect these environmentally sensitive lands. The areas of high conservation value cover 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.



Minnamurra River in flood March 2011

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)

Table 1.1: Local Environment Plan 1996 Zones

2.2 PRESSURE

2.2.1 DEVELOPMENT

Development contributes to a region’s ability to provide economic and social benefits but can also place demands on urban and rural infrastructure, services, and natural resources. Unless carefully managed, development can also pose threats to the environment.

Kiama Municipality experienced slight growth in separate houses and medium density dwellings between 2001-2006(Kiama community profile id, 2011).

This is in line with the conclusion of the Illawarra Regional Strategy, 'Kiama is likely to have a more limited role in the regional housing supply. Some medium density potential does exist with Kiama and Gerringong providing the best opportunities for urban infill'.

The Illawarra Regional Strategy outlines policies for the region's housing, employment, natural resources and environmental and cultural heritage for the period 2006 to 2031. Council is guided by this strategy in discharging its role in local planning.

Figure 2.1 shows the number of development approvals that Council granted for residential dwellings, commercial and industrial activities for the period of 2007/08-2010/11. For historical figures from 1999 refer to past State of the Environment reports.

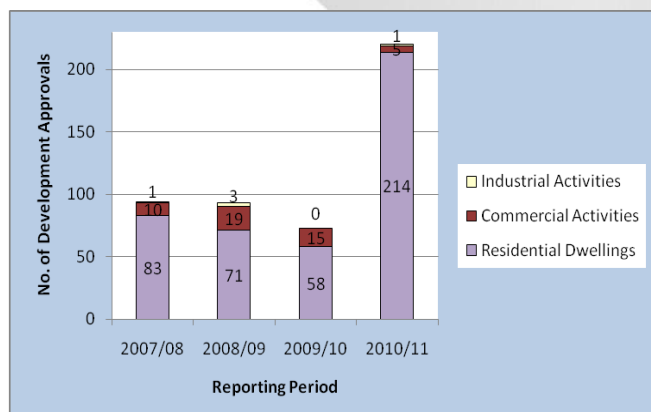


Figure 2.1: Development Approvals for Residential Dwellings, Commercial and Industrial Activities

2.2.2 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*.

Amendments to the *Contaminated Land Management Act 2008* commenced on 1 July 2009. These changes prescribe certain matters to be included in section 149 (2) planning certificates, and have revised Office of Environment and Heritage Guidelines on the duty to report contamination and significantly contaminated land, as specified under this Act.

2.3 RESPONSE

2.3.1 LAND USE PLANNING INITIATIVES

The LEP is under review and the draft *Kiama LEP 2010* and the *Kiama Urban Strategy* were publicly exhibited from November 2010 to February 2011. The draft LEP is subject to some amendments proposed by Council in response to submissions considered at its meeting held on 5th April 2011. The draft LEP is now subject to the approval of the Department of Planning and Infrastructure and the Minister for Planning and Infrastructure anticipated its approval in the second half of 2011.

Council is still reviewing the *Kiama Urban Strategy* following significant community opposition expressed in submissions opposed to land release proposals for the southern expansion of Gerringong.

The *Kiama Urban Strategy* is Council's response to meeting dwelling targets set in the State Government's *Illawarra Regional Strategy* now administered by the Minister for Planning and Infrastructure. Council was set a target of 812 detached dwelling lots over a 15 year period from 2006 to 2021. The exhibited Strategy proposed most of the land release in Gerringong with other land also identified in Kiama and to a lesser extent at Jamberoo.

2.3.2 BASIX CERTIFICATION

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 1st October 2006, BASIX was also applied to residential alterations and additions valued at \$100,000 or more (from 1 July 2007, the value dropped to \$50,000) and where a swimming pool (or pool and spa) with a capacity greater than 40,000 litres is being installed.

BASIX ratings can be achieved through design choices such as:

- Rainwater tanks connected to toilet, laundry and/or garden irrigation systems;
- 3A -5A rated showerheads, toilets, taps & fittings;
- Floor and ceiling insulation;
- Using compact fluorescent light globes;
- Native vegetation to landscape areas;
- Shading to windows;

- Solar, heat pump or high efficiency gas hot water systems;
- Appropriate aspect for suitable solar access;
- Alternative energy systems such as photovoltaic;
- Performance glazing to large glazed areas / poorly oriented areas;
- Ceiling fans, evaporative coolers or high efficiency air conditioning; and
- Efficient pool pumps.

In the 2010/2011 reporting period, 122 BASIX certificates were issued in the Kiama Municipality.

You can find out more about BASIX at www.basix.nsw.gov.au.

2.3.3 CONTAMINATED LAND MANAGEMENT

During the 2010/11 reporting period Council submitted its final report to the NSW Environmental Trust for the grant funded investigation of the former Kiama Gasworks site. The Manager of Contaminated Sites from the Office of Environment and Heritage (OEH, formerly Department of Environment, Climate Change and Water), determined that they have no reason to believe that contamination at the site is significant enough to warrant regulation. However, the OEH recommended that Council should note the existence of the site contamination in any Planning Certificate issued for that land.

CHAPTER 3: WATER

3.1 STATE

The Kiama Municipality has three major catchments within its boundaries, the Minnamurra River, the Crooked River and Werri Lagoon. There are also a number of smaller creeks and streams which drain into larger catchments including the Shoalhaven River, Kangaroo River and Macquarie Rivulet, or directly into the ocean. For a comprehensive map of catchments within the Kiama Municipality refer to 2009 State of the Environment Report.

3.1.1 WATER MONITORING

Landfill water monitoring

Council undertakes quarterly groundwater and surface water monitoring in and around its waste disposal depots at Minnamurra and Gerroa, both of which are currently being remediated.

This monitoring is being conducted in accordance with the NSW Office of Environment and Heritage (OEH) license requirements. The monitoring is to identify any impacts that the facilities may have on the surrounding waterways so that action can be taken if necessary.

River and estuary water monitoring

Other water quality monitoring is undertaken throughout the municipality by Streamwatch volunteers. There are up to 6 active Streamwatch networks including Jamberoo Valley, Kendalls Beach, Lands Edge, Gerringong-Gerroa, Werri Lagoon and Kiama High School. Testing was undertaken, verified and uploaded to the Streamwatch website for 10 sites during 2010/11. The sample results as they apply to the ANZECC guidelines for the year can be found in Appendix 1, for more information please refer to the Streamwatch website at www.streamwatch.org.au.

Beachwatch water monitoring

Sydney Water Corporation and the OEH undertake monitoring of beach water quality at 4 beaches across the Kiama Municipality including Boyd's/Jones Beach, Bombo Beach, Surf Beach and Werri Beach. Recreational water quality is no longer reported as percentage compliance based on microbial data, but as Beach Suitability Grades. The Beach Suitability Grades can either be Very Good, Good, Fair, Poor or Very Poor. Definitions for these classifications can be found at www.environment.nsw.gov.au/beach/beachclassification.htm.



Bombo Beach, Kiama

The Beach Suitability Grades are determined from a Sanitary Inspection of the swimming site and an assessment of the Microbial Water Quality. The Sanitary Inspection is a qualitative assessment undertaken to identify all sources of faecal contamination that could affect the swimming location and assess the risk to public health posed by these sources. The microbial water quality assessment is determined by calculating the 95th percentile of enterococci water quality data. More detailed information regarding water quality guidelines is available at: www.environment.nsw.gov.au/beach/thewaterqualityguidelines.htm.

The Beach Suitability Grades for Kiama Council swimming sites are shown in Table 3.1 Below:

Swimming Sites	Beach Suitability Grades
Boyd's/Jones Beach	Very Good
Bombo Beach	Good
Surf Beach	Good
Werri Beach	Good

Table 3.1 Kiama LGA Beach Suitability Grades 2010/11 (Beachwatch, 'State of the Beaches Report', 2010-11)

All Kiama ocean beaches were classified as Very Good or Good. Beaches classified as Very Good means they generally have excellent microbial water quality and very few potential sources of faecal pollution. Water is considered suitable for swimming almost all of the time. Beaches classified as Good means they generally have good water quality and are considered safe for swimming most of the time. These sites have some potential pollution sources which are generally triggered after rainfall.

Kiama Council has made a decision to monitor Seven Mile Beach under the Beachwatch Partnership Program for the 2011/12 swimming season, which will be reported on in the 2011/12 State of the Environment Report.

3.1.2 WATER CONSUMPTION

The Kiama Municipality is part of the Sydney Water supply network and is therefore subject to the same water restrictions. Since the introduction of Level 1 mandatory water restrictions in October 2003 and subsequent progression to Level 3 in 2005, there have since been easing of the restrictions, but a number of water wise rules have applied from the 21st June 2009. For a list of the water wise rules and current restrictions visit: www.sydneywater.com.au.

Table 3.2 show the dam storage levels for the Sydney Water Catchment, showing a 18.8% increase on the previous reporting period.

Date	Dam Water Storage Levels
30 June 2007	53.1%
30 June 2008	66.6%
30 June 2009	61.4%
30 June 2010	57.6%
30 June 2011	76.4%

Table 3.2 Dam Storage Levels (Source: Sydney Catchment Authority 2011)

Community Water consumption

For the seventh year in a row in 2009/10 the Kiama Municipality topped the list of most water wise local government areas in the Sydney Water supply network. The average consumption per household in 2010/11 was 144,000 litres, which is 15,000 litres less than the 2009/10 average. Water consumption by property type for the Kiama Municipality is shown in Table 3.3.

Property Type	Consumption 08/09 (kL)	Consumption 09/10 (kL)	Consumption 10/11 (kL)
Commercial	284,678	266,411	269,722
Houses	1,048,777	1,060,292	1,016,653
Units/flats	136,779	128,552	147,229
Industrial	6,791	5,956	5,873
Other	113,571	122,717	132,472
Total	1,590,596	1,583,928	1,571,949

Table 3.3: Water consumption by property type for Kiama LGA updated for 2010/11 (Sydney Water Corporation, 2011)

Council water consumption

Water consumption by Council's operation has been steadily decreasing since 2002/03 due to mandatory water restrictions and pro-active management to implement initiatives recommended in Water Savings Action Plans (WSAP) for the top water consuming facilities. Kiama Council's total water consumption for the 2010/11 year was 88,493, which is an 11.3% decrease from the 2009/10 year.

The top 11 water consuming facilities consumption is shown in Table 9.2 compared with the 2002/03 baseline year for the WSAP.

A major initiative for the 2009/10 reporting period was the installation of automated data loggers on the 5 Council holiday parks and the Kiama Leisure Centre. These data loggers monitor water consumption on a 24 hour, 365 days a year basis, and give facilities managers the information required to detect base flows (leaks) by automatically sending emails to managers when base flow limits are exceeded.

During the 2010/11 reporting period, the automatic data loggers have been extremely effective in picking up base flows and enabling Council facilities to identify water wastage as it happens. All facilities have managed to have extended periods of time without base flow through their meters however due to the nature of the sites there will be ongoing base flows to be identified into the future. There were a number of major leaks detected during the 2010/11 year ranging from 8 kilolitres per day to close to 30 kilolitres per day at a number of the sites.

3.2 PRESSURE

Water consumption and demand by industrial, commercial, agricultural and residential areas puts pressure on water supply and water supply infrastructure. The demand for potable water can also create pressures on natural systems through the need for water supply catchments, as well as issues in disposing of effluent laden water from residential, rural, industrial and commercial areas.

Water quality can be affected by various natural and anthropogenic factors including drought, stormwater runoff from roads, residential, industrial, commercial and agricultural activities as well as sewerage overflows/bypasses and on site sewerage management systems.

3.2.1 SEWERAGE TREATMENT PLANTS

Table 3.4 shows the discharge and equivalent estimated populations for the two sewerage treatment plants located within the Kiama Municipality.

Sewerage overflows or 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 can result in untreated or partially treated effluent being discharged into waterways or the ocean.

Treatment Plant	Treatment Level	Discharge (ML/day)	Equiv. Population
Gerringong Gerroa	Tertiary (additional Phosphorus removal & ozonation, microfiltration, activated carbon & disinfection)	0.7	5,600
Bombo	Secondary and denitrification & disinfection	3.6	14,700

Table 3.4: Sewerage Treatment Plants in Kiama Municipality

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

Sydney Water Corporation is required to notify Council when any dry or wet weather overflows or bypasses occur, leading to the discharge of untreated or partially treated effluent.

Table 3.5 shows the wet and dry weather overflows at Bombo STP compared to the last 3 reporting periods. There have been no dry or wet weather overflows events at the Gerringong-Gerroa sewerage scheme since it commenced operation in 2002 (J Kidd, pers comm, 2011).

Year	2007/08	2008/09	2009/10	2010/11
Wet Weather Overflow	4	6	7	12
Dry Weather Overflow	0	0	11	7
Total	4	6	18	19

Table 3.5: Sewerage Overflows/Bypasses at Bombo STP (Barr, Greg, 2011)

3.2.2 ON-SITE SEWERAGE MANAGEMENT SYSTEMS (OSSMS)

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

There are approximately 870 systems currently operating in the Kiama 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 Response section of this chapter) to determine if each

system is operating correctly and identify any possible risks to human health and the environment.

3.3 RESPONSE

3.3.1 WATER POLLUTION ENFORCEMENT

Kiama Council Environmental Health Officers and Rangers Services Officers investigate complaints received by Council relating to water pollution and the Office of Environment and Heritage (OEH), investigates complaints regarding water pollution from scheduled premises and activities. The number of complaints received is shown in Table 3.6. The number of complaints relating to water pollution recorded during the last reporting period was 26, which is 5 more than the 2009/10 year.

Type of complaint	2008/2009	2009/2010	2010/2011
Water pollution complaint to OEH	5	5	5
Spill complaint to OEH	-	-	4
Water pollution complaint to Council	20	16	17
Total	25	21	26

Table 3.6: Water pollution complaints to Council and OEH (Roy, L, OEH, 2011)

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*. There were 2 Penalty Infringement Notices issued during the 2010/11 reporting period for polluting waters.

3.3.2 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*.

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, 2003):

- 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 of 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; and
- Mitigation of stormwater impacts from current developments: all catchments.

For a full list of strategies implemented, please refer to previous SoE Reports.

Mechanical street sweeping is undertaken in all urban areas of the Kiama Municipality on a quarterly basis, with the commercial town centres of Kiama being swept daily and the Gerringong and Jamberoo townships swept twice per week. Approximately 560 tonnes of litter, sediment and leaf litter was collected by street sweeping services in the reporting period, which is an increase of 148 tonnes on the previous reporting period.

3.3.3 ON-SITE SEWERAGE MANAGEMENT SYSTEMS INSPECTIONS

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.

During the 2010/11 reporting period, 264 On Site Sewage Management Systems were inspected, with 21 major and 33 minor defects identified, with all cases rectified or works are in progress.

3.3.4 SYDNEY WATER CORPORATION PROGRAMS

Sydney Water has developed a number of programs to encourage the uptake of water efficient products and fittings to decrease the consumption in the residential sector. Table 3.7 show the participation rates for Sydney Water programs for the 2010/11 financial year, and compares this with the 2009/10 reporting period. There was a decrease of 206 participants from the previous reporting period most likely due to the finish of the Rainwater tank program and the Washing machine rebate. The total number of participants from the Kiama Municipality since the introduction of these Sydney Water programs in 1999/2000 is 5,882.

Program	2009/10	2010/11
DIY Kits	-	3
Love your Garden	8	-
Rainwater tanks	51	26
Toilet replacement	74	67
Washing machine rebate	142	1
WaterFix	35	7
Total	310	104

Table 3.7: Participation rates for Sydney Water programs

Of the programs listed in Table 3.7, only the toilet replacement service, WaterFix and DIY kits remain available to residents. The rainwater tank rebate ended on 30 June 2011, and the 'Love Your Garden' and 'Washing machine rebate' also ended earlier in the 2010/11 reporting period.

For a full list of current Sydney Water residential rebate and incentive programs visit :

www.sydneywater.com.au/Water4Life

CHAPTER 4: NOISE

4.1 STATE

Kiama Council has a regulatory role in preventing unwanted and offensive noise through the development approval process and by enforcing development consent conditions and noise pollution regulations under the *Protection of the Environment Operations Act 1997*.

The most common environmental issue that Council is contacted about is noise. The main noise pollution issue that Council is contacted about is animal noise. The breakdown of noise complaints to Council and the Office of Environment and Heritage (OEH), is provided in Table 4.1. There were a total of 77 noise complaints to Council and the OEH in the 2010/11 reporting period which is a decrease of 7 from the 2009/10 year.

Type of Complaint	2008/09	2009/10	2010/11
Noise complaint to OEH	1	8	3
Industrial noise complaints to Council	0	0	0
Commercial noise complaints to Council	0	5	10
Residential noise complaints to Council	14	12	19
Construction noise complaints to Council	4	1	3
Council plant vehicle noise complaints to Council	1	3	0
Animal noise complaints to Council	45	56	42
Total noise complaints	65	84	77

Table 4.1 Noise complaints to Council and the OEH

4.2 PRESSURE

The pressures on the environment relating to noise generally centre around the impact of humans on each other in an urban environment with regard to residential and industrial/commercial and traffic/transport noise.

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

Business and commercial areas constitute only a small portion of the Kiama municipality, but can be a source of noise mainly from equipment such as air conditioners and deliveries during early hours.

Figure 4.1 shows that residential noise complaints are the most common noise complaint in the Kiama Municipality. These complaints include barking dogs, music, garbage and

recycling collection services, building construction and lawn mowing/gardening activities.

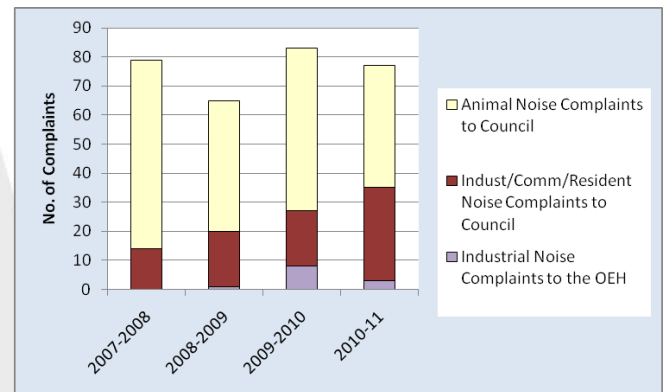


Figure 4.1 Noise complaints within the Kiama Municipality 2007/08-2010/11

4.3 RESPONSE

4.3.1 DEVELOPMENT CONTROL

Development Control conditions can be placed on development approvals for industrial and commercial activities to ensure noise pollution is minimized or prevented. For industrial premises the *NSW Industrial Noise Policy* applies, providing guidelines for large industrial developments, including guidelines 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 developments.

4.3.2 ENFORCEMENT

Councils Environmental Health Officers and Rangers investigate complaints received by Council relating to noise pollution and the Office of Environment and Heritage (OEH) 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 2007*.

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, heat pump hot water systems 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. Information on these restrictions can be found at

Nuisance Dog Orders can also be issued under the *Companion Animals Act 1998* when the noise is the result of a dog, requiring the owner to prevent the behavior causing the noise problem. There was no Nuisance Dog Order issued for the 2010/11 reporting period, which is one less than the 2009/10 reporting period.



CHAPTER 5: BIODIVERSITY

5.1 STATE

Biodiversity as a definition refers to 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.

5.1.1 ECOLOGICAL COMMUNITIES

According to a vegetation study undertaken by Kevin Mills and Associates during 2003/04, there are 12 Endangered Ecological Communities (EECs) within the Kiama Municipality which are listed under the *NSW Threatened Species Conservation Act 1995*. There are maps of the endangered ecological communities available in the 2008/09 State of the Environment Report.

5.1.2 SPECIES DIVERSITY – FLORA

According to the Atlas of NSW Wildlife Atlas (OEH, 2011), there are 837 native flora species which have been recorded in the Kiama Local Government Area. The Atlas of NSW Wildlife indicates that eleven threatened species listed in schedule 1 and 2 of the *NSW Threatened Species Conservation Act 1995 (TSC Act 1995)*, have been recorded in the Kiama LGA. This is the same as the previous reporting period. The species added to the list in the last reporting period was Deans Boronia, (*Boronia deanei*).

For a list of the threatened flora species that have been identified in the Kiama LGA, and their listing in the *TSC Act 1995* and the *Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act 1999)* please refer to the 2008/09 State of the Environment Report.

5.1.3 SPECIES DIVERSITY – FAUNA

According to the report 'The fauna of Kiama Municipality, South Coast NSW' (Kevin Mills & Associates, 2006), which compiled a report from a variety of sources, there are 496 species occurring in the Municipality. The list included mammals, birds, frogs, reptiles, freshwater and estuarine fish species.

The Atlas of NSW Wildlife indicates that 46 animal species actually recorded in the Kiama Municipality are listed as threatened species in Schedule 1 and 2 of the *NSW TSC Act 1995*. This is the same number as the previous reporting period. Some of these species are also listed as threatened under the Commonwealth *EPBC Act 1995*. For a full list of threatened species including the Mills and Associates listings please refer to the State of the Environment Report 2008/09.

The Kevin Mills and Associates reports (2006), '*The Natural Vegetation of the Municipality of Kiama NSW*' and '*The Fauna of the Municipality of Kiama, South Coast NSW Final Report*', are both available on the Kiama Municipal Council website.



Factsheets on Frogs of the Illawarra and Birds of the Illawarra developed under the regional Illawarra Biodiversity and Local Food Strategy for Climate Change Project

5.2 PRESSURE

The main pressures on biodiversity in the Kiama Municipality are habitat loss and fragmentation due to vegetation clearing, fire, predation by feral and domestic animals, overgrazing of habitat areas by stock, stream bank disturbance, pollution and invasion of weed species.

The *NSW TSC 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'. The key threatening processes are listed in Schedule 3 of the legislation. There were two new listings for key threatening processes in the *NSW TSC Act 1995* during the reporting period:

Invasion of Native Plant Communities by African Olive, *Olea europaea L. Subsp. Cuspidate*

Introduction and establishment of Exotic Rust Fungi of the order *Pucciniales* pathogenic on plants of the family Myrtaceae

For a full list of key threatening processes refer to the State of the Environment Report 2008/09.

5.2.1 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 is a legal requirement on landowners to control these weeds once declared. For a full list of weeds declared noxious in the Illawarra District Noxious Weeds Authority (IDNWA) control area please refer to the State of the Environment Report 2009, or the IDNWA website, accessed through the Southern Councils Group website at www.southerncouncils.nsw.gov.au. Information on common south coast weeds is available in the 'Grow me Instead' booklet available at Council and on-line.



'Grow Me Instead! And Illawarra District Noxious Weed Authority' brochures available from Council and the Illawarra District Noxious Weed Authority through the Southern Council Group

5.2.2 BUSHFIRES

Bushfire can pose a significant threat to biodiversity. According to the Kiama/Shellharbour District Rural Fire Service there were 6 vegetation fires in the Kiama and Shellharbour areas within the reporting period (pers comms, D.Bushby Rural Fire Service, 2011). This compares with 21 vegetation fires for the 2009/10 reporting period.

5.2.3 TREE LOPPING OR REMOVAL

Removal of tree, 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 Environment 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 358 permits issued to remove or prune trees. This was 28 more than last years' 330 permits.

5.3 RESPONSE

5.3.1 WEEDS

During the reporting period the Illawarra 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:

- Local weed control programs for private landholders and government agencies with 165 properties inspections for the 2010/11 reporting period. All nurseries and aquaria outlets were also inspected;
- All infestations of Class 2 and Class 3 noxious weeds on private lands were inspected and control treatments implemented by 30 June 2011. The only exception is Gorse which will be inspected in the next reporting period;
- All Class 4 weeds on private land were strategically targeted for control within the Kiama LGA according to local action plan guidelines;
- Eight section 18A Notices were issued;
- All Council lands with infestations of *Class 3 weeds were inspected and treated at least once and up to twice by 30 June 2010;
- All Bitou bush on Council controlled lands was inspected and treated by 30 October 2010. 5ha was aerially sprayed at Walkers Beach, Gerringong;
- All African love grass and Serrated tussock infestation were treated by 30th November 2010;
- Five alert weeds – Glory lily, Spiny burr grass, Sea Spurge, Coolatai grass and Montpellier broom were identified and controlled throughout the southern areas of the Kiama LGA;
- The two major water catchments, namely Crooked River and Minnamurra River were inspected along their length to ensure there were no new aquatic weed incursions

- 68% of rural roads and 48 (71%) of public reserves were inspected and/or treated for one or more noxious weeds by 30 June 2011. Four (4) non-rural roads were also treated for noxious weed infestations;
- Improved cooperation between stakeholders is being addressed through representation on 4 regional committees, 1 national committee and a subcommittee of the NSW Noxious weeds advisory committee (NWAC); and
- Kiama Council funding of \$29,850 was supported by NSW State Government funding (Industry and Investment) of \$29,550 for noxious weed control in the Kiama LGA.

*Class 3 weeds include Giant Parramatta grass, Gorse, Groundsel bush, St Johns wort, Mysore thorn and Water hyacinth.

For a full list of noxious weeds found within the Kiama LGA refer to the 2009 State of the Environment Report.

5.3.2 COUNCIL REHABILITATION PROJECTS

Council has continued to implement rehabilitation and revegetation projects within its parks, reserves and beaches within the Municipality. During the reporting period the following projects were undertaken:

- Ongoing maintenance and revegetation of Spring Creek Wetlands, Jerrara Dam, Bonaira Native Garden, Stead Reserve and Robert East Park
- Species labelling of 'species of interest' in Bonaira Native Gardens and Spring Creek Reserve has been started in the 2010/11 year



Signage installed at Spring Creek Red Cedar (*Toona ciliata*)

- Sanctuary Place quarry tree planting and picnic table installation
- Kaleula Headland restoration and vegetation survey of *Themeda* grassland on sea cliffs and headlands Endangered Ecological Community
- West Kiama riparian corridor additional planting and weed removal
- Union Creek riparian corridor weeding and replanting after construction works
- Rocklow rest stop Minnamurra, removal of weeds including significant stands of tree of heaven and replanting
- Riverside Drive Minnamurra, remove vine weeds including, bridal veil and replant sections of the riverbank
- Jerrara Dam weeding and revegetation of subtropical rainforest and *Zieria granulata* rock shelf
- Seven Mile Beach reserve removal of weeds including asparagus fern and weeds of national significance (WONS). Re-planting of tea tree shrubland



Before (above) and after (below) at Seven Mile Beach



- Stage 1 works of the bank stabilisation works on the Minnamurra River along 300 metres of Riverside Drive was completed in early July 2010



Stage 1 Completed Minnamurra River bank stabilisation

- Stage 2 and 3 works of the bank stabilisation on the Minnamurra River bends was started in May 2011 and is expected to be completed by late September early October 2011



Stage 2 & 3 Minnamurra River bends bank stabilisation

- National Tree Day Activities with Kiama High School took place on 9 August 2010. For Council sites at Gerroa Waste Depot there were over 1,000 trees, shrubs and grasses planted. Other sites within the Municipality included Seven Mile Beach, Rose Valley, Little Blowhole, Minnamurra Rainforest Centre, and Bombo Headland. These sites were supported by Conservation Volunteers Australia, local landholders, Landcare Illawarra and environment groups, lions club, Department of Lands and National Parks and Wildlife Service



Seven Mile Beach National Tree Day site

5.3.3 COMMUNITY, VOLUNTEER & LANDCARE REHABILITATION PROJECTS

Landcare, Conservation Volunteers Australia and other community organisations play an important role in rehabilitation and revegetation activities and capacity building and awareness of natural resource management issues in the community within not only the Kiama LGA, but across all of Australia.

The Kiama Municipality has 12 active Landcare groups including:

Gainsborough Chase Minnamurra Wetland Landcare

Bombo Headland Landcare

Little Blowhole Landcare

Werri Beach Dunecare

Gerringong-Gerroa Landcare liaison network

Upper Minnamurra Rivercare

Wallaces Creek Landcare

Jamberoo Mountain Landcare

Cedar Ridge Landcare

Seven Mile Beach Landcare

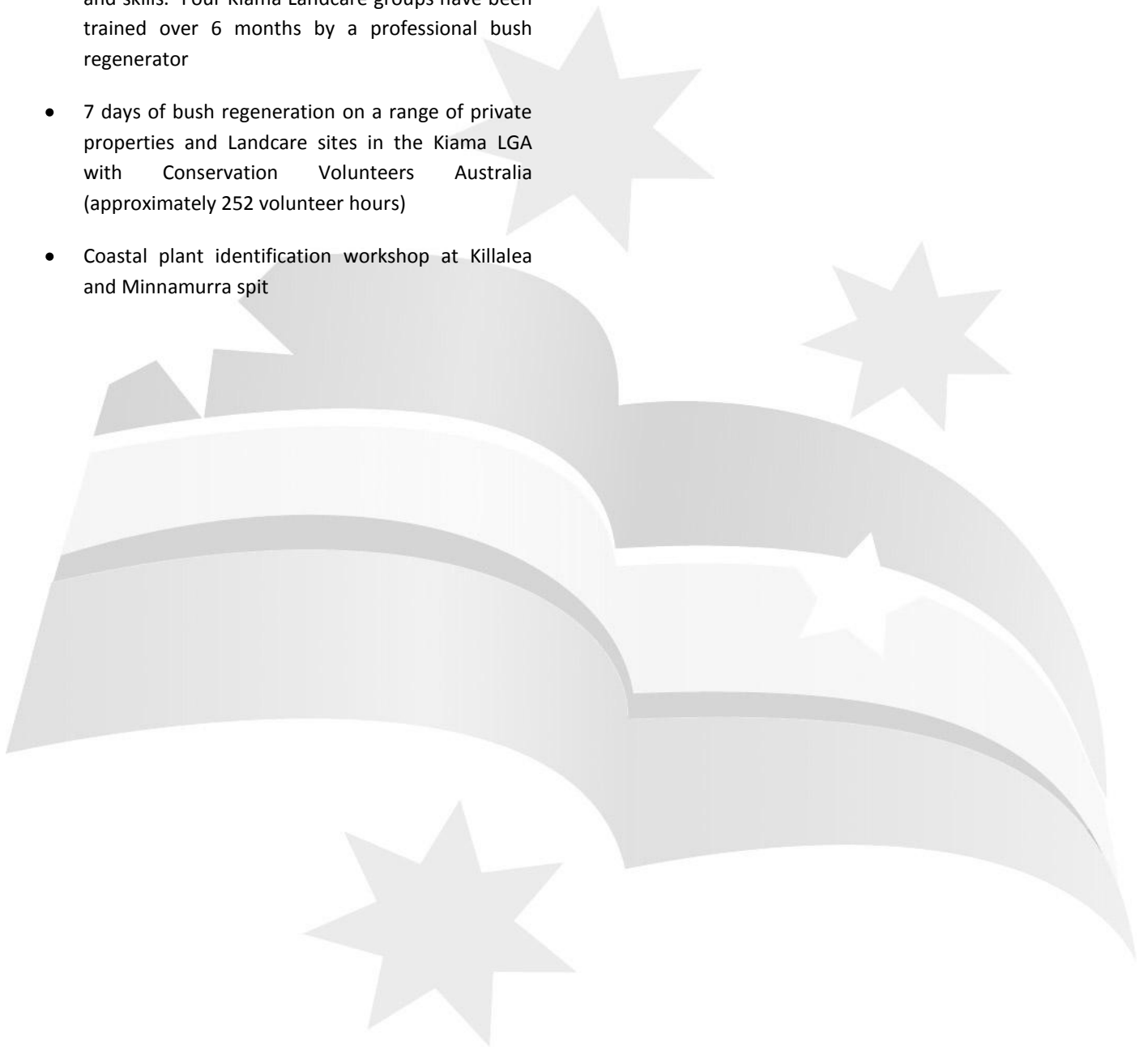
Kaleula Headland Landcare

Foxground Landcare

Landcare Illawarra are have supported a number of projects in the Kiama LGA for the 2010/11 year including:

- The Illawarra Woodland and Rainforest project funded by the Southern Rivers CMA and Caring for Country under the Tending Grass Roots program. Outcomes include over 2,000 different plants in a variety of woodland and rainforest species have been planted across the Kiama LGA on both public land and 14 private properties

- Foxground Landcare Dung Beetle project has released dung beetles on a number of properties in the Foxground area, funded by a community action grant
- Rainforest restoration project on Jamberoo dairy property funded by a community action grant
- Coastal Landcare and Bushland Regeneration training project, building volunteer's knowledge and skills. Four Kiama Landcare groups have been trained over 6 months by a professional bush regenerator
- 7 days of bush regeneration on a range of private properties and Landcare sites in the Kiama LGA with Conservation Volunteers Australia (approximately 252 volunteer hours)
- Coastal plant identification workshop at Killalea and Minnamurra spit



CHAPTER 6: WASTE

6.1 STATE

In the past Kiama Municipal Council has operated two landfill sites within the local government area, at Minnamurra and Gerroa. Both of these landfill sites are now closed and in the process of remediation and rehabilitation. There was also a Materials Recovery Facility at the Minnamurra Waste Depot which was closed in April 2008, and now all recycling is transported to facilities in Sydney Metropolitan Area for sorting and recycling.

A regional alternative waste treatment strategy and business plans are in the process of being developed and will set out the priorities for collection and treatment alternatives to effect further reductions in waste to landfill from our residential waste stream.

Council currently collects domestic waste on a weekly basis and recycling and green waste on alternate weeks. Council also provides 2 clean up days per year and a number of targeted recycling programs to reduce waste to landfill.

Table 6.1 shows the municipal waste to landfill, recycling and green waste diversion for the last 2 financial years. The NSW Waste Avoidance and Resource Recovery Strategy 2003 target for diversion from the municipal waste stream is 66% by 2014. Kiama Municipal Council is well positioned to meet this target with its current diversion percentage of 62.26%.

Please note the reason figures reported have changed since the last State of Environment is that the calculation is for the entire municipal waste and recycling stream figures not just the domestic waste and recycling. This is consistent with the advice provided by the OEH regarding the 66% diversion rate of the total municipal waste.

A consistent percentage has been applied to calculate Streets/Parks/Reserves waste and recycling, as this is collected combined with the commercial waste and recycling. A percentage estimate is also provided for commercial and green waste drop off.

The percentage figures are as follows:

Streets/Parks/Reserves waste = 50% of total commercial figure

Streets/Parks/Reserves recycling = 10% of total commercial figure.

Drop off recycling = 50% of total figure is attributed to commercial

	Tonnes 09/10	% 09/10	Tonnes 10/11	% 10/11
Waste landfill total*	4,574.76	42.06%	4,795.04	37.74%
Recycling total**	6,302.28	57.94%	7,910.94	62.26%
TOTAL	10,877.04	100%	12,705.98	100%

Table 6.1 Domestic Waste Stream Percentages to landfill

During the reporting period there were 137 new properties (1.6% increase) added to the domestic collection services, 121 urban and 16 rural.

6.2 PRESSURE

6.2.1 PRESSURES FROM WASTE GENERATION

Both population growth and behaviour are key contributors to volumes and types of waste entering landfill.

Population growth in Kiama LGA is fairly stable however surrounding areas are growing at a more rapid rate, putting pressure on regional landfill sites and processing facilities.

Emerging issue in waste include e-waste, and the proliferation of this type of waste, removing organics from the domestic waste stream, disposal of fluorescent lamps, disposal of batteries and diversion of mattresses from landfill.

In November 2010, Council held its first electronic waste recycling collection, "E-Cycle" recovering 37.2 tonnes. There is a planned national e-waste recycling scheme proposed to be implemented in 2012, however regional areas are likely to get the scheme later in 2013-14.

The estimated total waste (green waste, putrescibles and recycling) generated during the reporting period for domestic, rural, litter clean up, commercial and streets, parks and reserves was 13,688.07 tonnes. This is a 15.92% increase from the 2009/2010 reporting period.

During the 2010/2011 reporting period the total waste disposed of at the Shellharbour City Council facility was 5,367.99 tonnes, made up of the following:

*Urban garbage collection service	3,719.75
*Rural garbage collection service	244.15
*Streets/Parks/Reserves	572.95
Commercial waste	572.95
*Litter/Waste footpaths/parks/reserves	52.28
*Urban Kerbside Clean Up	205.91

During the reporting period 8,320.08 tonnes of materials were recycled at the Minnamurra Waste and Recycling Facility, consisting of the following:

Commercial recycling	393.4
**Streets/Parks/Reserves	43.71
**Drop off centre recycling	15.75
Commercial drop off recycling	15.74
**Kerbside recycling	2,335.89
**Rural recycling	146.85
**Steel	178.00
**Green Waste drop off	1,623.78
**Green Waste kerbside collection	2,898.08
**Kerbside Cleanup steel	62.96
**Street Sweeper waste	560.82
**E-waste	37.50
**Recycled Oil	3.60
**Batteries	4.00

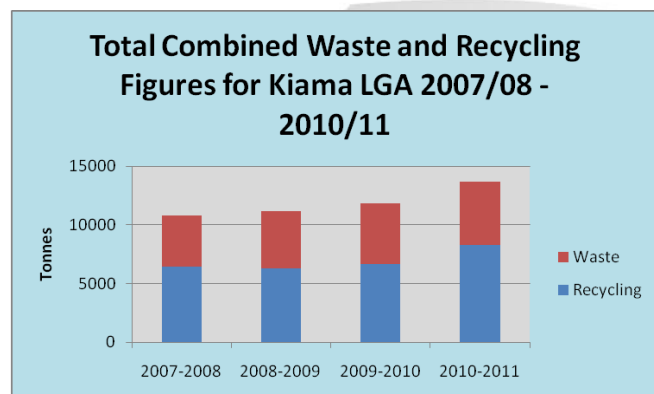


Figure 6.1 Waste and Recycling figures for Kiama LGA 2007/08 – 2010/11

6.2.2 ILLEGAL WASTE DISPOSAL

Illegal dumping of waste such as building and demolition waste, green waste, household items, household rubbish, abandoned cars and general littering have an impact on both visual amenity and the natural environment.

During the reporting period, Council investigated 85 illegal dumping complaints and 8 littering complaints, which is an increase of 42 from the previous reporting period. 5 penalty infringement notices under the *POEO Act 1997* were issued, 2 for littering, 2 for pollute waters and 1 for depositing advertising material on a vehicle.

6.3 RESPONSE

6.3.1 DEVELOPMENT CONTROL

Development Control Plan 25 (DCP) – Planning For Less Waste focuses on the building and demolition industries and aims to reduce the volume of waste to landfill from these sectors.

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 re-used, recycled or disposed of.

During the reporting period, statistics were recorded regarding building and construction waste from the 100 finalised development applications that were required to submit Waste Minimisation and Management Plans. The total estimated tonnage of waste disposed of, recycled or reused on or off the construction sites was 3,169.02 tonnes. Of this 2317.05 (73%) was recycled or re-used on site, and 851.98 (27%) was disposed of to landfill. This represents an decrease by 12% of waste recycled or re-used on site compared with the 2009/10 reporting period. These figures only cover developments over \$5,000 and do not include exempt development.

6.3.2 WASTE INITIATIVES

- School Clean Up Australia Campaign – 1,400 students participated.
- Clean Up Australia Day – 16 sites cleaned up, 250 volunteers, .9 tonnes of waste and 1.2 tonnes of recyclables collected.
- Assisted Minnamurra Public School with an “Environmental Poster” Competition by providing the prize for the winning entry.
- Kiama Council signed onto the State Government’s “Love Food Hate Waste Program”. It is envisaged to incorporate this program in council’s trial organics program scheduled for later in the year.
- 2011/12 Waste and Recycling Calendars printed and distributed to all households
- Two Composting Workshops were held on 7 May, 2011 as part of International Composting Week. A total of 40 participants were in attendance.



Composting workshop attendees May 2011

- Reviewed the current household kerbside clean up collections and considering several alternate options including an on-call service. Determination of new service to commence 2012/2013.
- 3 July, 2010 Second Hand Saturday conducted with 79 stallholders and approximately 1,100 attendees.
- 5 March, 2011 Second Hand Saturday conducted with 78 stallholders and approximately 1,000 attendees.
- Participated in regional mattress recycling program. A total of 53 mattresses were collected in this reporting period.
- A regional "Littering from Cars" program was conducted on Friday 27 May and Sunday 29 May, 2011. The program enlisted the assistance of Kiama Rangers to implement a Targeted Surveillance Program outside of Ranger's normal day to day inspections. A total of 100 people were approached and 7 verbal cautions were given.
- Conducted a "Scarecrow Sculpture" Competition with primary schools as part of World Environment Day activities. Presentation of prizes to winners was conducted as part of WED 2011 Community Garden Open Day and Kiama Future Care's "Sustainability Expo" held 5th June, 2011.



"Patch the Scarecrow" on display at Kiama Community Garden

- Continue to promote the NSW Government's Fridge BuyBack Program. As at June 2011, 243 fridges had been collected ranking Kiama 13th out of 45 participating councils in NSW.
- Kiama Council elected the lead council to design generic promotional material for electronic waste

that can be used by all councils in the Southern Councils Group.

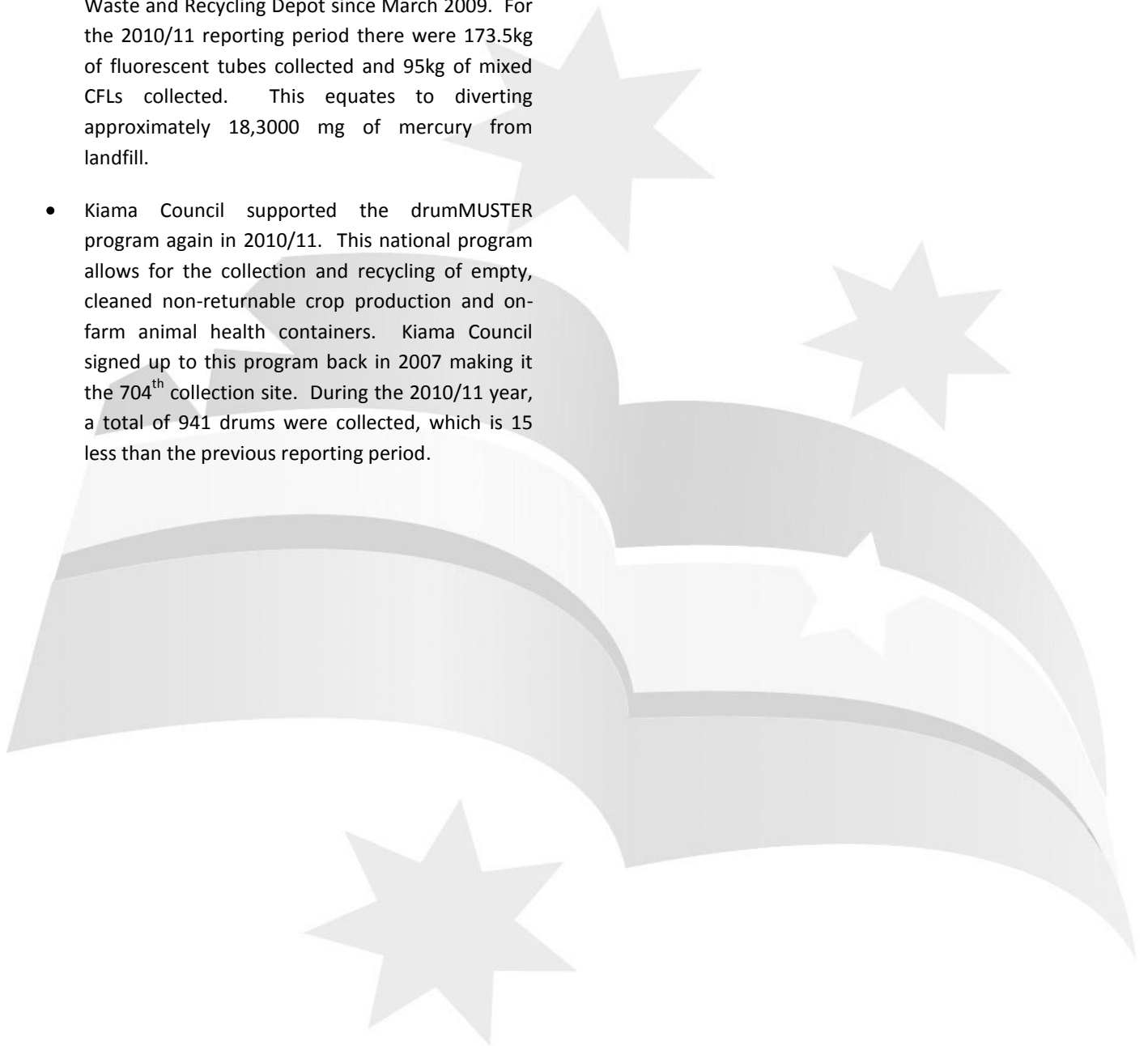
- As part of National Recycling Week, implemented Council's first electronic waste collection "E-Cycle" 8-13 November, 2010. A total of 37.2 tonnes was recovered.



Electronic Waste Recycling Collection "E-Cycle"

- Recognised and promoted Asbestos Week held first week of June.
- As part of Council's Public Place Recycling Program, infrastructure was erected including, double bin stands, new 240L Sulo bins fitted out with colour coded turbo bin lids and appropriate signage/stickers along Pacific Avenue, Warri Beach.
- Implemented recycling program at all council owned Holiday Parks over the summer period. Each site was assessed to determine most effective method of capturing more recycling during this period ie. Provision of yellow polywoven recycling bags for each camp site booking, 80L yellow lid recycling bins set up in designated camping grounds, colouring competition focusing on children, provision of educational materials.
- Environmental education material produced aimed at carnival operators attending the Kiama Show 2011.
- Following on from last year's success, the weekly residential recycling program was implemented during the peak holiday period from December 2010 to January 2011. An additional four services were undertaken during this period. This resulted in an additional 51.61 tonnes of recyclables collected during the period compared to last year's tonnages.

- Council continues to promote and participate in several recycling programs ie. Printer cartridge recycling, office paper recycling, mobile phone recycling, and at source recycling bins for each desk, recycling bins in staff kitchens. For the reporting period there was 91.18kg of printer cartridges recycled.
- The lamp recycling program for fluorescent tubes and CFLs has been operating at the Minnamurra Waste and Recycling Depot since March 2009. For the 2010/11 reporting period there were 173.5kg of fluorescent tubes collected and 95kg of mixed CFLs collected. This equates to diverting approximately 18,3000 mg of mercury from landfill.
- Kiama Council supported the drumMUSTER program again in 2010/11. This national program allows for the collection and recycling of empty, cleaned non-returnable crop production and on-farm animal health containers. Kiama Council signed up to this program back in 2007 making it the 704th collection site. During the 2010/11 year, a total of 941 drums were collected, which is 15 less than the previous reporting period.



CHAPTER 7: AIR

7.1 STATE

There are a number of sources of air pollution that have an impact on local and regional air quality such as motor vehicles, fire, solid fuel heaters, residential, industrial and commercial direct and energy consumption related greenhouse gas emissions, agricultural activities and natural phenomena such as dust storms.

The Office of Environment and Heritage (OEH) 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 three monitoring stations within the Illawarra Region at Albion Park, Kembla Grange and Wollongong.

The Illawarra Regional Air Quality Index (RAQI) combines data from the three regional air quality stations and uses the highest reading for the calculations. An Air Quality Index (AQI) of 100 corresponds to the relevant National Environment Protection Measure (NEPM) standard criteria for pollutants or the relevant NSW standard for visibility.

The RAQI count exceeded 100 on four occasions in the Illawarra region during the 2010/11 reporting period. Table 7.1 shows a comparison of the number of days in the year which fitted within each NEPM category, compared with previous years.

As can be seen over the last 3 years there has been an increase in the number of days in the Very Good category with a corresponding drop in the number of days in the Poor, Very Poor and Hazardous categories.

NEPM Category	No. of days 2008/09	No. of days 2009/10	No. of days 2010/11
Very Good	29	50	76
Good	277	263	264
Fair	45	39	21
Poor	8	9	4
Very Poor	2	1	0
Hazardous	4	3	0

Table 7.1: Air pollution indicator RAQI readings for Illawarra region 2008/09-2010/11

The number of complaints relating to air pollution in the Kiama LGA is shown in Table 7.2. The total number of complaints has increased by 8 since the last reporting period.

Type of complaint	2009/10	2010/11
Burning complaint to Council	5	5
Commercial complaint to Council	0	1
Dust complaint to Council	0	2
Odour complaint to Council	11	17
Odour complaint to OEH	0	
Industrial air complaint to OEH	0	2
Other air complaint to OEH	3	-
TOTAL AIR COMPLAINTS	19	27

Table 7.2: Air pollution indicator, Complaints relating to air pollution to Council and OEH

7.2 PRESSURE

The air quality in the Kiama Municipality is under pressure from a number of sources both local and regional. These pressures include motor vehicles, solid fuel heaters, burning of household refuse, vegetation clearing, waste disposal, dust from construction sites, direct emissions of pollutants and odours from industrial and rural activities and bush fires.

Vehicle Registration in the Kiama LGA

The latest figures on vehicle registrations in the Kiama Municipality show that in 2010/2011 there were 19,187 vehicle registrations, which is an increase of 527 (2.8%) vehicles since 2009/10 (RTA 2011). Of these registered vehicles, 3,566 are trailers (non fuelled).

According to the Roads and Traffic Authority Local Government Area Vehicle Registrations report (Roads and Traffic Authority, 2011), as of 30th June 2011, 80.59% of fuelled vehicles in the Kiama Municipality were fuelled by unleaded petrol, 2.3% by leaded petrol, 13.72% by diesel, 2.8% by LPG or LPG/petrol and 0.59% by other fuel types (or unknown). The fuel consuming registered vehicles made up 81.4% of the total registered vehicles, the remaining 18.6% of registered vehicles was made up of trailers and non-fuel consuming vehicles.

Bushfires and hazard reduction burns can also place pressure on local and regional air quality. The number of fires within the Kiama LGA for the 2010/11 reporting period are shown in Table 7.3. This is a decrease of 15 fires on the 2009/10 reporting period.

Type of Incident Subdivision Name	2010/11 Financial Year
Fires and other explosions	0
Building fires	2
Fires in buildings confined to non-combustible containers	3
Special structure fires	6
Outside storage fires	0
Mobile property type fires	6
Vegetation and other outside fires	17
Small vegetation fires	1
Outside rubbish fires	7
Explosions not as a result of fire	0
TOTAL	36

Table 7.3: Fires in the Kiama and Shellharbour LGA during 2010/11

7.3 RESPONSE

7.3.1 COUNCIL EMISSIONS REDUCTION ACTIONS

Fleet

Kiama Council has developed a Green Fleet Strategy and associated guidelines with the objectives of reducing fleet emissions.

As a major initiative Kiama Council has installed a Biodiesel tank at its works depot with the aim to run Council fleet and operational vehicles, plant and equipment on biodiesel. It is estimated that around 300 tonnes of CO₂ emissions can be abated by this initiative alone.

Cities for Climate Protection (CCP™)

The CCP™ program assisted Councils to deal with greenhouse gas emissions issues within their locality and as a result of the program and action plan was developed which sets out ways for Council to reduce greenhouse gas emissions.

There were a number of projects completed during the 2010/2011 reporting period which will have a direct impact on Council's greenhouse gas emissions including:

- Installation of a 10kW Photovoltaic Solar Power system on the Council Administration Building
- Power Factor Correction equipment installed at the Council Administration Building
- High Bay Lighting trial at the Council works Depot of induction lighting technology

7.3.2 CYCLEWAYS

Cycleways promote physical activity as well as improved air quality through providing alternative transport options for residents and visitors. Stages 1 and 2 of the Jamberoo Cycleway were completed during the 2010/11 financial year. A development application was also submitted for Stage 3 of the project. The list of priority cycleway sections can be seen in the 2009 State of the Environment Report.



Section of the new Jamberoo Cycleway

7.3.3 NO BURN POLICY

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. Through delegated authority from the OEH, Kiama Council is required to regulate outdoor burning in the Municipality.

During the reporting period there were 64 permits issued to create smoke pollution. This compares to 88 from the 2009/2010 reporting period and 133 from the 2008/09 reporting period.

CHAPTER 8: HERITAGE

8.1 STATE

8.1.1 Aboriginal Heritage

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

The Office of Environment and Heritage (OEH) 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 Kiama Municipality and within these sites, 97 site features were recorded as shown in Table 8.1.

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

Table 8.1: AHIMS record for the Kiama Municipality

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 under the Heritage Act and that the approval of the Heritage Council is required for any changes or demolitions.

At the National level the Department of Environment, Water, Heritage and Arts (DEWHA) has one site listed in the Register of the National Estate as an Aboriginal place, located in Berry, but the register does not have any specific details on the site.

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 DEWHA in the Register of National Estate and the National Heritage List. Items of State significance are listed in the NSW State Heritage Register. Items of regional significance are registered in Schedule 1 of the *Illawarra Regional Environmental Plan No. 1 1986* and amendments, as well as the *Illawarra Regional Environment Plan No. 2 – Jamberoo Valley 1987*.

Heritage items of local heritage significance are listed in Schedule 2 of Kiama's Local Environment Plan 1996. For a full list of heritage items identified in the above listed registers please refer to the State of the Environment Report 2009.

8.2 PRESSURE

Aboriginal heritage sites are under threat from 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 redevelopment, weather conditions, vandalism, general poor maintenance and lack of understanding.

8.3 RESPONSE

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 no Aboriginal Heritage Studies have been conducted.

Recent studies were carried out for:

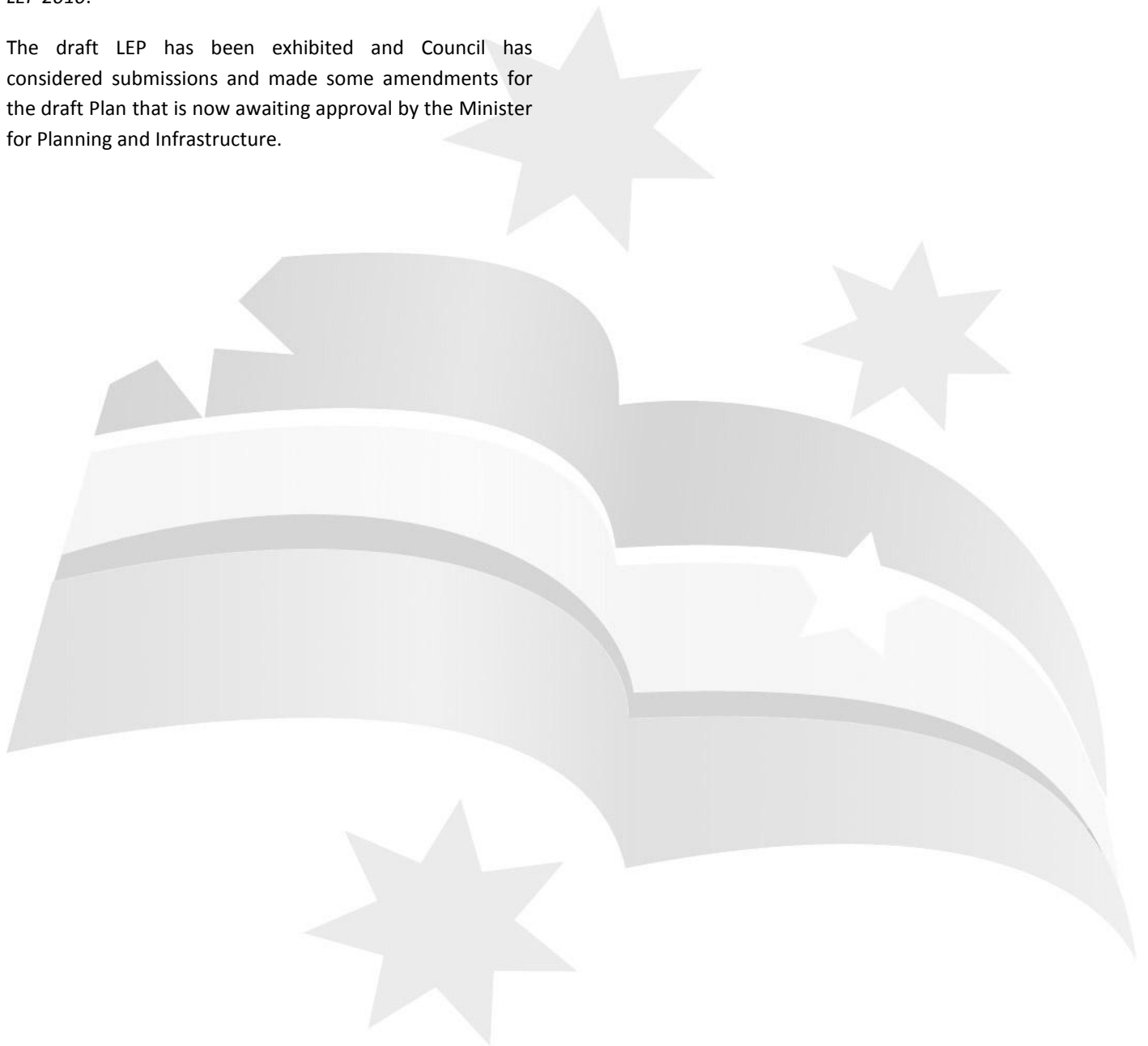
- Draft LEP (Amendment 63) - the Gerringong Cemetery extension site at Gerringong;

- LEP (Amendment 62) - the *Illawarra Fly* site at Knights Hill; and
- LEP (Amendment No. 40) - Gerringong Headland residential release site at Gerringong.

8.3.3 HERITAGE PROJECTS

Council engaged Truman, Zaniol & Associates to review the Municipalities heritage items and recommend those items which should be included in Schedule 5 of the *Draft Kiama LEP 2010*.

The draft LEP has been exhibited and Council has considered submissions and made some amendments for the draft Plan that is now awaiting approval by the Minister for Planning and Infrastructure.



CHAPTER 9: SUSTAINABILITY

A focus on sustainability both within Council's operations and within the community has become more and more apparent in the past few years. Sustainability at its core is aimed at reducing consumption of non-renewable resources and utilising our energy and water as efficiently as possible, as well as preserving the natural and cultural assets of our environment for future generations.

Kiama Council has undertaken many initiatives to not only identify strategies and potential future actions, but also make pro active changes to its operations and provide the community with educational and participatory events to help the Kiama Municipality become a more sustainable society.

9.1 KIAMA COUNCIL TOP 11 WATER AND ENERGY CONSUMING FACILITIES

Kiama Council collates its energy and water data through service provider Planet Footprint. The results for the top 11 energy and water using facilities are shown in Figure 9.1 and 9.2. Please note the top energy consuming facilities are ranked for the current year and the water consumption is ranked compared to the baseline year of 2002/03.

This data is being utilised to benchmark performance of the sites and show trends in consumption from year to year.

Facility	2009/10 Consumption (kWh)	2010/11 Consumption (kWh)
Kiama Leisure Centre	427,584	415,410
Blue Haven Independent Living	367,058	367,885
Kiama Council Chambers	356,307	339,365
Werri Beach HP	337,882	334,743
7 Mile Beach HP	333,604	321,617
Blue Haven Nursing Home/Hostel	323,382	323,160
Surf Beach HP	212,828	222,454
Kiama Library	181,770	171,117
Kendalls Beach HP	169,698	184,141
Kiama Showground Pavilion	131,360	144,398
Kiama Harbour Cabins	126,935	121,153
TOTAL	2,968,408	2,945,443

Figure 9.1: Electricity consumption for the Top 11 consuming facilities

There is a decrease of 22,965 kWh for the top 11 facilities between 2009/10 and 2010/11. Total electricity consumption for Councils operations has fallen by 0.3% between 2009/10 and 2010/11.

Facility	2002/03 Consumption (kL)	2010/11 Consumption (kL)
Seven Mile Beach Holiday Park	22,468	10,710
Werri Beach Holiday Park	15,856	7,176
Blue Haven Retirement Village (Nursing home and hostel)	11,158	8,276
Kiama Leisure Centre	11,121	7,605
Surf Beach Holiday Park	11,092	6,903
Kiama Sports Complex	8,815	1,968
Kiama Harbour Holiday Cabins	8,231	5,310
Blue Haven Retirement Village	8,028	12,469
Kendall's Holiday Park	7,911	6,651
Kiama Showground	7,088	2,316
Kiama Council Works Depot	3,938	1,129
TOTAL	115,706	70,513

Figure 9.2: Water consumption for Top 11 consuming facilities from 2002/03 financial year

Compared to 2002/03 figures there is a reduction in consumption of 39.05% in the top 11 facilities.

Compared with the 2009/10 water consumption figures for the facilities in Figure 9.2, the 2010/11 reporting period recorded a decrease of 11,485 kilolitres (14%).

There was a total Council water consumption reduction of 11.3 % between 2009/10 and 2010/11.

9.2 CLIMATE CHANGE AND SUSTAINABILITY STRATEGIES AND PROGRAMS

9.2.1 SUSTAINABLE KIAMA COMMUNITIES PROJECT

During 2010/11 reporting period the Sustainable Kiama Communities Project (SKC) was concluded. The following programs and initiatives have been implemented under the SKC project:

- Residential energy monitoring trial where 40 households had energy monitoring meters installed in their meter boxes with the aim of measuring the effectiveness of these meters in helping people reduce their energy consumption
- Solar hot water and renewable energy information evenings



Renewable Energy Expo, October 2010

- Weekly recycling trial
- Lamp Recycling Program
- Second Hand Saturday Waste Avoidance events
- Automated data loggers were installed across 6 of Councils highest water using facilities in partnership with Sydney Water. These data loggers provide real time information on water consumption which enables facility managers to see whether or not there are base flows (leaks) at their facilities. These data loggers have identified a number of leaks during the reporting period and will continue to be a valuable asset.
- A Health and Sustainability Policy was developed during the reporting period, and was adopted by Council at its November 2010 meeting.
- The Sustainable Kiama Communities project has developed a sustainability emailing list and produces a bi monthly newsletter which it sends to subscribers
- Green Vehicle Guidelines were drafted to be implemented under the Health and Sustainability Policy.
- A trial public place recycling program was implemented. Eight key public places and reserves were identified for the trial and as a result public place recycling services remain at these sites

9.2.2 ILLAWARRA BIODIVERSITY AND LOCAL FOOD STRATEGY FOR CLIMATE CHANGE PROJECT

The Illawarra Biodiversity and Local Food Strategy for Climate Change is a regional project between Kiama, Wollongong and Shellharbour Councils, funded through the NSW Environmental Trust. The project is concentrating on the two key areas of biodiversity and local food production

and security. The following was achieved during the 2009/10 reporting period:

Local Food Strategy

- The Living Classrooms project was awarded to Kiama Public School and the food garden installed. Education sessions conducted during Term 2 and 3 to 2011.
- The Kiama Community garden on-ground works were finished in November 2010 and the Community Garden Group established to develop the operational side of the garden. First crop was picked in December 2010. The group have been developing governance structures for the garden. The Hothouse and composting areas have been established.



The Kiama Community Garden

- A number of workshops and events for residents of the three Illawarra Councils were conducted during the 2010/11 reporting period including: Cheese, Introduction to Permaculture, Pickling and Preserving Workshops; 1 community film night attracting 166 paying viewers.
- The Low Cost meals Directory was evaluated, re-written and published.
- Funding was provided to 4 residents to undertake Permaculture Design Certificate training - \$1400 per resident. 13 applications were received from the community.
- The Edible Street Tree demonstration project commenced – “The Hillside Project” at the Kiama Sporting Complex including the employment of a casual project officer 7 hours per week.

Biodiversity Strategy

- The Illawarra Biodiversity Strategy was adopted by Kiama Council at its May meeting in 2011. The other 2 Illawarra Councils adopted the Strategy at their June meetings in 2011. The Illawarra Biodiversity Strategy outlines regionally coordinated programs of action for the Illawarra Councils which contribute to the State and National natural resource management targets. The Strategy also provides clear guidance to the allocation of internal and external funding to the highest biodiversity value natural areas under Council care and control
- A number of workshops for residents of the three Illawarra Councils were conducted during the 2010/11 reporting period including::
 - Private Conservation Law workshop
 - Plant propagation workshops
 - Eucalypt identification workshop
 - Spring Creek Open Day
 - A Fauna habitat tour
 - Grass identification workshop
 - Summer Discovery coastal walks program in partnership with Conservation Volunteers Australia. 4 Walks were held in the Kiama Municipality in January and February 2011



Spring Creek Open Day October 2010

- The Illawarra Bushland Database was reviewed and is being updated to be completed in the 2011/12 reporting period.
- On-ground works at Jerrara Dam Arboretum and Rocklow rest stop were funded under the project



Rocklow rest stop tree of heaven infestation before removal

9.3 COMMUNITY UPTAKE OF SUSTAINABILITY NSW GOVERNMENT REBATES AND PROGRAMS

Both the NSW State Government and the Australian Government have offered rebates and incentives to residents to promote the uptake of sustainable living initiatives and technologies. The breakdown of rebates by local government area has only been done for the NSW Government rebates, and the following are statistics for the Kiama LGA to 30th June 2011:

Rebate type	Number	*As % of households in Kiama LGA
Rainwater tank	249	2.84%
Hot water system	1,150	13.12%
Ceiling insulation	103	1.2%
Washing machine	247	2.81%
Dual Flush Toilet	48	0.54%

*Total households in Kiama 8,763 Source Australian Bureau of Statistics, 2006 Census of Population housing

9.4 SUSTAINABILITY INITIATIVES IMPLEMENTED THROUGH THE WASIP PROGRAM 2010/11

During the 2010/11 financial year, the following initiatives were implemented under the Waste and Sustainability Improvement Payments Program:

- 10kW photovoltaic system was installed on the Kiama Municipal Council Administration Building
- A self-bunded above ground fuel tank was installed at Council's works depot to run all operational vehicles, plant, equipment and corporate fleet on B100 biodiesel. Currently B50 biodiesel is being utilised due to an issue with one type of truck not performing well on B100 biodiesel. The biodiesel company is communicating directly with the truck company to work through the issue



The biodiesel tank installed at the Kiama Council Works Depot

- Holiday Parks source separation project where a recycling scheme was implemented targeting campers over the summer holiday period
- Composting and plant propagation areas for the Kiama Community Garden

Other projects carried over to the 2011/12 financial year include:

- Investigation of variable speed drive pumps for the Leisure Centre
- Sustainable Procurement training for staff
- Waste not DCP Guidelines review
- Sports ground recycling infrastructure upgrade



Kiama Council's 10kW photovoltaic system

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APPENDIX 1

	Testing site	Water quality parameter						
		pH	Turb	EC	AP	Faecal coliforms		
						Drinking (0 CFU/ 100ml)	Primary (150 CFU/ 100ml)	Secondary (1000 CFU/ 100ml)
Gerringong Gerroa Streamwatch Group	Crooked River under Gerroa Rd. Off footpath near caravan park	Yellow	Blue	N/A	Yellow	Red	Blue	Blue
	Werri Lagoon, Birrebungi Reserve	Blue	Blue	N/A	Red	Red	Blue	Blue
Ooree Creek Conservation Volunteers Australia	Ooree Creek @ cattle crossing	Green	Blue	not tested	Red	not tested	not tested	not tested
	Ooree Creek @ Rose Valley	Green	Blue	Blue	Red	not tested	not tested	not tested
	Ooree Creek u/s cattle crossing	Green	Blue	not tested	Yellow	not tested	not tested	not tested
Kendalls Beach Streamwatch Group	Rose Valley Creek, Rose Valley Road	Green	Blue	not tested	Yellow	not tested	not tested	not tested
	Rocklow Creek, Princes Highway	Blue	Blue	N/A	Red	not tested	not tested	not tested
	Rocklow Creek, upstream of Minnamurra River junction	Red	Blue	N/A	Red	Not tested	Not tested	Not tested
	Bonaira Creek Lagoon, south Kendalls Beach	Yellow	Yellow	N/A	Red	Red	Blue	Blue
	Minnamurra River tributary (unnamed creek), Thornett Way wetlands	Blue	Blue	N/A	Red	Red	Red	Blue

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, 2011)