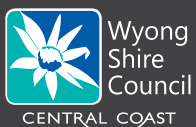




# shaping our environment



Wyong Shire Council  
SHAPING OUR ENVIRONMENT

2011/12

*creating a caring, prosperous, sustainable Wyong Shire*



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# INTRODUCTION

# Introduction

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## About this Report

Under the provisions of the NSW Local Government Act 1993 Wyong Shire Council is required to prepare an annual State of the Environment Report (SoE). This report covers the period 1 July 2011 to 30 June 2012 and provides:

- an evaluation of the current condition of the Shire
- the key driving pressures which can affect the local environment and responses to these pressures
- the predicted trend for the future – based on the key drivers and the response undertaken

Some of the key driving pressures facing our environment arise from past decisions that have left an ongoing legacy of impact. In addition, our changing climate and growing population confront us with a new variety of challenges. Fortunately, there is evidence that we have the means to disconnect, at least to some degree, the relationship between growth and environmental impact. More people and more economic activity may mean more resource use, but the actual impact on the environment depends on where and how the growth occurs, and how we live our lives.

## Structure of the Report

The document has been structured around ten major themes: Sustainability, Land, Catchment Management, Biodiversity, Air Quality, Climate Change, Energy, Waste Management, Heritage and Noise. These themes align with those covered in previous reports. Changes to this format are likely in coming years as this is the final year of transition to the new Integrated Planning and Reporting framework.

Each of the ten major themes in the SoE are reported on under the following headings.



**At a Glance** – An overview of the issue and the current state

**Current State** – Assessment of the issue (as declining, stable or improving)



**Key Drivers** – The pressures impacting the issue



**Response** – What is being done to address the issue/drivers



**Future Trends** – Assessment of the likely state of the issue given the response

**References** – Additional information sources on the issue

Information and expertise within Council, state government agencies and private industry have been drawn upon to support this document.

The state rating table that appears at the beginning of each chapter provides a condition rating for the current and previous two reporting periods. The effectiveness of past responses to key driving pressures can be determined from the state rating trend.

The SoE report forms part of the feedback loop to assess whether our community is moving towards its 20-year vision, as outlined in the Community Strategic Plan adopted in June 2011. A table outlining the Community Strategic Plan objectives and how Council is working towards them is at the back of this report on page 67.

# Sustainability in Action 2011/12

*Sustainability is best defined as "meeting the needs of the present without compromising the ability of future generations to meet their own needs"*  
(Our Common Future, Brundtland Commission 1987).

Ultimately, sustainability for the Council is about doing things better and improving our environment, community, economic performance and governance. Council has a pivotal role to play in protecting the things and places our community values, providing essential services and helping shape our way of living, for now and for future generations. We are committed to creating and supporting a culture of sustainability in Council and the community.

Council has adopted a set of six key sustainability principles. These have been created by staff with community input and are based on what we value and were benchmarked against national and international principles to ensure they were up to date with current best

practice. It is important to note that Council uses a broad definition of sustainability, encompassing much more than only ecological or environmental considerations.

The principles are a key part of Council's endeavour to improve sustainability across our organisation and within our community and were created to guide everything from planning and development decisions to every-day on-ground actions. The six sustainability principles are key to Wyong's future vision as outlined in the Community Strategic Plan (2030).

Council's Sustainability Principles are:

## Think holistically. Act responsibly.

A sustainable Wyong Shire recognises that **people, nature and the economy** are affected by our actions. We plan for the long-term and recognise shorter term needs.

We integrate these considerations into our decision making, working with the forms and functions of the **natural environment** and with our **social and economic** attributes as the basis of our **planning and development**.

## Good processes. Improved outcomes.

A sustainable Wyong Shire demonstrates **leadership, accountability, transparency and financial responsibility** in all decision making.

We measure our prosperity by the health and wellbeing of our people, **environment and economy** and strive for **continuous improvement**.

## Care for nature.

A sustainable Wyong Shire recognises the intrinsic value of **biodiversity and natural ecosystems**, protecting the environment for the benefit of all life forms.

We commit to the sustainable use of natural resources to maintain healthy ecological systems for the **benefit of present and future generations**.





Riparian workshop for community volunteers

### Smart, local, adaptable.

A sustainable Wyong Shire responds to future challenges by embracing **innovation and acting timely and effectively.**

We base our actions locally, mindful of our place in the world, building on our strengths and special qualities of **place and community.**



### Lead by example.

A sustainable Wyong Shire leads by example with actions for **positive change** and supports visionary policies and practices within the community.

We involve people with the relevant **skills and knowledge** in our projects and recognise there are many ways to achieve our goals. We embrace the opportunity to **learn from our actions** and the actions of others.



### Work together.

A sustainable Wyong Shire community **builds partnerships** by engaging with and listening to all facets of society, working together for the benefit of the whole.

We have a **culture of collaboration** and participation that encourages innovation, sharing of resources, engagement in decision making and **shared accountability** for all results.



# Sustainability at Wyong Shire Council

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Sustainability is everyone's responsibility. However, Council has a leadership role in helping improve our understanding of sustainability and to provide good examples of how to act more sustainably, and inspire others to do likewise.

The organisational performance of Council is pivotal in setting a good example for the rest of the community. This means that current practices should not lead to a reduction in environmental, economic and social values, and should enhance the total quality of life now and into the future.

## Sustainability at Wyong 2011/12

Over the past 12 months Council has continued to work towards transforming its attitudes, practices, governance and culture to enable it to deliver services and projects to the Wyong Shire community in thoughtful, efficient and innovative ways.

By working towards a whole of council approach to sustainability Council activities are increasingly being measured against a 'quadruple bottom line'. In using economic, environmental, social and governance criteria to make its decisions, Council continues to improve its operations to function in a more sustainable, holistic and integrated way that meets community priorities.

For example, in 2011/2012 Council celebrated the following sustainability achievements:

- Completed the award winning Mardi-Mangrove Link Project, a key element in the region's long-term water supply.
- Developed an internationally recognised and top ten ranked approach to asset management determining asset and project alignment to achieve quadruple bottom line evaluation.
- Launched and achieved outstanding results for the Tuggerah Lakes Estuary Management Plan stage 2, including a dedicated website *Love our Living Lakes*.
- Continued its multi-pronged progress with Gosford City Council on the formation of Central Coast Water Corporation.
- Delivered a record year for road improvements and footpath construction using innovative sustainable designs.
- Doubled the capacity of the Buttonderry Waste Management facility methane extraction program.
- Prepared Town Centre Masterplans, a Natural Area Bush Fire Management plan, a Learning Communities Strategy, a Community Facilities Strategy, a Playground Strategy, and an Engagement Framework and Strategy.
- Delivered innovative community development programs such as a Social and Creative Enterprise program, and an Indigenous Wellbeing program.
- Implemented a range of innovative sustainability education and engagement trials and leadership programs for Council staff to improve Council's performance and culture of sustainability.
- Further embedded sustainability into key areas of Council through improved policy development, decision making tools and staff induction.
- Continued implementation of ongoing sustainability initiatives outlined in previous State of the Shire reports.
- Developed a stringent Environmental Management System (EMS) with the aim of establishing best practice in environmental protection.
- Improved the customer experience with e-lodgement for applications, streamlined complaint management, and rollout of Resident ePanel and online Consultation Hub.
- Facilitated community workshops for residents on sustainability practices such as composting, worm farming and chook rearing.
- Funded the implementation of projects delivering reduced emissions equal to or greater than the green energy equivalent that could be sourced through Council's Green Energy Fund.
- Transformed a former landfill site to a first grade sporting complex at Bateau Bay, rebuilt Shelly Beach and Soldiers Beach Surf Clubs, and constructed the Hamlyn Terrace Sports and Community Centre.



# Improving Council's culture of Sustainability

Council's CEEchange project '*Working Sustainably*' focussed on trialling Community Education and Engagement (CEE) activities to help Council staff better understand and apply sustainability in order to embed sustainability principles into Council operations.

The education and engagement activities undertaken in 2011/12 included:

- Awareness raising and education for sustainability (all staff)
- *Working Sustainably* LEGO Serious Play™ workshops (pilot engaging 13% of all staff)
- Collaborative network building for Council's collaborative network, the S-Team
- Staff training in sustainability, leadership, management, and induction for new staff
- Developing cross-organisational strategic partnerships and alliances between Units

The '*Working Sustainably*' trials provided significant value to Council and demonstrated the role that education and engagement can play towards driving and improving Council's culture of sustainability, performance and outcomes (including efficiencies and cost savings). The staff workshops using the LEGO Serious Play methodology were particularly successful with identified outcomes including:

- Staff being exposed to multiple perspectives from across the different Council business areas
- A number of participants reported they have modified their thinking and behaviour e.g. switching off lights, planting native trees, recycling, replacement of air conditioning system with a more sustainable system, replacement of taps, planning for solar panels on community centres, replacement of cleaning products with green products, buying local, increased use of the Swap Station (office equipment recycling)
- Participants made a wide range of personal commitments to sustainability

Independent research (including staff focus groups, longitudinal staff surveys, interviews etc) contributed to rigorous evaluation of the trials, which produced positive results and valuable findings for future sustainability work at Council.

***I'm looking forward to providing my input to growing the Sustainability movement at Council and throughout Wyong Shire.***

**Alex.**

***I'm looking forward to learning new skills, particularly in change management and sustainability leadership. This training will help me become a driver for sustainable change within Council and our community.***

**Kurt.**

Pictured: Tabitha Kuypers, Kurt Sorensen, Alex Beavis and Michael Neville.



## Building the right new assets

In 2011 a new model for project assessment was adopted by Council — one that has been regarded by many as the ‘gold standard’ of holistic planning.

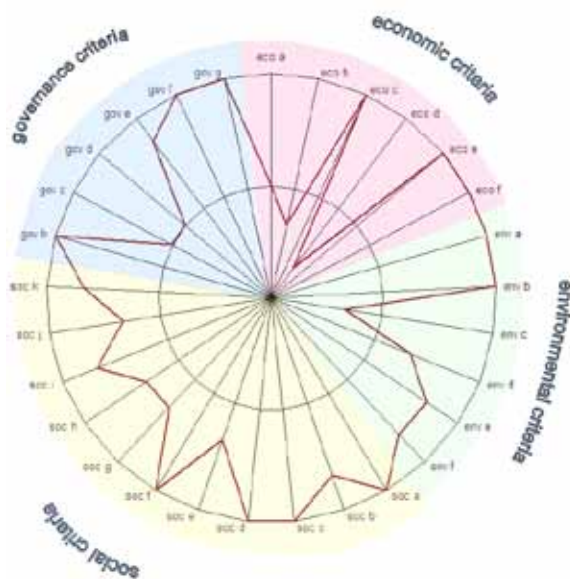
One of the key questions leading to the development of this new approach to asset management was how the Council could deliver better projects — meeting the needs of the people of Wyong more effectively, performing better financially and environmentally and using a best-practice approach to governance. Clever planning and thoughtful decision-making was the priority.

All new projects are now rated by an interdisciplinary Project Assessment Team (PAT), according to a quadruple index of factors. Council derived these factors from its community strategic vision:

- economic viability
- community benefit
- environmental impact
- governance

Each proposed project now receives a ‘score’ and a unique quadratic graph, enabling teams to make quick judgments about a project’s sustainability and value to the community. The interdisciplinary nature of the PAT means that projects receive a rigorous evaluation, which takes into account perspectives from the range of council management areas.

**The result?** Robust project management, diversity of staff engagement in the project process and, most importantly, community confidence — that only the right projects are built at the right time and in the right way.



The Quadruple Bottom Line

## Snapshot of Rating

The following tables provide a summary of the current ratings reported in previous State of Environment Reports versus 2011/12 ratings.

Section	2009/10	2010/11	2011/12
Highlands and Valleys	Stable	Stable	Stable
Coastal Lowlands and Floodplains	Declining	Declining	Declining
Coastline and Wallarah Peninsula	Declining	Declining	Declining
Lakes	Stable	Stable	Stable
Creeks and Rivers	Stable	Stable	Improving
Wetlands	Declining	Declining	Declining
Oceans	Stable	Stable	Stable
Biodiversity	Declining	Declining	Declining
Air Quality	Declining	Declining	Stable
Climate Change	Declining	Declining	Declining
Energy	Declining	Declining	Declining
Waste	Stable	Stable	Stable
Non-Aboriginal Heritage	Stable	Stable	Stable
Aboriginal Heritage	NR	NR	Declining
Noise	Data Unavailable	Data Unavailable	Data Unavailable

Year	Improving	Stable	Declining
2011/12	1	6	7
2010/11	0	6	7
2009/11	0	6	7

## Current and future Challenges

While some improvements have been made, there is always more that can be done to improve quality of life in the Shire and, in turn be more sustainable. Future efforts to further improve the sustainability of Wyong Shire Council will include:

- Roll out of Council’s Environmental Management System (EMS).
- Organisational focus on expanding the current target and indicator set for measuring Council’s progress towards sustainability.
- Implementation of a whole-of-council sustainability policy and strategy to enhance Council performance.
- Community education and engagement continued with residents, businesses and all Council staff.



# LAND

Pioneer Dairy open day



*Land management issues are divided into six major landscape regions, namely highlands and valleys; coastal lowland and floodplains; coastline and the Wallarah Peninsula. Each has its own distinct issues, pressures and responses.*

## Highlands and Valleys

The highlands are the areas in the south and west of the Shire which form higher hills and plateaus. Large areas are protected by State Forest (Ourimbah and Wyong) and Conservation Lands. There are also farms and orchards around Kulnura, and rural residential areas around Glenning Valley and Fountaindale.

The valleys are primarily the areas west of the F3 Freeway on either side of the freshwater sections of Ourimbah Creek, Wyong River and Jilliby Creek. The valleys include the water supply catchment for the Shire's drinking water and the site of the proposed Wallarah 2 Coal Project.



### State Rating

2009/10	2010/11	2011/12
Stable	Stable	Stable

At least 65% of Wyong Shire soils continue to be protected by some form of native bushland cover including State Forests, National Parks and natural bushland; with many of these areas occurring in the valleys and highlands. It is in these and other vegetated areas such as wetlands and restored stream banks where valley soils are not declining.

The Central Coast Regional Strategy (2008 - 2031) limits expansion of the urban footprint by protecting land west of the F3 Freeway from further residential development until after 2031. This will help to protect the region's water supply catchment from inappropriate development.

In spite of this, in November 2007, a Part 3A Project Application was lodged with the then Department of Planning (DoP)

by the Wyong Areas Coal Joint Venture (WACJV) for a proposed underground coal mine known as the Wallarah 2 Coal Project. WACJV proposed to extract coal from under the Dooralong and Yarramalong Valleys using longwall mining techniques. The Minister for Planning formally refused the application on 3 March 2011, citing uncertainty of:

- Subsidence predictions;
- Surface water quality impacts;
- Ecological impacts; and
- Heritage impacts.

WACJV are in the process of undertaking additional studies to accompany a new application which is planned for lodgement in late 2012. It is anticipated that, once lodged, the assessment process would take approximately 12 months and involve further community consultation.



Pressures in the highlands and valleys include:

- Sedimentation
- Soil and streambank erosion (due to clearing and domestic stock intrusion)
- Fertilizer, sewerage and chemical pollution of creeks
- Grazing and farming practices (such as chicken or turf farms)
- Mining (gas and coal resources)



Wyong Shire Council, in conjunction with rural landowners, local Landcare groups and with funding from the Federal Government's Caring for Our Country grant, rehabilitated 2.39 km of degraded streambanks in the water supply catchment area during 2011/12.

Council and the community will have the opportunity to review and provide comments on the amended "Walarah No.2" project application once it is placed on exhibition, which is expected to occur in late 2012.

The Regulation and Compliance section of Council recorded the following pollution complaints regarding land/property. The type of pollution is not identified.

### Number of pollution complaints

2006/07	132
2007/08	99
2008/09	71
2009/10	70
2010/11	179
2011/12	112



Continuing streambank rehabilitation works for the upper Wyong River and Ourimbah Creek will see an improved catchment quality. The Department of Planning and Infrastructure's Central Coast Regional Strategy seeks to protect Wyong Shire's environmental values through limiting future development west of the F3 Freeway. A coal mine in the sensitive valleys catchment may result in a very different future scenario.

### REFERENCES

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=2150](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=2150)  
<http://www.walarah.com.au/>

## Coastal Lowlands and Floodplains

The coastal floodplains surround the lower estuarine parts of Wyong River, Tumbi Creek, Ourimbah Creek and Wallarah Creek and the lowlands are the rolling hills which surround the floodplain. They include the expanding suburbs to the west and north of Tuggerah Lakes such as Mardi, Wyong, Watanobbi, Wadalba, Warnervale, Woongarah, Hamlyn Terrace, Halloran, Kanwal, Gorokan, Charmhaven, Blue Haven, San Remo and Doyalson. The Warnervale Town Centre and Wyong Employment Zone are situated within the lowlands.



### State Rating

2009/10	2010/11	2011/12
Declining	Declining	<b>Declining</b>

Previous State of the Shire reports have indicated increasing pressures on the coastal lowlands and floodplains, a trend that has continued into 2011/12. The most significant areas of impact are on soils presently located within these landscape regions due to development in the catchment of the floodplains. Ongoing subdivision of lowland greenfield areas causes a steady loss of their soils and bushland. Large areas of the lowlands are and will continue to be developed in the future.

Past management practices and increasing stormwater inputs from new suburbs have altered the wetting and drying cycles of many natural wetlands and creeks. The impacts of hydrological changes include loss of biodiversity, deposition of silt, altered groundwater recharge, weed invasion and loss of floodplain flood mitigation capacity.

The Department of Planning and Infrastructure are currently working on the North Wyong Shire Structure Plan, which will be the focus of future greenfield development in Wyong Shire. The North

Wyong Shire Structure Plan is expected to accommodate some 19,500 dwellings (16,500 dwellings in greenfield and 3,000 within the Warnervale Town Centre).

The rezoning of the Coal and Allied sites at Nords Wharf, Middle Camp and Gwandalan in the Wyong and Lake Macquarie Council areas were approved by the NSW Government in April 2012. The rezoning is expected to lead to the development of 935 dwellings across 100 hectares of land, comprising of 90 dwellings at Nords Wharf, 222 dwellings at Middle Camp and 623 dwellings at Gwandalan, subject to development application approval. It will also trigger the transfer of approximately 848 hectares of high conservation value lands to the NSW Government to be reserved as national parks. Key threatened species, populations and ecological communities will be protected as a result of the rezoning, including significant areas of the following endangered ecological communities: Swamp Mahogany – Paperbark Forest, Riparian Melaleuca Swamp Woodland, Narrabeen Foreshore Redgum – Ironbark Forest.

Rezoning proposals for the three sites had to be withdrawn and then re-lodged in 2010 after the Land and Environment Court found the use of “memorandums of understanding” between the former Minister for Planning and proponent were invalid. Since that time, the rezonings and associated planning agreements (which outline State infrastructure funding and conservation land arrangements) have been re-exhibited and the planning agreements signed ahead of the rezoning. The planning agreements deliver State infrastructure contributions to help fund facilities including Pacific Highway intersection upgrades, the Gwandalan Public School expansion and a new emergency services facility for the South Wallarah Peninsula. These final planning agreements are available at <http://majorprojects.planning.nsw.gov.au>. The Planning Assessment Commission (PAC) recommended the rezoning be approved, subject to minor changes that have been adopted.

In particular, it requested that the Middle Camp residential area be excluded from the NSW Housing Code to ensure future development is compatible with the adjacent State heritage listed Catherine Hill Bay Cultural Precinct. Additionally, following the PAC advice, houses at Middle Camp associated with the former mining operations were listed as local heritage items. Coal and Allied is also currently seeking concept plan approval for residential development across the three sites. The PAC will be the consent authority for this proposal.



- Development pressures that continue to cause a steady loss of soils and bushland in the lowland and floodplain areas
- Fragmentation of Ecological Endangered Communities by development
- Altered and increasing stormwater flows that threaten natural wetlands and streams
- Changes to environmental policy and legislation that will provide stronger controls over threatened vegetation



Council Actions and Programs undertaken:

- Draft Development Control Plan - The DCP will provide planning and development controls to protect all waterways and waterbodies such as wetlands, within in the Shire.
- Draft Development Control Plan - Water Sensitive Urban Design (WSUD) is in the final stages of development, with all appropriate departments within Council consulted throughout its development.
- Porters Creek Integrated Water Cycle Management (IWCM) Scheme which will incorporate significant stormwater harvesting from the Porter’s Creek catchment, and re-use within the Porters Creek and Wyong River catchments.



- The final Lower Wyong River Floodplain Risk Management Study and Plan is complete and is awaiting to be considered and adopted by Council.
- The Porters Creek Floodplain Risk Management Study and Plan is currently underway as part of this study, the Porters Creek Flood Study which was completed in July 2009 was revised with additional information, including recent large scale developments in the catchment.
- The draft Lower Ourimbah Creek Floodplain Risk Management Study and Plan has been completed and is awaiting Council approval for public exhibition.
- A preliminary draft of the Tumbi Umbi Creek Floodplain Risk Management Study and Plan has been completed with Council currently reviewing and editing the draft report.
- The Tuggerah Lakes Floodplain Risk Management Study and Plan is currently underway. Consultations with appropriate departments within Council have been held during the initial development of the study and plan.
- Other Floodplain Risk Management Studies and Plans for particular catchments in the Shire will be prepared in the near future. These are dependent on State and Federal Grant funding. These studies will update Council flood studies and information that are over 10 or 20 years old.
- Constructed wetlands (and monitoring): Council currently maintains 16ha of constructed wetlands represented by 25 sites across the Shire at a cost of \$140,000 per annum. The primary purpose of the wetlands is to improve water quality for receiving environments downstream. The number of constructed wetlands in the Shire is planned to grow significantly over the coming years with the implementation of Water Sensitive Urban Design Principles. An intensive monitoring program is being undertaken by Council to determine how effectively these devices are at

removing pollutants from stormwater with the information feeding back into improved design.

- Estuary Management Plan Implementation continued (see Water and Catchment Management for further details on these actions).



While the response to the pressures on these areas is improving there is still considerable scope for protecting bushland and floodplains through an integrated approach which combines conservation and catchment water cycle planning.

The silting of Tumbi Creek (that has been reported in previous years) is indicative of what is occurring in other catchments within the Shire. This can be expected to continue in the future with continued development, especially if management practices continue to focus on the symptoms rather than the causes of environmental problems.

## Coastline and Wallarah Peninsula

Wyong Shire's coastline is the narrow strip of rocky headlands, beaches and connecting sand dunes between the ocean and Tuggerah Lakes. The coastline has the highest percentage of conservation land of any area of the Shire. The Wallarah Peninsula extends to the northern boundary of the Shire and into Lake Macquarie Local Government Area.



### State Rating

2009/10	2010/11	2011/12
Declining	Declining	Declining

Overall the quality of the coastal lands are slowly declining due to ongoing residential and resort development,

recreational impact, stormwater impacts, erosion and coastal recession and the invasion of weeds such as Bitou Bush. The issues of coastal erosion and recession are predicted to increase in future years due to the impacts of climate change. Coupled with the level and location of existing development along the Shire's coast, rising sea levels will result in increased vulnerability over time.

Properties at coastal erosion hotspots, such as Cabbage Tree Harbour, The Entrance North and Hargraves Beach, are at ongoing risk of coastal hazards, including slope instability, coastal erosion and coastal inundation. Council announced (in February 2008) its intention to build a toe drainage structure to stabilise the bluff behind residents' homes as a result of coastal erosion that had occurred at Cabbage Tree Harbour in the June 2007 storm event. Construction commenced in May 2012 and has now been completed (August 2011). Council resolved a shared funding arrangement of approximately \$1.95 million with the Office of Environment and Heritage (OEH). To date the Toe Drainage Structure has been successful in reducing slope stability issues. By armouring the toe of the slope, the toe drainage structure reduces undercutting from wave attack and also addresses drainage issues by trapping fine sediments that are at risk of erosion from groundwater discharge.



- Increasing pressure from population growth and resultant development
- Climate change predicts rising sea levels and an increase in severe weather events leading to a heightened risk of coastline erosion and coastal recession
- Existing development subject to increased vulnerability to erosion over time



Council has recently prepared a Coastal Zone Management Plan (CZMP), which was adopted in December 2011 following extensive community consultation. The Plan examines coastal erosion hazards now, and into the future, in accordance with the State Government's sea level rise benchmarks of 0.4m by 2050 and 0.9m by 2100. The Plan incorporates a full study of the coastline for environmental, social and economic issues and develops action plans that incorporate a range of planning, management and construction options. Since the adoption of the Plan, draft amendments to relevant chapters in Council's LEP and DCP documents have been developed in accordance with the Coastal Zone Management Plan. These chapters will likely be available for public exhibition in late 2012.

Council continues to support Coastcare and Dunecare groups who undertake valuable dune protection and bush regeneration works supported by Councils Landcare program. Six volunteer groups located in Budgewoi, Noraville, Norah Head and The Entrance North are restoring approximately 100ha of dune ecosystems and coastal headlands.

The primary stages of major dune restoration works at The Entrance North and southern Budgewoi Beach are completed, with maintenance work an ongoing issue. Sixteen hectares of Bitou Bush has been treated, 800m of foredune reshaped and fences constructed to capture sand and reduce erosion. These areas have been planted with local native coastal species and beach access points upgraded to direct pedestrian traffic through the dunes, reducing erosion and damage to regenerating vegetation. Council aims to seek funding for continued coastal restoration and revegetation for a number of locations along the Wyong coastline.



The Coastline and Wallarah Peninsula will continue to be placed under development pressure due to population growth, the number and type of rezonings that occur which could have a significant impact on this area. The recently adopted CZMP includes a land use planning framework for areas affected by coastal hazards. Development controls for properties within 2100, 2050 and immediate coastal hazard zones aims to limit inappropriate development in affected areas.

Future predictions of sea level rise and increased storm activity due to climate change suggest there is a risk of continued and increased erosion of the dune and bluff systems in years to come. As this occurs it will potentially result in a significant number of properties being adversely affected, many so much so that they will become uninhabitable. The CZMP incorporates the precautionary principle and recommends the sustainable policy of managed retreat with adaptation and protection measures where possible and feasible. This aims to reduce the level of vulnerability into the future. As Council understands more about the implications of climate change planning controls can be modified through an adaptive management strategy, so as not to sterilise coastal lands before recession makes development impossible. Council is also developing a Climate Change Policy for adoption in 2012/13.

## Entrance Channel Coastal Monitoring Camera

Council recently resolved to proceed with the installation of a new coastal environmental monitoring camera at The Entrance Channel. The camera was installed by CoastalCOMS at the Tasman Towers high rise on 1 June 2012.

For many years significant resources have been invested into managing North Entrance Beach and the Entrance Channel through channel dredging programs, beach nourishment, dune restoration, sea bird monitoring, surf life saving and other programs. Data provided by the camera will assist in developing better knowledge and understanding of site specific coastal dynamics, which will prove useful for:

- Floodplain, Estuary and Coastal Management
- Dredge operations
- Surf Life Saving (the location is nationally recognised as a Coastal Black Spot for drowning)
- Coastal development risk assessment (coastal erosion and sea level rise)

Council is also investigating the possibility of a live feed of imagery to be available on the Council website.



Saltmarsh Tuggerah Bay





# CATCHMENT MANAGEMENT

# Catchment Management



AT A GLANCE KEY DRIVERS RESPONSES FUTURE TRENDS

*From a geophysical perspective Wyong Shire can be viewed as a complex system of adjacent catchments that feed a variety of waterways including wetlands, creeks, lakes and the ocean. The activities that occur within each catchment affect the health of the receiving waterway. Subsequently, waterway management is best approached from a catchment scale. Considering the role that waterways play in characterising Wyong Shire, there is significant pressure to ensure each catchment is managed appropriately.*

## Lakes



### State Rating

2009/10	2010/11	2011/12
Stable	Stable	Stable

Tuggerah Lakes estuary consists of three interconnected shallow lagoons: Tuggerah Lake, Budgewoi Lake and Lake Munmorah. They are largely isolated from the ocean and are the receiving water bodies at the bottom of the catchment.

The Tuggerah Lakes Estuary Management Plan (EMP) was adopted in 2006. Its primary objective is to facilitate long-term improvements to the condition of the Tuggerah Lakes estuary and encourage the sustainability of its ecological systems. The EMP Implementation Program is detailed further in the Response sub-section.

In addition to the activities outlined in the EMP, Council, in partnership with the Office of Environment and Heritage (OEH) undertakes a Beachwatch Program. Each month recreational water quality is monitored at 22 popular swimming locations in the Shire. During the summer reporting period, 17 ocean beaches and five coastal lake sites were tested weekly for contamination using the faecal indicator organism enterococci. These results are used to assess compliance with the National Health and Medical Research Council's *Guidelines for Managing Risks in Recreational Water* (NHMRC 2008).

Since 1999, the majority of the 22 sites monitored have achieved a high level of compliance with the NHMRC 2008

guidelines. At times however, some of the coastal lake sites have been found to have high faecal indicator levels. This can be attributed to stormwater water pollution collected within the catchments feeding out into the Tuggerah Lakes system. A summary of the annual results of the monitoring program is included in the NSW State of the Beaches report (available on the OEH website).

The number of people volunteering in Landcare, Bushcare, Coastcare and Dunecare groups to restore natural areas remains stable, with the number of Landcare groups decreasing slightly.

Year	Groups	Sites
2006/07	32	51
2007/08	32	51
2008/09	36	47
2009/10	41	52
2010/11	42	56
2011/12	39	53

An additional staff member was employed on a permanent basis to increase the level of support provided to these groups. Council also provided resources for 21 Landcare groups, including project materials such as native plants, tools, personal protective equipment, contracted bush regeneration and material for Landcare community nurseries.

Over \$270,000 of external funding was secured or utilised by Landcare groups for projects including:

- Ourimbah Creek floodplain rainforest and wetland regeneration at the Palm Grove Ourimbah Creek Landcare site
- WyCare network support funding.
- Reduction in Noxious Weeds (Crofton Weed) in the South Chain Valley Bay Wetland.

- Habitat protection for Little Terns at The Entrance North.
- Caring for our Coast program including bush regeneration to support Landcare groups at Budgewoi Beach, Lakes Beach South, Norah Head, and The Entrance North.

A National Green Jobs Corps team comprising of 20 young local people also volunteered on Landcare sites at The Entrance North, the Lakes Beach, Norah Head, Lake Munmorah, Budgewoi, Wyong, Summerland Point, Tumbi Umbi and Kanwal, and assisted with the Tuggerah Lakes Estuary Management Plan streambank rehabilitation works.

The Community Environment Network (CEN) undertook the following projects:

- The Stepping Stones Project (Wyrrabalong to Wyrrabalong): a partnership between Bateau Bay Bushcare, the Community Environment Network and Wyong Shire Council. It aims to link North to South Wyrrabalong National Park with a green corridor by expanding and improving the quality of remnant vegetation. Project sites include Coleridge Road Reserve, EDSACC Oval, Saltwater Park, Peter Clifford Reserve and the Long Jetty foreshore. The project has also held a number of community workshops including National Tree Day 2011 at EDSACC oval and ongoing Water Quality Testing training and monitoring of the drains along the Long Jetty Foreshore. The Hunter Central Rivers Catchment Management Authority funded bush regeneration at Peter Clifford Reserve in 2011, which has dramatically transformed the reserve. The natural regeneration at this site has exceeded expectations and some strategic buffer plantings of

the degraded edges of the reserve will minimise weeds re-entering the site. Stepping Stones bushcare group, formed in 2010 through the project, is gaining momentum and currently meets fortnightly, maintaining, removing weeds and revegetating various locations in the Stepping Stones Corridor.

- Land For Wildlife (LFW) is expanding in Wyong with 6 new LFW registrations during the 2011/12 reporting period, bringing the total number of LFW members in Wyong to 74. Some of these registrations have had bush regeneration activities taking place to remove weeds of national significance (WONS) and environmental weeds on their property. This will allow native plant species to regenerate and in turn provide better habitat for fauna in these areas. Land For Wildlife will have a greater focus in the Wyong Shire in 2012/13, with numerous workshops proposed to engage landholders in key corridor areas in the shire.
- During 2011/12 Waterwatch groups have been monitoring water quality in a range of areas including Spring Creek (Blue Haven), Wallarah Creek, Wyong River, Ourimbah Creek, Tuggerah Lakes, Lakes Foreshore at Long Jetty, Jilliby Creek, Little Jilliby Creek, Lake Macquarie at Mannering Park and wetlands at Pioneer Dairy Tuggerah, Blue Haven and Glenning Valley.

As a major employer in the region, Delta Electricity has a strong local sponsorship program supporting the social, educational, cultural, sporting and business development in local communities. Delta's investment of around \$200,000 per annum supports local government in improving local amenities, volunteer organisations (such as Progress Associations), primary and secondary school communities and charitable community service organisations. This support includes sponsorship of Landcare in the North of the Shire. In 2011/12, nine Landcare groups were sponsored by Delta for the following projects.

Group	Materials
Budgewoi Beach Dunecare	Tools and materials for propagation facility
Buff Pointers Landcare	Contract bush regeneration
Chain Valley Bay South Bushcare	Native plants
Colongra Bay Landcare	Materials and native plants
Hargraves Beach Dunecare	Tree guards
Lake Munmorah Landcare	Native plants, tree guards and erosion control materials
Lakes Beach United Dunecare/Coastcare	Native plants, tools and materials
Norah Head Coastcare	Native coastal plants
Northlakes Landcare	Contracted bush regeneration and materials



- Continuing population growth and resultant development pressures in the catchment
- Stormwater pollution and siltation reaching lakes
- Community expectations



### The Tuggerah Lakes Estuary Management Plan (EMP) Implementation Program

Has now completed its first four years of work. In 2011/12 works continued to be funded by the Federal Government *Caring for Our Country* (CFoC) grant, Stormwater Management Charge, Tourist Park Cluster Funding and Council funding.

In 2011/12, Council has partnered with a number of State Government organisations to implement works under the Estuary Management Plan in line with CFoC objectives. Through the partnership with the Office of Environment and Heritage, Council is gaining valuable knowledge and understanding of the lake and catchment's dynamics and interactions. Through the partnerships with National Parks and Wildlife Service and the Hunter-Central Rivers Catchment Management Authority, Council is able

to implement a broader on-ground works program to improve the health of Tuggerah Lakes and its catchment.

The EMP identifies a five year schedule of works to achieve improvements in four key Action Plans: Water Quality, Ecology, Socio-economic and Knowledge & Management. These Action Plans involved works for the 2011/12 financial year as follows.

#### Water Quality

- A total of 18.54km of streambank rehabilitation was undertaken by Council and the Hunter-Central Rivers Catchment Management Authority.
- Under Council's program, streambank rehabilitation and establishment works were undertaken on 10 reaches along Ourimbah Creek, two reaches along Wyong River, one reach along Spring Creek and one reach along Wallarah Creek. The total length of new rehabilitation works in this program was 2.64km.
- The Hunter-Central Rivers Catchment Management Authority supported 18 landholder projects which will rehabilitate 15.9km of streambank through bush regeneration and stock exclusion works.
- Designs completed and approvals underway for future reaches along Wyong River, Ourimbah Creek and Spring Creek. Construction to commence in 2012/13.



- Construction of stormwater treatment works underway or completed at:
  - Heritage Drive, Kanwal
  - Colongra Bay Road, Lake Munmorah
- The Office of Environment and Heritage devised and commenced a water quality monitoring program on behalf of Council. This program is in line with State wide monitoring programs and aims to determine the ecological health of the lakes. The information from this program is shown in the form of report cards for defined areas of the lakes and can be found on the Tuggerah Lakes Estuary website: [www.loveourlivinglakes.com.au](http://www.loveourlivinglakes.com.au)

## Ecological

- On-ground works were undertaken on three constructed saltmarshes at Lucinda Avenue, Killarney Vale. These works complete the active saltmarsh program, with saltmarsh rehabilitation in the next financial year focussing on a range of passive rehabilitation methods including bush regeneration, the fencing of key existing saltmarsh sites and installation of interpretive signage.
- Saltmarsh maintenance continued at six active saltmarsh sites in Tuggerah Lake and Budgewoi – These sites are located at Long Jetty, Berkeley Vale and Halekulani.
- Access controls were implemented at two natural wetlands in the Tuggerah Lakes catchment, Peter Clifford Reserve and Blue Haven Wetland. These works will protect the wetlands from illegal dumping and unauthorised access.
  - The access controls at Peter Clifford Reserve complement rehabilitation works being undertaken by the Stepping Stones project, with separate funding from the Australian Government's CFoC.
  - The access control works at the Blue Haven Wetland will be complemented by targeted weeding to be undertaken throughout the next financial year.
- The National Parks and Wildlife Service conducted weed removal and protection works including control of feral animals in Wyrribalong National Park and Colongra Nature Reserve.

## Socio-Economic

- Continuation of shared pathway construction at Buff Point (950m)
- Construction of shared pathway at Colongra Bay (600m)
- Construction of shared pathway at Osborne Park (550m)

Following the design of the boat ramp upgrade at Saltwater Creek in 2009/10, approval for funding under the EMP Cluster Plan was approved by Crown Lands. However, a need for complementary upgrades to adjoining carparks were also identified to proceed in conjunction with the boat ramp works. No work under this action plan was undertaken during 2011/12 due to no funding source identified for the carpark works.

## Knowledge and Management

- A Monitoring, Evaluation, Reporting and Improvement Plan for the CFoC program has been developed. This program will capture information to determine the success of the various components of the CFoC Program in implementing the Estuary Management Plan. Data collected will help Council and its partners to adaptively manage the works to ensure the most successful outcome is achieved for the program and to inform future management.
- The Office of Environment and Heritage continued work on the development of a wrack and ooze model for the lakes to complement the previously developed hydrodynamic and ecological response models. This will help Council to better understand these issues and strategically manage them into the future. Work with Council's Communications unit to develop estuary report cards for the Council's website was also undertaken, this program uses the data collected from the water quality monitoring program.
- The last financial year saw the completion of the Love Our Living Lakes website, EMP branding strategy and communications and

- marketing strategy to further increase the engagement and education collaboration with the community
- A number of community engagement and education events were held with over 500 residents in attendance, including the following.
  - Four catchment crawls of the Tuggerah Lakes catchment, from Kulnura to the lakes
  - Three landowner workshops in the valleys, including one run in conjunction with the Hunter-Central Rivers Catchment Management Authority
  - Three fishing clinics for people from local disadvantaged groups
  - An education program commenced for primary schools in the Porter's Creek Wetland catchment, this is being run in collaboration with WetlandCare Australia
  - A partnership with International Student Volunteers resulted in 16 volunteers working with Council's bush regeneration team on a number of streambank and saltmarsh rehabilitation projects



The lakes will continue to be put under pressure from urban development and human activities in the catchment. The implementation of the Tuggerah Lakes Estuary Management Plan is aiming to strengthen resilience of ecological systems within the catchment to buffer these impacts.

Community awareness and associated behaviour change are expected to improve through a greater understanding of the value of the estuary. This will be achieved through extensive education, communications and engagement programs.

## Creeks & Rivers

Wyong Shire has six tributaries, all of which enter the Tuggerah Lakes estuary: Wyong River, Ourimbah, Spring and Wallarah Creeks in the west, and Tumbi and Saltwater Creeks in the south. Wyong River and Ourimbah Creek provide the majority of Wyong's water supply. Provision of adequate environmental flows is necessary to maintain the ecological integrity of these streams.



### State Rating

	2009/10	2010/11	2011/12
Wyong River	Stable	Stable	Improving
Spring-Wallahah Creek	Stable	Stable	Improving
Tumbi Creek and Saltwater Creek	Stable	Improving	Improving

Previous State of the Shire reports were indicated as declining but have stabilised more recently for the condition of the streams feeding into Tuggerah Lakes. Streambank rehabilitation works undertaken over the last 15 years (and ongoing) in the water supply catchments and projects undertaken as part of the Tuggerah Lakes Estuary Management Plan (EMP) are progressively addressing streambank erosion issues.

Streambank rehabilitation works undertaken in the water supply catchment and under the EMP will address areas of significant erosion and improve the riparian condition along the Shire's creeks and rivers.

The three estuarine river sites monitored in the Tuggerah Lakes catchment under the Beachwatch Program showed good compliance with the NHMRC (2008) swimming water quality guidelines with only 16 instances of non-compliance being recorded for the three sites.

## Stream Flows and Water Extraction

During 2011/12 monthly rainfall was mostly above average for the stream catchments. The following graphs display monthly streamflows for Ourimbah Creek and Wyong River as compared to monthly drinking water supply extractions during the reporting period. Extractions were closest to monthly streamflows in May of 2012 when streamflow in Wyong River was recorded as 1,709.34ML and 1,324.6 ML of water was extracted.

Streamflows & Extractions from Ourimbah Creek, July 2011 to June 2012



Streamflows & Extractions from Wyong River July 2011 to June 2012





- Stormwater runoff, erosion and sediment transfer from urban areas affecting the ecology of our creeks and rivers
- Level of rainfall places pressure on the environmental stream flows for Wyong River and Ourimbah Creek
- The proposed Wallarah 2 Coal Project has the potential to affect the ecology of streams in the water supply catchment



During 2011/12 Council staff and landholders rehabilitated 18.72km of streambanks in the Shire. This work was undertaken for a number of projects including the Tuggerah Lakes Estuary Management Plan Implementation Project, rehabilitation of sites following the Mardi-Mangrove Pipeline Link Project and Council's catchment management program. More detail on these projects is provided below.

### Mardi-Mangrove Pipeline Link Project & Council's Catchment Management Program

Council's catchment staff and landholders rehabilitated 180 metres of streambanks and rehabilitated 1,834m<sup>2</sup> of degraded areas in the water supply catchment on ten sites at Wyong Creek, Yarramalong and Mardi. 4,180 native trees, shrubs and groundcovers were planted across the sites at a cost of \$43,225. The work also involved the control of extensive stands of environmental weeds such as Privet, Lantana and Camphor Laurel.

Work on several of the sites was undertaken by Council staff to rehabilitate areas degraded by the construction of the Mardi-Mangrove Pipeline Link Project, a Federal Government funded project through the Water Smart Australia program.

Another \$22,380 was spent maintaining sites rehabilitated over the last three years

bringing the total expenditure on the program for the 2011/12 year to \$65,605.

### Tuggerah Lakes Estuary Management Plan Implementation Project (EMP)

The streambank rehabilitation program under the EMP achieved 18.54km of streambank rehabilitation within the Tuggerah Lakes catchment throughout the 2011/12 financial year. These works were undertaken by Council staff and also landholders utilising grants awarded through the Hunter-Central Rivers Catchment Management Authority; all of this work was funded through the Australian Government's Caring for Our Country (CFoC) grant.

The Council's component of works in 2011/12 included the following.

#### Wyong River:

- 1.5km of streambank rehabilitation works on two sites. These works included 1.35km of fencing to protect the riparian zone, the removal of weed species and replanting the areas with locally native species – including groundcovers, shrubs and trees.

#### Ourimbah Creek:

- 0.93km of streambank rehabilitation works on 10 sites. These works ranged from small bush regeneration jobs to works requiring re-alignment of large fallen trees.

#### Spring Creek:

- 0.06km of streambank rehabilitation works were undertaken at one site in Spring Creek. A number of noxious weeds were removed and a near-vertical bank was reshaped. Approximately 2,500 locally native plants were replanted at this site.

#### Walarah Creek:

- 0.15km of streambank rehabilitation works were undertaken on one site in Wallarah Creek. Works included the protection of riparian vegetation, removal of Weeds of National Significance and a large erosion hole was appropriately lined with rock to prevent further erosion. Approximately 500 locally native plants will be replanted at this site.

The Hunter-Central Rivers Catchment Management Authority supported 18 landholder projects throughout the Shire, which will rehabilitate 15.9km of streambank through bush regeneration and stock exclusion works.



Implementation of the WSUD DCP and streambank rehabilitation works in the catchment under the Estuary Management Plan and other programs in conjunction with better sediment and erosion controls will aim to improve catchment condition and ultimately water quality and lake ecology.

Water Sharing Plans are implemented to extract water supply needs while ensuring adequate environmental flows remain in place to maintain aquatic ecosystems.

# Wetlands



## State Rating

2009/10	2010/11	2011/12
Declining	Declining	<b>Declining</b>

Council has a number of significant natural wetlands in the Shire which in combination cover an area of more than 1,600ha. The condition of these wetlands ranges from excellent (Enterprise Drive, Wyee, Gwandalan) to poor (Tumbi, Toukley), depending on the extent to which development and increased stormwater flows has affected them. Freshwater and brackish wetlands are an extremely important part of the natural landscape and provide habitat for a diverse range of flora and fauna, assist in nutrient cycling, and provide a means for sediment trapping and flood control.

Impacts on natural wetlands and sensitive aquatic environments can be mitigated through implementation of proper stormwater management practises which serve to improve water quality and reduce the volume and rate of stormwater runoff. There are 25 constructed wetlands maintained by Wyong Shire Council covering a total area of 16 Ha, these combined with rainwater tanks and stormwater harvesting intend to reduce the impacts from urban development.

Past management of stormwater has altered the wetting and drying cycles of many natural wetlands and creeks by delivering increased runoff too frequently to the floodplain. Altered hydrology (increased stormwater runoff, modified drainage, and changes to natural surface and groundwater flow) threatens the condition and long-term survival of natural wetlands and streams. The stress of altered hydrology can result in extensive tree dieback, premature tree fall, weed invasion and little or no recruitment of native wetland vegetation species. Altered fire regimes, mine subsidence, catchment modification, water pollution, weed and pest infestation, removal of vegetation and vandalism also threaten the health and longevity of Wyong Shire's wetlands.



- Increasing development; which leads to changed stormwater flows, increased pollution loads, tree death and weed invasion.
- Adoption of Water Sensitive Urban Design Policy to guide new development and Council works.
- Development of Porters Creek Stormwater Harvesting Scheme in order to facilitate development within the Porters Creek catchment in a controlled and sustainable manner.



An Integrated Water Cycle Management (IWCM) Strategy was formulated in 2006 to mitigate impacts on Porters Creek Wetland associated with development of the Wyong Employment Zone (WEZ) and Warnervale Town Centre (WTC). An IWCM strategy has also been developed for the Warnervale Precinct 7a development area. One key element of the IWCM strategy is to capture and treat urban runoff and to divert excess stormwater around Porters Creek wetland. The IWCM strategy consists of a combination of water quality and water diversion works. Water quality requirements are mainly provided by artificial wetlands, but also by allotment and streetscape works. These are designed to reduce the sediment and nutrient load from runoff prior to it entering the Porters Creek Wetland or being pumped to Wyong River.

The water diversion works, or stormwater harvesting scheme, consist of storages, pump stations and pipelines designed to divert water around the Porters Creek Wetland to Wyong River. It is not possible to divert flows around the Porters Creek Wetland without the use of a pumped system. The discharge point into Wyong River is at the Wyong River Weir. This provides the option of discharging stormwater either upstream of the weir for use in directly supplementing the town water supply, onto the weir for use in environmental flow substitution thereby indirectly supplementing the town water supply or downstream of the weir without contacting the town water supply.

Other Council Actions and Programs undertaken in 2011/12 include the following.

- A longer term target identified in Council's Management Plan is to reduce pollutant loads entering the lake and implement Water Sensitive Urban Design (WSUD). A WSUD DCP Chapter and Technical Guidelines have been approved for public exhibition by Council. It is planned to exhibit this Chapter with Council's new Consolidated DCP 2012 concurrently with the new Wyong Local Environmental Plan 2012.
- Recommendations in the Porters Creek Wetland Management Plan include monitoring of flows in the Porters Creek catchment. Water level measurement equipment was installed during 2010 at the downstream end of the Porters Creek before it enters Wyong River. The completion of a flow rating curve for the site will enable the water level measurements to be converted into flow measurements. This will be recorded as baseline data and will assist with the management of the IWCM scheme once it is operational. Further sites in the Porters Creek Catchment are to be investigated for the installation of flow measurement equipment.
- Full-scale intensive water quality monitoring of the Myrtle Brush Park Constructed Wetland is to commence in 2012/13. To date, some physico-chemical indicators have been monitored for approximately six months. Once running this monitoring will provide important data on how effectively constructed wetlands are removing pollutants from the stormwater and will inform future constructed wetland design.
- Work on implementing the Tuggerah Lakes Wetland Management Plan has begun. Control works to limit unauthorised access and illegal dumping were undertaken at the Blue Haven wetland. Weed control works will be undertaken in the 2012/13 financial year to improve the ecological condition of the wetland. These works



are part of the Tuggerah Lakes Estuary Management Plan Implementation Program and are funded by the Australian Government's *Caring for Our Country* grant.



Overall the Shire's wetlands are continuing to decline. However, stabilisation or a reduced rate of decline may be seen once the implementation of the Wetland Management Plan begins and the WSUD DCP chapter is adopted and implemented for new development.

In relation to Porters Creek wetland, the stormwater harvesting scheme will be progressively rolled out as new development comes on line thus mitigating the impacts of the new development. There are strategies in place to cater for existing areas of development, (Watanobbi, Wadalba, Kanwal, Lake Haven etc.), however these are currently unfunded. Council must investigate grant funding and other sources of funding in order to implement the scheme in the future.

## OCEANS



### State Rating

2009/10	2010/11	2011/12
Stable	Stable	Stable

Wyong Shire has 35km of coastline that includes open beaches, sheltered bays and rock platforms. From the limited marine environmental data currently available to Council it appears that ocean water quality is satisfactory, although stormwater pollution continues to remain an issue of concern. However, as the four significant intertidal rock platforms within the Shire are not monitored, the illegal and inappropriate collection of marine life and subsequent damage to aquatic ecosystems within the coastal zone has continued unabated.

In relation to the amenity of the coastal zone, Council continues to maintain its beaches and surf life saving clubs to a level satisfactory to residents' needs. In June 2010 the Federal Government committed \$5 million to upgrade surf clubs in Wyong Shire and Council has now rebuilt surf clubs at Soldiers and Shelly beaches with the Entrance, Entrance North and Lakes beaches surf clubs receiving refurbishments.

Wyong Shire beaches are popular with residents and tourists alike. Of the 17 ocean beaches monitored under the Beachwatch program there were no instances of non-compliance with NHMRC (2008) swimming water quality guidelines.

Recent storm events have highlighted the vulnerability of the coastal zone with properties at Cabbage Tree Harbour (Norah Head), Hargraves Beach and The Entrance North considered at risk from coastal erosion processes. These areas are of growing concern due to issues arising from climate change. Similarly, many coastal environments will increasingly become subject to inundation and wave damage as a result of sea level rise and increased storm intensity.

Treated sewage effluent discharges from the Norah Head and Bateau Bay (Wonga Point) outfalls continued to meet OEHL volume and quality licence requirements during the reporting period. Average daily discharges through 2011/12 are provided in the table below.



- Climate change including sea level rise and increased storm intensity
- Future population and development will continue to place pressure on sensitive coastal environments
- Treated sewage discharge from ocean outfalls
- Urban runoff from roads, sewer overflows, spills, industrial activities and building sites being the most significant source of pollution for the near-coastal marine environments
- Runoff from urban areas - may be contaminated with sediment, nutrients, hydrocarbons, heavy metals, pathogens, and other chemicals



Wyong beaches are regularly monitored for swimming safety in accordance with the NHMRC *Guidelines for Managing Risks in Recreational Water* (2008). Program results are reported to Council on a monthly basis. Water quality results are published in the annual NSW State of the Beaches report which includes a summary of Beachwatch activities over the previous year and a summary of water quality along the NSW coast. Annual State of the Beaches reports are available on the OEHL website.

The recently adopted Coastal Zone Management Plan (see Coastline and Wallarah Peninsula page 98) aims to address issues relating to coastal hazards

Ocean outfall discharge – Treated Sewage Effluent 2011/12			
		OEHL licensed average daily discharge (kilolitres)	Actual average daily discharge (kilolitres)*
Outfall	Norah Head	40,000**	28,540
	Wonga Point	25,000	7,986

\* Covers effluent actually discharged to ocean but does not include treated sewage effluent diverted for non potable uses.

\*\* Norah Head licensed average daily discharge increased from 35,000 to 40,000 Kilolitres per day by the then DECCW in 2009-2010.



arising from storm events and sea level rise. The Plan incorporates a full study of the Wyong coastline for environmental, social and economic issues and develops action plans that incorporate a range of planning, management and construction options. The CZMP incorporates the precautionary principle and recommends the only sustainable policy of managed retreat with adaptation and protection measures where possible and feasible. This strategy aims to reduce the level of vulnerability to coastal hazards now and into the future.



Coastal and estuarine ecosystems such as wetlands, beaches, floodplains and dune systems are vulnerable to the impacts of climate change. Increased coastal hazards are expected from changes in coastal processes, affecting development, infrastructure and the economic base of coastal communities.

Climate change predictions for increased sea level rise and storm frequency and intensity suggest there is a risk of continued and increased coastal recession in years to come. The resulting impacts may be exacerbated if population and development pressures increase. Council's CZMP and the land use planning framework it puts forth aims to reduce this vulnerability into the future.

Strategic marine biodiversity monitoring in ecosystems such as rock platforms would assist in providing Council with data on how human interaction and climate change are affecting the coastal zone. Council aims to conduct a benchmark survey of coastal ecological communities in line with the actions listed in the CZMP.

#### REFERENCES

[http://www.environment.nsw.gov.au/soe/soe2009/chapter6/chp\\_6.5.htm#6.5.32](http://www.environment.nsw.gov.au/soe/soe2009/chapter6/chp_6.5.htm#6.5.32)  
[http://www.environment.nsw.gov.au/soe/soe2006/chapter5/chp\\_5.6.htm#5.6.34](http://www.environment.nsw.gov.au/soe/soe2006/chapter5/chp_5.6.htm#5.6.34)  
<http://www.environment.nsw.gov.au/beach/starratingsWyong.htm>



Coastal zone Norah Head





## BIODIVERSITY



Wyong Shire is rich in biodiversity, enhanced by the presence of both coastal and inland vegetation communities and expresses faunal characteristics of both the Sydney Basin and North Coast bioregions. The Shire supports over 427 native vertebrate fauna species (including mammals, birds, reptiles, and amphibians, excluding marine species) and many invertebrates.

We are fortunate to retain native bushland across 65% of Wyong Shire. This is partly due to a large portion of the Shire's 82,042 hectares being managed as State Forest (14,678 ha - 18% of the Shire) or National Park (13,163 ha - 16% of the Shire), and partly due to numerous small and large parcels of vegetated areas owned by Wyong Shire Council (3,011 ha) and the Crown (State Government).



## State Rating

2009/10	2010/11	2011/12
Declining	Declining	<b>Declining</b>

At the National Level, there are 63 threatened species, two threatened ecological communities and 59 migratory species listed as matters of national environmental significance under the *Environmental Protection and Biodiversity Conservation Act* (EPBC Act) that occur or whose habitat is likely to occur within Wyong Shire. Other matters listed under the EPBC Act that may relate to Wyong Shire include 78 marine species. In 2011/12, one new species was listed as Endangered and two new species were listed as Vulnerable under the EPBC Act that occur or whose habitat is likely to occur within Wyong Shire. The species as are follows:

- The tufted perennial herb Omeo Stork's-bill (*Pelargonium sp. striatellum*) was listed as Endangered
- The Black Rockcod (*Epinephelus daemeli*) was listed as Vulnerable
- The Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) (*Phascolarctos cinereus*) was listed as Vulnerable.

## EPBC Act Protected Matters Summary Report for Wyong Shire

	Other	Vulnerable	Endangered	Critically Endangered	Total
<b>Matters of National Environmental Significance</b>					
Threatened Species					
Plants	0	12	6	0	18
Sharks	0	3	0	1	4
Fish	0	2	1	0	3
Frogs	0	4	1	0	5
Reptiles	0	4	2	0	6
Birds	0	13	5	0	18
Mammals	0	7	2	0	9
Total	0	45	17	1	63
<b>Threatened Ecological Communities</b>					
Migratory Species	0	0	0	2	2
Marine Species	10	14	4	0	28
Terrestrial Species	6	0	1	0	7
Wetland Species	23	1	0	0	24
Total	39	15	5	0	59
<b>Other Matters</b>					
Marine Species	62	12	4	0	78
Whales / Cetaceans	10	1	1	0	12
Total	72	13	5	0	90

Source: [www.environment.gov.au](http://www.environment.gov.au)

\*Estimated species, or species habitat, likely to occur in Wyong Shire based on known distribution, expert knowledge and for less well known species distribution models

At the State level, there are 107 vulnerable, 57 endangered and four critically endangered species, populations or ecological communities listed that are known or predicted to occur in the Wyong sub-catchment (note: this sub-catchment extends into the Gosford Local Government Area). There were also 32 key threatening processes identified for the LGA.

In the 2011/12 reporting period one new species was listed as Endangered and two species changed in status under the New South Wales *Threatened Species Conservation Act 1995* (TSC Act) for species that have been recorded within the Wyong Local Government Area as follows:

- The Curlew Sandpiper (*Calidris ferruginea*) was listed as Endangered,
- The Southern Right Whale (*Eubalaena australis*) changed in status from Vulnerable to Endangered,
- The Leatherback Turtle (*Dermochelys coriacea*) changed in status from Vulnerable to Endangered.



Tawny Frogmouth (*Podargus strigoides*)

TSC Act Summary Report for Wyong Sub-Catchment

	Ecological Communities	Endangered Populations	Flora	Fauna	Total
<b>Vulnerable</b>	0	0	21	86	<b>107</b>
<b>Endangered</b>	14	2	18	23	<b>57</b>
<b>Critically Endangered</b>	1	0	1	2	<b>4</b>
<b>Sub-total</b>	15	2	40	111	<b>168</b>
<b>Key Threatening Processes</b>					<b>32</b>
<b>Total</b>					<b>200</b>

Source: [www.environment.nsw.gov.au](http://www.environment.nsw.gov.au)

\* These figures encompass species and communities recorded within the Wyong LGA. There may be additional species and communities listed under the TSC Act that have not been recorded or modelled to occur in the area but that do occur.



There is continuing pressure on the Shire’s biodiversity from population growth and associated development. The area of native vegetation approved to be cleared for development can be used as a measure of the impact that new development has on available habitat. The following table shows the approximate area of vegetation that Council approved to be cleared during the 2011/12. In addition, the Natural Areas Bush Fire Management Program (NABFMP) has identified the need for significant additional clearing and vegetation modification on Council bushland reserves to mitigate bush fire risk. There exist opportunities to incorporate ongoing improvements during this process by improved weed and stormwater management at the bushland / urban interface. The NABFMP also recommends that all clearing or vegetation modification at the interface is offset through permanent conservation and bush regeneration works on other Council land.

Area of clearing and compensatory habitat restoration approved in 2011/12.

Category of development	Total approved clearing (hectares)	Total approved compensatory habitat restoration (hectares)
Residential	5.63	7.22
Commercial and Industrial	9.09	2.15
Council works	1.7	0
Other – Special Uses	0.08	0
<b>Total</b>	<b>16.5</b>	<b>9.37</b>

An additional 44 individual trees were approved for removal to accommodate commercial & industrial, residential, and “other” developments during the reporting period. To compensate for those that were removed the developers have committed to planting 248 replacement trees. It is important to note that these figures were sourced from Development Applications and are therefore likely to underestimate the total area/number of trees cleared.

Other activities that may contribute to further loss of vegetation include:

- Cumulative vegetation loss due to approved minor development, such as tree works applications, complying development and single dwellings in rural locations
- Illegal clearing that is unaccounted for in Council calculations
- Clearing undertaken through agricultural practice, particularly grazing, that may be exempt from development consent
- Single dwellings or clearing that was approved in a previous year (i.e. Section 96 applications under the *Environmental Planning and Assessment Act 1979*)
- Clearing approved by the NSW State Government under Part 3A of the *Environmental Planning and Assessment Act 1979*
- Clearing conducted by State Government agencies, such as Energy

Australia and Transgrid, under Part 5 of the *Environmental Planning and Assessment Act 1979*

- Clearing approved by the Hunter-Central Rivers Catchment Management Authority or Department of Environment and Climate Change under the *Native Vegetation Act 2003*
- Cumulative canopy loss due to removal of trees that Council’s Development Control Plan (2005) Chapter 14 exempts from requiring consent
- Unapproved/illegal clearing

Under Clause 14 (3b) of the Wyong Local Environment Plan (1991) land owners can subdivide land zoned for scenic protection – small holdings into lots smaller than the minimum lot size, provided the developer undertakes a certain action, such as dedicate land to Council or contribute money to Council for the purchase of conservation zoned land or for the improvement or embellishment of any conservation zoned land owned by the Council. In 2011/12, Council did not acquire any new land for conservation. Council is currently developing a policy framework to guide future acquisition and management of conservation lands, using the bonus provision fund. The availability of these funds for these restricted purposes is being used to leverage external funding, and in 2011/12, Council was successful in winning three competitive Small Project grants from the Hunter-Central Rivers Catchment Management Authority and used funds to build on works undertaken using grants from various Disaster Resilience funding for fire trails. There remains some uncertainty regarding the ability to retain this conservation offset tool under the forthcoming Wyong LEP 2012, but this is currently being investigated with the Department of Planning.

Council is currently in negotiations to purchase one parcel of land at Fountindale and one parcel at Wadalba using the Restricted Funds. Council has also been involved in the review of the

NSW Government Biobanking Scheme, and three sites have been shortlisted for a trial of the Biobanking methodology through the Linking Landscapes Program in 2012/13.



- Objective 4 of the Community Strategic Plan 2030 – Areas of value in public and private ownership will be enhanced and retained to a high level in the context of ongoing development.
- Objective 5 of the Community Strategic Plan 2030 – There will be a sense of community ownership of the natural environment through direct public involvement with environmental programs.
- Community expectations to retain the Shire’s natural resources for a range of reasons including biodiversity, scenic amenity and support for property prices.
- Provision of a wide range of ecosystem services that cannot be provided cost-effectively through artificial means, such as flood control through natural wetlands.
- Climate change impacts and mitigation and adaptation strategies.
- Emergency Management related to natural disasters.
- Population growth and related needs for development, recreation, employment generating landuses (i.e. industrial and commercial), infrastructure and associated facilities.
- Tension between future development and preservation of the Shire’s biodiversity.
- Changing legislation relating to listings, assessment, conservation and maintenance of areas.
- Changing legislative framework for bush fire management.
- Biobanking and Biodiversity Certification opportunities to source additional external funding to manage reserves.
- Private land certification options including Voluntary Conservation

Agreements and Property Vegetation Plans.

- Central Coast Regional Strategy – Regional Conservation Strategy and Northern Wyong Shire Structure Plan.
- The need to retain functional natural ecosystems to ensure their integrity is retained for future generations and ensure ecosystem services and opportunities are not further degraded.
- Agricultural activities, primarily in the valleys – e.g. poor riparian habitat management practices.
- Poor management of feral animals (rabbits and foxes).
- Inappropriate management of domestic animals (cats and dogs).
- Diseases such as chytrid fungus, phytophthora and Myrtle Rust.
- Attitudes of residents towards trees in urban areas.
- Management of public land adjoining private land e.g. foreshores and bush reserves.
- Altered fire regimes.



- Council staff renewed a scientific licence from the Department of Environment, Climate Change and Water on behalf of Landcare groups working in Endangered Ecological Communities and in the habitat of threatened species. This licence applies to 23 groups working in the habitat of six species of flora, 13 species of fauna and nine Endangered Ecological Communities protected by the Threatened Species Conservation Act NSW (1995).
- Council employs a Noxious Weeds & Pest Species Officer. In line with the Lower Hunter & Central Coast Weed Action Plan, high risk properties, outlets and pathways have been identified and an inspection schedule developed. The aim of this program is to detect weeds at an early stage and control them before a large problem develops. All nurseries and pet/

aquarium shops were inspected. The class 1 weed, Kidney Leaf Mudplantain (*Heteranthera reniformis*) was found through Council’s weed education program and continues to be treated. All main roads in the Shire have been mapped for noxious weeds.

- An estimated 1,167ha of natural areas will be transferred from private to public ownership over the next seven years. Each site will have an associated Land Management Plan with actions assigned to various sections of Council for implementation. The management of these actions will require close liaison and coordination with the various sections of Council, external government agencies, developers, contractors, community volunteers and operational staff. The initial upfront environmental restoration costs for proposed conservation lands will be supported by section 94 funding strategies. This will not include any contributions for recurrent maintenance costs. There is a need to nurture the sites in perpetuity by setting up maintenance programs once the Section 94 contributions are expended.
- During the 2011/12, Council received \$120,000 in grant funds through the Local Government Fire Mitigation Program to assist in the maintenance of 30.72km of Asset Protection Zones (APZs) across the 66.7km urban bushland interface with Council bushland. Council also received a further \$42,000 through the Fire Mitigation Works Fund to upgrade a 420m section of a fire trail at Durren Durren.
- In 2011/12 Council carried out a comprehensive review of its existing APZ program in consultation with the NSW RFS. This review involved identifying the priority risk rating of all of Council’s existing APZs as identified in the Wyong Bush Fire Risk Management Plan (BFRMP) and undertaking a Stage 1 Gap Analysis of areas that need further investigation. All APZs ranked below High risk were removed from the works schedule following a desktop analysis of each



of the sites. Although these sites represent a bushfire risk, the Wyong BFRMP states that “all areas identified as Medium or Low do not require specific application of resources, if resource constraints are an issue”. This review allowed Council to prioritise its works program and re-allocate its resources more effectively to those assets with a higher risk. Council was then able to identify and create a number of new APZs which were identified as having high (or above) risk ratings according to Wyong’s BFRMP, resulting in improved bushfire protection within the Shire. Council now maintains 116 APZs across the Shire, covering a total distance of 30.72km and an area of approximately 17.6ha.

- Council is continuing to undertake the Natural Areas Bush Fire Management Program (a grant funded partnership with Commonwealth and State Governments) which is further analysing the need for bush fire management with a focus on APZs, fire trails, infrastructure protection and community engagement. A draft five year program has been produced and will be presented to Council for endorsement and funding in early 2013.
- Significant conservation on private lands has been achieved through the CEN’s Land for Wildlife (for rural properties) and Habitat for Wildlife (for urban properties) Programs. Wyong and Gosford Councils are jointly sponsoring the Land for Wildlife program on the Central Coast, which is part of a national program to support private landholders who wish to manage part of their land for native biodiversity.
- Council’s Estuary Management Program focussed on regenerating a wide range of habitat types including riparian areas, wetlands and saltmarsh. The program produced significant improvements in high priority areas using bush regeneration techniques, revegetation with local provenance

plants and intensive weed control. This work, in association with extensive community engagement and education had a positive impact on biodiversity conservation within the Shire, increasing species richness and abundance in previously disturbed areas.



The decline in the Shire’s biodiversity is being driven by a number of different factors. As the Shire’s population increases, the resulting development continues to fragment the remaining native vegetation, leading to a loss in viable habitat for many native species. Whilst the majority of this development is focused east of the freeway, fragmentation is also evident in the valleys as a result of agricultural practices, e.g. poor riparian habitat management. This fragmentation is exacerbated by the loss, degradation of, and competition for habitat caused by exotic plant species.

Competition for resources with introduced species (e.g. rabbits and deer), predation by introduced animals (e.g. feral cats, foxes, domestic cats and dogs), altered fire regimes, and diseases such as chytrid fungus (in frogs) and root-rot fungus (*Phytophthora cinnamomi*) are also among the factors contributing to the decline of biodiversity in the Wyong Shire. Whilst there are programs already being conducted that are aiding in biodiversity management such as those detailed above, there needs to be a more overarching strategic approach to the management of biodiversity across the whole of the Shire.

The Central Coast Regional Strategy (CCRS) does not detail the way in which the potentially conflicting land uses of development and biodiversity will be managed. This has the potential to significantly affect the Shire’s capacity to fulfil its regional and state objectives for

population and employment targets over the next 20 years. As such, overarching strategies need to be developed to guide the management of the complex biodiversity issues within the Shire. The development of a policy statement, investment strategy and investment plan to guide strategic decision making with respect to land management and land ownership where conservation outcomes can be achieved will be the first step to allow biodiversity issues to be effectively identified, strategically managed and monitored to provide long-term stability. The overarching draft Natural Resource Management Strategy (NRMS) will aid in the long-term management of our natural resources. If development pressures continue to fragment the remaining bushland in Wyong Shire without the direction of strong conservation planning, then biodiversity values will continue to decline to the detriment of our overall sustainability.

Climate change is having an increasing role to play in land use decisions at the local level with many existing threatening processes such as weeds, pests and fragmentation likely to be exacerbated by climate shifts. The precautionary principle would encourage us to avoid making decisions and actions where we really don’t know the possible outcomes and impacts.

There are management and planning actions that can be undertaken to assist species and ecosystems to respond and build resilience to climate change. These actions may assist the natural adaptation of species and protect species that are particularly vulnerable to climate change. Therefore, maintaining connectivity across the landscape will be a key element of mitigation planning at the regional and state level.

As many programs and initiatives being undertaken across the Shire are reliant on external funding (i.e. Federal or State), should this funding no longer be available, the trend for the next 20 years



would be fairly grim. There are many initiatives and programs which could be undertaken and could result in improved outcomes for biodiversity (through both protection and education), but are subject to current resourcing constraints. The challenge will continue to be to maintain the “bushland” lifestyle valued by the residents of our Shire by integrating the social and economic aspects of development with preserving and enhancing the natural environment.

It is likely that ecological stress and decline will continue to occur in small fragmented reserves at the urban bushland interface. Community expectations to invest greater effort in actively managing our natural areas are predicted to increase with significant local, national and international focus on climate change. Expectations are also likely to be heightened following delivery of various proposed environmental education programs (e.g. Tuggerah Lakes Estuary Management Plan education strategy).

A coordinated and holistic approach to biodiversity management across the Shire would have the potential to reduce the decline in the Shire’s biodiversity and result in long term stability and resilience.

#### REFERENCES

<http://www.environment.gov.au>



Community Tree Planning Day celebrating National Tree Day

## Volunteers making a real difference to biodiversity

It is truly amazing what the hard work and dedication of volunteers can achieve! The Palm Grove Ourimbah Creek Landcare group have been working tirelessly across 30ha of riparian rainforest since 2000 to help restore the vegetation and increase biodiversity. The core group dedicate two mornings a week to the cause and have achieved impressive results in that time.

The original rainforest of the Ourimbah Creek Valley was gradually eaten into over a period of 60 years to make way for agricultural activity. World War II brought about a shortage of farm workers and a gradual reduction in farming across the site. In later years the land was purchased by the NSW Roads and Maritime Service (RMS) to allow for the construction of the F3 Freeway which supported a boom in population on the Central Coast. The land is still owned by the RMS and Wyong Shire Council and houses some water supply infrastructure but is predominantly set aside for conservation.

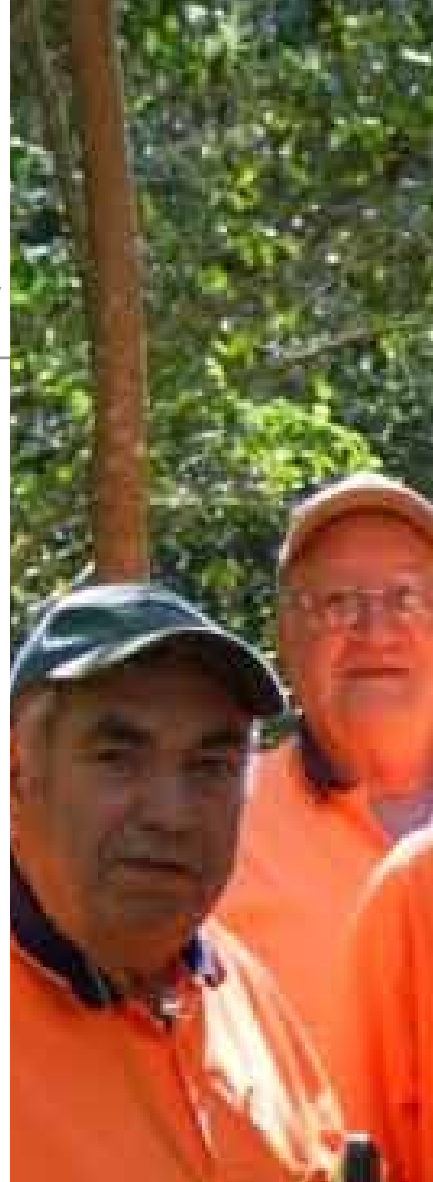
The astounding recovery of the site would not have been possible without the tireless efforts of committed volunteers. Together, the group control environmental weeds, propagate and transplant local native plants, maintain access to and within the site, facilitate educational activities, report regularly to local authorities and the public, monitor and record biodiversity and host community activities.

In addition to the volunteer work, a series of external grants has allowed the group to engage professional bush regeneration contractors to help manage some of the more difficult areas of the site. The results of this work are clearly visible to anyone who visits. Most recently, the group has been successful in obtaining a six year grant (the first in Wyong Shire) to continue their efforts to restore and protect the Ourimbah Creek floodplain. This long-term commitment allows the group to target large areas of weed invasion in a systematic way, freeing up space for rainforest species to regenerate. The works have flow on effects for the downstream environment, protecting the water supply and improving water quality to the Tuggerah Lakes estuary.

These days the site is a hotspot for biodiversity in Wyong Shire supporting 350 recorded species of native biota and a number of threatened species of note including the endangered Magenta Lilly Pilly (*Syzygium paniculatum*), the vulnerable Biconvex Paperbark (*Melaleuca biconvexa*), Powerful Owl (*Ninox strenua*), Sooty Owl (*Tyto tenebricosa*), Varied Sitella (*Daphoenositta chrysoptera*), Gang-gang Cockatoo (*Callocephalon fimbriatum*) and the migratory Cattle Egret (*Ardea ibis*).

The group are also improving local biodiversity through their efforts to return Bangalow Palms (*Archontophoenix cunninghamiana*), Strangler Figs (*Ficus obliqua* and *F. rubiginosa*), White Beech (*Gmelina leichhardtii*) and Yellow Ash (*Emmenosperma alphitonioides*) to this part of the catchment.

Council is a proud supporter of the Palm Grove Ourimbah Creek Landcare group and encourages interested residents to get in and help out where they can to support their fellow community members. Perhaps you could join a local Landcare group or even start your own in your local area.



BEFORE: The site in 1941 at the height of agriculture and clearing...



AFTER: The site in 2010 after more than 11 years of natural regeneration, dedicated bush regeneration and weed control.



Palm Grove Ourimbah Creek Landcare group pictured (from left): Al Wagenaer, Ian Playford, Brian Patterson, Ray Galway (back), Eileen Patterson (front), Henny Wagenaer and Boris Zrnic

## Fire trail upgrade improves safety in the valleys

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Above the before photo of the fire trail in Dooralong Valley - Opposite the fire trail after \$40,000 of work carried out

An eroding fire trail in Dooralong has been given a much needed upgrade. Wyong Shire Council recently spent more than \$40,000 to fix 420 metres of the worst part of the 1.6km fire trail in the Dooralong Valley.

The work was done as part of our Wyong Bush Fire Risk Management Plan and 95 per cent was funded through grants. Before the works, this fire trail suffered from a lot of erosion and vegetation damage; and had high maintenance costs.

The track upgrade has improved public and volunteer fire fighter safety, reduced risk, reduced erosion, restabilised the vegetation and reduced maintenance costs. Council and the Rural Fire Service can now plan to carry out a 60 hectare hazard reduction burn that could not be done safely without the fire trail in place. A final upgrade of this trail (about 300m) will be done in 2012/13. Other low use trails showing major signs of erosion will be rehabilitated back to natural bush land.





Come fly with me - celebrating World Migratory Bird Day exploring Tuggerah Lakes and surrounds with renowned bird experts Alan Morris and Ricki Coughlan



# AIR QUALITY

# Air Quality



AT A GLANCE KEY DRIVERS RESPONSES FUTURE TRENDS

*Clean air is fundamental to all people's health, with air quality particularly affecting the health of children and older people. It also affects the natural environment and the liveability of the communities in which we work and reside. Bushfires, stubble burning, dust storms and wood heaters are the major emission sources in Wyong Shire. The State Government aims to develop initiatives to reduce the community's exposure to pollution and improve air quality in NSW.*



## State Rating

2009/10	2010/11	2011/12
Declining	Declining	Stable*

\*Determined from currently available monitoring data.

Air quality measurements are undertaken at a number of locations in the Shire by private industry. These measurements confirm that air quality in the monitored areas of Wyong Shire met the standards set in the National Environment Protection Measure (NEPM) for ambient air quality and have remained relatively stable over the reporting period. However, particle pollution and photochemical smog remain a concern in the Greater Metropolitan Region (which extends as far north as the Lower Hunter). Medical research confirms that fine particulates represent a significant health risk to urban communities while inhalation exposure to ozone has been linked to numerous respiratory health effects including decreases in lung function and airway inflammation.

Common Air Pollutant	Acronym
Total suspended particulates	TSP
Particulate matter <10 µm	PM <sub>10</sub>
Particulate matter <2.5 µm	PM <sub>2.5</sub>
Nitrogen dioxide	NO <sub>2</sub>
Sulfur dioxide	SO <sub>2</sub>
Ozone (photochemical smog)	O <sub>3</sub>

- The Office of Environment and Heritage (OEH) is establishing a high quality ambient air quality monitoring network throughout NSW to provide the community with information on current air quality. To date, the network consists of 40 monitoring stations. In June 2012 consent was granted for the construction and operation of a

monitoring station at Wyong Race Club. This station will be capable of continuously measuring a variety of air quality parameters and is expected to be up and running by the end of 2012. Real-time data collected from the monitoring station will be publically available on the OEH Air Quality Data webpage. The ambient air quality data will include Ozone, Particles (PM<sub>10</sub>, PM<sub>2.5</sub>), Oxides of Nitrogen, Carbon monoxide, sulphur dioxide, visibility and meteorology. The purpose of the network is to:

- Inform the public of regional air quality levels
- Establish compliance with national ambient air quality standards
- Track air quality trends and evaluate progress of emission control programs
- Support development of emission control and air quality research programs

The closest OEH monitoring stations to Wyong Shire that are currently operating are located in Newcastle CBD and Wallsend. Although they are relatively close, the data recorded by these stations can not be interpreted as representative of Wyong Shire. Subsequently, air quality reporting to date has relied heavily on data collected by Delta Electricity and Wyong Areas Coal Joint Venture (WACJV).

Delta Electricity operates the Colongra gas-fired power station and the Vales Point and Munmorah coal-fired power stations in Wyong Shire. Air Quality in the region of the power stations is monitored continuously by three air quality monitoring stations. The Wye and Lake Munmorah Public School sites commenced monitoring in the early 1990s and the Morisset Peninsula site was established in late 2005. Data made available from Delta indicated the following for their 2010/11 reporting period.

- The maximum sulphur dioxide (0.07ppm) and nitrogen dioxide

(0.02ppm) were well below the relevant one-hour average National Air Quality Standards (<0.2ppm) during the reporting period. No exceedences have been recorded over the years that monitoring has been undertaken.

- Concentrations of total suspended particulates (TSP) are well below the NSW assessment criterion at each of the three sites.
- Smaller sized particulate matter (PM<sup>10</sup> and PM<sub>2.5</sub>) concentrations were below the standards for the vast majority of the time – occasional elevated concentrations were usually related to broad-scale factors such as bushfires and dust storms.

The Wyong Areas Coal Joint Venture (WACJV) has provided Council with the air quality data recorded since 1999 by their High Volume Air Samplers located at Buttonderry Road and Tooheys Road. Ambient air quality data is being collected as baseline monitoring for the proposed long wall coal mining under the valleys (see Highlands and Valleys page 96). This data gives an indication of the volume of fine and coarse particles in the air resulting from local traffic, wind-driven pollution from surrounding urban and industrial areas and events such as bushfires.

From 1999 to 2009 the data revealed an increasing trend in PM<sub>10</sub> concentrations, though concentrations always remained below the NEPM annual average goal of 50ug/m<sup>3</sup>. Data collected between July 2010 and June 2012 are displayed in the table below and show further increases, although still below the 50ug/m<sup>3</sup> NEPM goal.

The Air NEPM sets a standard for particles less than 10 micrograms (PM<sub>10</sub>) of 50um/m<sup>3</sup> (1-day average), with a goal of no more than five exceedence days per year to allow for natural events such as dust storms and bushfires.



Air Pollution incidents reported to the OEH Environment Line over the past four reporting periods.

Table X1 WACJV Particulate Data July 2011- June 2012

		PM <sup>10</sup> (µg/m <sup>3</sup> )			TSP(µg/m <sup>3</sup> )		
		Mean of Sample	Exceedence days for the year	NEPM annual <b>average</b> goal (max. ambient concentration in one day)	Mean of Sample	Exceedence days for the year	NSW DECCW Annual <b>average</b> Impact Assessment Criterion
Buttonderry Road	2010/11	10.8	0	50	16.9	0	90
	2011/12	10.4	0		20.6	0	
Tooheys Road	2010/11	16.3	1		31	0	
	2011/12	16.3	1		30.9	0	

When compared with the previous reporting period, PM<sub>10</sub> has remained stable while the mean of the TSP sample has increased by over 10µg/m<sup>3</sup> at both sampling locations.

Chain Valley Colliery, operated by LakeCoal Pty Ltd, received major project approval on the 23rd January 2012 for continuation of mining. The approval requires LakeCoal to implement various environmental monitoring measures, including real time depositional dust and volumetric dust monitoring. In mid 2012 four depositional dust gauges were installed in key locations around the operation, with the view of installing a fifth. These gauges will provide monthly depositional dust results. LakeCoal also plan to install a single real-time or high volume PM<sub>10</sub> monitor by the beginning of 2013. This information will be made publically available and will be included in this report in years to come.

The following air pollution incidents were reported to the OEH Environment Line over the past four reporting periods. There appears to be little correlation between the available air quality results and the number of complaints received each year.

	2008/09	2009/10	2010/11	2011/12
Air Pollution Incidents where the EPA was the Appropriate Regulatory Authority (ARA)	45	15	9	6
Air Quality complaints received by EPA that were referred back to Council	9	7	16	25



- Transport is a significant source of particulate matter, as well as oxides of nitrogen and volatile organic compounds. The Shire's growth and residents' increasing dependency on motor vehicles will result in increasing emissions.
- Continued demand for electricity generation by power stations fuelled by burning of coal will impact on air quality and greenhouse emissions.



Environmental Protection Authority and Council respond to air quality complaints as they occur. There is also continued assessment of development applications and related air quality issues based on the OEH and NEPM legislation guidelines.

The new gas fired power station built on the grounds of the Munmorah Power Station was opened on 21st December 2009. Known as Colongra Gas Turbines, this plant will help secure future power supply across New South Wales and lower greenhouse gas emissions. With a capacity of 667 megawatts, it will generate enough power for 700,000 homes every hour it operates while producing about 40% less greenhouse gas emissions compared to coal-fired power plants. Colongra is designed to meet demand when it peaks during very hot or cold periods. Gas-fired power stations can fire up quickly at times of peak demand compared to coal-fired power stations.

The OEH air quality monitoring station at Wyong Race Club has also been established in response to community concerns about air quality. This station will provide real-time data that will be locally relevant and publically available on the OEH Air Quality Data webpage.



Presently we have inadequate and inconsistent monitoring for comparative purposes, however, from the available data the trend is showing increased particulate matter over time. This has implications for future air quality, particularly given the northern part of the Shire will be a focus for further industrial and urban development in the future and hence any increase in particulate matter may exacerbate the air quality issue.

Climate models surveyed by the Bureau of Meteorology suggest sea surface temperatures in the tropical Pacific Ocean will maintain values close to El Niño thresholds before returning to more neutral values in early 2013. A long, hot summer is likely to result in an increased incidence of bush fires, which have a significant impact on air quality. In the long term, climate change is also likely to further add to the bushfire risk.

Improved access to real-time air quality monitoring data will provide a clearer understanding of the Shire's air quality on a daily basis and over time will provide a valuable insight into local air quality trends.

#### REFERENCES

<http://www.de.com.au/ArticleDocuments/42/Colongra%20booklet%20-%20DE431.pdf.aspx>  
<http://www.environment.nsw.gov.au/air/actionforair/>  
<http://www.ephc.gov.au/taxonomy/term/23>  
<http://www.bom.gov.au/climate/enso/>  
<http://www.health.nsw.gov.au/PublicHealth/environment/air/media.asp>

## Air Pollution and Health: KEY FACTS

Results of many scientific studies over several decades provide compelling and consistent evidence about how air pollution can affect people's health. For example:

- Air pollution is responsible for 2.3% of all deaths in Australia.
- Between 640 and 1400 people die prematurely each year due to air pollution in the Sydney Greater Metropolitan region.
- Air pollution causes more premature deaths in NSW per year than road accidents.
- Air pollution causes almost 2000 hospitalisations per year in Sydney Greater Metropolitan region.
- Air pollution costs NSW around \$ 4.7 billion dollars per year in health costs.

Source: <http://www.health.nsw.gov.au/PublicHealth/environment/air/media.asp>

Fire at Watanobbi photo courtesy of Shane Geerin, The Lakes Team Rural Fire Service





Rock platform Shelly Beach



# CLIMATE CHANGE



*Over the past year or two the science of climate change has been widely contested in the public media, well outside the rigour of peer reviewed scientific literature. However in spite of this ill-informed confusion, the climate scientists continue to advance their understanding of the climate systems. Many of the changes being observed provide strong and clear evidence that climate change is happening and that temperatures are increasing. Similarly, also known with a high level of confidence is that the primary cause of the observed warming and associated changes since the mid-20th century is a result of greenhouse gas emissions due to human causes (DCCE 2011).*



## State Rating

2009/10	2010/11	2011/12
Declining	Declining	<b>Declining</b>

CSIRO projections indicate that by 2070 average summer temperatures will be 3°C warmer (OEH 2010). Along the coast, sea-levels are rising resulting in coastal erosion and recession. The potential for increases in frequency and severity of flood-producing storm events will exacerbate the risks to coastal properties as well as inundate low-lying areas (OEH 2010).

For Sydney and Central Coast regions summer rainfall is expected to increase by 20-50% with a smaller increase in spring. Winter rainfall is expected to decrease. El Nino years are likely to continue to be drier than average and become hotter. La Nina years are likely to continue to be wetter than average and also become hotter (OEH 2010).

While there is still substantial year to year variability, the mean temperature in Australia has increased by about 0.7°C since 1960. Some areas have experienced a warming of 1.5 to 2°C over the last 50 years. Warming has occurred in all seasons, however the strongest warming has occurred in spring (about 0.9°C) and the weakest in summer (about 0.4°C)

## Records Tumble.....2011

- Warm, wet year for Sydney
- Wettest year since 2007
- 19th consecutive year with above average temperatures
- Most hot nights on record

### Rainfall

Following a dry start to the year, including the driest February in thirty years, the Bureau of Meteorology (BOM) reports 2011 was the wettest year for Sydney since 2007.

### Temperature

The average maximum temperature in Sydney during 2011 was 22.6 °C, 0.9 °C above the historical average and the 19th consecutive warm year. Minimum temperatures were also 1 °C above average for the 41st consecutive year, although cooler than both 2010 and 2009. There were 24 days above 30 °C during the year, the highest since 2006, of which 5 reached 35 °C. There were also a record-breaking 7 nights above 24 °C, most of which fell during February; the previous record was three hot nights, set in 2010. In comparison, no nights during 2011 fell below 5 °C, compared to a historical average of three nights.

### Hot Days

Maximum temperatures were well above average across NSW between January 30 and February 6, with the largest anomalies persisting along the Central Coast where an extended hot spell was experienced and numerous records broken.

Source – Bureau of Meteorology 2012 (BOM)

It is virtually certain that the global average temperature will continue to rise through the 21st century, which is very likely to lead to an increase in the number, length and intensity of heat waves over many of the regions where we live.

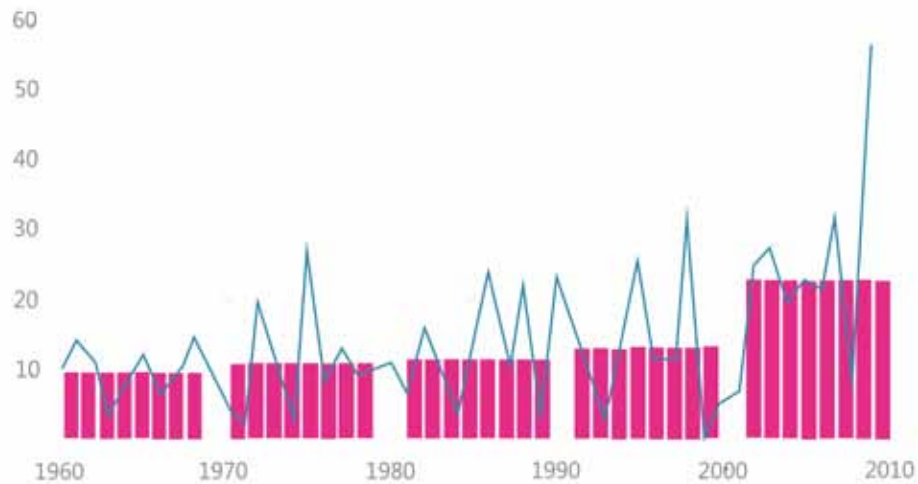
Scientists can project with greater confidence future trends in temperature than projections for rainfall. Further, there is greater confidence in projections at global and continental scales than at regional and local scales. However, 90% of climate models' simulations agree we can expect to see an increase in extended dry periods by the end of this century for southwest and southeast Australia, implying a higher risk for drought. This projection is consistent with trends that have already been observed and with scientists' current understanding of the physical processes that underpin these trends.

Similarly, scientists say that the long dry periods will be interrupted by an increase in heavy rainfall events. However, that on average, the south of the continent will likely be drier in the future compared to mid twentieth century, particularly in the cooler months of the year.

These changes have the potential to impact agriculture, water security, natural systems and the Australian economy, highlighting the need to enhance our community capacity to adapt to both floods and droughts and build society's resilience to these anticipated changes.

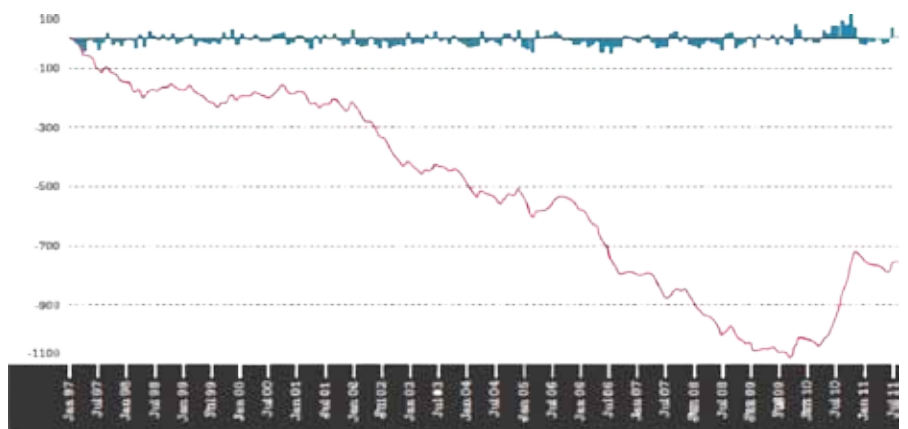
One of the significant impacts of climate change is that posed to human health. Serious environmental health impacts include exhaustion and heart failure due to heatwaves, asthma attacks from bushfire smoke and post-traumatic stress from natural disasters such as droughts, cyclones, floods and bushfires. In the worst case scenarios these events have cost billions of dollars in damages and led to deaths. Scientists expect that these health impacts will be exacerbated as climate change continues.

**Number of record hot day maximums at Australian climate reference stations**



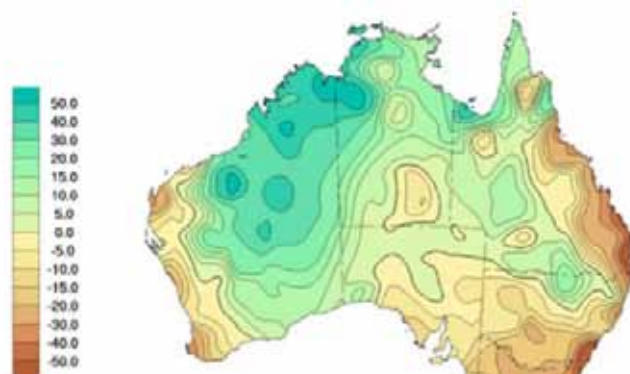
(CSIRO 2012).

**Cummulative rainfall**



Cumulative rainfall variations (in mm) from the long term average for southeastern Australia for the period January 1997 to December 2011. Individual monthly variations are shown in the columns.

**Trend in annual rainfall 1960-2009 (mm per decade)**



Trend over five decades of rainfall decreasing across much of southern and eastern Australia

(Source: BOM in CSIRO State of the Climate 2012)



- Annual emissions for the year to March 2012 are estimated to have increased by 0.3% compared to the year to March 2011, steadily returning to the peak observed in the year to March 2009. The increase in annual emissions reflects increased emissions from transport and agriculture and was partially offset by decreases in annual emissions from electricity, stationary energy excluding electricity, fugitive emissions and industrial processes.
- The electricity sector has experienced the strongest growth since 1990, increasing by 49.1%. Emissions from transport grew 40.6%. In contrast, emissions from the agriculture and waste sectors have declined since 1990, by 1.5% and 19.1% respectively (DCCEE 2012).



Drive organisational wide action to support Council's response and preparedness for the future impacts of climate change: Throughout 2011/12 the Statewide Climate Change Adaptation Report (2010) was revised. Updated Adaptation Plans completed and consultation with Council Directors and Managers underway for implementation at the Service Unit level.

Responding to many of the anticipated impacts of climate change will fall under the responsibility of local government. Typical functions of Council to be affected by these impacts including:

- Infrastructure and property services
- Provision of recreation facilities
- Health services
- Planning and development approvals
- Natural resource management
- Water and sewerage services

To reduce some of the anticipated negative social, environmental and economic impacts of climate change Wyong Council has committed to developing and implementing an

Adaptation Plan in line with the direction outlined by its Insurer Statewide Mutual.

Other policies and plans Wyong Council has in place to guide development and strategic planning decisions when considering climate change include:

- Estuary Management Plan
- Draft Tuggerah Lakes Floodplain Risk Management Plan
- WaterPlan 2050
- Coastal Zone Management Plan
- WSC Climate Change Adaptation Report (2010)
- Regional Climate Change Adaptation Plan (HCCREMS).

Throughout 2011/12 asset management staff committed to including climate change in the development of the latest Asset Management Plans. Future Plans will identify specific assets vulnerable to climate change impacts and investigate actions to remediate the risks.

Meanwhile the Hunter and Central Coast Regional Environmental Management Strategy (HCCREMS) was successful in gaining funding to implement the recommendations of the Regional Climate Change Adaptation Plan. Through a collaborative effort with 14 other Hunter/ Central Coast councils, this project has sought to develop a Decision Support Tool to assist councils in understanding some of the triggers and risks common to all the coastal councils in the Hunter region.

It is quite clear that strong global mitigation measures are necessary if the more severe consequences of climate change are to be avoided. In terms of Australia's contribution, this will hopefully be achieved through the proposed carbon pricing mechanism outlined by the Federal Government for 2012.

To address the risk of a liability under the Carbon Pricing Mechanism Council has begun to prepare its greenhouse gas inventory. To complement the inventory a program of emission reduction strategies has been implemented (see Energy page 134). The program is based on the Council adopted Carbon Management Hierarchy which focuses on the principles of 'avoid, reduce and replace before offsetting' to effectively reduce emissions.

Until June 2012 funding for implementation of projects that delivered reduced emissions equal to or greater than the green energy equivalent could be sourced through the Green Energy Fund. This fund no longer exists providing no recurrent funding mechanism for implementation of energy saving projects.



The effects of climate change will progressively and significantly impact on Council and the community. The 2011 Central Coast Research Foundation Environmental Attitudes Survey found that 67% of their respondents agree or strongly agree that climate change will have a direct impact on their lives in the next 20 years (CCRF 2011). Similarly, 85% of Central Coast survey respondents want action to address climate change with 53% of all respondents wanting action now.

Council has a role in preparing the community for the unavoidable impacts of climate change, but at this stage does not have the resources to implement such a program.

#### REFERENCES

Central Coast Region Research Foundation (2011) Environmental Attitudes Survey  
 DECCW 2010 Summary of Climate Change Impacts Central Coast Region  
 Dept Climate Change and Energy Efficiency 2012 'National Greenhouse Gas Inventory-Quarterly Report' <http://www.climatechange.gov.au/~media/climate-change/emissions/2012-mar-ationalGreenhouseGasInventory-QuarterlyReport-March2012.pdf>  
 The Climate Commission 2012 'The Critical Decade: Climate Change and Health'  
 The Climate Commissions 2012 'The Science behind Southeast Australia's Wet, Cool Summer' 2012 [www.climatecommission.gov.au](http://www.climatecommission.gov.au)  
 CSIRO 2012 'State of the Climate Report' <http://www.bom.gov.au/climate/current/statements/scs27.pdf>  
<http://www.bom.gov.au/climate/current/annual/nsw/sydney.shtml>





ENERGY



*Energy significantly contributes to all sectors of the economy, including supplying power to households, industry, and transport.*



## State Rating

2009/10	2010/11	2011/12
Declining*	Declining	Declining

\*Rating of declining is based on a predicted increase in energy consumption leading to an increase in greenhouse gas emissions.

Increasing population, high economic growth and high wages have led to behavioural and lifestyle changes which increase consumer demand and consumption habits. Electricity is the most common energy source used by NSW households to power home heating and cooling systems with an estimated 1,321,600 or 50% of NSW households using either ducted, split system or portable air-conditioning to cool their homes (ABS 2008).

In broad energy terms fossil fuels currently meet 97% of New South Wales energy demands, with transport and its associated demand for fuel continuing to be the sector with the greatest use of fossil fuels and strongest growth in demand. One quarter of the energy we use is electricity, most of which comes from coal fired generators which contributes 36% of the country's net carbon dioxide-equivalent emissions (AUA 2008). In the NSW State Plan the Government has determined that renewable energy will be a priority with electricity supplied from renewable sources (other than Snowy Hydro) more than tripling from 2003 to 2008. In spite of this, in 2009 only 6% of electricity was from renewable sources such as solar, wind and biomass (NSW SoE 2009).

The amount and type of energy used by industry and to an extent households, has considerable implications for the environment, including:

- Depletion of natural resources by:
  - Use of large quantities of water, and
  - Clearing of vegetation through our insatiable demand for more power and therefore construction of new power stations (e.g. clearing for Colongra gas pipeline).
- Greenhouse gas emissions and air pollution (see Climate Change page 130).

The intended consequences of the carbon pricing strategy are to reduce energy consumption and to encourage the development of power stations using alternative energy sources such as wind and solar. The impact on Council will be costs due to direct emissions (such as Buttoderry Waste Management Facility) and costs due to indirect emissions (such as the use of electricity). The increased cost of generating electricity from a coal-fired power station arising from carbon pricing will be "passed through" to consumers, including Council. It should be noted that the Federal Government is providing assistance to households and heavy industries to offset this cost. There is no direct assistance to Councils, except for the opportunity to compete for the limited grant funding of energy saving projects.

## Clean Energy Future

The implementation of carbon pricing from 1 July 2012 has placed an increased emphasis on the need to reduce greenhouse gas emissions. The carbon pricing mechanism is described briefly below.

Carbon price: a two-stage approach

- 1. Fixed price period**—The carbon pricing mechanism will commence on 1 July 2012, with a price that will be fixed for the first three years. The price will start at \$23 per tonne and will rise at 2.5 per cent each year in real terms.
- 2. Emissions trading scheme**—On 1 July 2015, the carbon price will transition to a fully flexible price under an emissions trading scheme, with the price determined by the market.

## Coverage

Broad coverage, encompassing the stationary energy sector, transport, industrial processes, non-legacy waste, and fugitive emissions. A carbon price will not apply to household transport fuels, light vehicle business transport and off-road fuel use by the agriculture, forestry and fishing industries. An effective carbon price will be applied to domestic aviation, domestic shipping, rail transport, and non-transport use of fuels. Users of these fuels can opt-in to the mechanism under the Opt-in Scheme.

## International linking

International linking to credible international carbon markets and emissions trading schemes from the commencement of the flexible price period. At least half of a liable party's compliance obligation must be met through the use of domestic permits or credits.

## Industry assistance

The Program was designed to ensure that industry, local communities and workers have a smooth transition to a clean energy future and that these industries have a strong incentive to reduce their carbon pollution.

## Energy Security

An Energy Security Fund will be established to ensure there is a smooth transition which preserves energy security. The Energy Security Fund comprises two elements:

1. An allocation of free carbon units and cash payments to strongly affected coal-fired electricity generators. These allocations will be conditional on electricity generators strongly affected by a carbon price publishing Clean Energy Investment Plans, which show how they will reduce their pollution, and by meeting power system reliability standards.
2. The Government will seek to negotiate the closure of around 2,000 megawatts (MW) of highly polluting generation capacity by 2020. Closing down some of our highest polluting coal-fired generation capacity makes room for investment in lower pollution plants—and kick starts the transformation of our energy industry in a managed way.

## Household Assistance

Assistance for Australian households, through tax cuts and increased payments, to help them with increased living costs as a result of the introduction of a carbon price.

## Council's Electricity Consumption

In 2011/12 Council's total electricity consumption was 36,101 MWh at a cost of approximately \$7.8m. A significant part of this cost is due to service charges for street lighting (about \$2m). Council's strategy to reduce these costs is to minimise energy consumption and obtain the best rates from the electricity supplier. Council has signed up to contracts to minimise energy charges. This provides competitive rates for the energy components of the bill for a large site and a discount for small sites. However, the network charges for a large site (about 50% of the bill) are passed through and cannot be minimised, as they are set by the regulator.

Energy usage by Council department.

Description	2011/12 Energy (kWh)	Percentage
Water & Sewerage	22,852,291	63.30%
Roads & Stormwater	6,810,290	18.86%
Sport, Leisure & Recreation	2,411,487	6.68%
Governance	2,024,223	5.61%
Plant, Fleet & Depots	882,906	2.45%
Open Space	313,813	0.87%
Community & Cultural Development	271,436	0.75%
Lifelong Learning	229,680	0.64%
Waste	175,671	0.49%
Community Buildings	116,769	0.32%
Property Services	6,913	0.02%
Other	5,151	0.01%



This shows that the bulk of the electricity consumption is by Water & Sewerage facilities (63.3%), followed by Roads & Stormwater (18.86%), Sport Leisure & Recreation (6.68%) and Governance (5.61%). Typical facilities by Department are as follows:

Department	Typical Facilities
Water & Sewerage	Treatment plants and pumping stations
Roads & Stormwater	Streetlighting
Sport, Leisure & Recreation	Sporting fields, holiday parks
Governance	Wyong Civic Centre
Plant, Fleet & Depots	Operational Depots
Open Space	Parks and reserves
Community & Cultural Development	Community centres
Lifelong Learning	Libraries and child care centres
Waste	Buttonderry Waste Management Facility
Community Buildings	Halls and toilets
Property Services	Cottages

### Council's Consumption Trends

The following table shows the consumption trends since 2006/07:

Year	Energy used (kWh)	Change from previous year
2006/07	24,761,646	0.0%
2007/08	30,913,117	24.8%
2008/09	33,536,437	8.5%
2009/10	33,776,039	0.7%
2010/11	33,795,340	0.1%
<b>2011/12</b>	<b>36,100,628</b>	<b>6.8%</b>

Source: Wyong Council

The significant increase in consumption in 2011/12 is due to the impact of the Mardi – Mangrove Pipeline, which has been commissioned to ensure the continued security of the region's water supply.

### Council's Greenhouse Impact

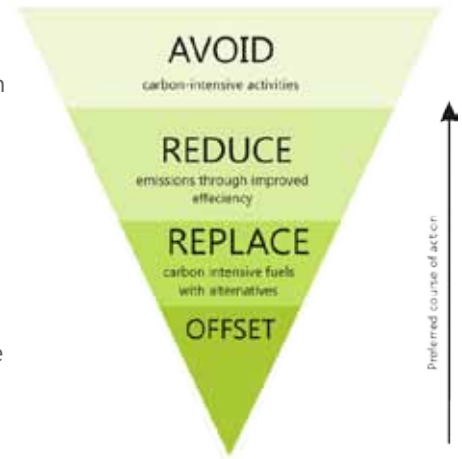
Consumption of 36,101 MWh in 2011/12 equates to a greenhouse gas emission of 32,129 tonnes of greenhouse gases (carbon-dioxide equivalent) (CO<sub>2</sub>-e). Of the total consumption about 350 MWh was sourced from green energy which reduced the GHG emissions by 311 tonnes CO<sub>2</sub>-e.



- Increasing population.
- Higher per capita consumption.
- Growing cost of energy in NSW.
- High car ownership.
- Large commuter population.
- Increasing community awareness of the climate change issue.
- Council's commitment to implementing energy and greenhouse reduction strategies.
- New legislation and regulations on Council and the community in relation to energy saving and greenhouse reductions e.g. proposed amendment to the Energy Administration Amendment (Water and Energy Savings) Act 2005 will make it mandatory for Council to undertake committed actions in its Energy Savings Action Plan.
- Impact of additional energy consumption due to commissioning of the Mardi Suite of Works and the Mardi-Mangrove Link project.
- Water consumption and reuse.



Wyong Shire Council has demonstrated its commitment to reducing energy and its carbon footprint by adopting the Carbon Management Hierarchy as the basis for managing its greenhouse gas performance, thus enabling a long-term strategy to effectively reduce the amount of greenhouse gases generated in Council operations.



According to this directive, Council will address opportunities to avoid activities that emit greenhouse gases, improve resource efficiency to reduce emissions per unit output, and replace high-carbon energy sources with low-carbon alternatives. Where none of the previous options are available, Council will continue to implement a number of offsetting initiatives including the purchase of Green Energy, the offsetting of fleet vehicles fuel emissions and the installation of methane recovery technology at Buttonderry Waste Management Facility.

Prior to the adoption of the Carbon Management Hierarchy the purchase of GreenPower was an integral part of Council's effort to reduce its greenhouse gas emissions. In 2010/11 Council changed its approach to the purchase of green energy for its large sites. The funds set aside for the purchase of green energy at these sites was set aside for projects to reduce Council's greenhouse gas emissions. Council continued its commitment to purchasing 25% green power for the smaller Council buildings and 10% green power for waste and water sites.

The NSW Government requires Local Government Areas with a population over 50,000 people to develop Energy Savings Action Plans (ESAP). Management and operational actions were identified in Council's Energy Savings Action Plan adopted in August 2008.

Through the Energy Saving Action Plan a number of projects were investigated, some of which were not viable. A number of energy saving initiatives have been identified at Council's Holiday Parks through the development of an environmental management plan. Some of these initiatives include solar panels for electricity and water heating, and the use of energy efficient appliances. The Energy Saving Committee is looking to review energy saving issues including educating staff on energy efficiency at work. The Waste and Sustainability Improvement Payment (WaSIP) program forms part of the NSW Office of Environment and Heritage's City and Country Environment Restoration Program, and assists Councils to invest in additional actions and programs that improve waste and sustainability outcomes across their local government areas.

WaSIP funding provided opportunities to implement a number of projects identified in the Energy Saving Action Plan:

- Project 1: Aims to improve energy efficiency from 1.43 to 2.7 EER (Energy Efficiency Ratio = energy out / energy in) by replacing two air conditioning systems in Council Chambers (one of Council's top ten energy producing sites). Both systems are operating at 1960's efficiencies and are consuming considerable electricity and contributing unnecessarily to greenhouse gas emissions. The new systems can reduce emissions by 95 tonnes of Carbon Dioxide equivalents (CO<sub>2</sub>-e) per annum.
- Project 2: GreenPower represents an important component of Council's greenhouse gas emissions mitigation plans. Project 2 proposes to reduce black energy consumption in the Council Chambers by increasing the GreenPower purchased from 25% to 50% (with WaSIP only to fund the difference in cost between the two). This project will help Council reduce its emissions output in the immediate (445 tonnes of Carbon Dioxide equivalents (CO<sub>2</sub>-e) per annum), whilst additional renewable energy and energy efficiency measures are fully investigated for subsequent WaSIP

funding. The purchase of GreenPower also has the benefit of creating demand for Australian Government Accredited renewable energy which will assist in the development of large scale projects across Australia and support the creation of green jobs. This is essential if Australia is to make a genuine transition to a low carbon economy within the timeframe required to avoid the serious impacts of climate change.

- Project 3: Funded development of a Model to optimise sewage treatment plant processes for Wyong South Sewage Treatment Plant and provide opportunities for significant energy savings, thereby leading to better utilisation of equipment. Data can also be obtained to determine the appropriate capital upgrades.
- Project 4: Proximity switches are being installed at Wyong Civic Centre so that lights in passageways only operate as required (Project 4).
- Project 5: Energy consumption reduction plan implemented at the Charmhaven Depot through the installation of energy efficient devices, such as LED lighting, and Voltage Reduction Devices (VRD) for the workshops.
- Installation of wireless sub-metering at Wyong Civic Centre will enable staff to obtain an accurate measurement of energy usage. A system that is able to identify and report on the energy consumption throughout the building, to individual distribution boards, will help monitor the major pieces of equipment that use energy (e.g.: a/c units) and enable targeted improvements to be made.

## T5 LIGHTING

A major focus to reduce energy consumption in 2011/12 was the use of T5 lighting. The standard "T8" fluorescent tube rated at 36W will consume about 40W with the ballast. By comparison, a "T5" lamp which is thinner and more efficient consumes about 25W. Council has now installed T5 lamps throughout Civic Centre and at all of the Libraries and Child Care Centres. In addition, many halogen downlights that were rated at

50W have been replaced by compact fluorescent types consuming only 6W. The effect of all this will be to achieve permanent reductions in Council's energy consumption.



Even at the current level of demand, there will be considerable challenges to meet the estimated increase in future energy cost given the imminent introduction (in 2012) of an Emissions Trading Scheme aimed at reducing carbon emissions. In addition, total energy demand across Australia is projected to increase by 50% by 2020 and it is anticipated that to meet the nation's energy demands will require at least \$37 billion in energy investment (Energy Matters 2008). This makes the actual cost of electricity consumption and the cost of infrastructure development unsustainable in financial and environmental terms.

## REFERENCES

Energy Savings Action Plan (March 2007)  
 Australian Bureau of Statistics (2008)  
 Department of the Environment, Water, Heritage and the Arts (DEWHA) (2008) Energy Use in the Australian Residential Sector 1990-2020 <http://www.environment.gov.au/settlements/energyefficiency/buildings/publications/pubs/energyuse-part1.pdf>  
 Energy Matters (2008) <http://www.energymatters.com.au/faqs/energy-consumption-australia.php>  
<http://www.abs.gov.au/Ausstats/abs@.nsf/39433889d406eeb9ca2570610019e9a5/f4dfb2708feecd63ca2574660010f0cc!OpenDocument>  
 Department Of Environment and Heritage (2009) NSW State of the Environment Report [http://www.environment.nsw.gov.au/soe/soe2009/chapter3/chp\\_3.2.htm](http://www.environment.nsw.gov.au/soe/soe2009/chapter3/chp_3.2.htm)  
<http://www.cleanenergyfuture.gov.au>



**TALK DIRTY**

It's talking dirt from your red, that's great!  
 By February 1st 2008, most properties will have  
 a new 140 litre **RED BIN** for all your waste  
 that can't be recycled.

Compost Community Workshop



# Waste and Resource Recovery



*Solid waste is defined as material residue or by-product discarded during or after resource extraction, production and/or consumption. The amount of solid waste generated by a community depends on a range of factors, including the strength of the economy, community values and socio-economic status. Together with the USA and Canada, Australia is consistently among the top ten global producers of waste per capita and is the third-highest generator of waste in OECD countries (ABS, 2007).*

Sound environmental management of the Buttoderry Waste Management Facility (BWMF), in compliance with all legislative requirements is a core role of Council's Waste Unit. This includes appropriate management of potential environmental impacts, including:

- Leachate – the liquid that percolates through landfill material carrying soluble contaminants
- Greenhouse gases – decomposing organic material releases methane, a long-term greenhouse gas pollutant over with a global warming potential 21 times that of carbon dioxide
- Stormwater and sediment runoff – while not in direct contact with landfill, stormwater needs to be appropriately managed through the use of control measures such as detention basins and vegetative filters to ensure minimal impact on surrounding waterways



### State Rating

2009/10	2010/11	2011/12
Stable	Stable	Stable

Waste collection and recycling services in the Shire are provided under a contractual arrangement. The services provided include the collection of waste, recyclable materials, garden vegetation, bulk kerbside material, litter bin waste and some commercial waste. All waste collected is disposed of at the BWMF.

All residential properties in the Shire are provided with a 140 litre Mobile Garbage Bin (MGB) for waste collection and a 240 litre MGB for recycling. All households east of the Freeway (F3) are also provided with a 240 litre MGB for garden

vegetation. The waste bin is serviced weekly and the recycling and vegetation bins are serviced fortnightly on alternate weeks. Commercial customers can be provided with the standard recycling bin, standard vegetation bin and waste bins of varying sizes.

The BWMF is located on Hue Hue Road, Jilliby, The site has DA approval for landfilling over 120ha, with approximately 25ha used at the present time. It has an expected total landfill life of approximately 45 years on the Eastern side of Buttoderry Creek, with future capacity on the Western side of the site. Approximately 140,000 tonnes of waste are land filled per annum at the BWMF. Ancillary activities include crushing of concrete (4,000t/yr) for operational reuse, collection of scrap metal (1,300t/yr) for recycling and processing of organics (40,000t/yr).

There are eight closed landfills in the Shire - Bateau Bay, Mardi, Gwandalan, Shelly Beach, Tumbi Umbi, Toukley, Warnervale and North Entrance. The North Entrance site is no longer in Council's ownership and is now used as a golf course with adjoining sites developed for residential and commercial uses. All closed landfills are classified as potentially contaminated land under the Contaminated Lands Act and Council is required to investigate the sites and undertake rehabilitation works (if required) in order to minimise environmental impacts. Council has a program in place to rehabilitate these sites over the next seven years.

### Total Waste

The Shire experienced a 1.4% overall decrease (1948 tonnes) in the amount of waste landfilled in 2011/12 compared to 2010/11. This confirms that current trends in landfilling across all sectors are currently stable.

### Municipal Waste

Municipal Waste consists of both domestic waste and Council waste. It includes wastes collected from households as well as waste collected by Councils from municipal parks and gardens, street sweepings, public places and council engineering works.

2011/12 shows an increase of 4.1% (2856 tonnes) compared to 2010/11 which is most likely reflective of the increasing domestic population in the Shire and the number of properties serviced.

Under the current waste collection and recycling service introduced in 2008 a broader range of recyclables are accepted than previously and the introduction of a third bin allows the more efficient storage of recyclables.

### Domestic Recycling and Resource Recovery

The State Government Waste Avoidance and Resource Recovery (WARR) Act 2001 (and more recently the WARR Strategy 2007) set targets for resource recovery in the municipal, commercial and industrial (C&I), and construction and demolition (C&D) sectors. The State targets are:

- Municipal waste – 66%
- Commercial and Industrial – 63%
- Construction and demolition – 76%



## Quantities of waste landfilled in 2010/11 and 2011/12

Year	Municipal		Commercial and Industrial (C&I)		Construction and Demolition (C&D)		Total landfilled*	
	Tonnes	Kg per person	Tonnes	Kg per person	Tonnes	Kg per person	Tonnes	Kg per person
2010/11	68,720	453	39,668	261	33,372	220	142,274	938
<b>2011/12</b>	<b>71,576</b>	<b>472</b>	<b>31,357</b>	<b>206</b>	<b>32,993</b>	<b>217</b>	<b>140,326</b>	<b>926</b>

\* miscellaneous wastes outside these categories account for 4,400 tonnes in 2011/12.

Note: Soil generated by Council operations is classified as Construction and Demolition waste.

Local Councils have direct control and responsibility over municipal and domestic (household) waste through their kerbside services, infrastructure provision and educational activities. However, Councils have only indirect influence over the C&I and C&D sectors.

Only five Councils in the state have reached the 66% municipal resource recovery target. All of these Councils either collect both food waste with garden organics for reprocessing, or send their mixed waste to Alternative Waste Technology (AWT) facilities.

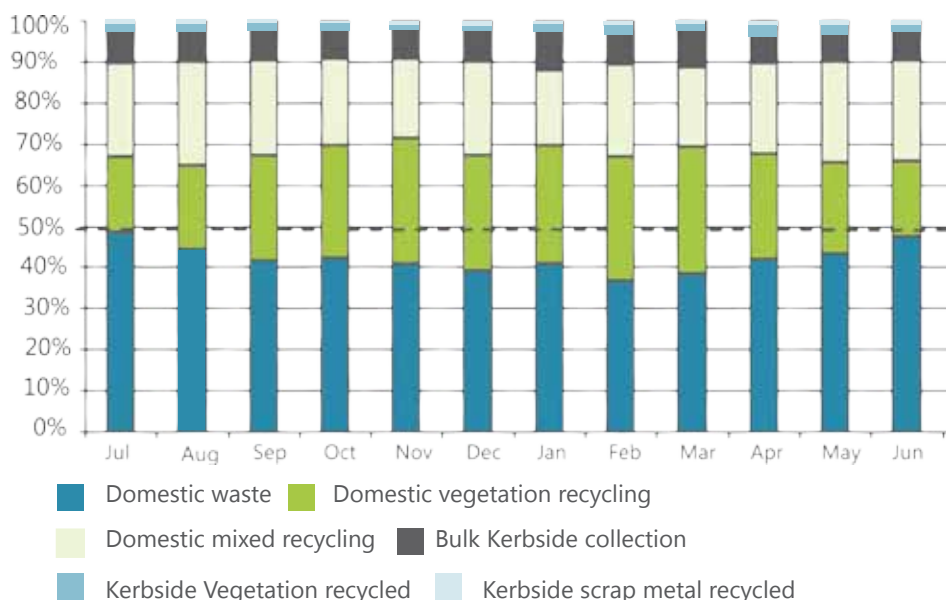
In the most recent publicly available state-wide comparisons, Wyong Council ranked in the top 20 Councils for domestic (household) resource recovery performance (Review of Waste Policy and Strategy in NSW 2010). Wyong Shire Council uses one of the preferred 3 bin systems nominated by OEH in their Best Bin Systems – Preferred resource Recovery Practices by Local Councils 2011.

During 2011/12 total domestic resource recovery fluctuated between 48% and 52% each month, with an overall annual recovery rate of approximately 52%.

Based on the Office of Environment and Heritage, Benefits of Recycling Calculator, the WSC yellow bin mixed recycling tonnages equate to the following environmental benefits:

- 2,259 cars permanently removed from the roads
- 1,444 households' annual electricity requirements saved
- Annual water usage of 3,317 people, or 5,642 average sized backyard swimming pools of water saved

Resource Recovery by Month 2011/12



## Council Waste

The following table shows the amount of waste generated from Council activities and works.

Year	Total tonnage (t)
2010/11	18,965
<b>2011/12</b>	<b>19,726</b>

Note: The tonnages shown are included as part of the Municipal Waste shown in Quantities of waste landfilled in 2010/11 and 2011/12.

The quantities of Council waste are subject to significant fluctuations due to the nature of Council works.

Some Council materials, such as soils from road works, which were previously used for alternative purposes, are now classified as waste materials and therefore included in overall waste figures.



Key drivers for change in waste and resource recovery include:

- Increasing waste levy charged by the NSW government
- Alternative Waste Technology System (AWT) Technology
- Need to minimise emissions of greenhouse gases
- Generation of greenhouse gases and utilisation of methane gas generated by the landfill
- Community expectations
- Changing legislation influencing work practices and procedures
- Loss of finite resources contained in the waste
- Energy and water use in the production, consumption and disposal life-cycle of materials
- Loss of habitat to landfill excavations
- Land contamination and sterilisation
- Potential for surface and groundwater pollution
- Noise, odour, littering and other impacts on local amenities
- Contamination of bushland from illegal dumping



- Implement Litter Management Plan: The original Litter Management Plan was superseded by the Integrated Litter and Illegal Dumping Plan. Implementation of the integrated plan commenced during 2011/12. Updated annual actions for 2011/12 were submitted to the Environment Protection Agency (EPA) and approved in June 2012.
- Undertake a feasibility study for establishment of soil processing facility: The majority of soil received by the Buttonderry Waste Management Facility is comprised of road excavated material. A recent change in legislation permits the exemption of the majority of the excavated material which is managed by Roads & Stormwater. The management of the residual soil (non-exempted material and other soils) is currently being investigated.

- Complete detailed design for Mardi, Gwandalan & Toukley closed land fills:
  - Mardi: The concept design has been completed. Investigations are in progress for the preparation of DA documentation under preparation for lodgement end of 2012. The detailed design documentation is to be finalised in 2013.
  - Gwandalan: The design has been delayed. Consideration of potential alternative end uses for the site has required an amendment to the Remediation Action Plan (RAP). Negotiations with the owner (Darkinjung LALC) of part of the site have progressed but are still to be finalised. Pre-design investigations required by the Remediation Action Plan will take place in 2012/13. Tenders invited for design in 2012/13.
  - Toukley: The scope of design work is currently being finalised. Detailed design is planned to be completed by the end of 2012/13.

Further to the above responses, Council has undertaken a number of additional initiatives to improve waste and resource recovery including:

- Preparation of a long term waste strategy for BWMF that incorporates Alternative Waste Technologies (AWT).
- Establishment of appropriate sites that have all required approvals and licenses for the temporary storage of Council waste materials suitable for re-use or recycling and/or reprocessing to maximise resource recovery and minimise landfilling and associated disposal costs.
- Prevention of illegal dumping and avoidance of illegal storage and disposal of Council waste from all operational area including Virgin Excavated Natural Materials (VENM), soils, concrete, mulches, seagrass and kelp.

## Rehabilitation of Closed Landfills

Progressive rehabilitation will occur in order of priority i.e. Mardi (2012/13) followed by Gwandalan (2013/14), followed by Warnervale (2013/14), Shelly Beach (2014/15), Tumbi Umbi (2015/16) and Toukley (2016/17).

## Landfill Gas Capture

In 2011/12 Council doubled the electricity generation capacity by installing a new 1MW generator. The generator is a win-win-win, providing benefits for the environment, the community and the Council. Powered by methane gas extracted from landfill, the generator prevents this powerful greenhouse gas from leaking into the atmosphere.

Creating enough energy to power around 4,000 households, the methane extraction program is an environmentally progressive way of powering the Shire. By extracting methane from landfill, Council is taking the initiative to minimise its liability under the Carbon Pricing

## Electronic Waste

Electronic waste (e-waste) is the fastest growing domestic waste stream in Australia and poses considerable storage and toxicity problems for both councils and their communities. With the imminent digital switch over, the quantities of old televisions and computers are set to dramatically increase. E-waste poses a risk to both the environment and human health, and contains a range of toxic, rare and valuable resources.

Each tonne of e-waste recycled equals 3.5 tonnes of carbon emissions reductions as well as the conservation of finite natural resources. Enthusiastic public participation in Council's free e-waste drop-off recycling program at Buttonderry Waste Management Facility helped to dramatically reduce the carbon footprint of the area in 2011/12. Huge public interest and participation in the free drop-off program has meant that Council

collected over 200 tonnes of e-waste. By recycling over 95% of this waste, Council has reduced the carbon footprint of the community by about 800 tonnes.

Council has committed to continuing this popular and successful program, dedicating \$90,000 per annum. In 2012/13 Council will investigate the possibility of e-waste kerb-side collection to ensure equity of access to the program for all residents.

## Problem Wastes

The household waste stream is becoming more complex, due to the ever increasing range of products that are available for purchase and will eventually require end-of-life management. When the majority of waste was disposed to a sanitary landfill there was less need to worry about individual items in the waste stream. With more complex modern waste management systems, it is increasingly important to prepare the waste stream in order to maximise its resource recovery potential.

'Problem wastes' for the Central Coast include items that require special attention because they either: have a very high resource value; contain hazardous materials; reduce the effectiveness of current and future resource recovery operations; may be illegally dumped and cause litter; or could be better managed through other systems, such as Product Stewardship programs. Problem wastes include materials such as:

- Electronic waste (e-waste, such as TVs, computers and peripherals)
- Mobile phones
- Car batteries
- Household chemicals (e.g. paint, cleaning products, adhesives, solvents)
- Fluorescent lights
- Gas bottles
- Tyres
- Sharps and clinical waste
- Pharmaceuticals
- Nappies
- Asbestos





Batteries and fluorescent lights contain harmful elements such as mercury, alkaline and lead acid, which can cause major environmental hazards, and can also pose a serious health risk, with the mercury in just one fluorescent tube polluting up to 30,000 litres of water. A new recycling program for batteries, light globes and fluorescent tubes has started at Council's Customer Contact Centres and Libraries. Residents are encouraged to bring unwanted batteries and fluorescent lights to collection points across the Shire, rather than having to wait for twice yearly chemical collection days. The recycling program has been introduced for a trial period of one year and has been funded by the NSW Government's Waste and Sustainability Improvement Payment (WaSIP) program to help reduce the amount of materials being incorrectly disposed of.

### Mattress Recycling Program

Since the mattress recycling program began in August 2011 over 800 old mattresses have been recycled rather than being buried with general waste in the Shire. The mattresses are collected by recycling firm Dreamsafe and taken to a Newcastle depot where they are dismantled for recycling. So far, the recycling program has saved about 598 cubic metres of space at Buttonderry. Recycling mattresses not only saves limited landfill space, it also saves resources. The average mattress contains 12.5kg of steel, 2kg of wood and 1.5kg of foam – most of which is recycled. Funds to extend the trial have been given to Council by the NSW government under its WaSIP program.

### Organic Recycling Education Program

In 2011/12 Council ramped up its efforts to educate and engage the community in the benefits and ways of recycling organic waste, holding 24 workshops for over 600 residents. Food waste is a significant challenge both nationally and in the Wyong Shire, comprising over 36% of the domestic waste stream. The workshops are funded through the WaSIP program.

Through these innovative recycled organics workshops, Council is educating the community on how to reuse and recycle organic waste. Focusing on a range of topics including composting, worm farming, chicken-care, mulching techniques and no-dig organic gardens, the workshops aim to develop residents' capacity and confidence in the avoidance and responsible management of food waste. Council is also using the workshops as a forum to build community sustainability support networks.

### Commercial and Industrial Waste

Recycling options for the commercial sector are now more flexible than ever. Designated bins for recyclable materials can now be provided, that may encourage greater recycling and result in an increased diversion of waste from landfill. However, commercial recyclable materials are generally produced in large quantities or are oversized (e.g. cardboard), making the use of household recycling bins inappropriate for all sites. State Government action is therefore required to create infrastructure to facilitate and encourage commercial recycling.

### Construction and Demolition

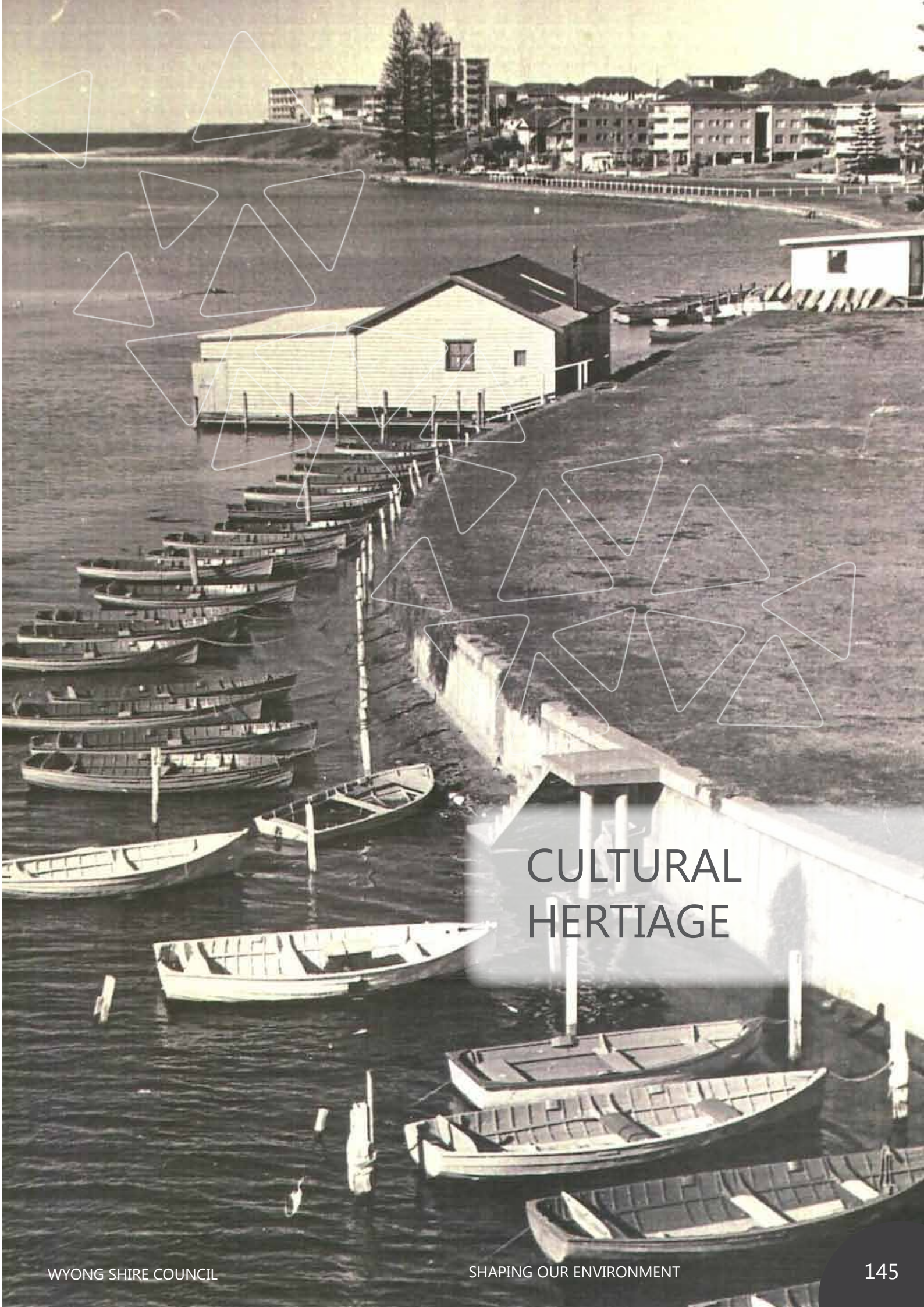
While the smallest component of the three waste streams locally, there are opportunities to recycle much of this C&D waste. However, as a large component of the building waste received at BWMF is co-mingled it cannot be diverted easily for reprocessing and is therefore destined for landfilling. A differential pricing structure is in place where mixed waste attracts the highest charge and source-separated recyclable materials receive no charge or a lower charge.



It is anticipated that in the future Council will have access to Alternative Waste Technology for municipal and some commercial waste. This will reduce the volume of waste significantly which in turn will increase the life of the landfill. In addition, an AWT system renders waste inert which means environmental risks and hazard associated with landfilling are minimised.

A draft Central Coast Waste Strategy is currently being developed in collaboration with consultants and staff from Gosford City Council.

It is also anticipated that infrastructure will be developed to facilitate recycling for commercial and industrial building development and demolition.



# CULTURAL HERTIAGE



*Heritage in Wyong Shire includes all the things that make up the local identity – our spirit and ingenuity, our historic buildings and our unique, living landscapes. By protecting, preserving and maintaining the heritage and significant cultures of the past and present we provide future citizens of Wyong Shire, and our visitors, with the opportunity to learn from and enjoy our rich connections with the past.*

The value of Wyong Shire’s natural heritage is recognised and protected by National Parks, nature reserves and open space reserves. In total, approximately 65% of the Shire has been left as bushland. Protecting Aboriginal and non-Aboriginal heritage requires respect and an understanding of places and items with tangible cultural significance (such as buildings, monuments, art and artifacts), as well as the related intangible aspects of culture (such as folklore, traditions, language and knowledge).



## State Rating

	2009/10	2010/11	2011/12
Aboriginal Heritage	NR	NR	<b>Declining</b>
Non Aboriginal Heritage	Stable	Stable	<b>Stable</b>

NR = Not Rated

During the reporting period registered and unregistered Aboriginal sites continued to be degraded by natural weathering, vandalism and mismanagement. While vandalism and arson also pose a constant threat to publicly and privately owned non Aboriginal heritage sites, they have generally been in a stable state over the past twelve months.

## Aboriginal Heritage

Aboriginal people have occupied the NSW landscape for more than 42,000 years and are recognised as part of the oldest and most continuous living culture in human history. Evidence and important cultural meanings relating to this occupation are present throughout the Shire and are integrated into traditions, lore, customs and beliefs which link Aboriginal people to their country.

So far, there are over 300 sites of Aboriginal cultural importance registered with OEH on the Aboriginal Heritage Information Management System (AHIMS). These include open camp sites, scarred trees, axe grinding grooves, rock engravings, shelters with art and / or deposits, kitchen middens, burial areas and stone arrangements.

In addition to the tangible remains of occupation, there are many other places which hold spiritual, ceremonial, social and educational value. Tuggerah Lakes Resting Place is the first Aboriginal ‘place’ to be registered within Wyong Shire and is located entirely within Tuggerah Nature Reserve.

The Tuggerah Lakes area is of significance to the local Aboriginal community because of its traditional usage. The area was used for gathering wild resources and is also known locally as a traditional meeting place. It was a place for learning and education and has a great spiritual presence for local Aboriginal people. Today, Tuggerah Lakes Resting Place is also recognised as an Aboriginal reburial site where ancestral remains have been returned to Country and to where other cultural material may be repatriated to the Aboriginal community.

Over the past 200 years many more sites have been damaged or destroyed by activities associated with agriculture, mining and development. The effective protection and conservation of remaining sites will assist in maintaining a rich cultural landscape. In an effort to protect those sites that are still intact, it is an offence to harm an Aboriginal site under the National Parks & Wildlife Act 1974, where harm is defined as:

- Destroying, defacing, damaging or desecrating an object;
- Moving an object from the land on which it is situated; or
- Causing or permitting an object to be harmed.

## Non Aboriginal Heritage

Recorded European settlement of the Shire commenced in the 1820’s though timber getters worked and lived here from the 1790s. Settlement spread at a different pace in different areas, not taking up the poorer land of Wanervale and Gorokan until the 1870’s. The opening of the Great Northern Railway in the late 1880’s created a much closer link to Sydney, encouraging agriculture and fishing, sparking the development of Wyong as a railway town and initiating tourism. Timber getting peaked in the early 1900’s, later giving way to citrus growing, dairy farming, pastoralism and more recently tourism. Fishing was significant from the earliest days. Evidence of this history is found throughout the Shire.

Currently, there are 97 items of local European heritage significance in the Shire listed in Wyong Local Environmental Plan 1991 (Wyong LEP 1991), which date back to the early settlements in the 1820s. These include houses, barns, holiday homes, war memorials and

bridges. The state of at least one privately owned local heritage item has improved after it was sold and restored. Council has limited power to force maintenance unlike State Heritage Items. Local heritage items power only extends as far as weed control and where the building forms a safety concern.

There are now four items listed on the State Heritage Register under the NSW Heritage Act 1977 in Wyong Shire, these include: The Entrance Ocean Pools; Hargraves House, Noraville; St Barnabas Anglican Church, Yarramalong and Norah Head Lighthouse. Any developments involving items of State significance becomes an integrated development and requires the concurrence of the NSW Heritage Office.



- Population growth and resultant urban development and redevelopment (e.g. The Entrance)
- Increasing land values resulting in a push to maximise development potential of sites
- Development reflecting current trends rather than the existing character of the area - resulting in the loss of context and the degradation of streetscapes
- Natural processes of deterioration and potential climate change impacts
- The limited nature of any heritage incentives or legislation to ensure preservation of local items of heritage



Council takes heritage issues into consideration both when assessing relevant development applications and when heritage items managed by Council are impacted by Council's works program. During the reporting period there were a number of actions taken that influence the management of cultural heritage in the Shire, including the following.

- Part of the preparation of the Comprehensive LEP (commenced in 2008/09) included a review of the

Wyong LEP 1991 heritage clauses 32 to 36 and the heritage categories and listings contained in Schedule 1. The Shire-wide Heritage Review involves a review of local heritage provisions including Local Thematic History, list of Heritage Items included in the Heritage Inventory, conservation management recommendations and planning controls and guidelines. The Shire-wide Heritage Review was completed in mid 2011 and includes an Inventory Database based on the Heritage Branch template.

- As part of the Shire-wide Heritage Review, Norah Head Light Station Precinct will be reclassified as a heritage item of state significance under Schedule 1 – Heritage Items of Wyong LEP 1991. This will be consistent with its State listing.
- The 2003/04 audit of Council owned non-Aboriginal heritage items recommended that conservation plans and maintenance guidelines be developed for each item in accordance with the NSW Heritage Office. However, these have not yet commenced on any coordinated basis.
- As part of the EMS an Aboriginal Heritage Procedure is being prepared. Once completed, the document will guide staff through the due diligence process when designing and carrying out activities that could result in harm to an Aboriginal site. The procedure is guided by Council's Cultural Plan (2005) and Council's Aboriginal Heritage policy, which states that "all reasonable steps be taken to maintain and interpret sites of Aboriginal importance for the benefit of current and future generations."
- To encourage appropriate management of the Norah Head Aboriginal sites cluster, Coastcare invited land managers (including Crown Lands, Council and Aboriginal stakeholders) to attend a site investigation on 19 April 2012. The aim of the site visit was to accurately locate and describe the registered sites within the Norah Head coastal strip and informally assess their condition. The correct coordinates and site details were provided to OEH to update the AHIMS register and to support land management into the future.

- In August 2012 Council funding for the management of a site of Aboriginal cultural significance was approved. Aboriginal stakeholders requested that the location of the site be kept private to reduce the risk of vandalism. Protection works will be undertaken in consultation with OEH and local Aboriginal stakeholders and will likely involve pedestrian diversions, erosion and sediment control works and vegetation management.



While non Aboriginal heritage sites on land owned and managed by Council are generally well maintained, there is a risk of incremental loss of privately owned heritage items over time. Continuing pressures from neglect, vandalism fire and other hazards are likely to continue to reduce the numbers of existing items, although this loss will be offset by the listing of new items as time progresses.

Conservation of Aboriginal cultural heritage involves identifying, assessing, protecting and maintaining the important cultural heritage values of landscapes, resources, places, objects, customs and traditions. The complexity of such a task is likely to result in the continued decline of Aboriginal heritage in the Shire. An integral step towards changing this outcome would be to ground-truth those sites that are registered on land under Council's care and control to ensure appropriate management practices are in place. Maintaining strong working relationships with Darkinjung Local Aboriginal Land Council and other interested Aboriginal stakeholders, including Guringai Aboriginal Tribal Link, is vital in understanding working priorities and investing available resources into those projects of greatest cultural significance.

#### REFERENCES

Wyong LEP 1991- Schedule 1  
 Wyong Shire Heritage Study 1994 – Ron Howard Heritage Conservation Pty Ltd  
 NSW Heritage Act 1977  
 National Parks and Wildlife Act 1974  
 A Cultural Plan for Wyong Shire 2005



NOISE



# Noise



AT A GLANCE   KEY DRIVERS   RESPONSES   FUTURE TRENDS

*Noise pollution can be defined as unwanted noise that unreasonably intrudes on daily activities. In urban areas, noise pollution has many sources, most of which are associated with urban living (roads, rail, air transport, industry, recreational activities etc.). The level of annoyance or discomfort depends on the type, timing, duration and frequency of the noise, or where the disturbance is unusual.*

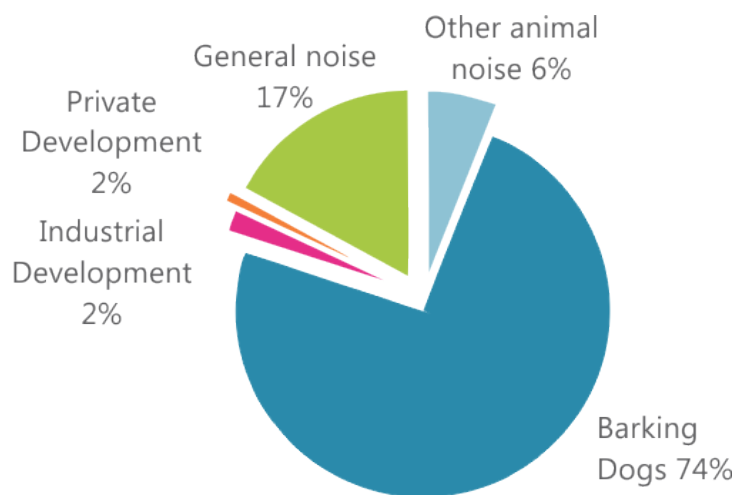


Council, OEH and NSW Police receive complaints regarding noise. There is limited available data and insufficient baseline data to establish acceptable benchmarks for gauging whether noise levels are changing in the Shire and establishing a current state rating. However, community response via Council's Customer Contact line provides an indication of the noise sources that are of concern to the public.

There were a total of 733 noise complaints made during the reporting period. Of this, 74% related to barking dogs and 17% related to general noise pollution (such as amplified music and air conditioners). Noise from animals other than dogs (such as roosters), commercial and industrial development and private development were also the subject of noise complaints, representing 6%, 2% and 1% of calls respectively. It is important to note that complaints are not considered to be an accurate measure of the impact of noise and typically understate it. As a result, the data on complaints is indicative only.

There is increasing evidence that the presence of quiet areas, both within and outside homes, results in increased wellbeing and reduced annoyance and adverse health impacts. Access from homes to quiet green areas, such as parks and reserves, has been shown to reduce noise annoyance and stress-related psychological symptoms. These findings reinforce the need for planning of residential developments as the pressures of population growth and greater urban density increase our exposure to the various forms of unwanted noise.

Noise complaints received by Council by type - 2011/12



- Increasing population, particularly where it involves expanding urbanisation in former rural areas, and urban consolidation with incompatible adjacent to land uses
- Increasing volumes of road, rail and air traffic
- Planning that results in noise based and use conflicts



Council addresses noise issues as they arise in planning and pollution control contexts. Noise buffers are also required to ensure acceptable noise standards in new developments (e.g. barriers around new major roads).

Council also respond to community complaints about noise problems under the Protection of the Environment Operations Act 1997. The following table outlines the range of government agencies responsible for dealing with noise issues.



Noise Source	Contact	
<b>Industrial/commercial noise</b>		
Smaller factories and backyard workshops	Wyong Shire Council	02 4350 5555
Commercial premises - ventilation, air conditioning, refrigeration	Wyong Shire Council	02 4350 5555
<b>Transport noise</b>		
Aircraft in flight, taxiing, taking off and landing	National Noise Inquiry Line	1300 302 240
Noisy motor vehicles (including trail bikes) in a public place, such as:	EPA Environment Line Police Assistance Line Wyong Shire Council	131 555 131 444 02 4350 5555
<ul style="list-style-type: none"> <li>roads, verges and car parks</li> <li>off road, including parks and reserves</li> </ul>		
Noisy motor vehicles (including trail bikes) on private property	Police Assistance Line Wyong Shire Council	131 444 02 4350 5555
Road traffic:		
<ul style="list-style-type: none"> <li>local roads</li> <li>freeways, tollways, main roads</li> </ul>	Wyong Shire Council Roads and Maritime Services Environmental Hotline	02 4350 5555 1300 308 349
Rail noise	EPA Environment Line Rail Greenline phone	131 555 1300 656 999
Naval vessels	Defence Department	1300 333 362
Recreational boating, jet skis	NSW Maritime	131 256
Amplified music from vessels	NSW Maritime Water Police Wyong Shire Council	131 256 (02) 9320 7499 02 4350 5555
<b>Construction noise</b>		
Road construction	EPA Environment Line Roads and Maritime Services Wyong Shire Council	131 555 02 4350 5555
Building construction	Wyong Shire Council	02 4350 5555
Major public infrastructure	EPA Environment Line	131 555
<b>Public sporting and entertainment venues</b>		
Motor sports and gun/rifle/pistol clubs	Wyong Shire Council	02 4350 5555
Sporting facilities	Wyong Shire Council	02 4350 5555
Aquatic motorised sporting events	NSW Maritime	131 256
Concert facilities	Wyong Shire Council	02 4350 5555
<b>Neighbourhood noise</b>		
Noise from residential premises, animal noise, barking dogs, power tools, loud music, air conditioners, pool pumps, etc.	Wyong Shire Council Police Assistance Line	02 4350 5555 131 444
Building intruder or car alarms	Wyong Shire Council Police Assistance Line	02 4350 5555 131 444



People come to Wyong Shire for many reasons, including the quality of the natural environment and the relaxed atmosphere. In planning for new development Council will aim to maintain these values by avoiding noise-related land-use conflicts through initial planning, with appropriate separations between incompatible land uses. Wherever possible, urban renewal will be located and designed to minimise noise impacts.

References

[http://www.environment.nsw.gov.au/soe/soe2009/chapter3/chp\\_3.5.htm](http://www.environment.nsw.gov.au/soe/soe2009/chapter3/chp_3.5.htm)  
<http://www.environment.nsw.gov.au/contact/EnvironmentLine.htm>  
<http://www.environment.nsw.gov.au/resources/noise/10799nglgfull.pdf>

## Community Strategic Plan Objective

Objective	Outcomes
Communities will be vibrant, caring and connected with a sense of belonging and pride in their local neighbourhood.	The Coastal Zone Management Plan has a considerable focus on increasing partnerships with community groups and encouraging participation in programs that increase community knowledge about coastal management issues, add value to the coastal zone and foster partnerships between individuals, community groups and with Council. These objectives and Actions are outlined in the Coastal Knowledge and Community Involvement Action Plan.
	Landcare groups bring local people together through a common interest of improving the local environment. The main demographic of the program is seniors, however the program is open to all ages and encourages youth participation through National Green Jobs (Green Corps) projects and Junior Landcare groups, in partnership with schools.
	The Wyong Shire-wide Heritage Review has been completed, which will inform the Settlement Strategy and feed into the Wyong Local Environmental Plan.
	The Wyong Shire-wide Heritage Review and Shirewide Settlement Strategy are now complete and will be sent to the Department of Planning & Infrastructure (DP&I) alongside the draft Wyong LEP 2012. The Shirewide Settlement Strategy builds upon the requirements of the Central Coast Regional Strategy (CCRS) and incorporates the Heritage Review and Draft North Wyong Shire Structure Plan. Examples include the identification of how Wyong LGA will meet the required dwelling, population and employment targets to 2031. Council is anticipating public exhibition of these document from mid November 2012 to end January 2013.
Communities will have access to a diverse range of affordable and coordinated facilities, programs and services.	The Coastal Zone Management Plan includes actions that aim to contribute towards enhancing beach access ways, beach amenity and other beach facilities which will in turn maximise their benefit and use to the community.
Areas of natural value in public and private ownership will be enhanced and retained to a high level in the context of ongoing development.	Landcare groups actively maintain the habitat of the threatened and endangered species and ecological communities on 23 project sites. The habitat of the Little Tern population at The Entrance North was protected and monitored, however due to natural environmental factors, the colony's breeding effort failed.
	<p>The Building Coastal Biodiversity Resilience Action Plan promotes the protection of terrestrial and aquatic habitats and communities in the coastal zone. Actions include:</p> <ul style="list-style-type: none"> <li>• Conducting a benchmark survey of coastal ecological communities</li> <li>• Strengthening coastal vegetation communities through dune restoration programs</li> <li>• Establishing conservation agreements for high value coastal ecological communities</li> <li>• Supporting Landcare groups,</li> <li>• Working with Office of Environment and Heritage and Hunter-Central Rivers Catchment Authority</li> <li>• Conducting dune stabilisation and revegetation work to encourage sand accretion.</li> </ul>
	The Natural Areas Bush Fire Management Program has undertaken significant analysis and prioritisation of hazard reduction activity undertaken by Council. Fieldwork has shown there are significant issues regarding encroachment and unauthorised use of Council bushland. Systems are being developed to improve overall land management to integrate bush fire protection with weed, stormwater and access control programs.

Objective	Outcomes
	The scenic qualities and features of the landscape, the character and amenity of the locality and views and vistas are all a matter for consideration under Section 79C(1)(b) of the Environmental Planning and Assessment Act 1979 and are considered during the assessment of a development application. In addition, the protection of existing trees and vegetation is considered under Clause 28 of Wyong Local Environmental Plan 1991 and Chapter 14-Tree Management.
There will be a sense of community ownership of the natural environment through direct public involvement with environmental program.	<p>The draft Natural Resource Management Strategy has been prepared in line with Commonwealth and State planning. The next step is to seek Council endorsement for exhibition and develop a community engagement strategy.</p> <p>Fieldwork undertaken for the Natural Areas Bush Fire Management Program has highlighted significant concerns over the number and condition of fire trail in Wyong. The program has developed a priority list for upgrades, construction guidelines and other tools to improve management of fire trails and will help encourage greater public use for appreciation, recreation and education.</p> <p>The Landcare program facilitates active community participation in environmental projects with a focus on regeneration of natural areas. In addition, field days such as National Tree Day and other planting and weeding events attract the general public for short term participation in the program.</p> <p>The Coastal Zone Management Plan encourages participation in programs that increase community knowledge about coastal management issues, add value to the coastal zone and foster partnerships between individuals, community groups and with Council.</p> <p>The Natural Areas Bush Fire Management Program has undertaken targeted community engagement and this includes helping residents better understand how they can assist in suitably maintaining bushland reserves adjacent to their property.</p> <p>Work on The Entrance Coast to Lake Walk has commenced, with Council also planning a Mountains to Sea walk.</p> <p>Council is currently developing a Greening Wyong Strategy, which will guide and manage the ongoing tree planting within the Shire's public places in a proactive and sustainable way. The strategy is intended for landowners, developers, general community members, and Council staff who are tree planting in public places, such as streets and parks. It is not a guide to tree planting in natural areas, such as wildlife corridors, bushlands and wetlands.</p>
There will be a strong sustainable business sector and increased local employment built on the Central Coast's business strengths.	The CZMP includes "Access, Recreation and Tourism Action Plan". This Action Plan sets out how Council will maintain and build on the important recreational and tourism values of the coastline taking into account potential coastal recession associated with climate change and sea level rise.
The community will be well educated, innovative and creative. People will attain full knowledge potential at all stages of life.	The Landcare program provides a lifelong learning experience for children, families and retirees. The Landcare program provides an avenue for people to gain and share new knowledge in relation to local natural areas and their management. Training activities and workshops are undertaken on a regular basis. 20 formal training activities were held through the Landcare program, attended by 179 people.
A high level of information about the natural environment and environmental change will be maintained and available.	The Coastal Knowledge Action Plan lists objectives to (O1) provide for efficient coastal management, based on access to best available science and information about community values and attitudes; (O7) enhance the awareness of residents, landholders and land users of coastal processes, climate change and impacts; (O8) develop efficient and effective strategies for minimising Council's and the community's exposure to risk in the coastal context; and (O11) establish a clear process for monitoring, review, reflection and adaptive management of the coastline.

Objective	Outcomes
Community knowledge of sustainability and environmental issues impacting Wyong Shire will be comprehensive.	The Natural Areas Bush Fire Management Program has undertaken significant fieldwork improving the understanding of Council's bushland estate as well as developing tools to improve management at the interface and of fire trails.
Residents will be active participants in setting the direction of their community.	The community has been consulted throughout the process of developing the CZMP. A targeted community consultation program prior to and during the public exhibition period between June and August 2011 allowed community members to have their say about the Plan. The Plan is adaptive and under regular review. Residents will be encouraged to be involved in the plans implementation and development over the coming years.
Communities are safe and will have a clear perception of security.	<p>Wyong's Coastal Emergency Response Management Plan and Emergency Action Sub Plans for Curtis Parade North Entrance, Hargraves Beach and Cabbage Tree Harbour describe proposed emergency response measures for areas threatened by coastal hazards and include Sub Plan's which dictate a course of Action during an Emergency event. These plans have been developed with input from the community. Measures are in place to ensure that affected residents are fully aware of emergency response plans that affect them.</p> <p>The Natural Areas Bush Fire Management Program has had significant improvements to the process and improved grant funding sources identified for further bush fire protection. Stage 2 of the program will include further improvement to community engagement on a broader scale, as well as extending the targeted community engagement trialled so far.</p>
High quality, sustainable development will be sympathetic to the local setting and reflect community values.	<p>The Coastal Zone Management Plan implements a sustainable land-use planning framework that aims to encourage sustainable and appropriate development in the coastal zone in light of environmental issues that exist now and are predicted to worsen in the future with predicted climate change and sea level rise.</p> <p>The land-use planning framework aims to restrict inappropriate development in areas affected by coastal hazards or recognised as having significant ecological value both now and into the future.</p>
All student and educational institutions will have access to high quality services and technological resources.	The recently installed CoastalCOMS Camera is a technical resource that provides scientific data about coastal processes which will be potentially valuable to local universities wishing to build knowledge and understanding in this field.



Wyong Shire Council  
STATE OF THE ENVIRONMENT  
**2011/12**



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*creating a caring, prosperous, sustainable Wyong Shire*