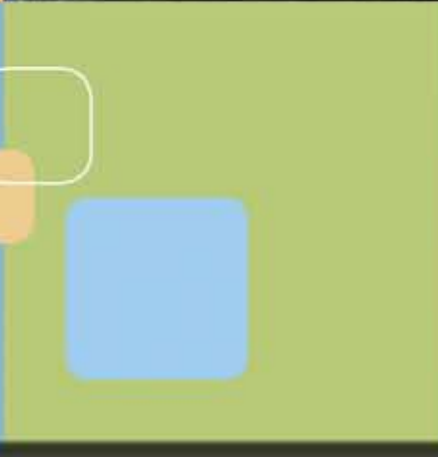
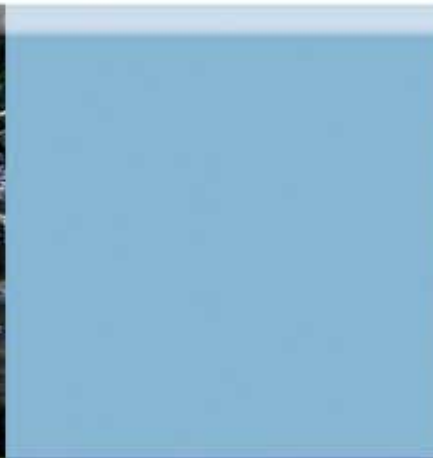


A sustainable high quality of life for all



Port Macquarie-Hastings Council *2005/2006 Annual Report*
Part B: State of the Environment Report

Table of Contents

Port Macquarie-Hastings at a Glance	3
About SoE 2005-2006	4
Chapter 1 – Towards Environmental Sustainability	5
1.0 Assessing Progress	5
1.1 Community Involvement in Environmental Monitoring	7
Chapter 2 – Human Settlement	8
2.1 Population and Settlement Patterns	8
2.2 Urban Water	9
2.3 Transport.....	10
2.4 Waste Management.....	12
2.5 Heritage.....	18
2.6 Amenity	19
Chapter 3 – Atmosphere	22
3.1 Climate Change and Energy Consumption	22
3.2 Urban Air Quality.....	24
Chapter 4 – Land	26
4.1 Land Use Changes	26
4.2 Soil Erosion.....	28
4.3 Acid Sulfate Soils.....	29
4.4 Land Contamination.....	31
Chapter 5 – Water	32
5.1 Surface Water Extraction	32
5.2 Groundwater Extraction.....	33
5.3 Water Quality and Riverine Ecosystem Health.....	35

Chapter 6 – Biodiversity	37
6.1 Terrestrial Ecosystems and Species Diversity	37
6.2 Native Vegetation Clearing	38
6.3 Introduced Terrestrial Species	39
6.4 Fire	40
6.5 Aquatic Ecosystems and Species Diversity	40
6.6 Introduced Aquatic Species	41
6.7 Aquatic Harvesting.....	41
Glossary	43
References	44

Port Macquarie-Hastings at a Glance

The Port Macquarie-Hastings local government area (LGA) lies within the North Coast Region of New South Wales. The North Coast Region is the most biologically diverse area in NSW (Native Vegetation Advisory Council of NSW, 1999). It is the fastest growing region in NSW outside of the Sydney/Wollongong and Newcastle/Central Coast areas.

The LGA covers an area of 3,693 sq km and is located 420 kilometres north of Sydney and 510 kilometres south of Brisbane. The Pacific Highway and the North Coast Rail Line bisect the area north to south. State Forests and National Parks occupy a large proportion of the area.

The Pacific Ocean in the east, with a coastline of some 84 kilometres and the Great Dividing Range in the west, provide the natural boundaries to the area. The northern boundary is shared with the Kempsey Shire and runs from Point Plomer on the coast west to the Great Divide. The southern boundary is shared with the City of Greater Taree and commences at Diamond Head on the coast and again runs west to the hinterland. The western boundary is shared with the Walcha Shire Council area. The area has two main river systems, the Hastings and Camden Haven Rivers.

The topography of the area is diverse ranging from sand dunes, coastal wetlands, flood plains and rugged mountain regions. The area is known for having an ideal temperate climate, with the maximum daily temperatures rarely going above 30°C or below 15°C.

The current population for the Port Macquarie-Hastings LGA is estimated at 71,573, and is anticipated to grow to 97,800 by the year 2021. The area has the second highest population (after the Tweed) and the highest population growth rate, 2.55%p.a. (five year average), in the North Coast Region (DLG, 2005).

The area has many small localities and villages in addition to three main townships. Situated on the coast, Port Macquarie is the largest town with a population of about 40,500 people and serves as a major tourist destination in addition to being the major regional centre for the area.

The township of Wauchope, 21 kilometres or 20 minutes by car from Port Macquarie, serves as the regional centre for the inland area, particularly for the rural communities and the associated agricultural industries. Wauchope has an estimated population of about 5,150 people.

The villages of Lake Cathie and Bonny Hills maximise the natural attributes of their location. The population of the area is approximately 4,750 and is growing rapidly.

The Camden Haven is located in the south of the LGA (population approximately 7,900) and includes the towns of Kendall, Kew, North Haven, West Haven, Dunbogan and Laurieton. It is mainly a retirement area and tourist destination, with Laurieton as the main service centre.

Smaller rural population centres and surrounding villages include the Comboyne Plateau (Comboyne, Comboyne West) and Rural Villages (Beechwood, Ellenborough, Long Flat, Pappinbarra, Hollisdale, Upper Pappinbarra, Bellangry, Pembroke, Ballengarra, Rollands Plains, Upper Rollands Plains, Telegraph Point). The rural population of the LGA is about 12,800 persons.

About SoE 2005-2006

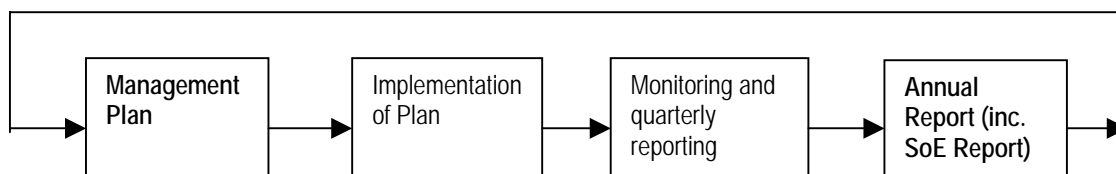
PURPOSE

The Port Macquarie-Hastings Council State of the Environment Report (SoE) 2005-2006 reports on the status of the main environmental issues facing the Port Macquarie-Hastings local government area. The report addresses eight environmental sectors – land, air, water, biodiversity, waste, noise, Aboriginal heritage and non-Aboriginal heritage.

The Local Government Act 1993 requires Council to prepare a *comprehensive* SoE the year ending after each election of the councillors, and a *supplementary* SoE report must be prepared in intervening years.

The SoE Report forms part of Council's Annual Report and is an important component of the Management Plan preparation and decision making process. The role of SoE reporting is depicted below.

Management Planning and Annual Reporting Cycle



THE REPORT

The 2005-2006 SoE Report is a *supplementary* report. A supplementary must identify any new environmental impacts since the Council's last SoE report and update the trends in environmental indicators that are important to each environmental sector. This report has been structured under the following headings:

- Toward Environmental Sustainability
- Human Settlement
- Atmosphere
- Land
- Water
- Biodiversity

The report aims to present information in a simple form and should be read in conjunction with the comprehensive Hastings SoE Report 2003-2004.

Tables showing indicator data attempt to provide data from previous *comprehensive* reporting years, 1998/99 and 2003/04, and updated data for the 2005/06 year. Graphical data displays are based upon the entire data set relevant to that indicator.

Chapter 1 – Towards Environmental Sustainability

1.0 Assessing Progress

An inherent purpose of State of the Environment reporting is to enable the assessment of progress towards environmental sustainability and focus strategies and actions required to improve environmental performance and ecological systems. This chapter attempts to provide a 'snap-shot' of Port Macquarie-Hastings Council's progress toward environmental sustainability on the basis of the data presented in this report.

The Port Macquarie-Hastings is progressing towards environmental sustainability in a number of areas. Examples of specific areas include:

- Waste reduction and recycling
- Waste water reuse
- Water supply demand management
- Heritage conservation and awareness
- Acid sulfate soils remediation
- Strategic land use planning
- Residential sector energy and water efficiency

The following key strategies will require continued support:

- Hastings Drought Management Plan
- Hastings & Camden Haven Reclaimed Water Project
- Hastings Waste Management Strategy 1999
- Hastings Effluent Management Strategy 1998
- Urban Growth Strategies
- Camden Haven Urban Growth Strategy 2003
- Greenhouse Action Strategy 2003
- Riparian Restoration Programs
- Estuary Management Plans
- Hastings Urban Stormwater Management Plan 2000
- Regional and Local Cycleway Plans

Table 1.1 draws together specific issues identified in this Report as requiring action to ensure that the Port Macquarie-Hastings LGA stays on the road towards environmental sustainability. These issues have been identified on the basis that:

- Indicator data reveals increasing levels of environmental pressure; and/or
- Indicator data reveals inadequate outcomes are being achieved; and/or
- The level or adequacy of responses currently being implemented.

Table 1.1 – Priority Issues for Council’s Management Plan

Issue	Recommended Response
Human Settlement	
Population growth	Identify critical constraints to population growth within the LGA.
Wastewater Management	Implementation of Village Sewerage Schemes
	Increased monitoring of on-site sewage management systems
Urban Noise	Increase proactive community awareness about the impacts of barking dog noise on amenity
Atmosphere	
Climate Change & Energy Consumption	Increase the use of renewable fuels in Council plant and vehicle fleet
Urban Air Quality	Strategically plan for effective of Public Transport Systems
Land	
Land use	Increased enforcement of erosion and sediment controls on construction sites
Water	
Water Quality & Riverine Ecosystem Health	Investigate more holistic water quality and riverine health assessment techniques
	Continue focus on riparian ecosystem rehabilitation work
Biodiversity	
Terrestrial Ecosystems & Species Diversity	Increased funding for terrestrial ecosystem rehabilitation projects
	Development of a Biodiversity Strategy
	Develop database of Koala Plans of Management and monitor compliance
Native Vegetation Clearing	Transfer private property tree management from Tree Preservation to development consent regulatory framework
Introduced Species	Increased funding for Weed Control Programs on private and public land
	Increase of Feral Animal Control activity

The issues identified in Table 1.1 have been reviewed by Council and will be incorporated into future Management Plans.

1.1 Community Involvement in Environmental Monitoring

The community plays an important role in environmental management and monitoring. In recognition of this role, this report draws on data from various community groups and provides information of community activities in managing restoring and monitoring the local environment. The information is not exhaustive in this respect, but aims to highlight particular issues associated with community involvement and recognise its importance.

In the 2005-2006 Report, reference is made to a number of community groups and their activities including:

- Landcare groups throughout the area
- Local schools
- The Koala Preservation Society
- Local oyster growing industries
- Hastings Valley Conservation Hunting Group

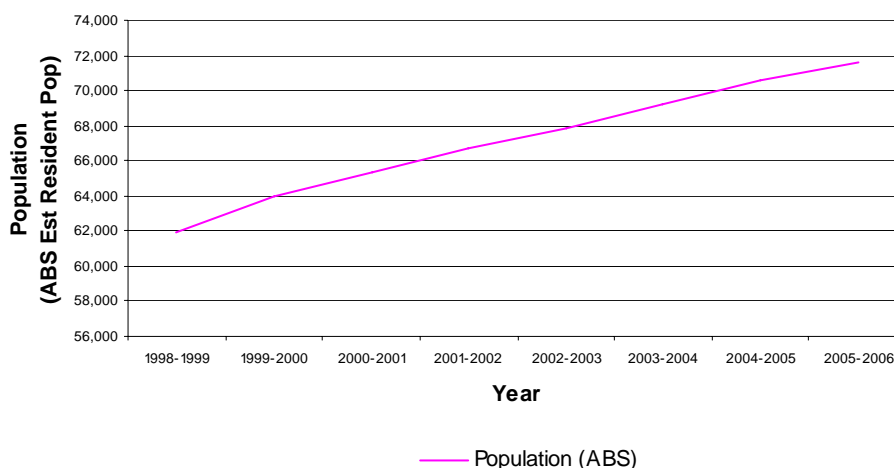
Chapter 2 – Human Settlement

2.1 Population and Settlement Patterns

TRENDS

The total population for 2005-2006 is estimated at 71,573. This estimate is based on Australian Bureau of Statistics (ABS) population and growth data for previous years. Data for all years since the 2001 Census has been updated based on improved population forecasting systems available to Council. The data, presented as Figure 2.2.1, shows the continued population growth trend for the LGA. Population growth in the Port Macquarie-Hastings continues to be amongst the highest growth rates in regional NSW.

Figure 2.1.1 – Port Macquarie-Hastings LGA Population Growth



Pressures on the environment and our natural resources are driven by population growth and the demand it creates. The trend line shown in the above graphic is used extensively in this report to relate trends in other indicator data to population increase.

RESPONSES

Council and government are strategically planning for sustainable population growth. A number of strategic planning, infrastructure and management strategies are being implemented to cater for sustainable population growth in the Port Macquarie-Hastings LGA including:

- Hastings Urban Growth Strategy
- Camden Haven Urban Growth Strategy
- Wauchope Urban Growth Strategy
- Rural Residential Growth Strategy
- Hastings Effluent Management Strategy
- Hastings Drought Management Plan
- Hastings Waste Management Strategy 1999
- Hastings Effluent Management Strategy 1998

In addition to broader strategies, Council is currently preparing detailed plans to ensure sustainable growth in the major urban expansion areas at Rainbow Beach (Lake Cathie/Bonny Hills) and Thrumster (west of Port Macquarie).

Despite the above, the long term capacity of the LGA to sustain population growth needs to be examined.

2.2 Urban Water

TRENDS

Table 2.2.1 – Indicators for Urban Water

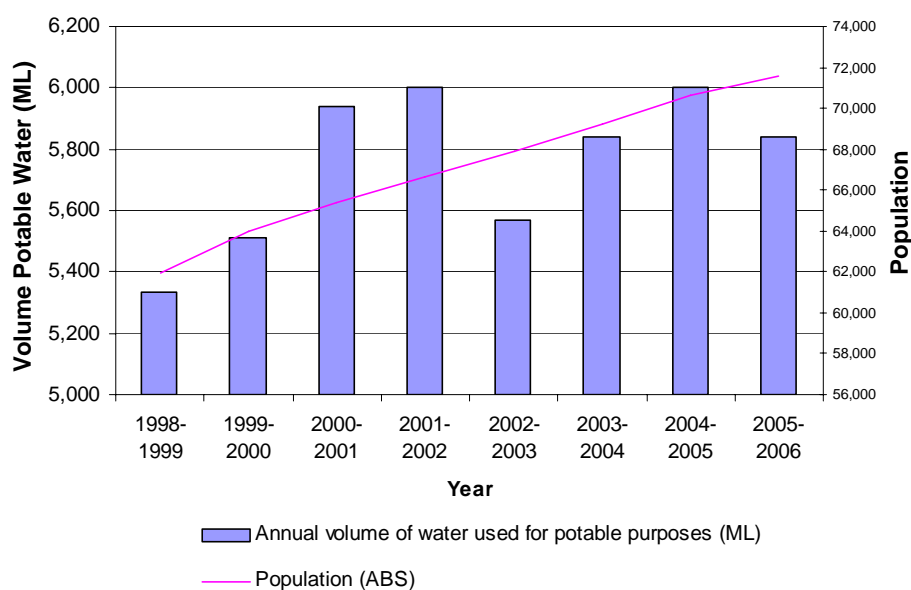
Type	Indicator	1998-1999	2003-2004	2005-2006
State	Potable water usage per property (KL)	248	230	224
State	Annual per capita potable water use (KL)*	86	84	82
State	Annual volume of water used for potable purposes (ML)	5,336	5,839	5841
Response	% Treated effluent reused	0.3	3.9	4.8
State	Number of water restriction breaches reported to Council	NEW INDICATOR	92	74

* Per capita data based on total LGA population for consistency of annual figure

While increases in potable water use have occurred over the past six years, the reduction in demand caused by water conservation measures during the drought is clearly evident as shown by Figure 2.2.1. Water restrictions imposed between 2002 and 2004 realised significant reductions in water consumption.

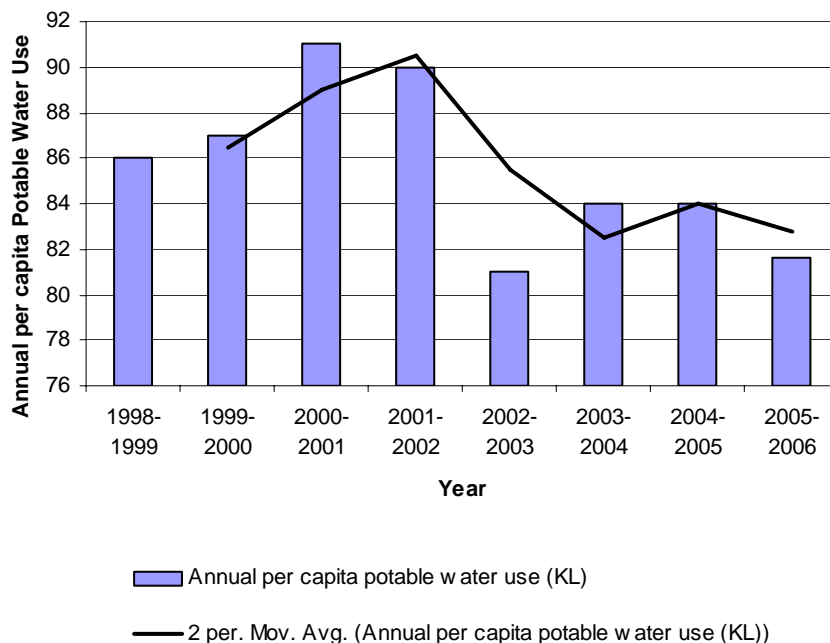
A 2.7% decrease in potable water usage occurred during 2005-2006, reversing the increase in consumption in the preceding 12 month period.

Figure 2.2.1 – Potable Water Use Trends



Per capita potable water consumption rates remain at low levels. This indicates the success of current water conservation strategies. Figure 2.2.2 provides a graphical comparison of per capita potable water consumption rates.

Figure 2.2.2 – Per Capita Potable Water Use Trends



RESPONSES

Port Macquarie-Hastings Council has implemented a number of significant responses to urban water management. Responses aim to provide a secure water supply while valuing the water resource and minimising impacts on the environment as a result of water abstraction. The following responses are relevant:

- Implementation of new water pricing that reflects the value of the water resource
- Substantial construction of the Port Macquarie Reclaimed Water Plant and reticulation system that will see reclaimed water provided to commercial premises and for irrigation of open space areas.
- Public education
- Demand management
- Permanent water conservation measures
- Pressure and leakage reduction
- Water sensitive urban design
- Improvements to existing water supply system
- Commissioning of village water treatment plants and substantial construction of the Wauchope Water Treatment Plant
- Home Water Saver Rebate Scheme
- Free Major Water User Water Analysis Studies
- Major user rebates to fund water saving retro-fitting works

2.3 Transport

Transport and travel have major environmental and other costs including:

- Consumption of significant amounts of non-renewable resources (especially fossil fuels)
- Producing of air pollution and greenhouse gas emissions
- Noise, visual and other impacts on urban amenity
- Runoff from roads impacting upon water quality
- Impacts on biodiversity as a result of fragmentation of natural ecosystems by roads

TRENDS

The most available and reliable indicator of transport impacts for the Port Macquarie-Hastings area is the number of registered motor vehicles in the LGA. The data reported below is directly from Roads & Traffic Authority (RTA) reporting.

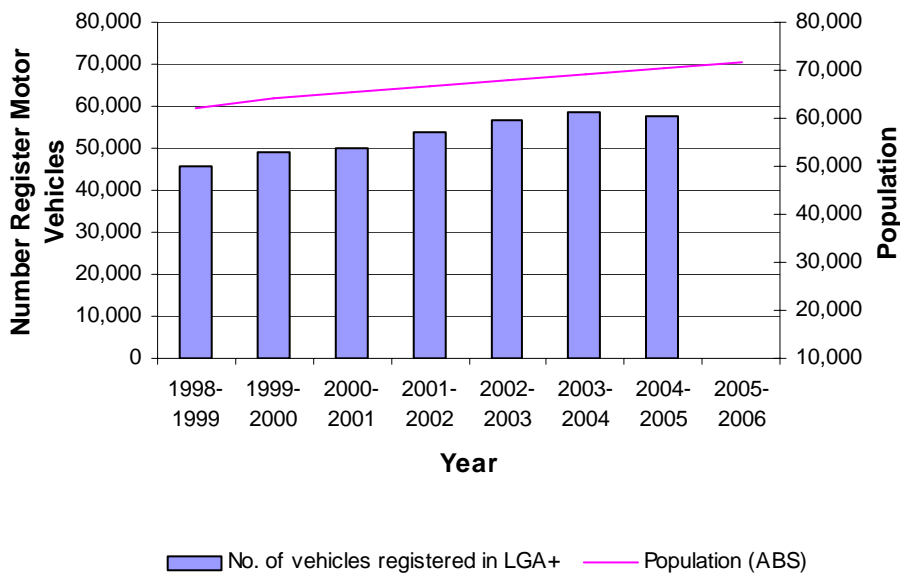
Figure 2.3.1 compares registered vehicle trends with local population growth. Despite a slight decrease in the number of vehicles registered in 2005 the graph shows the number of registered vehicles is increasing in line with population growth over time. Although only a surrogate environmental indicator, this data shows that impacts associated with transport and transport infrastructure would be increasing. Just how significant the impacts on air quality, biodiversity and water quality is more difficult to quantify.

RESPONSES

Responses implemented by Council in relation to transport issues include:

- Continuation with Council's local cycleway program
- Ensuring provision for public bus transport into urban design
- Implementing the Regional Cycleway Program
- Completion of a Fleet Sustainability Study to inform changes to Council's corporate fleet
- Trial of biodiesel in Council's works fleet as an alternative fuel

Figure 2.3.1 – Registered Vehicles in the Port Macquarie-Hastings LGA



2.4 Waste Management

2.4.1 Solid Waste

TRENDS

Table 2.4.1.1 – Indicators for Solid Waste

Type	Indicator	1998-1999	2003-2004	2005-2006
State	Solid waste produced (tonnes)	76,000	71,445	63,553
State	Solid waste landfilled (tonnes)	*	37,016	22,105
State	Volume of domestic waste (tonnes)	*	19,813	18,808
State	Solid waste generated per person per year (tonnes) [†]	1.2	1.05	0.89
State	% of solid waste diverted from landfill	11.5%	43%	41%
State	Solid waste recycled (tonnes)	*	30,653	22,255

[†] Per capita data based on total LGA population for consistency of annual figure

* Information not available

Solid waste management trends are provided in Table 2.4.1.1 and Figure 2.4.1.1.

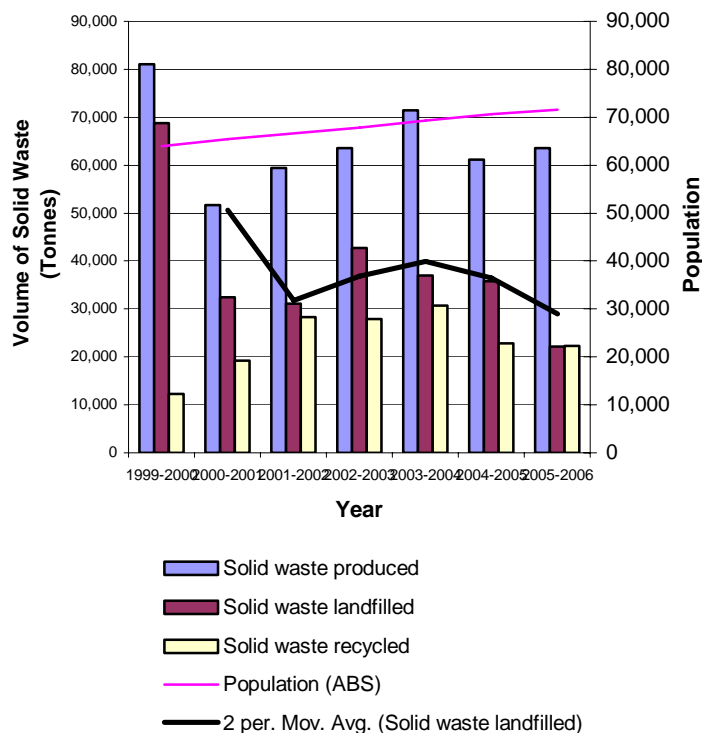
Waste generation is primarily influenced by population growth. Despite population growth in the Port Macquarie Hastings LGA, there has been a reduction in total solid waste volumes generated since 2003-2004. This trend has been influenced by reductions in domestic waste generation in 2004-2005 & 2005-2006.

Low waste generation rates, coupled with continuing success in recycling programs has resulted in a continued reduction in wastes being landfilled, despite ongoing population growth.

Per capita waste figures have been updated to reflect more accurate population estimate for the period since the last Census. The volume of waste generated in the LGA per capita continues to decrease.

Solid waste indicators show that waste programs being implemented by Council are successful and that community attitudes are changing in recognition of the environmental impacts of excessive waste generation.

Figure 2.4.1.1 – Solid Waste Trends



RESPONSES

Responses to solid waste management implemented by Port Macquarie-Hastings Council include:

- Implementation of a new waste processing and recycling contract to ensure a greater percentage of waste is recovered for recycling and/or reuse
- Construction of a new resource recovery facility at the Cairncross Waste Management Facility
- Implementation of a new weekly organics collection service, including free kitchen tidy bins, for residential properties
- Development of 'waste plans' for construction and demolition industries
- Commissioning of a new waste transfer station at Wauchope and closure of Wauchope landfill
- Implementation of a program, in partnership with the local oyster industry, to remove tar based oyster production equipment from the Hastings & Camden Haven River estuaries for disposal and landfill
- Continued participation in the regional Midwaste group

2.4.2 Liquid Waste

TRENDS

Table 2.4.2.1 – Indicators for Liquid Waste

Type	Indicator	1998-1999	2003-2004	2005-2006
State	Volume of wastewater received at sewerage treatment plants (ML)	6,979	6,381	6727
State	Volume of treated wastewater discharged sewerage treatment plants to receiving waters (ML)	6,953	6,132	6405
Response	Treated wastewater reused (%)	0.3	3.9	4.8
State	Volume of wastewater per person per capita (KL) *	113	92	94
State	No. of on-site sewerage management systems (e.g. septic)	**	4,479	4916
Response	No. of compliance inspections of on-site sewerage management systems by Council	**	170	120
Response	No. of inspections of on-site sewerage management systems by AWTS contractors	**	2,288	3252
State	No. of approved trade waste systems	341	483	507
Response	No. of compliance inspections of trade waste systems	**	800	920
State	% Compliance of trade waste systems	**	>90%	93%

* Per capita data based on total LGA population for consistency of annual figure

** Information not available

Reticulated Sewerage System

Figure 2.4.2.1 shows the trends in treated wastewater volumes since 1998. Volumes of wastewater treated and discharged are influenced by stormwater infiltration and as such relatively low volumes can be noted for the dry period between 2001-2002 and 2003-2004. The moving average trendline applied in this figure is influenced by these climatic factors but indicates stable annual volume of wastewater discharged to the environment over the period. This trend can be partially attributed to the increase in reuse of treated wastewater that is offsetting growth. 4.8% of treated effluent was reclaimed and reused in 2005-2006, a decrease on last year. Overall reclaimed water use trends are shown in Figure 2.4.2.2.

Overall decreases in wastewater generation are confirmed by per capita data as shown in Table 2.4.2.1 above.

On-Site Sewage Management

The number of on-site sewage management systems continues to grow. This is a direct reflection of increasing rural and rural residential development and improved monitoring of on-site sewage management systems by Council.

Inspections of aerated wastewater treatment systems by service contractors continue to increase as a result in the growth in number of these systems and a more efficient monitoring and regulatory regime implemented by Council.

The number of inspections by Council officers decreased in 2005-2006 as a result staff vacancies. The total annual number of inspections represents only a small percentage of the total number of on-site sewage management systems in the LGA. Many systems, particularly in the outlying rural areas have not been inspected to date.

Figure 2.4.2.1 – Volumes of Wastewater Treated and Discharged from STPs

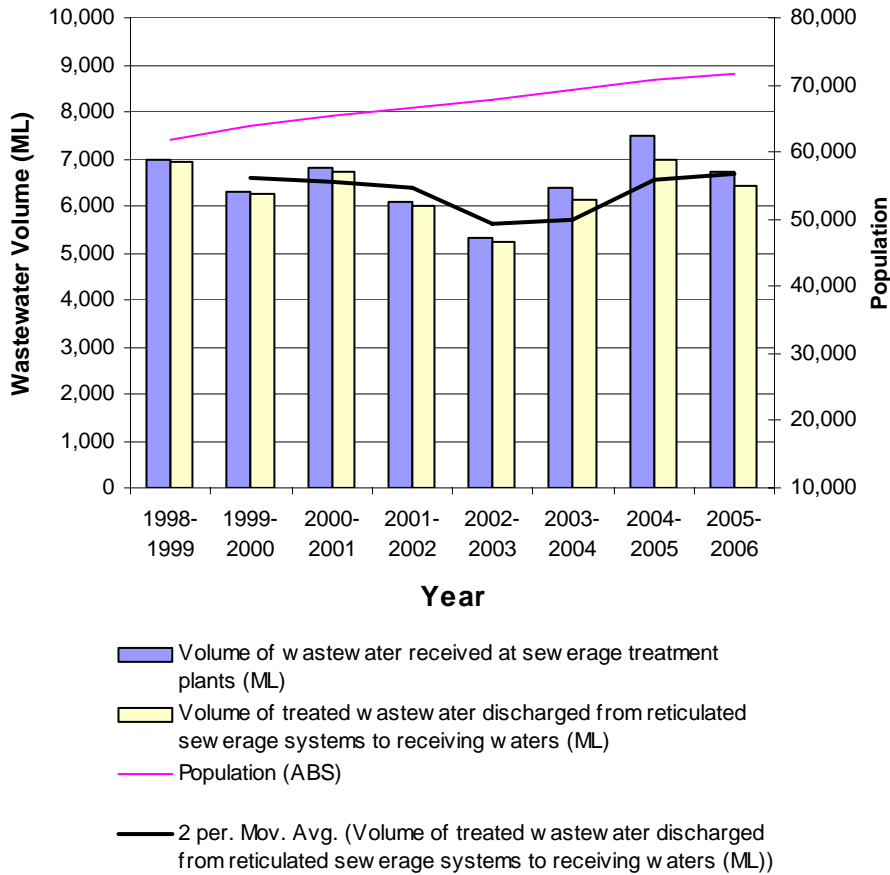


Figure 2.4.2.2 – Reclaimed Water Use

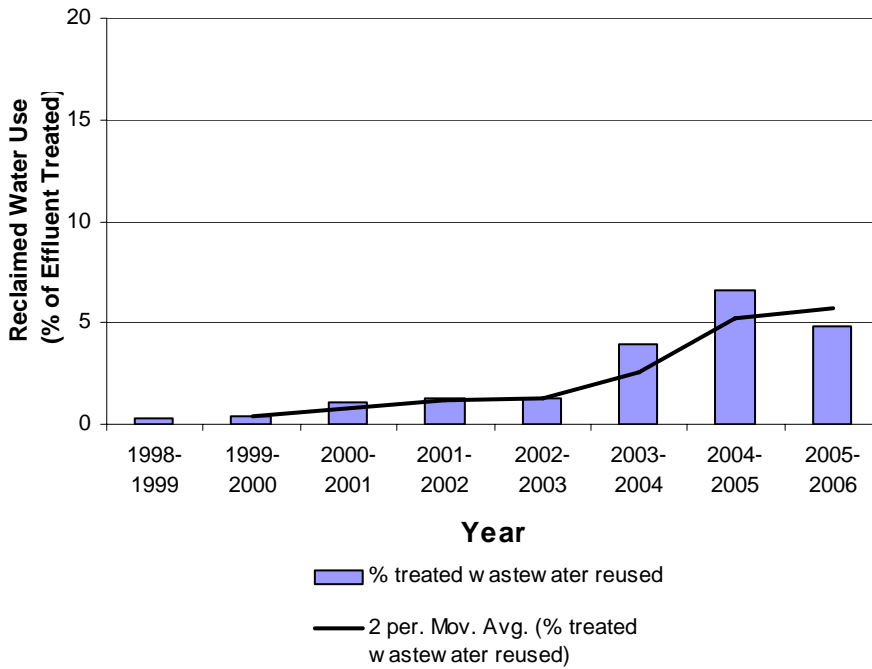
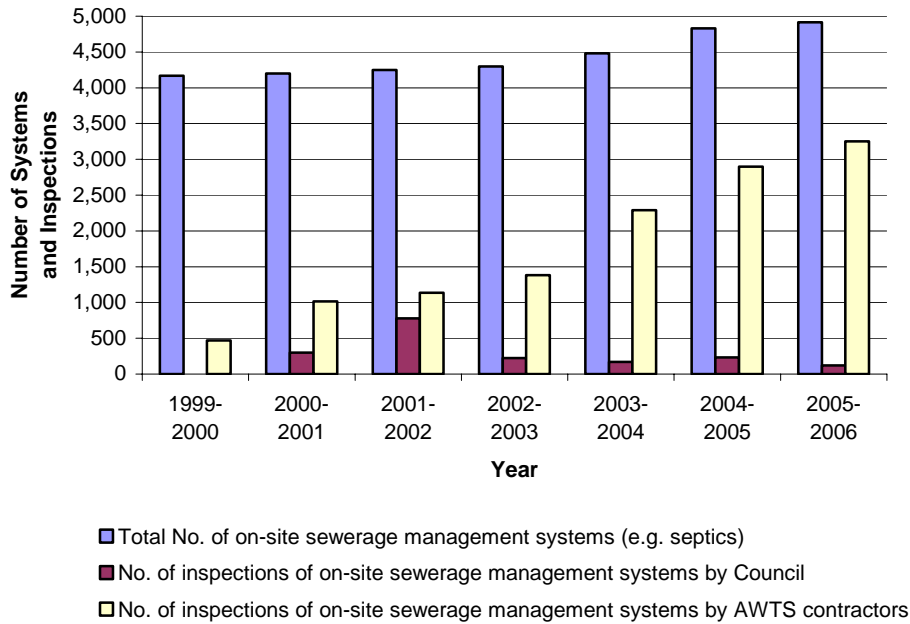


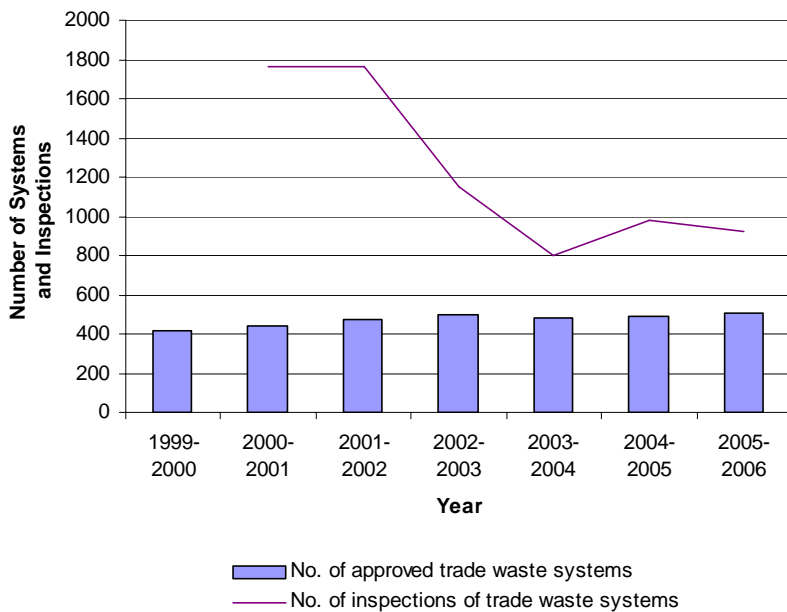
Figure 2.4.2.3 – On-Site Sewage Management Trends



Trade Waste

The number of trade waste systems installed to prevent the discharge of harmful substances to the sewerage system is growing at a low rate and is a reflection on the increase of commercial and industrial development in the LGA. Trends are depicted in Figure 2.4.2.4.

Figure 2.4.2.4 – Trade Waste Trends



RESPONSES

Reticulated Sewerage System

Recent responses include:

- Commencement of the detailed design for the augmentation of the Bonny Hills Sewage Treatment Plant to allow for the provision of a reclaimed water system for the Camden Haven area
- Continued development of treated wastewater reuse markets
- Continued investigation of options to minimise impact of private swimming pool discharges into the reticulated sewerage system
- Completion of an Environmental Impact Statement for the proposed Thrumster sewerage treatment plant to service the proposed Thrumster urban expansion area
- Progression of the Port Macquarie Reclaimed Water Project that will see wastewater treated to a high quality standard and reticulated for irrigation of sporting fields and use by commercial operators in early 2007
- Construction of a tertiary membrane filtration unit at the Wauchope Sewerage Treatment Plant to further improve effluent quality
- Construction of the Southern Effluent Pipeline to allow the distribution of reclaimed water from existing Sewerage Treatment Plants to reuse markets
- The upgrade of the reticulation network in the West Haven area to prevent historical overflows of effluent that have impacted upon Queens Lake and the local oyster industry

On-Site Sewage Management

Implementation of the Port Macquarie-Hastings On-Site Sewage Management Plan including:

- Routine compliance inspections for on-site sewage management systems using a risk based approach
- Monitoring of aerated wastewater treatment systems (AWTS) servicing and ensuring defects are rectified
- Reviewing the standards for accreditation of AWTS service contractors
- Review of technical standards for on-site sewage management
- Use of GIS based Soil Risk Mapping throughout the Port Macquarie-Hastings local government area reflecting risk of effluent disposal from OSM systems
- Providing pre-purchase inspections upon request for prospective property purchasers
- Continued development of village reticulated sewerage schemes as a replacement for high risk village on-site sewage management systems

Trade Waste

Responses to trade waste issues include:

- Proactive compliance inspection of installed trade waste systems
- Approval and regulation of proposed systems to ensure acceptable treatment standards are maintained
- Provision of advice and information to business and industry in relation to trade waste management
- Investigation and enforcement of breaches of trade waste management approvals

2.5 Heritage

TRENDS

Table 2.5.1 – Indicators for Heritage

Type	Indicator	1998-1999	2003-2004	2005-2006
State	No. of protected non-Aboriginal heritage items	132	153	156
State	No. of protected Aboriginal heritage items	198	385	393

A review of the records pertaining to sites of non-Aboriginal Heritage reveals that 156 sites are currently protected under a variety of mechanisms. These sites include built, archaeological and natural sites.

Information supplied by the Department of Environment and Conservation reveals that there were an additional eight sites of Aboriginal heritage afforded a legal conservation status during 2005-2006. These sites are classified as artefacts.

RESPONSES

Port Macquarie-Hastings Council continues its approach of proactive heritage conservation. The following responses were implemented last financial year:

European Heritage

- Awards for Excellence in Design & Heritage
- Heritage Bus Tours (3 tours)
- Continued Local Heritage Assistance Fund
- Heritage Advisory Program
- Conservation works to 5 graves - Port Macquarie Second Burial Ground
- Held 9th Heritage Festival in conjunction with Kempsey Shire Council consisting of 29 events during the National Trust's statewide festival of events
- Heritage Discovery Activities – 8 events held during school holidays
- Production of information brochure about Port Macquarie's underground archaeology to increase awareness of developers
- Workshop for Council managers to improve awareness of heritage issues in day-to-day council operations
- Unveiling of interpretive panels celebrating the convict heritage of the Port Macquarie historical and archaeological precincts



Aboriginal Heritage

- Draft Aboriginal Heritage Strategy development
- Reconciliation Strategy development (contains an Aboriginal Heritage component)
- Aboriginal heritage assessment as part of the development assessment process
- Aboriginal heritage awareness during Heritage Week
- Cowarra Dam Aboriginal heritage consultation and partnership

- Incorporation of Aboriginal heritage education and awareness into the Timbertown stories project

2.6 Amenity

'Amenity' refers to a wide range of attributes and values that make a positive contribution to peoples' quality of life. As urban populations and housing densities grow, these amenity values come under potential threat. While amenity values for most communities have not been formally identified, both local and state governments recognise the importance of new challenges to amenity rising from the land-use planning process.' (DEC, 2003)

2.6.1 Noise impacts

TRENDS

Table 2.6.1.1 – Indicators for Noise

Type	Indicator	2000-2001	2003-2004	2005-2006
State	No. of noise complaints: Total	537	460	482
State	No. of noise complaints: Domestic (excl. barking dogs)	97	81	80
State	No. of noise complaints: barking dogs	402	332	367
State	No. of noise complaints: building sites - working outside hours	13	29	17
State	No. of noise complaints: Industrial/Commercial	25	18	18

Table 2.6.1.1 provides details of the number and nature of noise complaints received by Port Macquarie-Hastings Council. Despite a slight increase between 2004-2006 & 2005-2006, the overall number of noise complaints remains relatively stable as shown by Figure 2.6.1.1. This is a positive trend given increases in growth, population density and construction activity, which are all causes of noise impact. The dominant source of domestic noise continues to be barking dogs in urban areas.

Increases in the number of vehicles in the LGA are also an indicator of increase transport noise. Figure 2.3.1 is relevant in this respect, showing vehicle registrations are growing inline with local population.

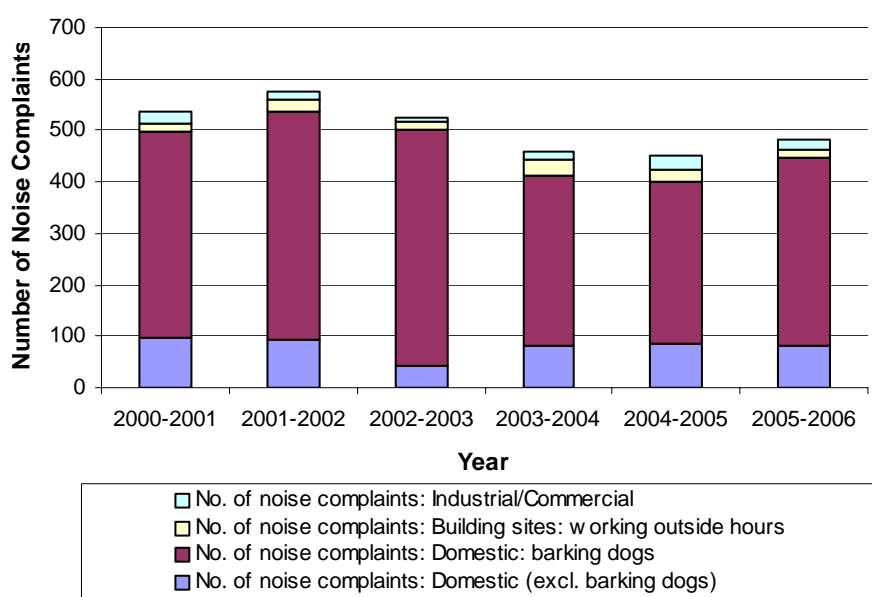
RESPONSES

Port Macquarie-Hastings Council has a number of responses to the issue of noise, including:

- Ensuring that new development proposals comply with relevant acoustical requirements
- Monitoring of new developments to ensure compliance with conditions relating to noise control
- The assessment of rezoning proposals to ensure that noise problems do not arise as a result of landuse changes
- The investigation and resolution of noise complaints
- The development of educational/informational initiatives (e.g. pamphlets)
- Noise assessment as part of the planning and design of new road infrastructure.
- Cycleway construction to reduce reliance on motor vehicles and hence reduce traffic noise

- Airport planning to ensure surrounding landuses comply with airport noise forecast requirements

Figure 2.6.1.1 – Noise complaints received by Council



2.6.2 Odour

TRENDS

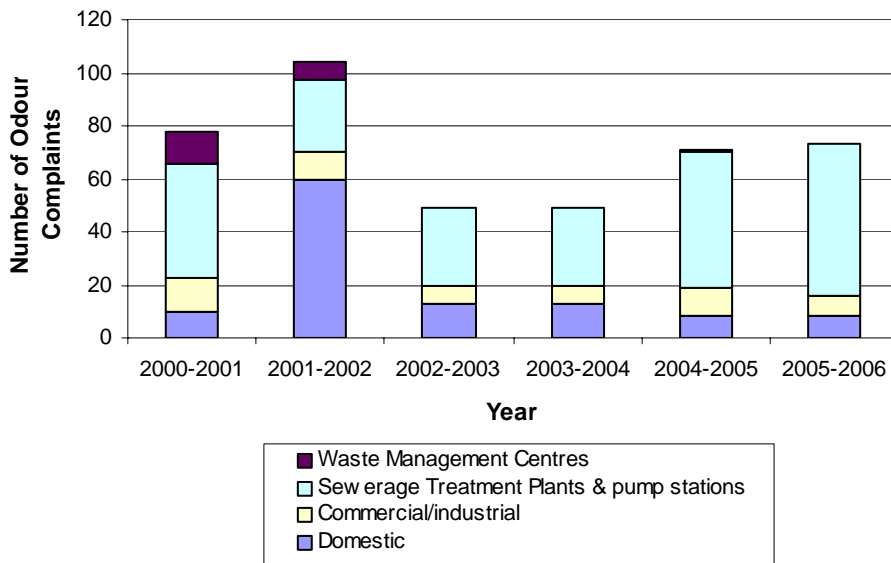
Table 2.6.2.1 – Indicators for Odour

Type	Indicator	2000-2001	2003-2004	2005-2006
State	No. Complaints (total)	78	49	73
State	- Domestic	10	13	8
State	- Commercial/industrial	13	7	8
State	- Sewerage Treatment Plants & pump stations	43	29	57
State	- Waste Management Centres	12	0	0

Council's records on odour complaints reveal no clear trends from which conclusions about odour impact can be drawn. However, some trends in complaint types can be explained:

- The reduction in odour complaints associated with waste management centres is attributed to the closing of the Port Macquarie landfill in Kingfisher Rd
- Odour associated, or perceived to be associated with sewerage infrastructure (pump stations, line breaks etc) is the most consistently common source of complaint to Council
- The reduction in domestic odour complaints since 2001-2002 is associated with improved regulation of subdivision construction burning-off practices and bans on backyard burning

Figure 2.6.2.1 – Odour complaints received by Council



RESPONSES

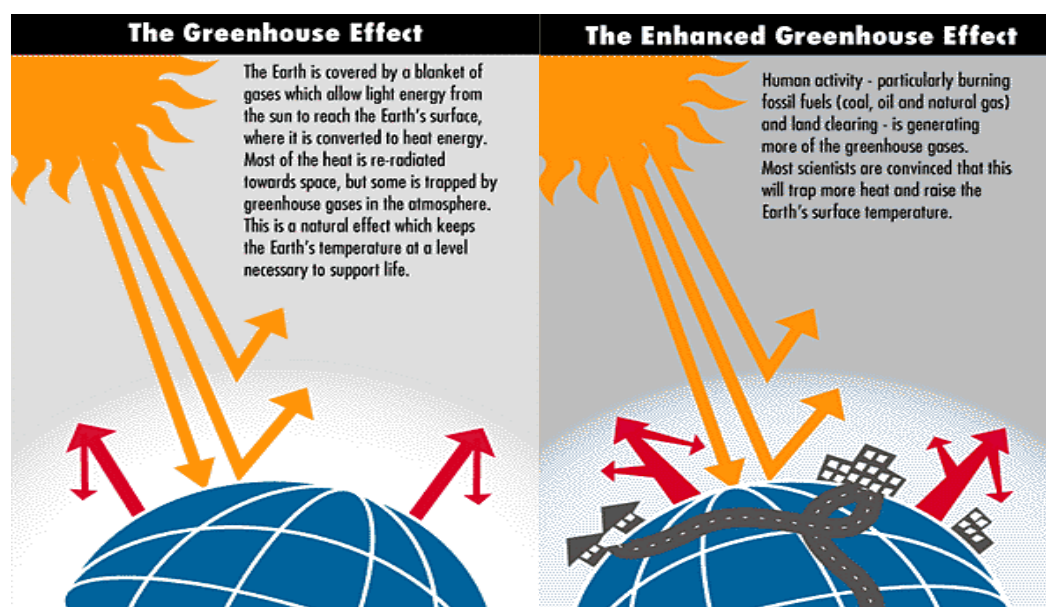
Port Macquarie-Hastings Council has a number of responses to the issue of odour, including:

- Ensuring that new development proposals comply with relevant environmental standards
- The assessment of rezoning proposals to ensure that odour problems do not arise as a result of landuse changes
- The investigation and resolution of odour complaints
- Odour assessment as part of the planning and design of new sewerage treatment infrastructure

Chapter 3 – Atmosphere

3.1 Climate Change and Energy Consumption

Figure 3.1.1 – The Enhanced Greenhouse Effect



TRENDS

Table 3.1.1 – Indicators for Climate Change

Type	Indicator	1996	1998-1999	1999-2000	2001-2002	2004-2005
State	National greenhouse gas emissions tonnes/ capita/ year ⁺	**	29.2	28.7	27.8	28.2
State	Estimated LGA greenhouse gas emissions tonnes/year ⁺⁺	585,529	**	**	783, 281	**
State	Estimated LGA greenhouse gas emissions tonnes CO ₂ eq /capita/year ⁺⁺	10.4	**	**	11.2	**
State	LGA Energy consumption (GJ) ⁺⁺	4,782,187	**	**	6,021,647	**
State	LGA Energy use /capita /year (GJ)	85	**	**	92	**
State	Council operational greenhouse gas emissions tonnes/year	**	**	14,532	**	**

⁺National Greenhouse Gas Inventory 2004

⁺⁺Local estimates based on Census data

**Information Not available

There is limited new indicator information for climate change available for 2005-2006. However, updated data on greenhouse gas emissions has been obtained from the National Greenhouse Inventory for 2003-2004. Australia's net emissions in 2004 were 564.7 Mt, an increase of 13.9 Mt or 2.5% over net emissions recorded in 2003. Contributing sectors to the increase in emissions over this period included *stationary energy* (up 2%), *transport* (up 4.1%), *fugitive emissions* from fossil fuel (up 3.6%), *industrial processes* (up 3.8%) and *land use, land use change and forestry* (up 16.0%). Sectors decreasing included *agriculture* (down 1.7%) and *waste* (down 0.4%).

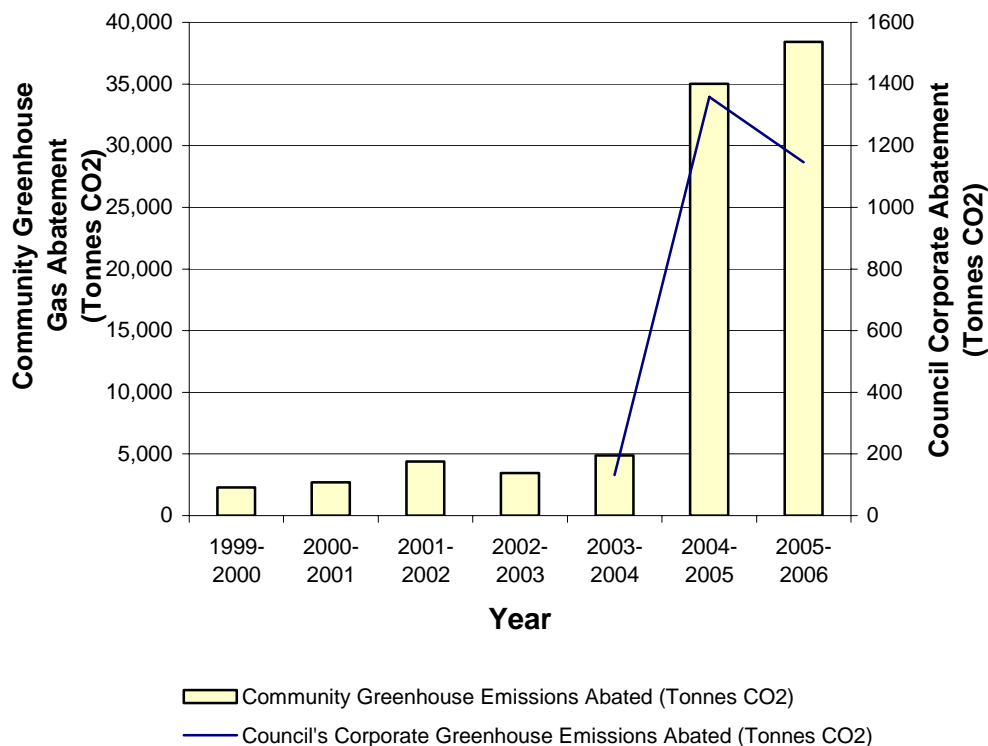
Table 3.1.1 indicates that on a per capita basis, greenhouse emissions increase to 28.2 tonnes/person/year in 2004.

Emissions data for 2005-2006 are not available for Council's corporate operations. However, data on the abatement of greenhouse emissions shows that Council is continuing to improve its response to climate change by implementing emissions reducing initiatives.

Figure 3.1.2 shows emissions abatement between both 1999 and 2006 in the community sector as a result of local initiatives and for Council's corporate operations. Community abatement between 1999 and 2003 comprised of reductions in energy demand resulting from the introduction of energy efficiency standards in new residential buildings while the significant increases in 2004-2005 & 2005-2006 result from the incorporation of abatement resulting from kerbside organic waste recycling initiatives in the community.

Abatement from Council's corporate activities are a combination of energy efficiency improvements in public facilities and the purchasing of green power across a number of sites.

Figure 3.1.2 - Local Greenhouse Gas Abatement



RESPONSES

Council's responses to climate change are based upon its participation in the Cities for Climate Protection Program and its Greenhouse Action Strategy. Specific responses implemented in 2005-2006 include those in Table 3.1.3 below.

Table 3.1.3 – Quantified Greenhouse Abatement Responses Implemented by Council

Sector	Measure	CO2E Savings t/year	Energy Savings kWh/year
Corporate	Replacement of CRT computer screens with LCD screens	23	23,420
Corporate	Lighting Efficiency Upgrades at Port Macquarie and Wauchope Council Offices	174	175,812
Corporate	Greenpower purchasing	762	781,653
Corporate	Port Macquarie Pool Hot Water Upgrade	15	15,700
Community	Energy efficient light globe give aways	1,496	1,535,335
Community	Energy Efficient Housing DCP	1,118	-
Community	Organic Waste Diversion from Landfills	32,264	-
Community	AAA rate shower head give aways	15	129,089
Total		35,868	2,661,009

Additional responses included:

- Tree planting days
- Biodiesel fuel trial
- Council Fleet Sustainability Study
- Purchase of six small 4-cylinder diesel vehicles in lieu of large six cylinder sedans

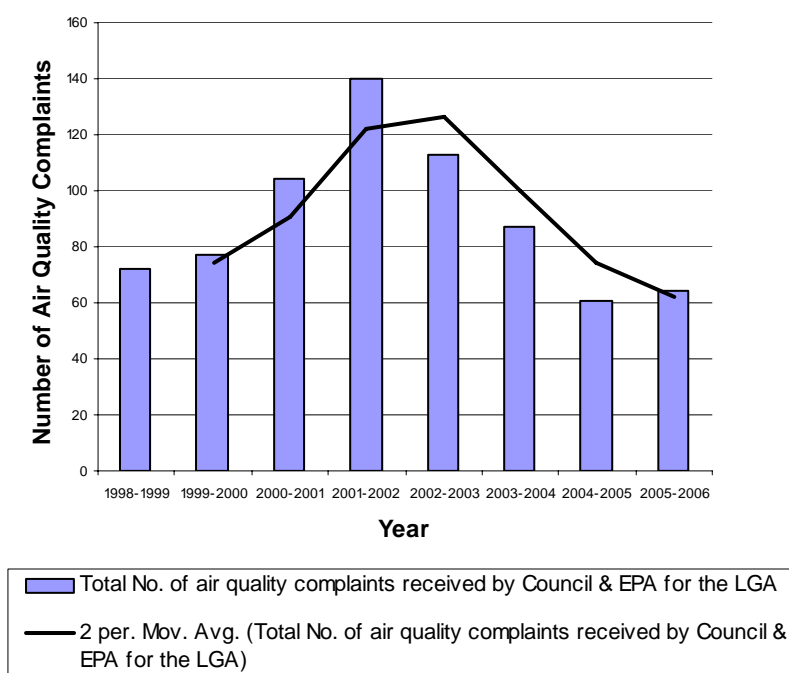
3.2 Urban Air Quality

TRENDS

Table 3.2.1 – Indicators for Urban Air Quality

Type	INDICATOR	1998-1999	2003-2004	2005-2006
Pressure	No. of EPA licensed premises	23	18	18
State	Total No. of air quality complaints	72	87	64
State	No. of air quality complaints - backyard burning	**	11	26
State	No. of air quality complaints – other	**	65	38

Figures relating to the number of air quality related complaints received are shown in the Table 3.2.1 and Figure 3.2.1. There has been a slight increase in air pollution complaints since between 2004-2005 and 2005-2006. This increase is marginal and overall trends indicate air pollution complaints are decreasing over time.

Figure 3.2.1 – Air Pollution Complaint Trends

The number of motor vehicles registered in the Port Macquarie-Hastings is a surrogate indicator of air quality given that transport is known to be a major contributor to air pollution. Trends in motor vehicle registrations are shown in Figure 2.3.1.

RESPONSES

Responses to air quality issues initiated by Port Macquarie-Hastings Council include:

- Ensuring new and existing developments adopt appropriate management practices
- Responding to complaints and distribution of educational material relating to air pollution issues such as solid fuel home heaters
- Prohibition on the burning of waste in non-rural areas and regulating the burning of vegetation wastes in all areas of the LGA
- Closing local landfills
- Constructing cycleways

Chapter 4 – Land

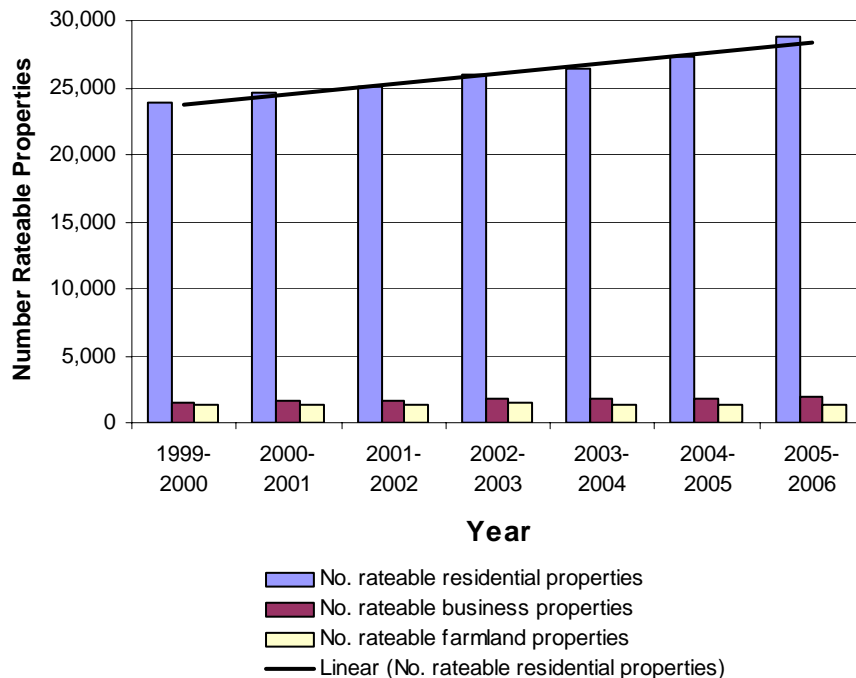
4.1 Land Use Changes

TRENDS

Land Use

Figure 4.1.1 shows that the number of rateable residential and business properties are steadily growing, while the rateable farmland properties have remained unchanged over the last seven years. This data demonstrates the increase in urban landuse, but is likely to understate the reduction in rural land resulting from urban growth. Accurate land use area information is needed to better analyse the potential impacts of landuse change.

Figure 4.1.1 – Property Use Trends



Development

Figure 4.1.2 shows a breakdown of the development applications received and processed by Council. The data shows a trend of decreasing approvals since 2001/2002 in the Port Macquarie-Hastings. This trend is consistent with the economic conditions associated with the property and housing industries of the period. However, these rates of development are still considered high when compared to other regional areas.

Figure 4.1.3 provides a graphical break down of the volume and type of development approvals issued.

The demographic and urban landuse information that is available demonstrates that the growth in urban landuse continues to be the most significant in the coastal 'strip'.

Figure 4.1.2 – Development Activity

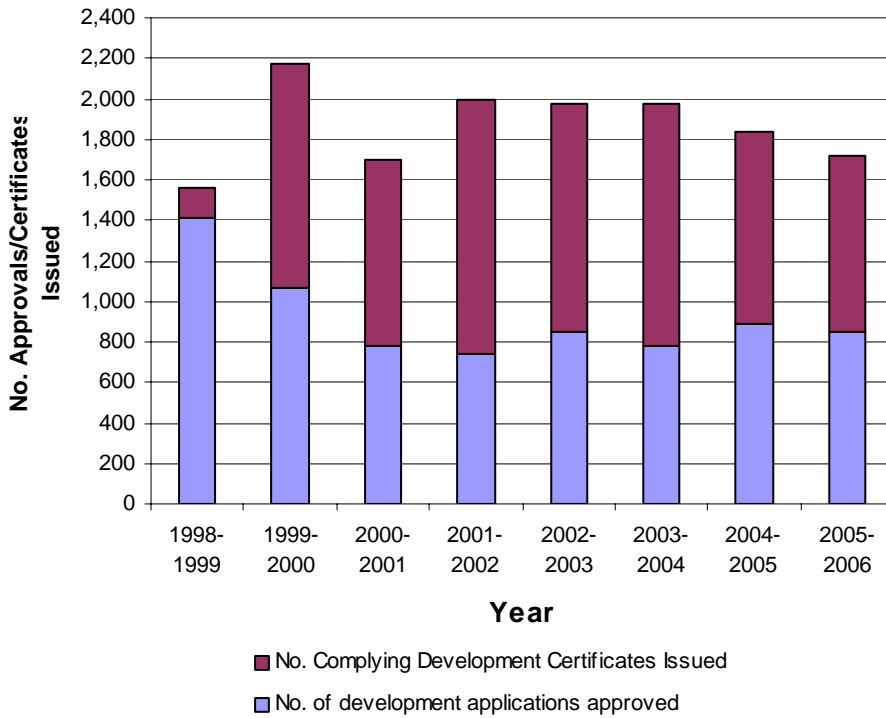
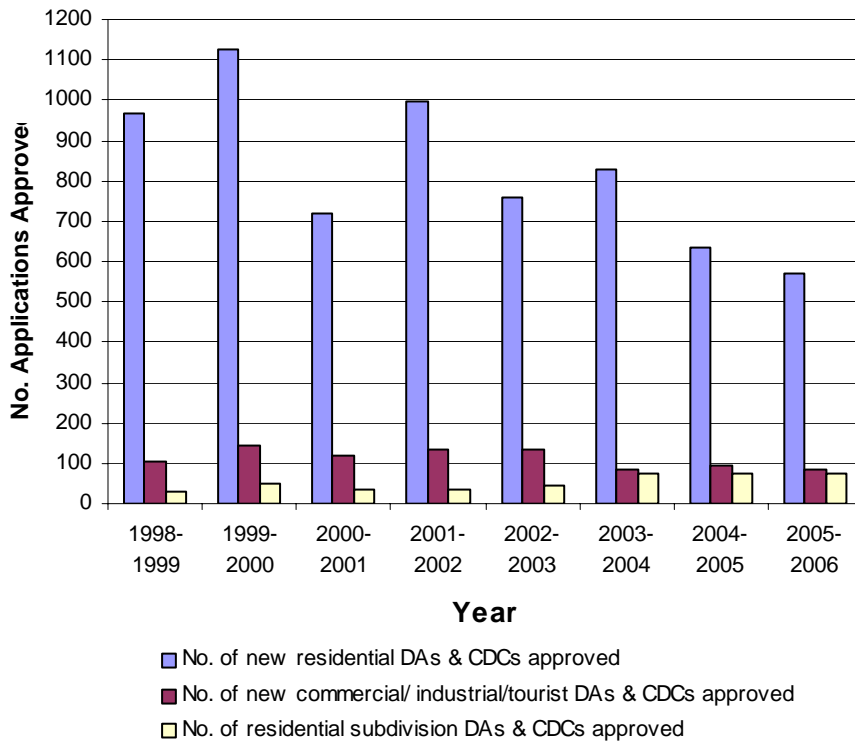


Figure 4.1.3 – Development Type Comparison



RESPONSES

Response to land use changes are implemented through a variety of strategic planning tools including:

- Hastings Urban Growth Strategy
- Camden Haven Urban Growth Strategy
- Wauchope Urban Growth Strategy
- Rural Residential Release Strategy

These strategies are complimented by infrastructure strategies such as the Hastings Effluent Management Strategy, the Hastings Drought Management Plan and Hastings Waste Management Strategy that over arch numerous specific projects aimed at servicing sustainable urban growth.

Development is managed and controlled through a suite of planning laws hinged upon the Environmental Planning & Assessment Act 1979 and the Hastings Local Environment Plan 2001.

4.2 Soil Erosion

TRENDS

Table 4.2.1 - Indicators for Soil Erosion

Type	Indicator	2000 - 2001	2003-2004	2005-2006
State	Erosion & sediment control - building sites - complaints	New Indicator	9	25
Response	Erosion & sediment - building sites - warnings issued	New Indicator	30	8
Response	S&E control - building sites - fines issued	New Indicator	11	4

The surrogate indicators in Table 4.2.1 are used to infer soil erosion impacts in the urban landscape. Soil erosion from development, building and subdivisions, has localised impacts on land and in receiving waters. Table 4.2.1 contains data on the number of complaints and enforcement activity relating to this issue. The data indicates an increase in complaints relating to erosion and sediment control on building sites and decrease in enforcement activity.

The Department of Natural Resources (DNR) have identified eight sub-catchments severally affected by land degradation (Taylor, 2000), being Bellangry, Bulga Plateau, Comboyne, Red Hill, Seaview, Stewarts River, Tilbaroo, and Upper Rollands Plain. Principle forms of land degradation affected these sub-catchments are soil and river erosion.

Within these eight sub-catchments a total of 45.7 km of riverbank erosion has been identified. Additional riverbank erosion is prominent in the estuarine reaches of the Maria River, Hastings River and Stingray Creek and Gogleys Lagoon. To date a total of 234 formal small bank stabilisation and revegetation projects have been implemented to address bank erosion and river health. Other works have also been carried out by private landholders in many locations. Further information on these works is provided in Section 5.3.

RESPONSES

A number of different responses have been implemented by Port Macquarie-Hastings Council to reduce soil erosion including:

- Enforcement of erosion and sediment control practises on development sites
- Stream bank erosion projects in partnership with the Department of Natural Resources, Landcare and the Northern Rivers Catchment Management Authority
- In partnership with Landcare and the Northern Rivers Catchment Management Authority, implementation of projects to remediated gully erosion on rural land at King Creek and Bellangry
- Implementation of remediation trials outlined in Council's Best Practice Management Guideline For Gravel Road Maintenance to minimise off-site water pollution for differing soil type zones, rainfall zones and road gradients

4.3 Acid Sulfate Soils

TRENDS

Table 4.3.1 - Indicators for Acid Sulfate Soils

Type	Indicator	1998-1999	2003-2004	2005-2006
Response	Total area of wetland /wet pastures re-established (ha)	0	762	890
Response	Percentage of acid sulfate soils drainage networks remediated (out of a total of 57)	0%	65%	98%

Indicator data in Table 4.3.1 focuses on remedial action as a surrogate measure of acid sulfate soil impact reductions. Based on monitoring and recent research (Johnson *et al.*, 2004) it is approximated that between 60 and 80% reduction in acid discharge has occurred at remediated drains.

Impact reductions resulting from the implementation of remediation projects include:

- Reductions in the duration and frequency of acid discharges from remediated drainage networks
- Remediation of acid scalded land
- Remediation and maintenance of backswamp environments

RESPONSES

Currently 59 of the 60 known acid discharging drains have been remediated at a cost of \$1.26M over a five-year period. All five 'hotspots' in the Hastings and Camden Haven catchments have been remediated or are in partial remediation. A total of 890 hectares of wetlands has been rehabilitated using a wet pasture management to promote vegetation regrowth and contain acidic groundwater. A total of 5260ha of floodplain land is under voluntary agreements for acid sulfate soil management. Figure 4.3.1 provides examples of the type of remediation work that has been implemented and Figure 4.3.2 provides a graphical representation of completed and proposed remediation work.

Figure 4.3.1 - Acid Sulfate Soil Remediation, Pre & Post Works at Rossglen



Acid scald at Rossglen Wetlands prior to remediation



Rossglen Wetlands remediated and natural hydrology restored

Figure 4.3.2 - Acid Sulfate Soil Remediation Works





Camden Haven Floodplain



Hastings Floodplain



Legend

-  Artificial Drainage
-  Remediated wetlands / wet pasture
-  Remediation Structures
-  Land under Plans of Management

4.4 Land Contamination

TRENDS

Table 4.4.1 - Indicators for Land Contamination

Type	Indicator	1999-2000	2003-2004	2005-2006
State	No. of potentially contaminated sites	165	157	161
State	No. of DEC confirmed contaminated sites	2	0	0
State	No. of sites under investigation by DEC	14	0	0

Table 4.4.1 above shows contaminated land statistics from Council's geographical information systems. An additional four sites were added to Council records in 2005/06, stabilising this trend. Variability in the number of contaminated sites relates factors such as the remediation of specific sites and the discovery of additional contaminated land.

There are currently no sites in the LGA listed or under investigation by the Department of Environment and Conservation pursuant to the Contaminated Land Management Act.

RESPONSES

Port Macquarie-Hastings Council implements a number of responses to land contamination including:

- Regulation of land contamination under Protection of the Environment Operations Act 1997
- Management of land contamination risk associated with landuse changes and development proposals
- Maintaining information systems on the number and nature of contaminated sites with the LGA
- Notifying prospective land purchasers of land contamination status using s149 Certificates through the conveyancing process

Chapter 5 – Water

5.1 Surface Water Extraction

TRENDS

Table 5.1.1 – Indicators for Surface Water Abstraction

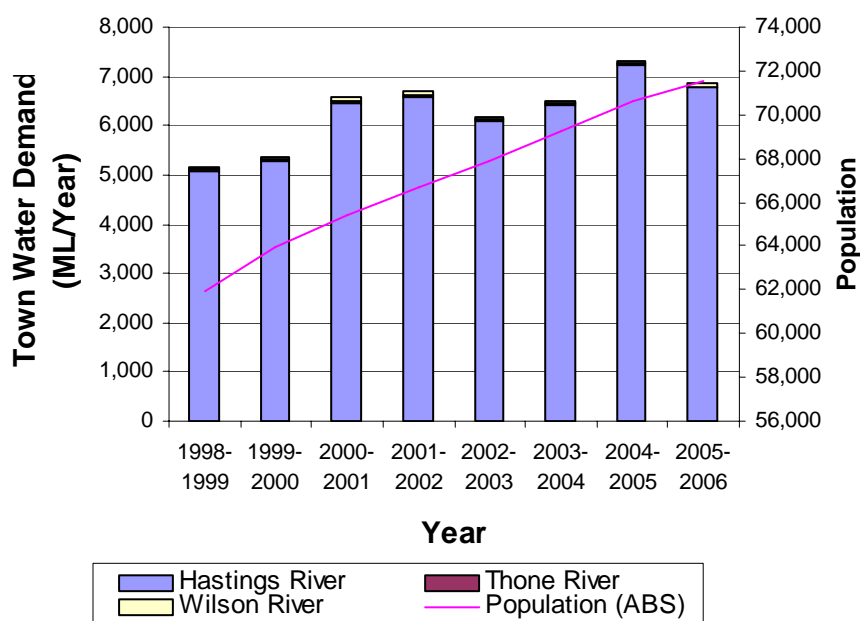
Type	Indicator	1998-1999	2003-2004	2005-2006
State	Total water demand from local rivers for potable supply (ML)	5,153	6503.2	6842.3
State	Annual water demand from Hastings River by Council for potable supply (ML)	5,079	6420.4	6771.4
State	Annual water demand from Thone River by Council for potable supply (ML)	31	31.1	22.75
State	Annual water demand from Wilson River by Council for potable supply (ML)	43	51.5	49.12
State	Number of surface water licences	298	345	352
State	Allocation (ML/yr) for surface water licences excluding Town Water Supply	New Indicator	11,792*	13048

* Excludes Town Water Allocation

Port Macquarie-Hastings Council Water Supply System

Data in Table 5.1.1 and Figure 5.1.1 show that the total town water demand trend fluctuates depending on rainfall conditions, but is dominated by population increase overall. Council does not pump water if river flows fall below minimum environmental levels, which are required to protect the riverine ecosystem.

Figure 5.1.1 – Town Water Demand Trends



Other Water Abstraction

The Department of Natural Resources has provided data on the number of water licences and the corresponding water allocations for a range of uses. Table 5.1.1 shows that the number of licences issues for water abstraction is increasing and that volume of water abstracted from rivers and streams in the LGA has increased by about 10% since 2003/2004. Table 5.1.2 provides a more detailed breakdown of the uses and volumes of water abstracted.

Table 5.1.2 - Number and summary of allocations of Active, Lodged and Suspended Surface Water licences (Water Act) by licensed purpose.

Purpose	Number Of Licenses	Allocation (ML/Year)
Aquaculture	4	132
Conservation Of Water	64	0
Domestic	24	24
Farming	54	270
Industrial	4	70
Industrial - Sand & Gravel	1	5
Irrigation	308	12,304
Pisciculture	1	110
Recreation - Low Security	1	80
Stock	18	53
Total	481	13,048

Note one license may have multiple purposes.

RESPONSES

(See also the Urban Water Section in the Human Settlement Chapter (2).)

Port Macquarie-Hastings Council has implemented a range of responses in relation to surface water abstraction including:

- Commissioning of Cowarra Dam as part of the Drought Management Plan. This facility will allow for sustainable river abstraction by allowing Council to rely on dam water during low flow conditions instead of river pumping.
- Biological monitoring of the lower freshwater reaches and upper estuary of the Hastings Rivers to assess impacts of river abstraction during drought conditions.
- Participation in the Hastings Water Users Group to ensure a holistic approach to surface water abstraction management.

The Department of Natural Resources manages a suite of responses to river water abstraction based around the framework provided by the Water Act 1912 and the Water Management Act 2000.

5.2 Groundwater Extraction

TRENDS

Data in Figure 5.2.1 shows that the number of groundwater bores licensed in 2005-2006 decreased in comparison to previous records for 2003-2004. Data on abstraction volumes are not available for 2004-2005 & 2005-2006. Table 5.2.1 provides information on the type groundwater bores.

Figure 5.2.1 – Groundwater Extraction Trends

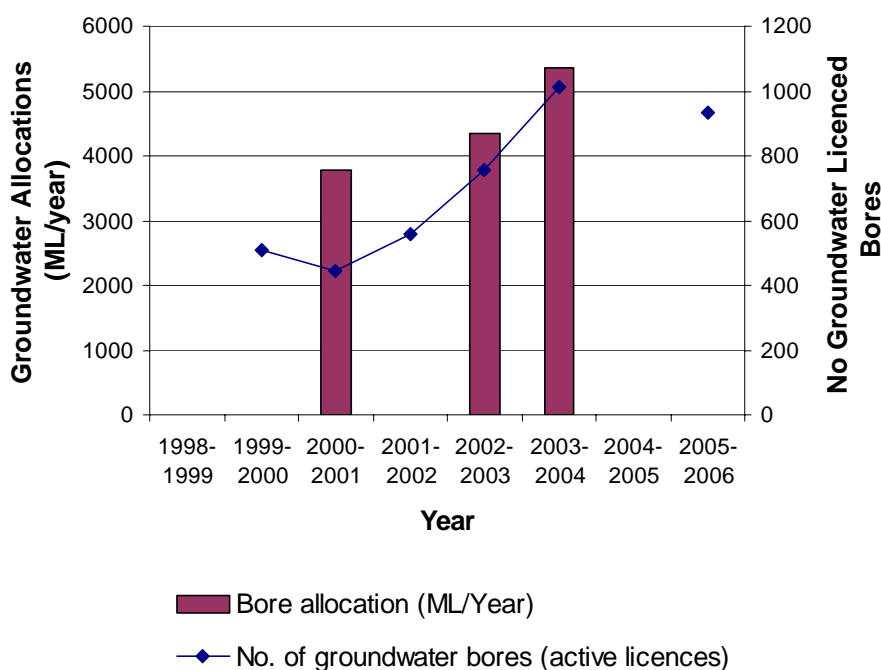


Table 5.2.1 – Number and Type of Groundwater Bores

Purpose	Number Of Licenses
Stock & Domestic	864
Farming	34
Town Water Supply	2
Other	106

Note: Bores may have more than one use

RESPONSES

Responses that relate to groundwater abstraction are implemented primarily by the NSW Department of Natural Resources who regulate groundwater management under the Water Management Act. The following responses from Port Macquarie-Hastings Council are also relevant:

- Consideration of groundwater issues as part of the development control and landuse planning process.
- Implementation of Water Sensitive Urban Design principles into new urban development.
- Incorporation of 'deep soil zones' requirements into development control plans to allow for stormwater infiltration and groundwater recharge in urban areas.

5.3 Water Quality and Riverine Ecosystem Health

TRENDS

Figures 5.3.1 and 5.3.2 show the proportion of water samples collected and analysed by Council that failed to meet ANZECC water quality criteria. The data reveals a trend of decreasing exceedence for nutrient and physiochemical parameters for the STP affected waterways. This is an indicator of improving sewerage treatment systems and their resulting effluent quality discharges.

While the data does indicate that water quality fails to meet specific water quality criteria for varying proportions of samples, it should be recognised that the ANZECC criteria are 'generic' for south-eastern Australian waterways and therefore do not recognise specific local geomorphologic characteristics that influence ambient water quality. It is also important to recognise that many of the ANZECC criteria exceedences are only minor and in general terms, river and stream water quality in the Port Macquarie-Hastings area is in a good state.

Figure 5.3.1 – Comparison of Water Quality with ANZECC criteria for Nutrients

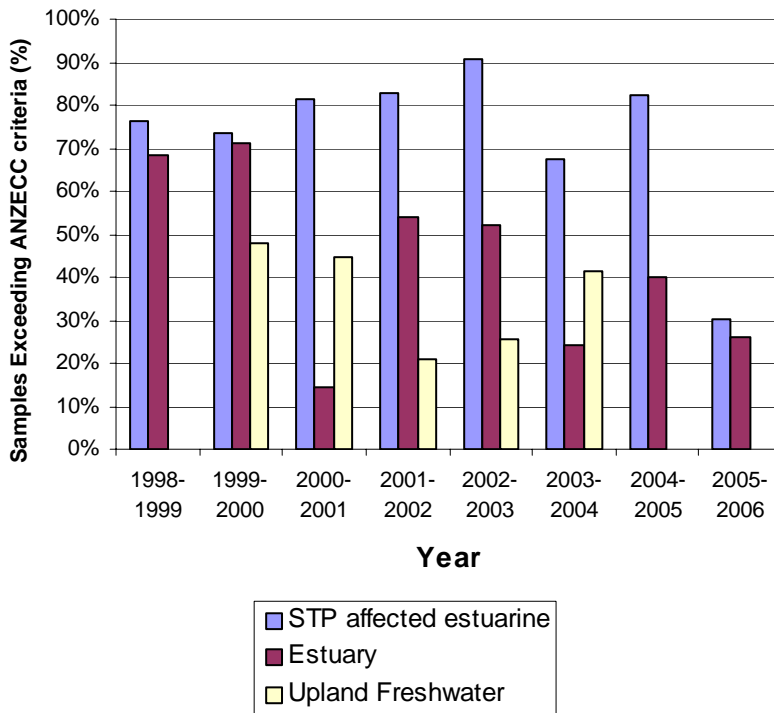
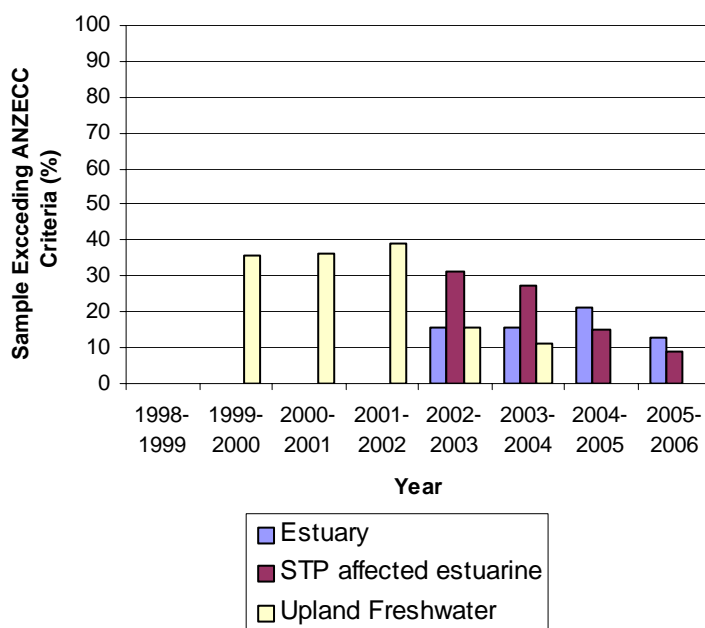


Figure 5.3.2 – Comparison of Water Quality with ANZECC criteria for Physicochemical Parameters

RESPONSES

A number of responses to water quality and riverine ecosystem health are implemented by Council, NSW Government Agencies, Landcare and other community groups. Relevant responses for 2005-2006 include:

- Acid sulfate soil remediation works as discussed in Section 4.2
- Water quality monitoring in freshwater and estuarine reaches of waterways within the LGA
- Implementation of Streamcare projects by Landcare
- Implementation of projects under council's Estuary Management Plan
- Installation of stormwater quality improvement devices under Council's Urban Stormwater Management Plan
- Continued development of an integrated water quality database to ensure efficient use and acquisition of water quality data
- Enforcement of water pollution laws and development regulations
- Implementation of education and awareness campaigns relating to water pollution prevention, stormwater management and water conservation
- Implementation of a program, in partnership with the local oyster industry, to remove tar based oyster production equipment from the Hastings & Camden Haven River estuaries for disposal and landfill
- Monitoring of water quality in the Hastings and Camden Haven River Estuaries by local oyster growers under the NSW Shellfish Quality Assurance Plan

Chapter 6 – Biodiversity

6.1 Terrestrial Ecosystems and Species Diversity

TRENDS

Table 6.1.1 – Indicators for Terrestrial Ecosystems and Species Diversity

Type	Indicator	1998-1999	2003-2004	2005-2006
Response	Area of LGA conserved in NPWS estate (%)	*	24.7	24.7
State	No. of threatened fauna/flora species in the LGA (Threatened Species Conservation Act 1998)	*	118	124
State	Koala mortality and morbidity (admissions to Koala Hospital)	139	214	226
Response	No. biodiversity conservation/ restoration projects implemented*	*	15	12

* Based on projects through Council and Landcare

* Information not available.

Table 6.1.1 presents the indicators for terrestrial ecosystem and species diversity relevant to the Port Macquarie-Hastings LGA.

A significant proportion of the LGA remains protected in National Parks estate.

Koala morbidity and mortality, measured as admissions to the Port Macquarie Koala Hospital, increased from 179 in 2004-2005 to 226 in 2005-2006. This is consistent with a growing trend of Koala mortality and morbidity since 1998. The figures reveal that impacts on Koalas (as a sentinel species for urban impacts on native species) continue to be significant and are generally in line with human population growth and subsequent urban expansion.

The number of biodiversity conservation projects implemented in the LGA has decreased when compared to figure for 2001-2002 and 2002-2003. This is due to the high number of projects implemented as part of the Streamcare Voluntary Grants Scheme that operated between 2001 and 2003.

RESPONSES

Threats to terrestrial ecosystems and species diversity are managed locally by a number of organisations including Council, Landcare, Department of Environment and Conservation, Northern Rivers Catchment Management Authority, Department of Natural Resources, Friends of Kooloonbung Creek and other community groups. Responses include:

- Implementation of site specific restoration programs
- Implementation of education programs
- Implementation of planning laws and local planning instruments to protect terrestrial ecosystems and species diversity from inappropriate development
- Cane Toad round up in areas of known toad habitat
- Green & Golden Bell Frog Surveys through a Landcare/Council/DEC partnership project
- Feral animal and weed controls (see Section 6.3)
- Operation of the Koala Hospital and associated programs by the Koala Preservation Society

- Tree planting initiatives on public land in partnership with local schools, Council and Landcare

6.2 Native Vegetation Clearing

TRENDS

Table 6.2.1 – Indicators for Native Vegetation Clearing

Type	Indicator	1998-1999	2003-2004	2005-2006
State	Extent of woody vegetation cover (% of land area in LGA)	72	71	71

The data in Table 6.2.1 is provided by the Department of Environment and Conservation for the purposes of SoE reporting and indicates a 1% decrease in woody vegetation cover in the LGA over the last seven years. This equates to an approximate loss of 37km² of woody vegetation from the LGA since 1998.

RESPONSES

A range of organisations including Port Macquarie-Hastings Council, Department of Natural Resources, Department of Environment & Conservation, Northern Rivers Catchment Management Authority, Landcare and other community organisations implement responses to native vegetation clearing, including:

- Assessment of habitat issues through the development control process for new developments by Council
- Regulation of native vegetation clearing through the Native Vegetation Conservation Act by Dept Natural Resources
- Implementation of the Tree Preservation Order by Council.
- Requiring supplementary planting where significant or Koala food trees have been approved for removal under the TPO
- Planting of native trees by Council in wildlife corridors in parks and reserves on an ad hoc basis
- Continued its support of local Landcare projects through Council's Environment Levy allocations.
- Revegetation projects by Council, Landcare, local schools and other community organisations
- Property vegetation planning for rural landholders by NRCMA
- Revegetation work by individual landowners

6.3 Introduced Terrestrial Species

TRENDS

Table 6.3.1 – Indicators for Introduced Terrestrial Species

Type	Indicator	1998-1999	2003-2004	2005-2006
State	No. of introduced animal species	17	17	17
State	No. of introduced plant species	138	142	142
Response	No. of declared noxious weeds	**	22	26
State	No. of complaints regarding noxious weeds	**	27	31

Trends in introduced terrestrial species indicators are provided in Table 6.3.1. Trends have remained relatively stable but still indicate a significant introduced species problem in the Port Macquarie-Hastings LGA.

The increase in the number of noxious weed species does not reflect a real increase in the number of these species within the LGA, rather changes to the classification of species as a result of amendment of the Noxious Weeds Act in 2005.

RESPONSES

A number of organisations are responsible for implementing responses to reduce the impact of introduced species in local biodiversity including Port Macquarie-Hastings Council, Department of Natural Resources, Department of Primary Industries, Department of Environment and Conservation, Landcare and other community based groups. The following are responses implemented during 2005-2006:

- Bitou Bush control projects in partnership between Council, Landcare and the Department of Environment & Conservation, including aerial spraying and biological control
- Inspection and treatment of over 350km of roadside for Giant Parramatta Grass
- Salvinia infestations on private lands have been controlled on a number of properties using a combination of mechanical, chemical and biological control methods
- Riparian weed control works focusing on Madeira Vine and Catsclaw Creeper have continued during 2005/2006 in locations such as Ellenborough, Wauchope, Long Flat and Lake Cathie
- Council officers carried out approximately 370 on-ground inspections of rural properties and aerial inspections were conducted both along the coastal fringe and along the Hastings, Ellenborough, Maria, Wilson and Thone Rivers, covering approximately 300 properties
- Council has continued educational and awareness activities including; general advice to landholders, inspection of aquarium/pet shops with reference to the sale of potential aquatic weeds, production of 4,000 weed control calendars, awareness advertising in Town & Country newspaper supplement, a display at the Wauchope Alternate Farming Field Day, a field day on Giant Parramatta Grass and general presentations to local schools and Landcare groups to promote weed management
- Council has continued to play an active role in the development and implementation of the strategies prepared in weed control plans through the Mid North Coast Weeds Advisory Committee (eg, Bitou Bush, Grounsel Bush etc) including the development of new Class 4 weed control fact sheets as required by the new Noxious Weeds Act
- Landcare have continued to address weed infestations through a range of projects. New volunteer Landcare groups have been established at Blackbutt Park, Wauchope and Rushcutter Way Reserve at Lighthouse Beach, Port Macquarie
- Council in partnership with the Hastings Valley Conservation Hunting Club and the NSW Game Council (DPI) continued implementation feral animal control programs on

Council land at Thrumster and the Port Macquarie Waste Management Facility site targeting feral deer, feral cats, foxes and wild dogs. This work has seen the removal of 60 feral deer, five foxes and three wild dogs from the Council managed land in the local area. Anecdotally, similar success has resulted on other private land

- Control of feral cats at Council Waste Management Facilities
- Council and Landcare have commenced an Indian Myna trapping program, harnessing the energy of volunteers through the Landcare network. To date 250 birds have been trapped and removed from the local environment

6.4 Fire

TRENDS

Table 6.4.1 – Indicators for Fire

Type	Indicator	2003-2004	2004-2005	2005-2006
Pressure	Area affected by major bushfire (ha)	Nil	Nil	Nil
Pressure	No. Permits issued by RFS for hazard reduction burning	1007	649	541

Data listed in Table 6.4.1 attempts to provide insight into trends associated with fire related impacts on biodiversity in the LGA. There have been no significant areas affected by major bushfire since 2002-2003.

A new indicator has been introduced to assist in understanding the potential local impact of fire on biodiversity. The Rural Fire Service has provided data on the number of permits issued for burning off. Data on permits for burning that have the potential to impact on biodiversity have declined over the last three years. It is likely that the introduction of tighter laws controlling native vegetation removal and the burning of waste vegetation have impacted on the number of permit applications over this period.

RESPONSES

Responses to the impact of fire on biodiversity are implemented by the Rural Fire Service through the provisions of the Rural Fires Act 1997, which require an environmental assessment of hazard reduction works with the aim of protecting areas of high conservation value and threatened species.

6.5 Aquatic Ecosystems and Species Diversity

TRENDS

Table 6.5.1 – Indicators for Aquatic Ecosystems and Species Diversity

Type	Indicator	1998-1999	2003-2004	2005-2006
State	Number of aquatic endangered and vulnerable species	New Indicator	5	5

Threatened aquatic species that are known to occur in the area include the Black Cod, Great White Shark, Grey Nurse Shark, Oxleyan Pygmy Perch and the Green Sawfish.

RESPONSES

Responses to manage and protect aquatic ecosystems and aquatic species diversity are principally implemented by NSW Department of Primary Industries (Fisheries) through the Fisheries Management Act and various recovery plans and marine reservation systems. The following activities of Port Macquarie-Hastings Council are indirect responses:

- Implementation of development and landuse planning controls that prevent impacts of landuse on aquatic environments, eg, setbacks to waterways, water pollution controls, stormwater treatment
- Implementation of stormwater quality management strategies
- Implementation of Estuary Management Plans that include actions to protect the aquatic environment
- Water pollution regulation and education

6.6 Introduced Aquatic Species

TRENDS

Table 6.6.1 – Indicators for Introduced Aquatic Species

Type	Indicator	1998-1999	2003-2004	2005-2006
State	No. Introduced Aquatic Species*	3	3	3

*Aquatic animals only, relevant plant species included in Terrestrial indicators

Three introduced fish species have been identified in Hastings freshwater systems. These are carp (*Cyprinus carpio*), mosquito fish (*Gambusia holbrooki*) and Goldfish (*Carassius auratus*). Information on the true extent of introduced aquatic species (eg, ballast water introductions in marine environments) is not currently available.

RESPONSES

Responses to manage and prevent further exotic introductions are principally implemented by NSW Department of Primary Industries. Local responses implemented by Council in relation to aquatic weeds are addressed in conjunction with terrestrial weed control initiatives as outlined in Section 6.3.

6.7 Aquatic Harvesting

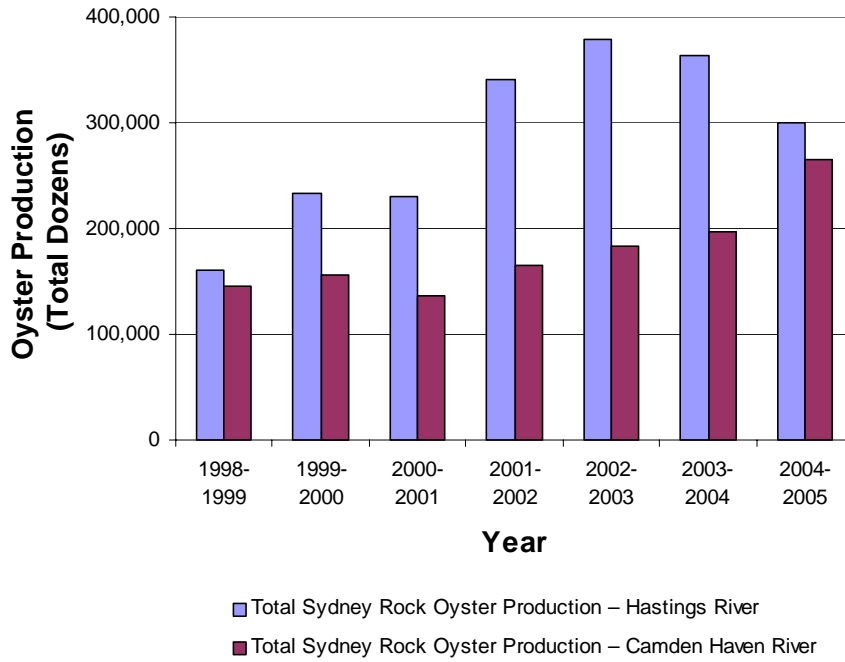
TRENDS

Indicators of aquatic harvesting activity are a useful measure of the ability of the Hastings & Camden Haven River estuaries to support a sustainable commercial fishery. It can also be used, with caution, as an indicator of estuary health.

NSW Department of Primary Industries data on oyster production is shown in Figure 6.7.1. Statistics for 2005-2006 were not available for the preparation of this report. The data reveals that there has been an overall increase in production between 1998-1999 and 2004-2005 in the Camden Haven estuary. Production rates in the Hastings estuary peaked in 2002-2003 and have declined since.

Consultation with the local oyster industry reveals that anecdotally, declines in production of oysters in the Hastings estuary can be attributed to an increase in seed stock production for export to other estuaries, a small decline in the number of growers and mortality resulting from unknown factors (environmental or otherwise).

Figure 6.7.1 – Indicators for Aquatic Harvesting



RESPONSES

Responses relevant to this issue are implemented by a number of agencies including Council, NSW Fisheries and NSW Food Authority and are generally associated with water quality protection as detailed above in Chapter 5.

Glossary

ABS	Australian Bureau of Statistics
ANZECC	Australian and New Zealand Environment Conservation Council
ASS	Acid Sulfate Soils
AWTS	Aerated wastewater treatment system
DCP	Development Control Plan, which, under the Environmental Planning and Assessment Act 1979, is a detailed policy of Council to support control of development together with LEPs.
DEC	NSW Department of Environment and Conservation (formerly EPA and NPWS)
DNR	Department of Natural Resources (formerly part of DIPNR)
EPA	NSW Environment Protection Authority
GIS	Geographical information system
HUGS	Hastings Urban Growth Strategy 2001
KL	Kilolitres (1000 litres)
LEP	Local Environmental Plan
LGA	Local government area
ML	Megalitres (million litres)
NPWS	NSW National Parks & Wildlife Service
NRCMA	Northern Rivers Catchment Management Authority
OSM	On-site sewage management system
RTA	NSW Roads & Traffic Authority
SoE	State of the Environment
SQID	Stormwater Quality Improvement Device
STP	Sewerage Treatment Plant
TPO	Tree Preservation Order

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