



Annual Report

2006 - 2007

Part B: State of the Environment Report



PORT MACQUARIE
HASTINGS



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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 one of the fastest the fastest growing regions in NSW.

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 2006 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 42,000 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 6,000 people.

The villages of Lake Cathie and Bonny Hills maximise the natural attributes of their location. The population of the area is approximately 5,600 and is growing rapidly.

The Camden Haven is located in the south of the LGA (population approximately 8,800) 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 9,400 persons.

About SoE 2006-2007

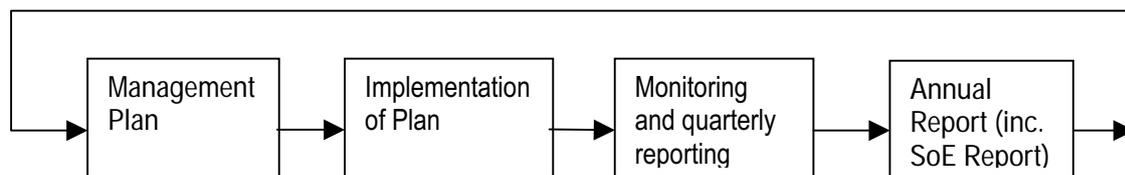
Purpose

The Port Macquarie-Hastings Council State of the Environment Report (SoE) 2006-2007 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 2006-2007 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 2006/07 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
- Resources Efficiency and Sustainability Strategy 2007 (Waste)
- Hastings Effluent Management Strategy 1998
- Urban Growth Strategies
- Camden Haven Urban Growth Strategy 2003
- Greenhouse Action Strategy 2003
- Environmental 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 green field and infill development sites 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	
Global Warming & Energy Consumption	Increase the use of renewable fuels in Council plant and vehicle fleet
Urban Air Quality	Strategically plan for effective 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
Biodiversity	
Terrestrial Ecosystems & Species Diversity	Increased funding for terrestrial ecosystem rehabilitation projects
	Development of a Biodiversity Strategy
	Implement strategic planning controls to manage and protect koala populations
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 2006-2007 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

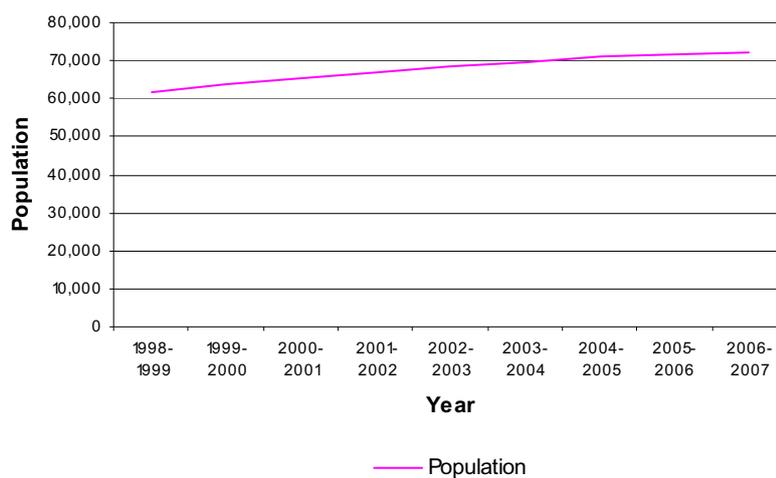
Chapter 2 – Human Settlement

2.1 Population and Settlement Patterns

Trends

The total population for 2006 is estimated at 71,573. This estimate is based on Australian Bureau of Statistics (ABS) and independent forecasting population data. The data, presented as Figure 2.2.1, shows the 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
- Resources Efficiency and Sustainability Strategy 2007 (Waste)
- 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 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 studied. The Department of Planning and Council are currently examining this through the Mid North Coast Regional Plan preparation process. This will result in the review of current urban investigation areas for residential, industrial and commercial development. This process is supported by both existing and new strategic planning work undertaken by Council.

2.2 Urban Water

Trends

Table 2.2.1 – Indicators for Urban Water

Type	Indicator	1998-1999	2003-2004	2006-2007
Pressure	Potable water usage per property (KL)	248	230	198
Pressure	Annual per capita potable water use (KL)*	86	84	77
Pressure	Annual volume of water used for potable purposes (ML)	5,336	5,839	5,767
Response	% Treated effluent reused	0.3	3.9	2.8
Pressure	Number of water restriction breaches reported to Council	NEW INDICATOR	92	33

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

A continued reduction in demand caused by water conservation measures during the drought and the introduction of a more significant 'user-pays' water pricing system is clearly evident as shown by Figure 2.2.1 and 2.2.2. The total volume of water used for potable purposes has continued to decline since 2004-2005 and included a reduction of 1.3% during 2006-2007. This reduction is more significant than it may appear, given that the reduction has occurred despite population growth. On a per property basis, water consumption fell by 11.6% during 2006-2007. The data demonstrates the commitment of Council and the community to responsible use of water resources.

Figure 2.2.1 – Potable Water Use Trends

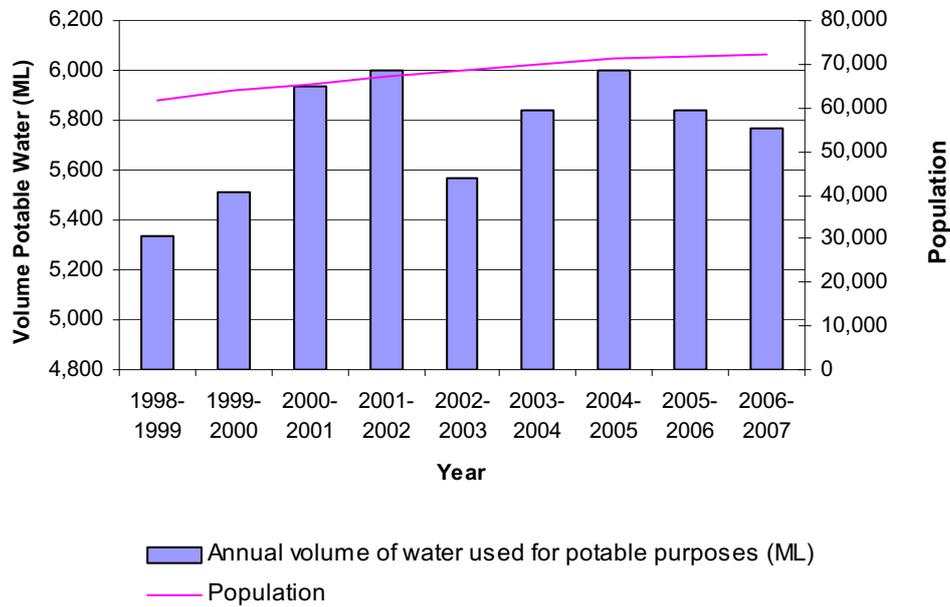
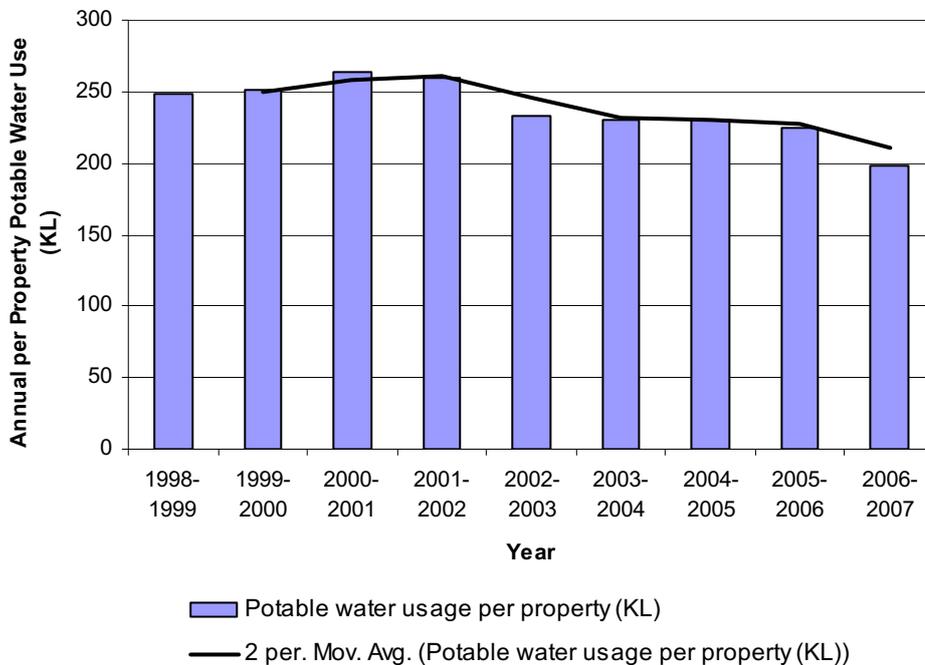


Figure 2.2.2 – Per Property Potable Water Use Trends



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
- Completion 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 the Wauchope Water Treatment Plant
- Home Water Saver Rebate Scheme
- Free Major Water User Water Analysis Studies

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 sourced from Roads & Traffic Authority (RTA) reporting.

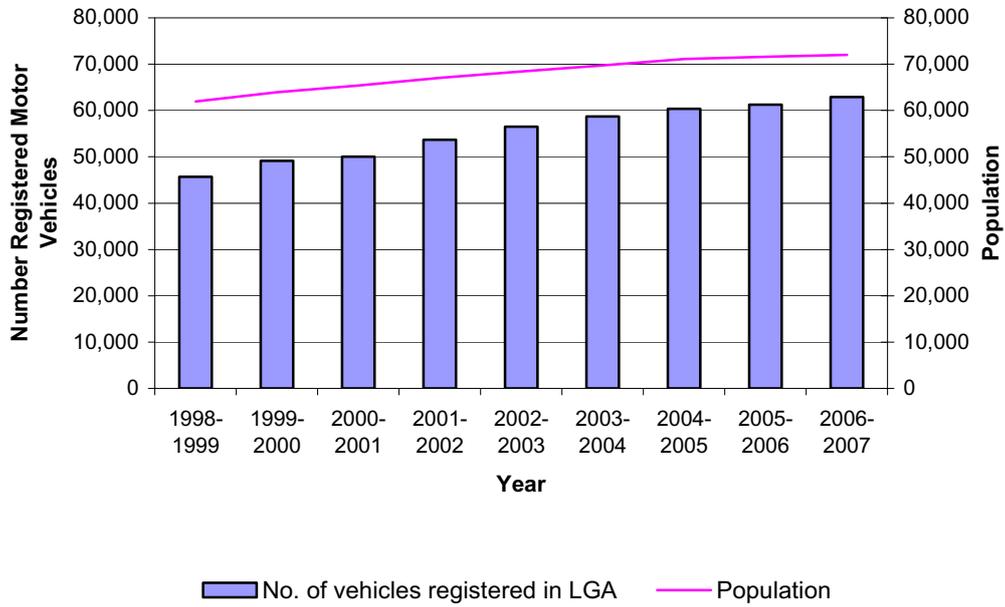
Figure 2.3.1 compares registered vehicle trends with local population growth. The number of registered vehicles is increasing in line with population growth over time. Although only a surrogate environmental indicator, this data supports the anecdotal evidence that impacts associated with transport and transport infrastructure would be increasing. Just how significant the local 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
- Increasing the number of fuel efficient vehicles in the Council fleet

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	2006-2007
Pressure	Solid waste produced (tonnes)	76,000	71,445	57,242
Pressure	Solid waste landfilled (tonnes)	*	37,016	25,672
Pressure	Volume of domestic waste (tonnes)	*	19,813	14,527
Pressure	Solid waste generated per person per year (tonnes) ⁺	1.2	1.05	0.80
Response	% of solid waste diverted from landfill	11.5%	43%	55%
Response	Solid waste recycled (tonnes)	*	30,653	31,615

⁺ 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.

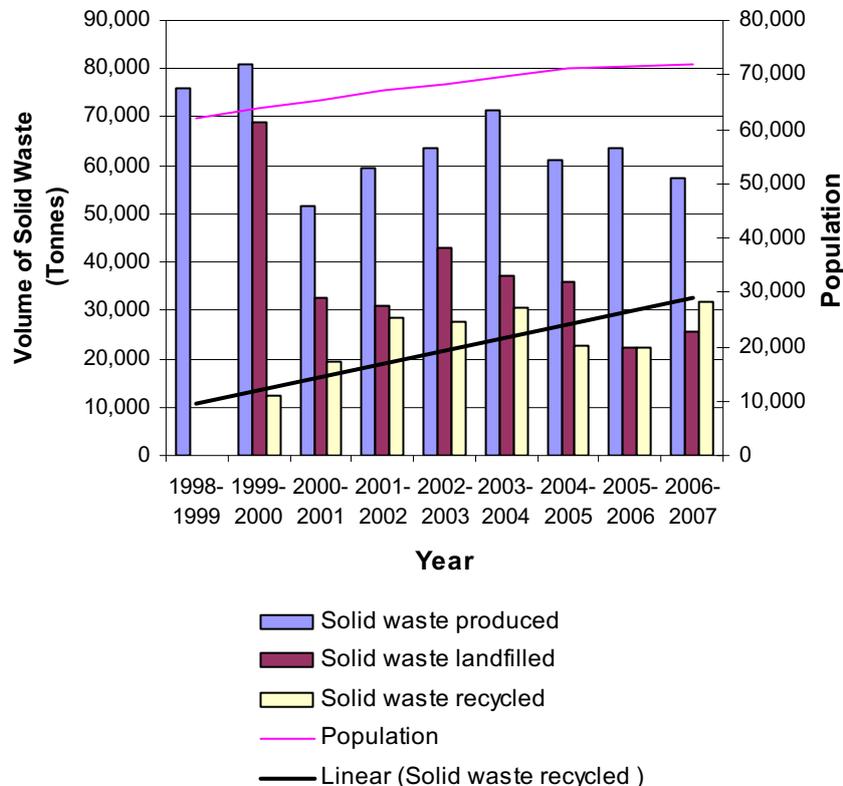
Waste generation is primarily influenced by population growth. Despite population growth in the Port Macquarie Hastings LGA, there has been a reduction in total solid waste volumes generated since 2003-2004.

During 2006-2007, solid waste generation rates dropped by 9.9% and solid waste recycling rates increased by 42.1%, resulting in an overall reduction in waste going to landfill of 55%.

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 weekly organics collection service, including free kitchen tidy bins, for residential properties that has resulted in an increase of organics collected by 37% over the previous corresponding period
- Implemented a capital expansion of the Organic Resource Recovery Facility to meet increased organics inputs
- Adoption of a new Resource Efficiency and Sustainability Strategy 2007
- Completed final capping of the closed Wauchope landfill.
- Development of 'waste plans' for construction and demolition industries
- Continuation 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	2006-2007
Pressure	Volume of wastewater received at sewerage treatment plants (ML)	6,979	6,381	8,330
Pressure	Volume of treated wastewater discharged sewerage treatment plants to receiving waters (ML)	6,953	6,132	8,200.3
Response	Treated wastewater reused (%)	0.3	3.9	2.8
Pressure	Volume of wastewater per person per capita (KL) *	113	92	122
Pressure	No. of on-site sewerage management systems (e.g. septics)	**	4,479	5,134
Response	No. of compliance inspections of on-site sewerage management systems by Council	**	170	104
Response	No. of inspections of on-site sewerage management systems by AWTS contractors	**	2,288	3,428
Pressure	No. of approved trade waste systems	341	483	523
Response	No. of compliance inspections of trade waste systems	**	800	640
State	% Compliance of trade waste systems	**	>90%	>90%

* 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 heavily influenced by stormwater infiltration. During 2006-2007, the highest volume of effluent was generated since 1998. This result being attributed to a return to wetter conditions during the period.

Figure 2.4.2.2 shows a reduction in the reuse of reclaimed water (treated effluent) during 2006-2007. The reuse volume dropped to 129.7ML from 322ML in 2005-2006. This reduction resulting from wetter conditions over the period that reduced the opportunity to irrigate reclaimed water on reuse sites.

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 2006-2007. 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

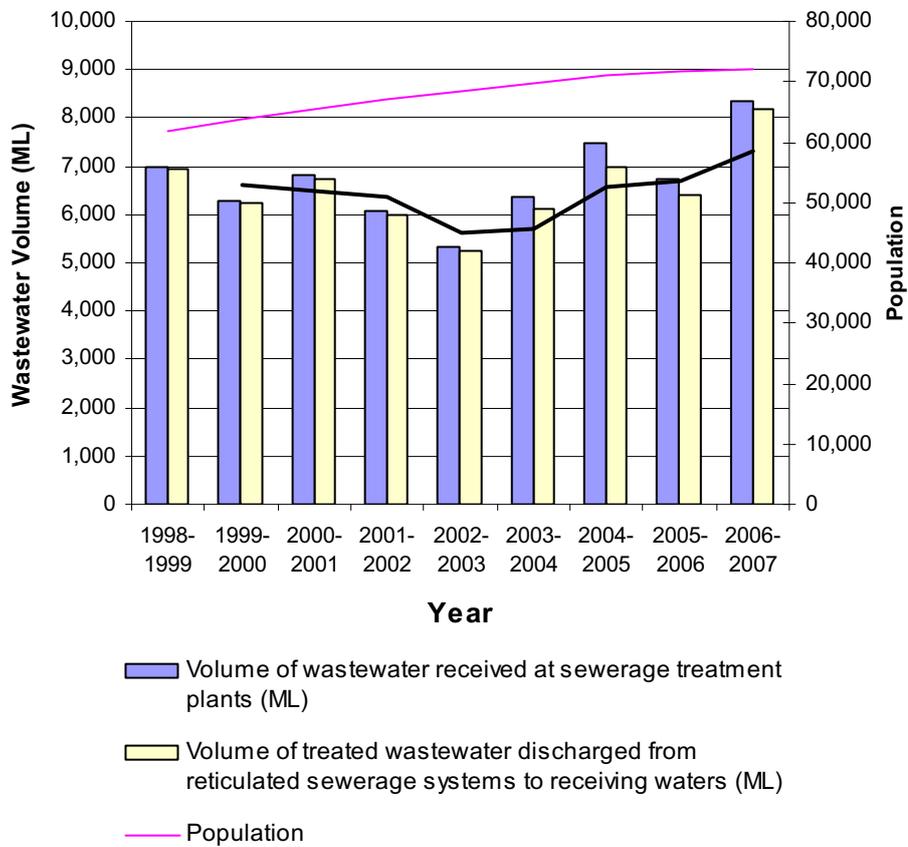


Figure 2.4.2.2 – Reclaimed Water Use

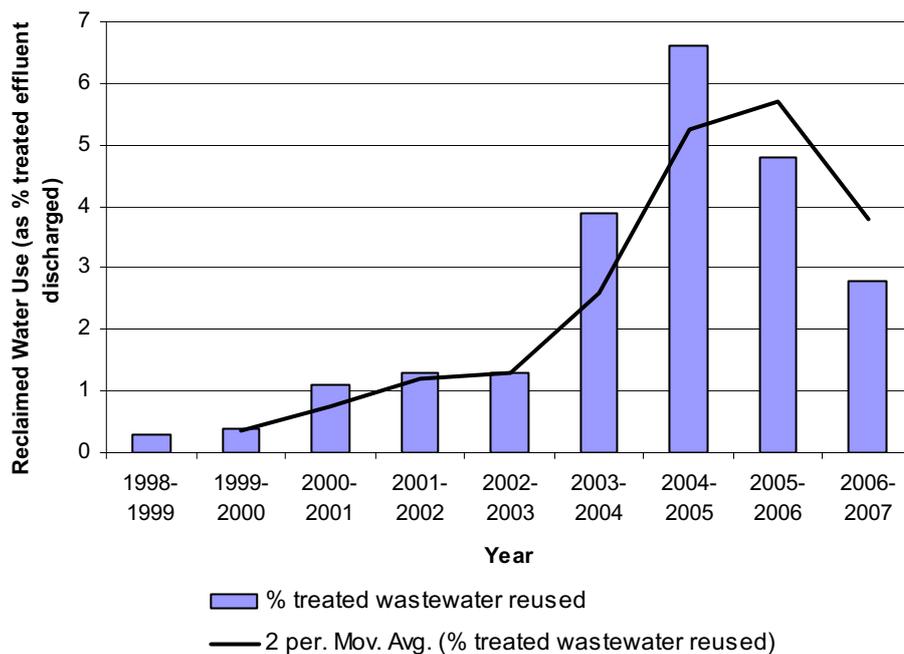
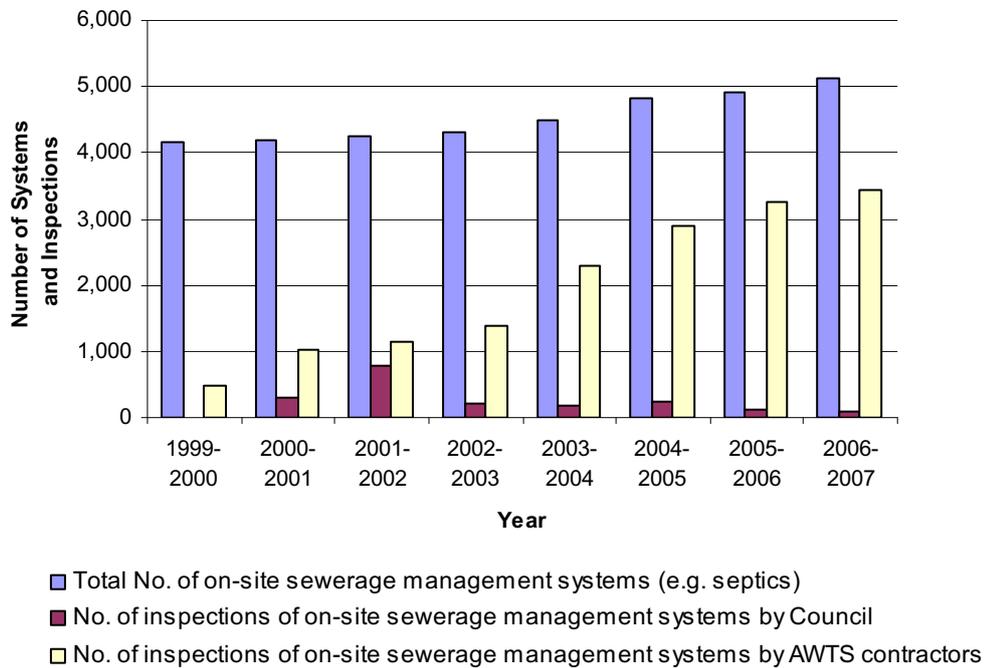


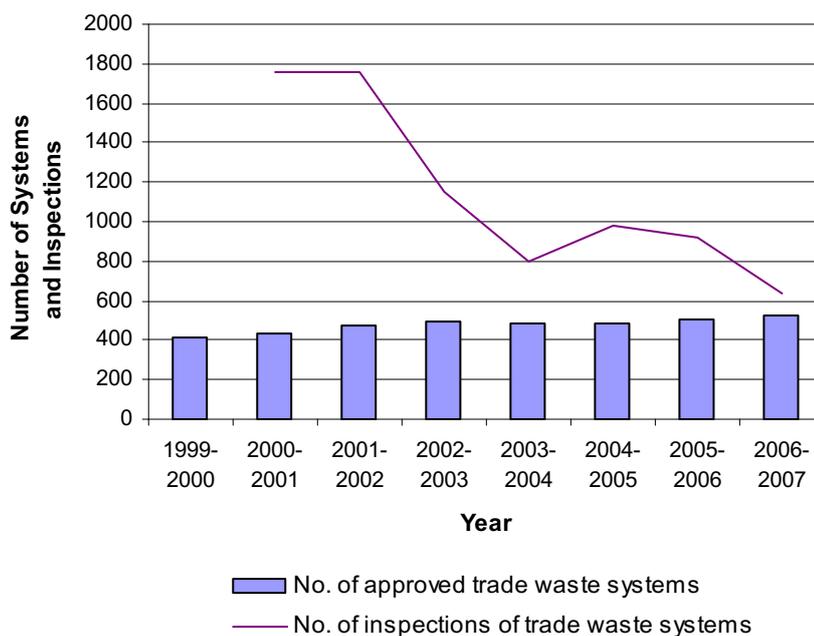
Figure 2.4.2.3 – On-Site Sewerage Management Trends



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 growth of commercial and industrial development in the LGA. The number of compliance inspections carried out by council has decreased due to staff availability. Trends are depicted in Figure 2.4.2.4.

Figure 2.4.2.4 – Trade Waste Trends



Responses

Reticulated Sewerage System

Recent responses include:

- Completion of the detailed design for the augmentation of the Bonny Hills Sewage Treatment Plant and commencement of contracting processes to allow for the construction of a reclaimed water system for the Camden Haven area
- Continued development of treated wastewater reuse markets
- Completion of the validation process for 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 2007
- Completion of 65% of the Southern Effluent Pipeline to allow the distribution of reclaimed water from existing Sewerage Treatment Plants to reuse markets

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
- 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. Construction timeline for 5 villages have been adopted.

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	2006-2007
Response	No. of protected non-Aboriginal heritage items	132	153	156
Response	No. of protected Aboriginal heritage items	198	385	406

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 thirteen sites of Aboriginal heritage afforded a legal conservation status during 2006-2007. These sites are classified as artefacts, earth mounds and stone quarry.

Responses

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

European Heritage

- Conservation work on thirteen (13) monuments within Port Macquarie's Second Burying Ground (1824-1886). The cost of this work was approximately \$29,500 and included conservation of stonework and brickwork, removal of concrete surrounds and resetting of stelaes.
- Secured grant funding from the NSW Heritage Office for the following: \$100,000 towards interpretation of archaeological remains on the site of The Glasshouse; \$20,000 continuation of conservation work at Port Macquarie's Second Burying Ground; \$7,500 continuation of the Heritage Assistance Fund; \$2,750 continuation of the Heritage Advisory Service.
- Held an exhibition to showcase some of the artifacts that were uncovered during the development of the Royal Hotel and Rydges sites. The exhibition is now a permanent fixture within the Rydges Hotel.
- Council allocated a total of \$15,000 from the Heritage Assistance Fund to six (6) property owners to carry out repairs, maintenance or to re-instate missing items to their heritage listed property. The total cost of this work was \$30,444.
- Between the 3-18 March 2007 held the tenth Heritage Festival. As part of the National Trust's state-wide festival of events. More than 7,000 people attended thirty-one (31) events.
- Prepared a draft Interpretation Plan and Education Kit for Port Macquarie's Second Burying Ground. The Plan will be implemented over time as funding becomes available.
- Installation of three (3) interpretive signs at Hibbard providing an insight into heritage of the locality.
- Continued the Heritage Advisory Service that assists Council and the community to have appropriate measures in place to conserve and present local heritage.
- Council worked with the developers of the Focus Apartments and The Point Apartments to ensure the preservation and future interpretation of heritage significance of these sites.



Aboriginal Heritage

- Continued development of the draft Aboriginal Heritage Strategy
- Continued development of the Reconciliation Action Plan (contains an Aboriginal Heritage component)
- Aboriginal heritage assessment as part of the development assessment process
- Aboriginal heritage awareness during Heritage Week
- Aboriginal heritage consultation and partnership regarding the upgrade of Pacific Highway; Coopernook to Heron's Creek
- Completion of Stage 1 Thomas Dick Photographic Collection highlighting Aboriginal cultural heritage in the Hastings

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	2006-2007
Pressure	No. of noise complaints: Total	537	460	713
Pressure	No. of noise complaints: Domestic (excl. barking dogs)	97	81	100
Pressure	No. of noise complaints: barking dogs	402	332	570
Pressure	No. of noise complaints: building sites - working outside hours	13	29	7
Pressure	No. of noise complaints: Industrial/Commercial	25	18	36

Table 2.6.1.1 provides details of the number and nature of noise complaints received by Port Macquarie-Hastings Council. The overall number of noise complaints received increased by 48% between 2005-2006 and 2006-2007 as shown in the figure below. All types of noise complaint experienced an increase with the exception of building site noise. The dominant source of domestic noise continues to be barking dogs in urban areas.

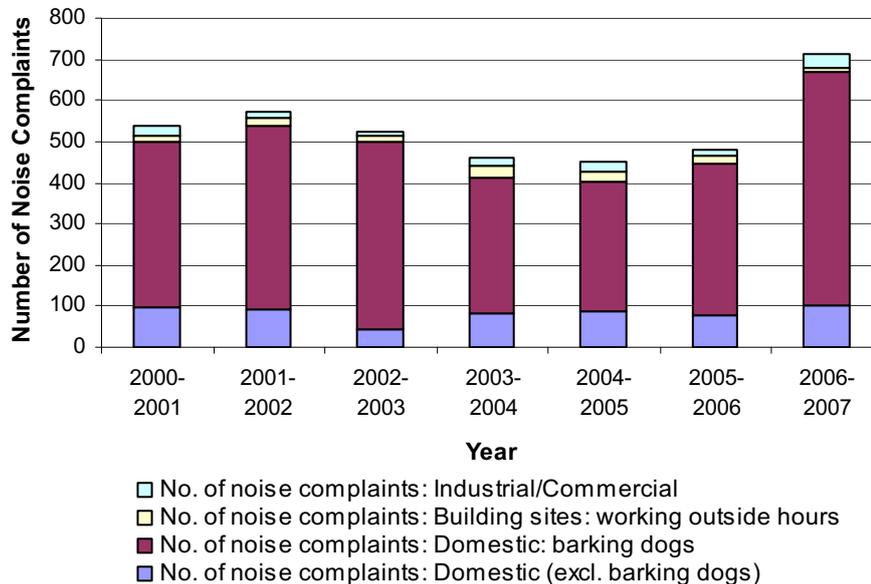
Increases in the number of vehicles in the LGA are also an indicator of increase transport noise. Figure 2.3.1 is relevant in this respect, showing vehicle registrations are growing inline with local population.

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

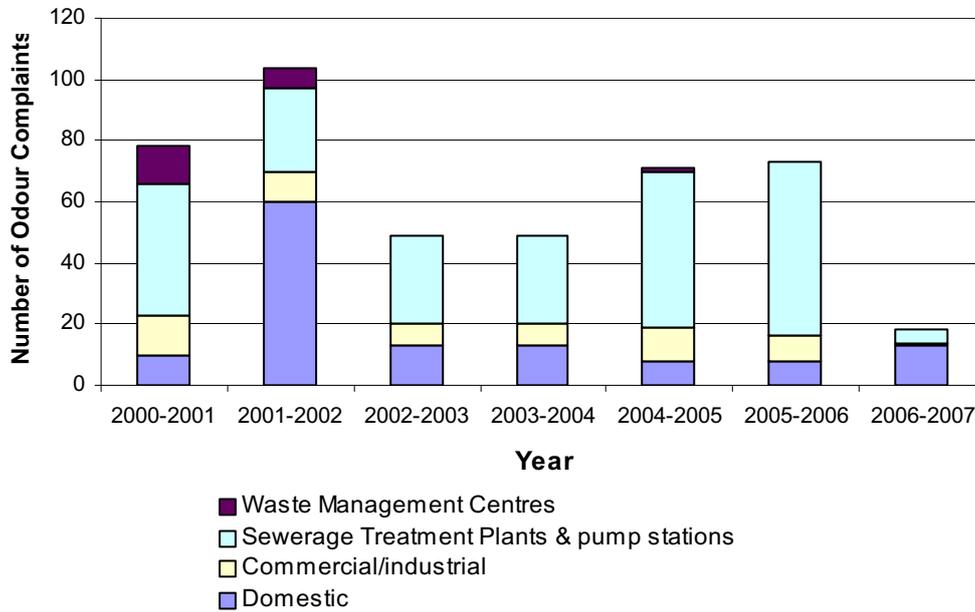
Trends

Table 2.6.2.1 – Indicators for Odour

Type	Indicator	2000-2001	2003-2004	2006-2007
Pressure	No. Complaints (total)	78	49	18
Pressure	- Domestic	10	13	13
Pressure	- Commercial/industrial	13	7	1
Pressure	- Sewerage Treatment Plants & pump stations	43	29	4
Pressure	- Waste Management Centres	12	0	0

Odour complaints received by Council reduced by 75% between 2005-2006 and 2006-2007. As shown in figure 2.6.2.1 this is the lowest level of complaint since 2000. The most significant reduction is associated with complaints about odour from sewage treatment plants and sewage pump stations. This reduction is likely to be the result of improved odour control at treatment plants and cleaning practices at sewage pump stations. It should also be noted that many complaints about odour from sewerage infrastructure are often attributed to other sources of odour, such as decomposing organic matter in wetlands that are located nearby. This has the potential to skew past results and impact on the variability of complaint statistics.

Figure 2.6.2.1 – Odour complaints received by Council



Responses

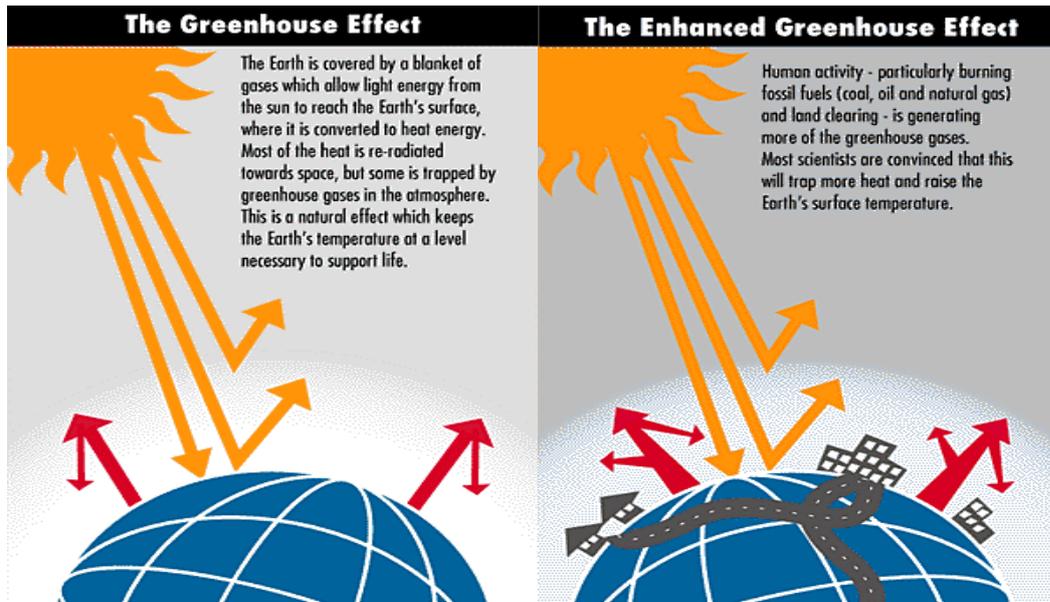
Port Macquarie-Hastings Council has a number of responses to the issue of odour, including:

- 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
- Continuous improvement of sewerage infrastructure operations

Chapter 3 – Atmosphere

3.1 Global Warming and Energy Consumption

Figure 3.1.1 – The Enhanced Greenhouse Effect



Trends

Table 3.1.1 – Indicators for Global Warming

Type	Indicator	1996	1998-1999	1999-2000	2001-2002	2004-2005	2005-2006
Pressure	National greenhouse gas emissions tonnes/ capita/ year ⁺	**	29.2	28.7	27.8	28.2	27.6
Pressure	Estimated LGA greenhouse gas emissions tonnes/year ⁺⁺	585,529	**	**	783, 281	**	**
Pressure	Estimated LGA greenhouse gas emissions tonnes CO ₂ eq /capita/year ⁺⁺	10.4	**	**	11.2	**	**
Pressure	LGA Energy consumption (GJ) ⁺⁺	4,782,187	**	**	6,021,647	**	**
Pressure	LGA Energy use /capita/ year (GJ)	85	**	**	92	**	**
Pressure	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 no new indicator information for global warming available for 2006-2007. However, updated data on greenhouse gas emissions has been obtained from the National Greenhouse Inventory for 2005-2006. Australia's net emissions in 2005 were 559.1 Mt, an increase of 2.2% over net emissions for 1990. Contributing sectors to the increase in emissions over this period included *stationary energy* (up 42.6%), *transport* (up 29.9%), *fugitive emissions* from fossil fuel (up 7.3%), *industrial processes* (up 16.5%) and *agriculture* (up 0.2%). Sectors decreasing included *land use change and forestry* (down 73.9%) and *waste* (down 6.94%).

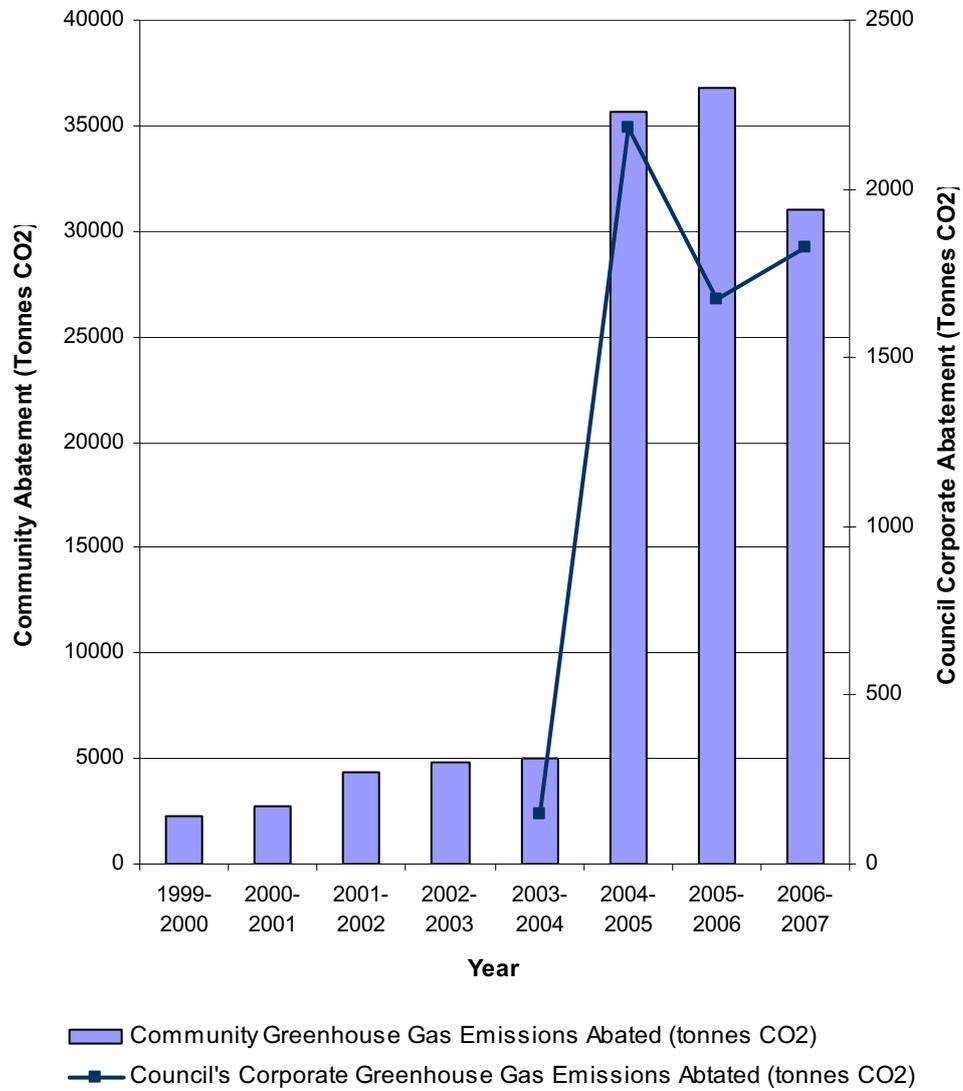
Table 3.1.1 indicates that on a per capita basis, greenhouse emissions fell to 27.6 tonnes/person/year in 2005 from 28.2 tonnes/person/year in 2004 .

Emissions data for 2006-2007 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 global warming by implementing emissions reducing initiatives.

Figure 3.1.2 shows emissions abatement between both 1999 and 2007 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 global warming are based upon its participation in the Cities for Climate Protection Program and its Greenhouse Action Strategy. Specific responses implemented in 2006-2007 include those in Table 3.1.3 below.

Table 3.1.3 – Quantified Greenhouse Abatement Responses Implemented by Council in 2006-07

Sector	Measure	CO2E Savings t/year
Corporate	Greenpower purchasing	1,728
Community	AAA rate shower head giveaways (1200)	1,586
Community	Energy Efficient Housing DCP / BASIX	1,304
Community	Organic Waste Diversion from Landfills	24,833
Total		29,451

Additional responses included:

- Tree planting days
- Implementation of fleet sustainability measures including:
 - 33% reduction in number of large 6 cylinder vehicles
 - 100% increase in mid size 4 cylinder vehicles
 - 243% increase in small 4 cylinder vehicles (including 9 small 4cyl diesel vehicles)
 - 1 hybrid vehicle
 - Converting 4 cylinder 2wd utilities from petrol to diesel models (8)

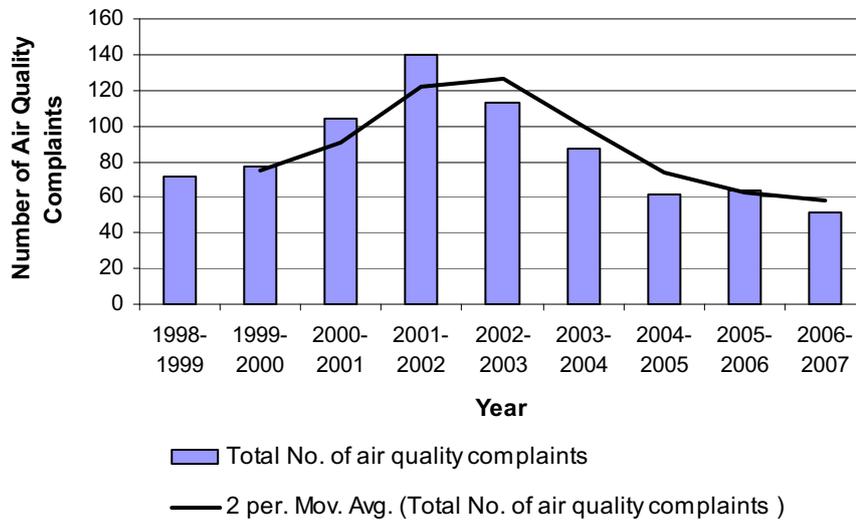
3.2 Urban Air Quality

Trends

Table 3.2.1 – Indicators for Urban Air Quality

Type	INDICATOR	1998-1999	2003-2004	2006-2007
Pressure	No. of EPA licensed premises	23	18	22
Pressure	Total No. of air quality complaints	72	87	52
Pressure	No. of air quality complaints - backyard burning	**	11	18
Pressure	No. of air quality complaints – other	**	65	34

Data relating to the number of air quality related complaints received are shown in the Table 3.2.1 and Figure 3.2.1. The number of air pollution complaints received decreased during 2006-2007, continuing a downward trend since 2001-2002.

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
- Wood smoke education campaign and investigation of wood smoke complaints
- Closing local landfills
- Constructing cycleways

Chapter 4 – Land

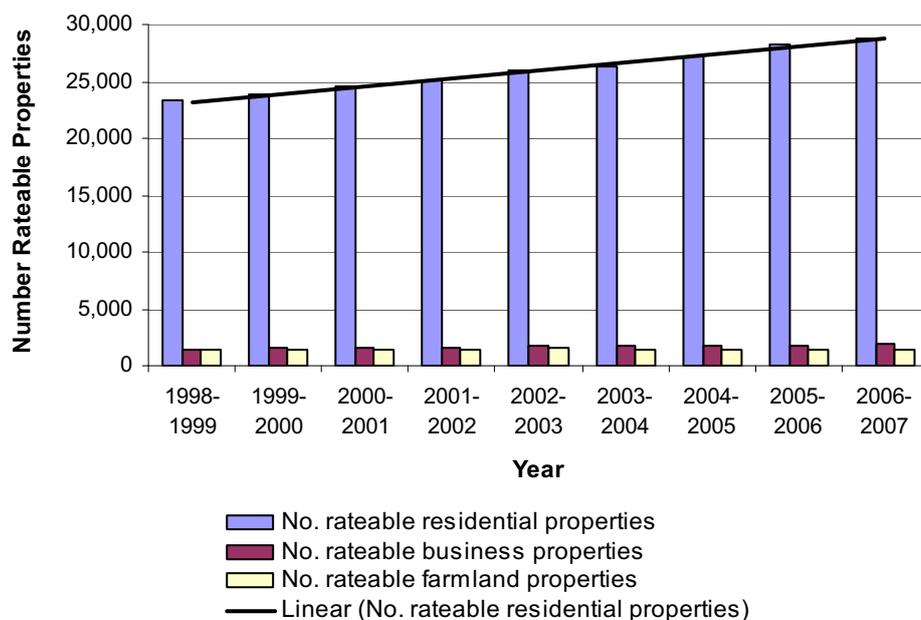
4.1 Land Use Changes

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 eight years. This data demonstrates the increase in urban landuse, but is likely to understate the reduction in rural land resulting from urban growth. More 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 1999-2000 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

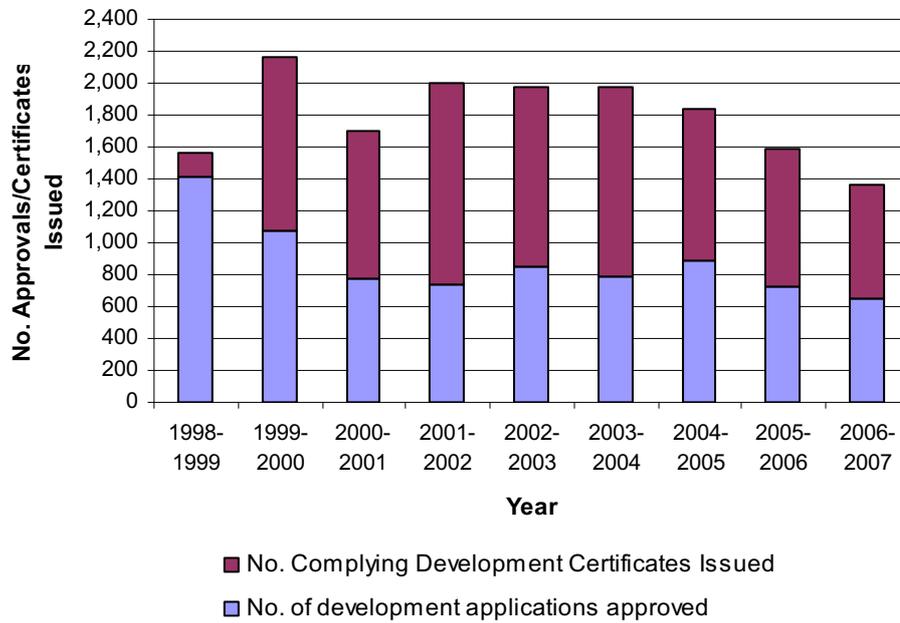
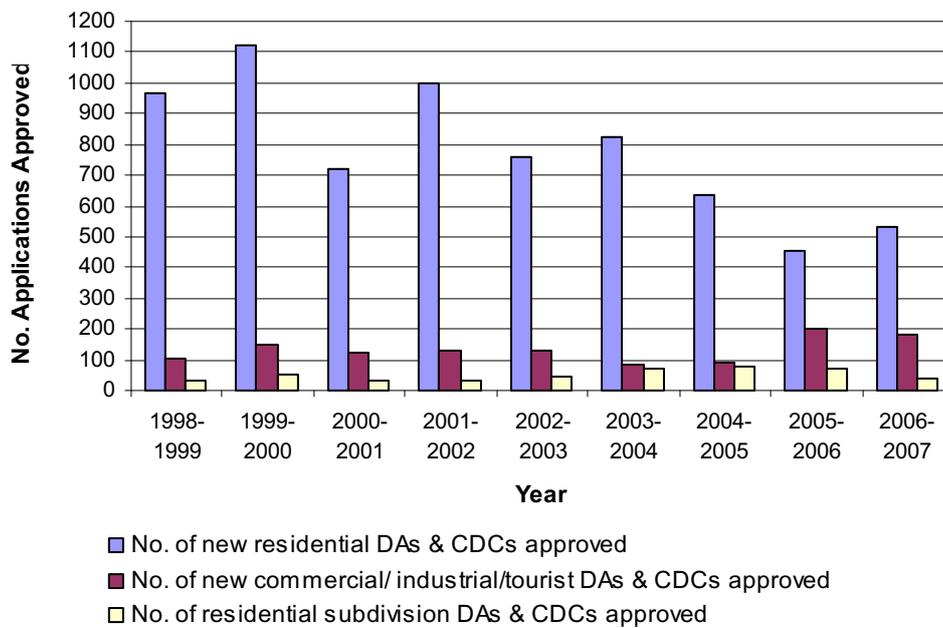


Figure 4.1.3 – Development Type Comparison



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.

More detailed local planning issues associated with the development of land at Area 13 and Area 14 are managed through the Area 13 Thrumster Structure Plan (2006) and the Area 14 Lake Cathie Bonny Hills Urban Design Master Plan (2004) respectively. The outcomes of this work are being further developed to inform the drafting and subsequent adoption of Local Environment Plans and Development Control Plans for these areas.

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	2006-2007
Pressure	Erosion & sediment control - building sites - complaints	New Indicator	9	17
Response	Erosion & sediment - building sites - warnings issued	New Indicator	30	6
Response	S&E control - building sites - fines issued	New Indicator	11	2

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 a continued 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:

- Stream bank erosion projects in partnership with the Department of Natural Resources, Landcare and the Northern Rivers Catchment Management Authority.
- Implementation of targeted river reach remediation works on the Camden Haven and Hastings Rivers.
- Development 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	2006-2007
Response	Total area of wetland /wet pastures re-established (ha)	0	762	940
Response	Percentage of acid sulfate soils drainage networks remediated (out of a total of 60)	0%	65%	100%

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

All 60 known acid discharging drains have been remediated at a cost of \$1.35M over a six-year period. All five 'hotspots' in the Hastings and Camden Haven catchments have been remediated or are in partial remediation. A total of 940 hectares of wetlands has been rehabilitated using a wet pasture management to promote vegetation regrowth and contain acidic groundwater. A total of 5,380ha 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 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	2006-2007
State	No. of potentially contaminated sites	165	157	162
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. One additional site was added to Council records in 2006-2007.

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

Chapter 5 – Water

5.1 Surface Water Extraction

Trends

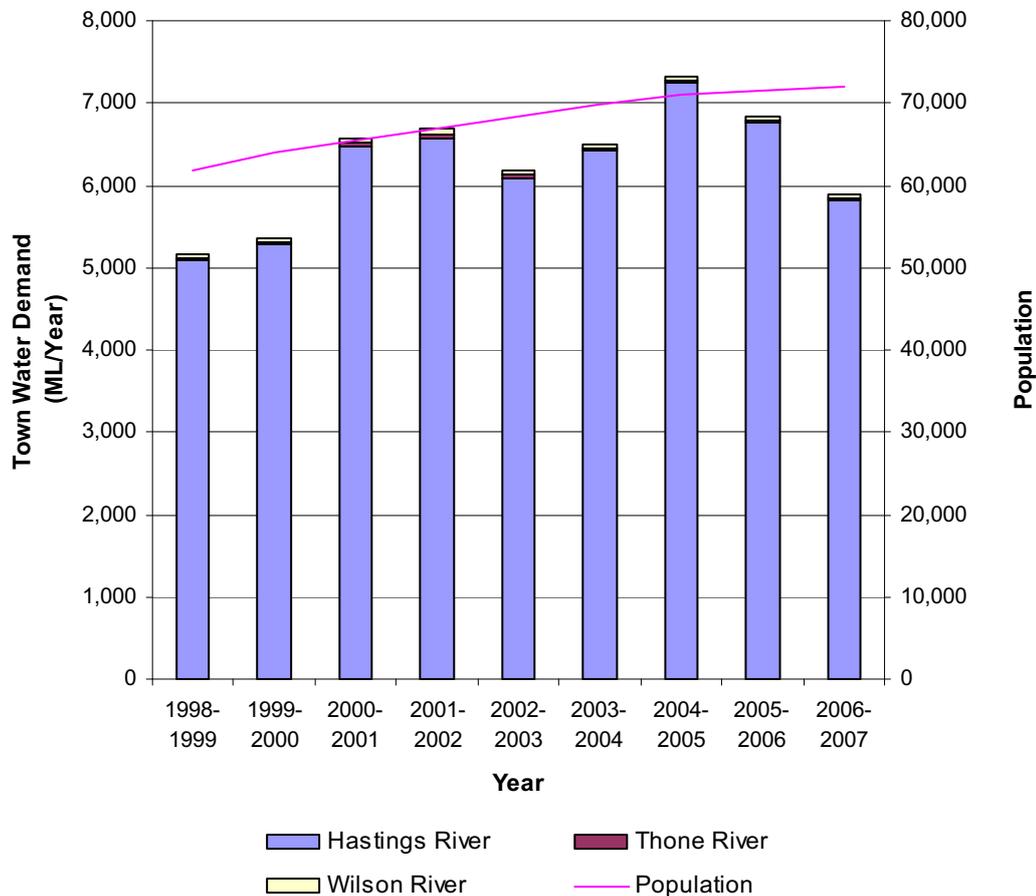
Table 5.1.1 – Indicators for Surface Water Abstraction

Type	Indicator	1998-1999	2003-2004	2006-2007
Pressure	Total water demand from local rivers for potable supply (ML)	5,153	6503.2	5892.3
Pressure	Annual water demand from Hastings River by Council for potable supply (ML)	5,079	6420.4	5818.55
Pressure	Annual water demand from Thone River by Council for potable supply (ML)	31	31.1	20.75
Pressure	Annual water demand from Wilson River by Council for potable supply (ML)	43	51.5	53.0
Pressure	Number of surface water licences	298	345	322
Pressure	Allocation (ML/yr) for surface water licences excluding Town Water Supply	New Indicator	11,792	21,018

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 generally dominated by population increase overall. However, a notable decrease in demand for town water during 2006-2007 is evident by the data. This decrease is attributed to the decrease abstraction during the dry period in early 2006-2007 and in response to Council's new user pays water charging structure and permanent water conservation measures.

Figure 5.1.1 – Town Water Demand Trends



Other Water Abstraction

The Department of Water & Energy has provided data on the number of water licences and water allocations in the LGA during 2006/2007. The total number of surface water licences fell by 30 to 322 while the total number ground water licences increased from of 950 to 1146 in 2006-2007. Surface water allocations, excluding town water increased only marginally.

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 River 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.
- Introduction of new water charges that reflect water use and encourage water conservation

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.

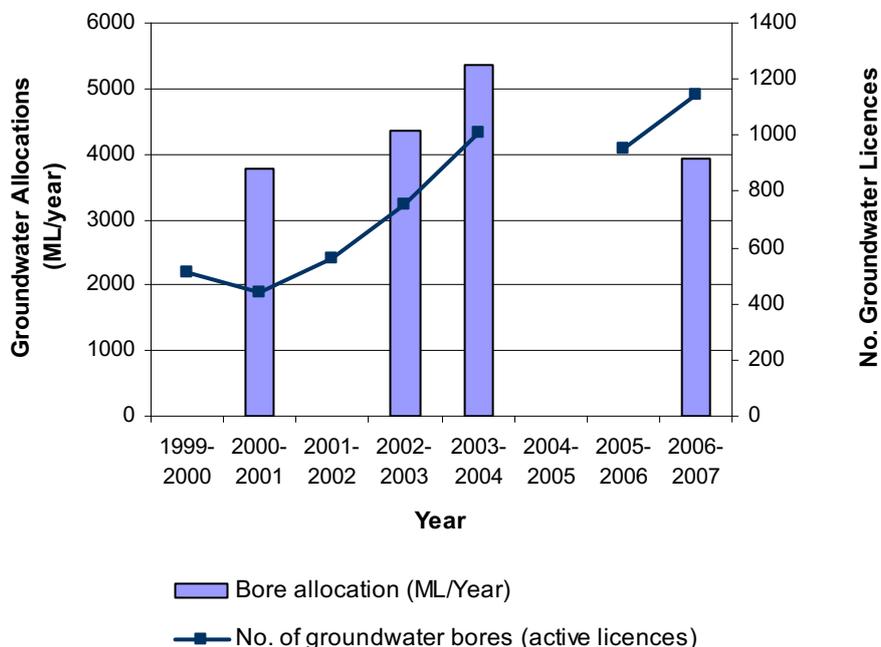
5.2 Groundwater Extraction

Trends

Data in Figure 5.2.1 shows that the number of groundwater bores licensed in 2006-2007 increased in comparison to 2005-2006, continuing an increasing trend.

Data on abstraction volumes are not available and alternatively data on groundwater bore allocations is provided as a broad indicator. This information does not include allocations for the majority of bore licences, which are small users including domestic or stock watering licences. The information can therefore only be considered a general indicator of groundwater use.

Figure 5.2.1 – Groundwater Extraction Trends



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. Nutrients include various forms of nitrogen and phosphorus and chlorophyll; and physicochemical parameters include water quality indicators such as dissolved oxygen, suspended solids, pH and salinity.

The results show a significant variability in the relationship between ambient water quality, both estuarine and fresh water, and the ANZECC water quality criteria. This variability is not unusual given the various conditions (e.g. wet periods, dry periods, during rainfall etc.) represented by the data and the variability of water quality in differing parts of the catchments.

Despite the above, the following observations are relevant:

- Exceedences of nutrient criteria in ambient estuarine waters generally declined until 2005-2006 with subsequent increase to 50% in 2006-2007, this being consistent with catchment run-off during 2006-2007.
- That nutrient water quality criteria are more frequently exceeded than physicochemical criteria which.
- The data demonstrates that while estuarine waters affected by treated effluent discharges exceed water quality criteria more frequently than ambient sites, a reduction in the impact of physicochemical parameters is occurring.

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 (within an order of magnitude) and in general terms, river and stream water quality in the Port Macquarie-Hastings area is in a good state.

Updated freshwater quality data will be reported in next year's comprehensive State of the Environment Report.

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

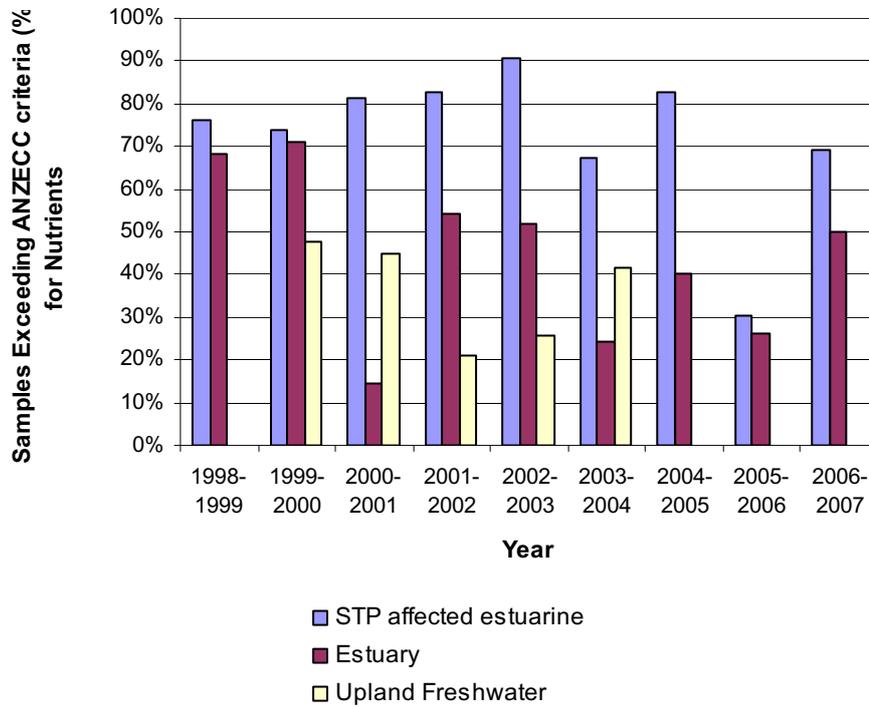
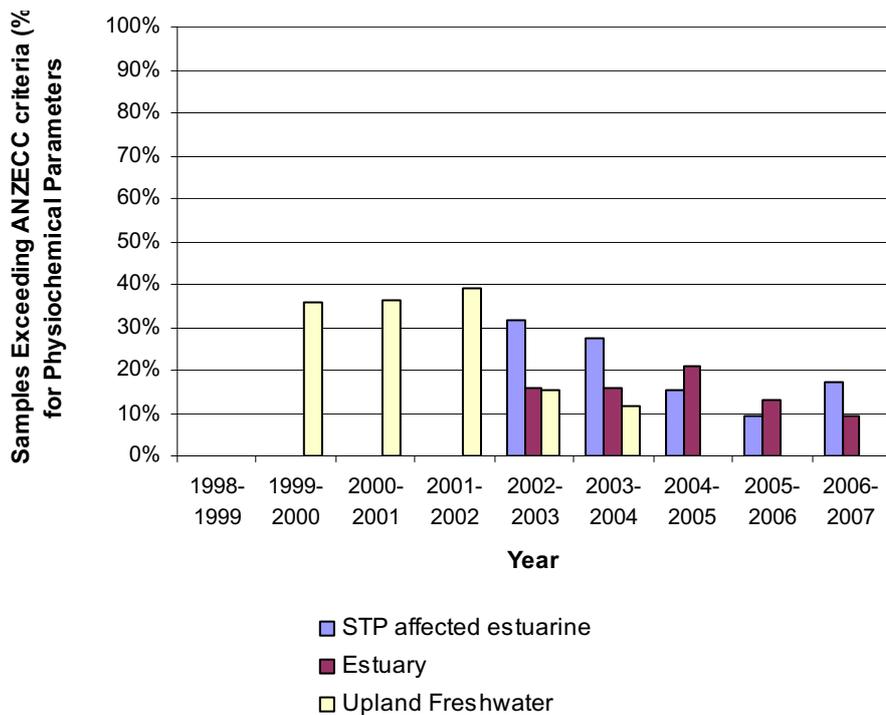


Figure 5.3.2 – Comparison of Water Quality with ANZECC criteria for Physicochemical



Responses

A number of responses to water quality and riparian ecosystem health are implemented by Council, NSW Government Agencies, Landcare and other community groups. Relevant responses for 2006-2007 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 river remediation works along 11kms of riparian zone across the LGA, in both estuarine and freshwater areas.
- 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	2006-2007
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	227
Response	No. biodiversity conservation/restoration projects implemented [†]	*	15	45

[†] Based on projects through Council and Landcare

* Information not available.

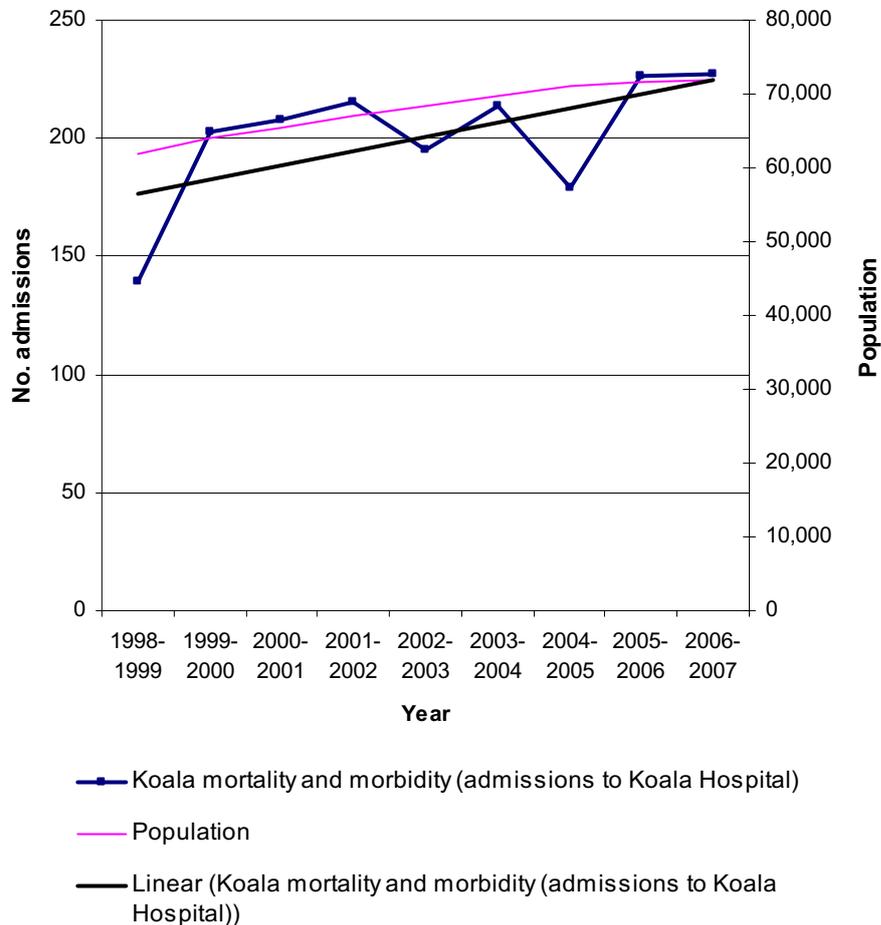
Table 6.1.1 presents the indicators for terrestrial ecosystem and species diversity relevant to the Port Macquarie-Hastings LGA.

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

There were no additional threatened species listed for the local government area during 2006-2007.

Koala morbidity and mortality, measured as admissions to the Port Macquarie Koala Hospital, remained stable between 2005-2006 and 2006-2007. However, a trend of growing admissions is evident since 1998 as shown in Figure 6.1.1. 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.

Figure 6.1.1 – Koala Morbidity and Mortality



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 targeted river reach remediation works on the Camden Haven and Hastings Rivers resulting in the implementation of management actions along 11km of riparian zone during 2006-2007.
- 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 and habitat development plan through a Landcare/Council/DEC partnership project
- Feral animal and weed control (see Section 6.3)

- Operation of the Koala Hospital and associated programs by the Koala Preservation Society Inc.
- Tree planting initiatives on public land in partnership with local schools, Council and Landcare
- Development of a database of Koala Plans of Management to enable the ongoing monitoring of Plan compliance

6.2 Native Vegetation Clearing

Trends

Table 6.2.1 – Indicators for Native Vegetation Clearing

Type	Indicator	1998-1999	2003-2004	2006-2007
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. There was no change reported for 2006-2007.

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	2006-2007
Pressure	No. of introduced animal species	17	17	17
Pressure	No. of introduced plant species	138	142	150
Response	No. of declared noxious weeds	**	22	30
Pressure	No. of complaints regarding noxious weeds	**	27	20

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.

Three new weeds were discovered in the LGA during 2006-2007. Each of the weeds, Broad leaf pepper tree, *Harrisia cactus* and Leafy elodea have a noxious weeds classification under the Noxious Weeds Act 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 2006-2007:

- 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 on 45 sites focusing on Madeira Vine and Catsclaw Creeper have continued during 2006/2007 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 20 retail outlets (e.g. pet shops, rural suppliers) 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 (e.g., 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 Lighthouse Beach and Wrights Creek, 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.
- Hastings Valley Conservation Hunting Club and the NSW Game Council (DPI) continued implementation feral animal control programs in partnership with landholders on private land.
- Council and Landcare have commenced an Indian Myna trapping program, harnessing the energy of volunteers through the Landcare network.
- Council has undertaken works at 21 major bush regeneration sites covering over 109 hectares of public land.
- Council has undertaken minor 230 weed control works during the year.

6.4 Fire

Trends

Table 6.4.1 – Indicators for Fire

Type	Indicator	2003-2004	2004-2005	2006-2007
State	Area affected by major bushfire (ha)	Nil	Nil	1,374
Pressure	No. Permits issued by RFS for hazard reduction burning	1007	649	148

Data listed in Table 6.4.1 attempts to provide insight into trends associated with fire related impacts on biodiversity in the LGA. Since 2002-2003, only 1,374Ha of the local area have been affected by major bushfire. This is a relatively minor area with the impacts occurring in 2006-2007.

The Rural Fire Service has provided data on the number of permits issued for burning off. This data is used to assist in understanding the potential local impact of fire on biodiversity. 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 in conjunction with dry conditions (high fire hazard) during much of the year 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	2006-2007
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	2006-2007
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.



Photo: NSW Fisheries
Common name: Mosquito fish
Scientific Name: *Gambusia holbrooki*
Size: Females to about 60 mm, males to about 35 mm

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.

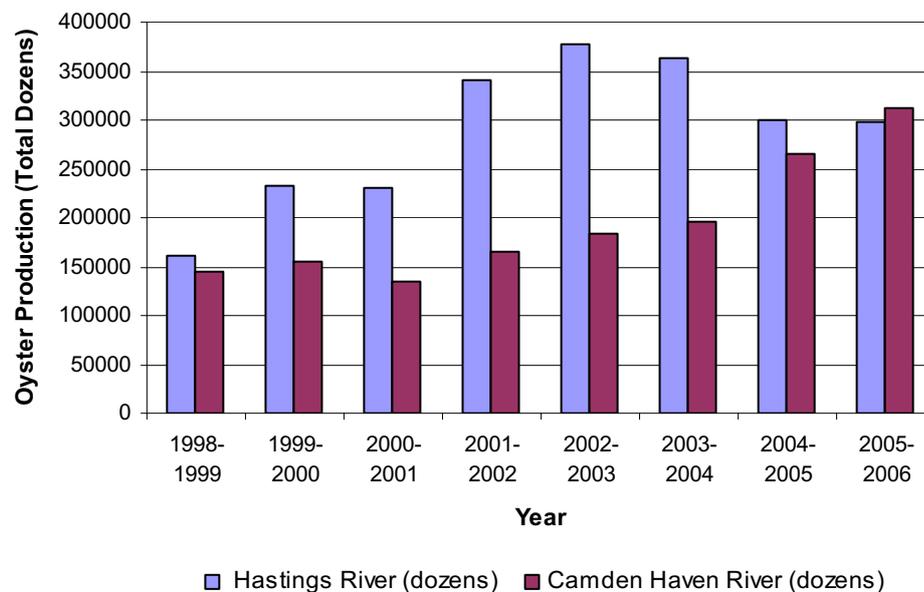
6.7 Aquatic Harvesting

Trends

Indicators of aquatic harvesting activity are a potential 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. A lack of data on catch effort is a limitation to this indicator.

NSW Department of Primary Industries data on oyster production is shown in Figure 6.7.1. Statistics for 2006-2007 were not available for the preparation of this report. The data reveals that there has been a continued increase in production during 2005-2006 in the Camden Haven estuary. Production rates in the Hastings estuary were stable over the same period.

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 NPWS)	NSW Department of Environment and Conservation (formerly EPA and NPWS)
DNR	NSW Department of Natural Resources (formerly part of DIPNR)
DoP	NSW Department of Planning
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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