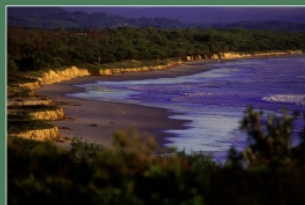




Tweed Shire

State of the Environment

SoE 2008



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INTRODUCTION

What is the State of the Environment Report?

The State of the Environment (SoE) Report is a statutory reporting requirement of the *Local Government Act, 1993*. Its purpose is to:

- Identify specific pressures being placed upon the ecological sustainability of the shire.
- Report on the responses being undertaken to help address these pressures.
- Monitor and evaluate the effectiveness these responses.
- Identify additional environmental management priorities.

Armed with this knowledge, Council can allocate its environmental management resources more effectively and devise a far more strategic plan of action to progress towards the achievement of Ecologically Sustainable Development (ESD).

How to Read the SoE Report

The SoE Report addresses four environmental management topics, being:

- Human Settlement
- Catchment Management
- Atmosphere
- Council Operations

Each topic has three sections:

1. Condition

- A brief summary on the current state of the topic (being reported on).

2. Pressure

- What (topic specific) pressures are being placed upon the ecological sustainability of the shire. These pressures are listed as icons such as:



- A list of Pressure Indicators to evaluate how the pressures are changing over time.

3. Response

- A history (from newest to oldest) of policies, strategies and actions that aim to address one or more identified pressure.
- Pressure icons are listed below each initiative to indicate what pressure is being targeted.
- Response indicators are listed at the end of each topic to help evaluate the performance of a specific initiative.



The Human Settlement section of this report includes:

[Built Environment](#)

[Water Supply](#)

[Waste-Water Management](#)

[Solid Waste Management](#)

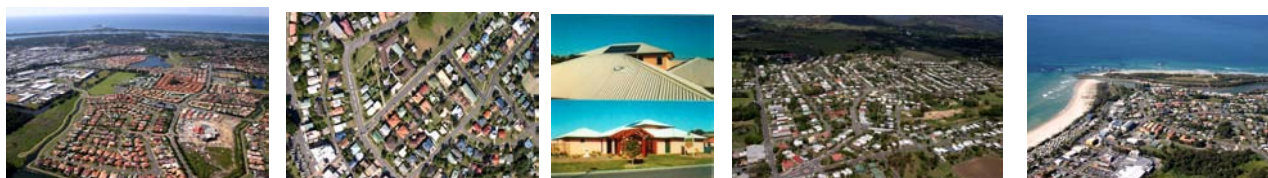
[Transport](#)

[Noise](#)

[Natural and Cultural Heritage](#)

[Environmental Education & Capacity Building](#)

THE BUILT ENVIRONMENT




CONDITION




At a Glance

- The Tweed Shire covers an area of approximately 1303 square kilometres.
- About two-thirds of the Shire has a rural zoning. (LEP 2000)
- In 2006 the shire population was 82,955 (ABS 2006).
- 64% of the shire's population is located in the Tweed Heads area, which consists of Tweed Heads (including Tweed Heads South and West), Bilambil, Terranora, Banora Point and Kingscliff. (ABS 2006).
- 25% of the shire's population is located in the rural areas of the shire, which consists of Murwillumbah, Uki, Tyalgum, Chillingham and the other villages surrounding these areas. (ABS 2006).
- 11% of the shire's population is located in the coastal areas of the shire, which consists of the villages and townships south of Kingscliff. (ABS 2006).
- New land release areas are anticipated to increase the shires population by more than 40,000 people in the next twenty years.
- For the foreseeable future the Tweed will remain predominantly rural. Most farmland is used for grazing of beef and dairy cattle. Sugar cane occupies about 7% of the Shire, mostly floodplains. Other agricultural activity includes banana growing, horticulture and market gardens, but the areas involved are quite small. Rural areas also include a range of tourist and recreational facilities (TSC 2004 b).

PRESSURE

At a Glance

Environmental pressures associated with the built environment include:	Code
<p>Greenfields Residential Development (i.e. new subdivisions)</p> <ul style="list-style-type: none"> - increase in the shires urban footprint and an associated reduction in the size, function and connectivity of natural ecosystems - Demands on the water supply catchment - Waste management - End-point greenhouse gas emissions (e.g. transport & electricity) - Diffuse source waterways pollution (e.g. stormwater) - Point source pollution (e.g. wastewater) to waterways 	
<p>Brownfields Residential Development (i.e. development in existing residential areas)</p> <ul style="list-style-type: none"> - Demands on the water supply catchment 	

<ul style="list-style-type: none"> - Waste management - End-point greenhouse gas emissions (transport & electricity) - Diffuse source waterways pollution (e.g. stormwater) - Point source pollution (e.g. wastewater) to waterways 	
<p>Greenfields Commercial / Industrial Development (e.g. new industrial estates)</p> <ul style="list-style-type: none"> - increase in the shires urban footprint and an associated reduction in the size, function and connectivity of natural ecosystems - Demands on the water supply catchment - Waste management - End-point greenhouse gas emissions (transport & electricity) - Diffuse source waterways pollution (e.g. stormwater) - Point source pollution (e.g. wastewater) to waterways - Liquid trade-waste management 	
<p>Brownfields Commercial / Industrial Development (e.g. development in existing industrial estates)</p> <ul style="list-style-type: none"> - Demands on the water supply catchment - Waste management - End-point greenhouse gas emissions (transport & electricity) - Diffuse source waterways pollution (e.g. stormwater) - Point source pollution (e.g. wastewater) to waterways - Liquid trade-waste management 	
<p>These pressures are likely to increase in proportion to population</p>	

Pressure Indicators

Indicator: Population Growth	1991	1996	2001	2006	2008 (estimated)
Resident population of the Tweed Shire	55,869	66,865	74,371	82,955	86,173

Source: [Australian Bureau of Statistics Census Data](#)

Indicator: Residential Footprint	1991	1996	2001	2006
Number of Private Residential Dwellings	23,077	28,835	32,974	36,598

Source: [Australian Bureau of Statistics Census Data](#)

Indicator: No. of Development Applications	01/02	02/03	03/04	04/05	05/06	06/07	07/08
Tweed Shire	1632	2178	1906	1719	1707	1696	1385
State Average	727	742	765	789	705	N/A	N/A

Data: All Development Applications. Source: [DLG Comparative Information](#) & Tweed Shire Council Development Assessment Unit

Indicator: Number of New Land Parcels	04/05	05/06	06/07	07/08
Industrial	9	0	10	33
Residential	839	339	130	243
Roadworks	29	14	27	2
Rural	63	31	38	56
Rural / Residential	7	0	13	0

Indicator: Number of New Land Parcels	04/05	05/06	06/07	07/08
Total	947	384	218	304

Data: Subdivision Certificates Approved or Issued. Source: TSC Development Assessment Unit

Indicator: Number of New Constructions	04/05	05/06	06/07	07/08
Commercial / Industrial	1	3	2	1
Commercial / Residential	5	5	5	4
Commercial	37	22	27	97
Industrial	18	20	8	19
Other (e.g. roadworks)	18	16	22	48
Residential	565	531	457	537
Rural	25	35	27	56
Rural / Residential	4	2	4	5
Total	673	634	552	767

Data: Construction Certificates Approved or Issued (for new constructions). Source: TSC Development Assessment Unit

Additional Indicators

[Water Consumption](#)

[Solid Waste Generation](#)

[Waste-water Generation](#)

[Greenhouse Gas Generation](#)

[Waterway Health](#)

[Bushland and Biodiversity](#)

RESPONSE

Each response seeks to address one or more identified pressure. Responses are listed in order from newest to oldest. This format gives regular readers of the SoE Report easy access to the most recent initiatives while allowing infrequent readers to view a catalogued history of responses.

Land Use Planning

Tweed Shire Council's land use planning involves the formulation of strategies to protect and enhance the environmental qualities of the Shire, facilitate the orderly and economic development of land and promote the well being of the area's population. Land use planning documents include the [Tweed Local Environmental Plan \(LEP\)](#) and the [Tweed Development Control Plan \(DCP\)](#). The LEP provides the land-use planning framework by identifying the land use zones for the entire shire, detailing the objectives of each zone and describing a list of prohibited and permissible uses corresponding to each zone. The DCP provides detailed development guidelines for specific localities or the entire shire to ensure appropriate development design.



Development Control Plan

Responsibility: Planning & Regulation Division

Status: Ongoing

In 2008 Council's individual Development Control Plans were amalgamated into one document as part of the planning reforms process (see below). The new Development Control Plan (DCP) contains detailed guidelines that illustrate the controls that apply to a particular type of development or in a particular area. The DCP aims to:

1. Achieve development that is consistent with the social, economic and environmental values of the shire.
2. Promote ecologically sustainable development and aims to provide a safe living and working environment.
3. Form part of a range of documents that provides a guide towards a more sustainable future for the Tweed Shire.
4. Provide design issues, performance criteria and standards for development both on a shire wide basis and those that relate specifically to particular development areas.



Employment Land Strategy

Responsibility: Planning & Regulation Division

Status: Ongoing

In February 2008 Council exhibited the draft Employment Land Strategy, the aims of which were to:

- a) comply with the Far North Coast Regional Strategy, that Council prepare a Growth Management Strategy prior to zoning further land for urban, commercial and industrial uses;
- b) comply with the North Coast Regional Environment Plan, 1988 (Clause 39) in relation to Council preparing a commercial expansion strategy and the principles for commercial and industrial development outlined in Clauses 46 to 48;
- c) provide a range of locations for new employment generating developments to provide for consumer choice;
- d) ensure that limited 'greenfield' sites available in Tweed Shire are developed to maximum capability without compromising the quality of the natural or living environment;
- e) ensure that 'greenfield' sites are not all used for residential development but also allow for employment land uses.



Environmental Enforcement Levy

Responsibility: Planning & Regulation Division

Status: Ongoing

In 2007 an Environmental Enforcement Levy for Development Applications was introduced to recover costs to Council associated with investigating complaints or conducting audits associated with construction activities. The Environmental Enforcement Levy of 0.1% of the contract price of development, with a maximum charge of \$2,000.



Ecologist / Specialist Planner

In 2007 Council appointed an ecologist/specialist planner in the Development Assessment Unit to provide expert advice to the Planning and Regulation Division in relation to biodiversity issues

associated with development, and in relation to restoration of natural areas of Crown land or land to be dedicated to Council.



Local Environment Plan (2008)

Responsibility: Planning & Regulation Division

Status: Ongoing

In 2006 it was mandated that all Councils in NSW undertake a review of their individual Local Environmental Plans and produce new LEPs in the format prescribed by the Standard Instruments (Local Environmental Plans) Order 2006 (amended January 2008) (The Order). Council has previously resolved, in accordance with Section 54 of the Environmental Planning and Assessment Act 1979, to prepare a new shire-wide Local Environmental Plan (LEP) and work on it commenced in 2006. The Council has a deadline of March 2009 for the completion of the draft Local Environmental Plan, although an extension to this time frame may be sought.

The review of Tweed Local Environmental Plan 2000 (TLEP) will produce a new TLEP 2008 and is being undertaken in three stages: Stage 1 being a 'rollover' of the TLEP into a format consistent with the Order; Stage 2 as more comprehensive review of the instrument, with the introduction of some strategic land-use changes shire-wide arising from the current planning projects; and Stage 3 which will include any necessary housekeeping amendments or any other matter arising through broader or additional planning projects, such as a rural lands investigation, an affordable housing strategy, urban consolidation strategy, urban density guidelines, heritage conservation or climate change policy. Stage 1 has been approved for exhibition and will be workshopped with Councillors in late 2008. To maintain the current momentum in delivering much needed planning policy the Stage 1 draft LEP would ideally be finalised and referred to the Department of Planning for gazettal in early 2009.



Planning Reforms

Responsibility: Planning & Regulation Division

Status: Ongoing

In 2006 Council began the process of preparing new planning controls that are consistent with the NSW State Government standard template. Key environmental outcomes associated with the planning reforms process include (but are not limited to):

- Implementation of Council's Vegetation Management Plan to protect significant ecological areas by way of new clauses in the LEP and the inclusion of a bushland/vegetation map overlay;
- Significant clauses within the LEP Template have been included specifically to address ecological issues including:
 - Environmentally sensitive areas are excluded from exempt and complying development provisions;
 - Environmental and sustainable development evaluation;
 - Development adjoining water bodies;
 - Preservation of trees and vegetation;
 - Habitat protection;
 - Development within and adjacent to an Environmental Protection Zone;
 - Development in steep land and water catchments;
 - Heritage conservation;

- Implementation of Locality Plans for Councils towns and villages which reinforce protection of ecological areas by way of establishing general urban footprints and including provisions to conserve significant environmental areas.



Building Reforms

Responsibility: Planning & Regulation Division

Status: Ongoing

In October 2006 Council's new land-forming policies took effect, bringing in several significant amendments in order to preserve natural hillsides, minimise cut and fill earthworks and promote water sensitive urban design in residential developments. Section A14 of Council's Development Control Plan (Cut and Fill on Residential Land) affects all residential development on sloping land, or where significant earthworks are involved. The changes include:

- Continuous slabs on sites with 10% slope or greater are no longer allowed.
- Maximum limits are set on impermeable site area (roof, pathways, decks, pools etc) to minimise stormwater runoff.
- Water sensitive urban design for residential developments is mandatory.
- There is a maximum permissible cut/fill depth of one metre over the lot.
- Variations to limits on cut/fill earthworks are only permitted to create a flat yard space which does not exceed 15% of the lot area.



Far North Coast Regional Strategy

Responsibility: NSW Government

Status: Ongoing

In 2006 the NSW Government produced a 25-year land use strategy to guide local planning in the six local government areas of Tweed, Ballina, Byron, Kyogle, Lismore and Richmond Valley. The Regional Strategy consolidates and builds on previous planning work, including the Northern Rivers Regional Strategy and local council settlement strategies.

The purpose of the Regional Strategy is to manage the Region's expected high growth rate in a sustainable manner. The Regional Strategy represents the agreed NSW government position on the future of the Far North Coast. It will be the overriding strategic planning document for the Region, and has been prepared to complement and inform other relevant State and local planning instruments. It is supported by a number of other documents including the Settlement Planning Guidelines, the North Coast Urban Design Guidelines and the Regional Industry and Economic Plan. The Far North Coast Regional Strategy applies to the period 2006–31 and will be reviewed every five years.



NSW Building Sustainability Index

Responsibility: NSW Government

Status: Ongoing

In 2004 the NSW Government introduced the Building Sustainability Index. BASIX ensures homes are designed to use less potable water and be responsible for fewer greenhouse gas emissions by setting energy and water reduction targets for house and units. For more information go to www.basix.nsw.gov.au



Tweed Vegetation Management Strategy 2004

Responsibility: NRM Unit – Biodiversity Program

Status: Ongoing

In 2004 Council introduced a Vegetation Management Strategy to inform the shires land use planning instruments. Refer to [Bushland and Biodiversity](#) section of this report for details of this management document.



Socio-Economic Development Controls

Responsibility: Planning & Regulation Division

Status: Ongoing

In 2002 Council introduced a Socio-Economic Development Control Plan to ensure that Development Applications that are likely to have a significant social and/or economic impact are properly considered in accordance with state and local land-use planning instruments. In 2008 this DCP was amalgamated into the new Tweed Shire DCP as part of the planning reforms process.



Compliance Officer

In 2002 Council appointed a Compliance Officer in the Development Assessment Unit to monitor and enforce compliance with conditions of development consent and respond to complaints relevant to Divisional regulatory responsibilities.



Locality Specific Development Controls

Responsibility: Planning & Regulation Division

Status: Ongoing

In 2000 Council began to introduce development control plans (also known as locality plans) for specific areas of the Tweed Shire to address issues such as maintaining village character and recognising the unique environmental issues for a particular area. Plans have been developed for number of areas including Koala Beach, Uki, Cobaki Lakes and Murwillumbah Town Centre. In 2008 these plans were amalgamated into the new Tweed Shire DCP as part of the planning reforms process.



Energy Smart Homes

Responsibility: Planning & Regulation Division

Status: Ongoing

In 2000 Council sought to improve the energy efficiency of new housing stock in the shire by adopting DCP 39 – Energy Smart Homes Policy. When adopted, DCP 39 included requirements for northern orientation of living spaces, ceiling insulation, breezeways, roof eaves and 3.5 star energy efficient hot water systems (e.g. solar hot water).



Tweed Urban Stormwater Quality Management Plan

Responsibility: Engineering & Operations Division

Status: Ongoing

In 2000 Council introduced an Urban Stormwater Quality Management Plan. Refer to [Waterway Health](#) section of this report for details of this management document.



Tweed Shire Smart House

Responsibility: NRM Unit – Sustainability Program

Status: The Smart House was sold in 2003

In 2000 Council constructed a demonstration home that had a range of ecologically sustainable features including grid interactive solar power, heat pump hot water, rainwater supply for toilets, gardens and washing machines and northern orientation, insulation and thermal mass for passive cooling and heating. The Smart House exposed over 12,000 people to the benefits of environmentally friendly design between 2000 and 2003.



Local Environment Plan (2000)

Responsibility: Planning & Regulation Division

Status: Ongoing

In 1998 the first of a two stage review of the existing shirewide LEP 1987 and Tweed LEP No 24 (covering the Clarrie Hall Dam catchment) was initiated. Stage one of the review sought to integrate the two documents into a single LEP. The second stage reviewed the shires environmental protection zones and their provisions. The draft LEP was placed on public exhibition following gazettal by the State Government and the document was adopted by Council in 2000.



Subdivisions

Responsibility: Planning & Regulation Division

Status: Ongoing

In the early 1990's Council introduced a Subdivisions Development Control Plan to establish guidelines and standards for the development of subdivisions in the shire. The DCP includes a range of urban design principles including transport and pedestrian infrastructure, stormwater control, preservation of natural topography and green space buffers.

In 2008 the Subdivisions DCP was updated and amalgamated into the new Tweed Shire DCP as part of the planning reforms process.



Local Environment Plan (1987)

Responsibility: Planning & Regulation Division

Status: Superseded by LEP 2000

In 1982 Tweed Shire Council resolved to prepare a LEP with the aim of replacing previous land use planning instruments with a comprehensive planning document. After the LEP was prepared, placed on public exhibition and a public hearing held on the submissions, the amended document was finally gazetted by the State Government in January, 1988. One of the stated aims of the LEP is to protect and enhance those areas within the shire identified as being of significant environmental value. One of the strategies used by the LEP is the creation of environmental protection zones in the shire.



S.94 Contribution Plans

Responsibility: Planning & Regulation Division

Status: Ongoing

In 1979 Section 94 Developer Contribution Plans were introduced to enable the levying of developer contributions for the timely provision of facilities and infrastructure such as roads, bus shelters, open space, footpaths and cycle paths.



Response Indicators

Indicator:	06/07	07/08
Greenfields Development & Habitat Restoration		
Area of bushland (ha) restored by landowner before handover to Council	N/A	26.6

Note: figure indicates only that land handed over during the relevant year (other land undergoing restoration)

Source: TSC Planning & Regulation Division

Indicator:	06/07	07/08
Unauthorised Clearing Response		
Number of environmental compliance orders issued by Council	N/A	12

Source: TSC Planning & Regulation Division

Indicator:	06/07	07/08
Stormwater Treatment Devices		
Total No. of artificial wetlands constructed for stormwater treatment	N/A	N/A
Total No. of pollutant traps installed	N/A	N/A

Source: TSC Planning & Regulation Division

Indicator:	04/05	05/06	06/07	07/08
Water Pollution Penalty Infringement Notices (PIN's)				
No. of PIN's issued under <i>POEO Act</i> *	2	3	2	N/A
No. of PIN's issued under <i>EP&A Act</i> **	2	2	33	N/A

Source: TSC Planning & Regulation Division

**Protection of the Environment Operations Act* 'likely or actual water pollution'

***Environmental Planning and Assessment Act* 'failure to comply with conditions of consent'

Related Issues

[Water Supply](#)

[Solid Waste Management](#)

[Wastewater Management](#)

[Transport](#)

[Catchment Management](#)

[Atmosphere](#)

WATER SUPPLY






CONDITION

At a Glance

- [Clarrie Hall Dam](#) is the off-river storage for Tweed Shire's water supply. When required, water is released from the dam and flows down the Tweed River to the Bray Park Weir.
- Water is drawn from the Bray Park Weir, pumped to the [Water Treatment Plant](#) and treated to remove sediments and kill bacteria and viruses.
- The treated water is pumped via 24 pumping stations, through more than 660 kilometres of water supply pipelines to 41 reservoirs with a storage capacity of 113 Mega Litres (ML).
- Depending upon demand for water, the water treatment plant runs for 10 to 18 hours a day, operating during off-peak hours as much as possible to reduce peak electricity demand and minimise the associated electricity costs.
- The cost of treating one mega litre of water is approximately \$170.
- Full details of the water treatment process can be found at: www.tweed.nsw.gov.au/PlanningBuilding/WaterHome.aspx

PRESSURE

At a Glance

Environmental pressures associated with water supply include:	Code
Water extraction rates and the associated impacts on environmental flows.	 WATER EXTRACTION
Altered flow patterns of natural watercourses which can lead to: <ul style="list-style-type: none"> ○ Degraded water quality. ○ Reduced riverine habitat. ○ Reduced flooding of riparian zones, floodplains and wetlands. ○ An increase in algal blooms. ○ Erosion of river channels. (DEC 2004). 	 FLOW PATTERNS
Energy use and the greenhouse gas emissions associated with the treatment and supply of water.	 CLIMATE CHANGE
These pressures are likely to increase in proportion to population.	

Pressure Indicators – Water Supply

Indicator: Catchment Inflow	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08
Annual Rainfall Figures for Bray Park (mm)	1592	764	1409	1371	1375	1419	886	1665

Source: Tweed Shire Council Water Unit

Indicator: Annual Water Consumption by Type (ML/year)	1991	%	1996	%	2001	%	2006	%	2007	%	2008	%
Residential	5815	63	5163	60	5833	60	5703	60	6004	64	5251	59.43
Commercial	1584	17	1400	16	1827	19	1563	16	1401	15	1015	11.49
Industrial	201	2	144	2	211	2	241	3	143	1	242	2.74
Rural	162	2	150	2	171	2	166	2	47	0	154	1.74
Institutional	185	2	171	2	195	2	170	2	209	2	600	6.79
Bulk Sales	100	1	70	1	105	1	57	1	38	0	66	0.75
Public Uses	242	3	257	3	260	3	241	3	258	3	181	2.05
Estimated Leakage + Unaccounted for Water	902	10	1170	14	1081	11	1245	13	1465	15	1327	15.01
Total	9190	100	8526	100	9683	100	9386	100	9566	100	8836	100

Source: Tweed Shire Council Water Unit

Indicator: Residential Water Consumption	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08
Shire population connected to reticulated (town) water	64,624	65,614	66,604	67,594	68,584	69,574	70,564	71,554
Annual Residential Consumption (Mega Litres)	5,833	6,215	5,552	5,690	5,996	5,703	6,004	5,251
Annual residential consumption per capita (Litres)	90,261	94,721	83,358	84,179	87,426	81,970	85,086	73,385
Daily residential consumption per capita (Litres)	247	260	228	231	240	225	233	201

Source: Tweed Shire Council Water Unit

Indicator: Drinking Water Quality	02/03	03/04	04/05	05/06	06/07	07/08
Number of complaints regarding quality of town water supply	16	30	40	13	29	41

Source: Tweed Shire Council Water Unit

Indicator: 06/07 Drinking Water Quality (% Compliance with Drinking Water Guidelines)	Physical (Turbidity, etc)	Micro-biological (Total Coliforms)	Chemical (pH, mineral content etc)
Bray Park Water Treatment Plant	99.96%	97.32%	91.30%
Uki Water Treatment Plant	100%	98.06%	98.14%
Tyalgum Water Treatment Plant	99.84%	99.02%	96.75%

Source: Tweed Shire Council Water Unit

Indicator: 07/08 Drinking Water Quality (% Compliance with Drinking Water Guidelines)	Physical (Turbidity, etc)	Micro-biological (Total Coliforms)	Chemical (pH, mineral content etc)
Bray Park Water Treatment Plant	100%	100%	99.6%
Uki Water Treatment Plant	100%	100%	99.27%
Tyalgum Water Treatment Plant	99.27%	100%	91.4%

Indicator - Surface Water and Groundwater Extraction: [NSW Natural Resources](#) regulates surface water and groundwater extraction throughout NSW and maintains a public register of water access licenses and water allocations. Information on the Tweed Catchment will become available as [water sharing plans](#) are implemented locally. This information will be a useful indicator to chart trends in water extraction within the catchment.

RESPONSE

Each response seeks to address one or more identified pressure. Responses are listed in order from newest to oldest. This format gives regular readers of the SoE Report easy access to the most recent initiatives while allowing infrequent readers to view a catalogued history of responses.

Community Education / Support

Refer to [Environmental Education and Capacity Building](#) for education based initiatives that aim to raise awareness about the urban water cycle and the importance of water wise behaviours.



Excess Water Charge for High Consumers

In 2008 Council introduced a pricing mechanism to encourage water conservation in households that consume more than 450,000 litres per year. The standard user pays tariff applies up to 450,000 litres of consumption and a higher tariff is charged for consumption in excess of this amount. These 'step charges' signal the need for consumers to review their water usage, with the aim of reducing consumption and associated bills.



Environmental Flows

In 2008 the development of [Macro Water Sharing Plans](#) for the region continued. These plans will require Council to release water from [Clarrie Hall Dam](#) to match river inflows during periods of very low flow less than the 95% flow. Other irrigators will be given cease to pump directive during such events.



Demand Management Strategy

In 2007 Council prepared a draft Demand Management Strategy (DMS) for the urban water cycle, which includes the town water supply. The DMS aims to deliver (amongst other things) a range of water conservation management options for existing residential areas (brownfields), new residential areas (greenfields) and commercial / industrial uses.



Community Retrofit Program

In 2007 Council built on previous community retrofit programs by partnering with an accredited provider under the NSW Greenhouse Gas Abatement Scheme to offer shire residents the free supply and installation of water wise showers, flush converters for single flush toilets and aerators for kitchen taps. Refer to Showerhead and Light Globe Giveaway No. 1, 2 and 3 in [Environmental Education and Capacity Building](#) for details of how Council's free community retrofit program has evolved. Participation rates, water savings and greenhouse gas abatement are provided in the [Response Indicators](#) section of the education and capacity building chapter.



Development Services Plan for Water Supply Services

In 2007 a Development Servicing Plan (DSP) for Water Supply Services was finalised to enable Council to levy contributions where the anticipated development will or is likely to increase the demand for water supply services. The principal purpose of the DSP is to identify the demand for capacity in water supply infrastructure as a result of development and to provide for that capacity through development contributions.



Water Restrictions Policy

In 2007 the [Tweed Shire Water Restrictions Policy](#) was amended to improve water security by increasing the level at which water restrictions are triggered.



Secure Yield Projections

In 2007 Council revised the secure yield of the Tweed Water Supply from 27,500 Megalitres per year (Ml/year), capable of sustaining a future population of 189,000 down to an estimated 13,750 Ml/year supporting a population of 94,000. This reduction in estimated yield has been brought about by improved modelling techniques, accounting for recent drought events and allowing for release of environmental river flows.



Leak Detection Program

In 2007 Council commenced preliminary investigations into a Leak Detection Program through the NSW Water Directorate.



Integrated Water Cycle Management Strategy

In 2006 Council adopted an Integrated Water Cycle Management (IWCM) Strategy to provide a framework and long term focus on the integrated delivery of water supply, wastewater and stormwater services.

The IWCM Strategy defines the catchment, water resources and urban water characteristics of the Tweed district and to plan for and manage the critical issues of:

- The ability of existing surface waters to adequately service future populations
- The impacts of urban stormwater and effluent on the Lower Tweed Estuary
- The impacts of agricultural runoff on the Upper Tweed River and Bray Park Weir.

Implementation of the twenty-six priority actions identified in the IWCM is ongoing.



Rainwater Tank Policy

In 2005 Council adopted [Rainwater Tank Policy](#) for the shire. The aim of the policy is to facilitate the installation and use of domestic rainwater tanks in the Tweed Shire as a way of supplementing the Tweed Shire bulk water supply and reducing the intensity and frequency of stormwater runoff from urban areas. The policy also aims to outline the necessary requirements to protect the public water supply and to ensure public health is not compromised.



Exempt Development Checklist for Rainwater Tanks

In 2005 Council prepared an [Exempt Development Checklist](#) to compliment the Rainwater Tank Policy. This checklist allows residents to determine if they need to submit a Development Application before installing a rainwater tank.



User Pays Water Pricing

In 2002 a user pays system was introduced for the town water supply to send a strong water conservation signal through pricing to consumers. User pays signals the need for consumers to review their water usage, with the aim of reducing consumption and therefore delaying growth related capital works. Refer to water supply [Response Indicators](#) for the current price of 1000 litres of town water.



Domestic Greywater Reuse

Since 2002 as part of its On-Site Sewage Management Program, Council has sought to improve community knowledge with regard to the use of domestic greywater. Refer to [Wastewater Section](#) of this report for more details.



Wastewater Reuse

In the mid 1980's Council commenced its first wastewater reuse project by supplying irrigation water to the Tweed-Coolangatta Golf Course. Refer to [Wastewater Section](#) of this report for details of wastewater reuse initiatives that have reduced demand on the town water supply.



Waterway Health

Since the early 1980's, as part of the Clarrie Hall Dam project, Council has sought to maintain water quality in the water supply catchment to reduce energy input for treatment of the town water supply and to promote catchment health. Refer to the [Waterway Health](#) for details of recent initiatives.



Clarrie Hall Dam

Completed in 1982, [Clarrie Hall Dam](#) provides for the Tweed water supply during the drier months of the year. When flows in the freshwater reaches of the Tweed River fall below 95%, water is released from the dam, flows down Doon Doon Creek and into the Tweed River. Water is then extracted at the Bray Park weir, treated and pumped via a network of over 660km of pipes to reservoirs throughout the shire. These reservoirs supply water to over 80% of the shires population.

Groundwater Management

Groundwater use is managed by the [NSW Natural Resources](#). Tweed Shire Council has not undertaken any specific initiatives to manage pressures on the groundwater supply at this stage.

Response Indicators

Indicator: Community Retrofit Program

Refer to [Response Indicators](#) in Environmental Education and Community Capacity Building.

Indicator: Rainwater Tank Rebates

Refer to [Response Indicators](#) in Environmental Education and Community Capacity Building.

Indicator: User Pays Water Pricing	02/03	03/04	04/05	05/06	06/07	07/08	08/09
Charge for 1000 litres (1 kilolitre) of water	\$0.60	\$0.62	\$0.68	\$0.82	\$1.04	\$1.23	\$1.36

Source: Tweed Shire Council Water Unit

Indicator: Daily Consumption Per Person	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08
Daily residential consumption per capita (Litres)	247	260	228	231	240	225	233	201

Source: Tweed Shire Council Water Unit

Related Topics

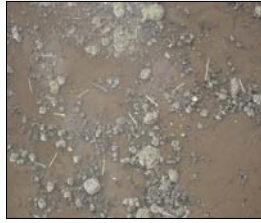
[Built Environment](#)

[Waste-Water Management](#)

[Waterway Health](#)

[Community Capacity Building](#)

WASTE-WATER MANAGEMENT







CONDITION

At a Glance

- Wastewater is the water borne wastes of a community. It contains approximately 0.1% pollutants by weight, with the remaining 99.9% being pure water.
- Wastewater comes from residences, local commercial and light industrial sites such as clubs, caravan parks, restaurants and commercial laundries, and hospitals. It does not include roof water or surface runoff – this is known as stormwater.
- Everyday each Tweed resident uses between 200-300 litres of water.
- About 65 percent of household water use is returned to the sewage system within minutes.
- The wastewater drains to 144 pumping stations which transfer the sewage to the local wastewater treatment plant for treatment.
- Treatment plants are located at [Banora Point, Hastings Point, Kingscliff, Murwillumbah, Tumbulgum, Tweed Heads, Tyalgum and Uki.](#)
- 90% of wastewater that enters the treatment plants is treated to tertiary standards.
- On-Site Sewage Management Systems (e.g. septic tanks) service approximately 18% of residents in the shire.
- Definitions:
 - Primary Treated Effluent – involves screening and grit removal and is design to remove a substantial amount of suspended matter, but little or no colloidal or dissolved matter.
 - Secondary Treated effluent – follows primary treatment and typically is a biological process designed to remove 85 % of the biological oxygen demand and suspended solids of the wastewater. Also ammonia is typically converted to nitrate.
 - Tertiary Treated effluent – follows or is often incorporated with the secondary process to remove phosphorous below 2 mg/L and Nitrogen below 15 mg/L. It also removes more suspended solids and reduces the biological oxygen demand of the secondary treated effluent. It often also has a final filtration process included. Advanced tertiary process can remove phosphorous below 0.5 mg/L and Nitrogen below 5 mg/L.
 - Recycled water – Takes tertiary treated effluent and provides further filtration to at least micro-filtration level and then further disinfects the water with a specific wave length of ultraviolet light or ozone and finally it is chlorinated to provide a residual disinfection capability, the same as with drinking water. Recycled water is a term generally now used to describe wastewater having being treated to a level where it can be used for residential out door use and for toilet flushing and the cold tap filling a washing machine.

PRESSURE

At a Glance

Environmental pressures associated with waste-water management include:	Code
Discharge of treated effluent to local waterways	 POINT SOURCE
The strength and volume of liquid trade waste	 POINT SOURCE
High failure rates of on-site sewage management systems and the associated impacts on adjoining waterways	 DIFFUSE
Greenhouse gas emissions associated with: <ul style="list-style-type: none"> • Energy input for the treatment and disposal of waste-water. • Methane generation from the treatment process. 	 CLIMATE CHANGE
These pressures are likely to increase in proportion to population.	

Pressure Indicators – Waste Water Management

Indicator:	02/03	03/04	04/05	05/06	06/07	07/08
Sewer Waste Connections						
Population serviced by sewer (%)	81.7	82.2	82.7	82.7	81.7*	82.15
Sewer discharges treated to secondary / tertiary standards (%)	0.2 / 99.8**	0.2 / 99.8**	0.2 / 99.8**	0.2 / 99.8**	0.2 / 99.8	11 / 89**
Volume of treated effluent discharged to watercourses (Mega Litres / Year)	7153	6947	7510	7526	6968	7713
Volume of treated effluent reused (ML/year)	244	354	353	291	286	341
Percentage of treated effluent reused (%)	3.1	4.6	4.5	4.0	3.9	3.9
Number of sewer overflows	37	26	32	5***	37	53

Source: Tweed Shire Council Water Unit

* The reduction in population serviced by sewer is due to revised data from the 2006 ABS Census.

** Tweed Heads was re-rated to secondary treatment in 07/08 due to revised definitions

*** Low incidences of sewer overflows in 2005/06 may be due to reporting on 'dry weather' overflows only.

Indicator:	02/03	03/04	04/05	05/06	06/07	07/08
Liquid Trade Waste						
Number of liquid trade waste generators	511	523	523	484	460*	460

Source: Tweed Shire Council Water Unit

*In 2006/07 trade waste figures have been based on properties with trade waste devices installed. In previous years the figure has been based on number of trade waste generators. This change in record keeping has resulted in the reductions seen.

Indicator: On-Site Sewage Management Systems	02/03	03/04	04/05	05/06	06/07	07/08
% of pop ¹ serviced by OSSMS (approx)	N/A	18%	18%	18%	18%	18%
No. of new OSSMS	103	152	165	120	120	92
Total No. of OSSMS (approx)	4000	6000	6342	6450	6580	6672

RESPONSE

Each response seeks to address one or more identified pressure. Responses are listed in order from newest to oldest. This format gives regular readers of the SoE Report easy access to the most recent initiatives while allowing infrequent readers to view a catalogued history of responses.

Kingscliff Wastewater Treatment Plant Upgrade

In 2008 construction of a new WWTP was completed to service Kingscliff and surrounding areas. The new WWTP treats wastewater to advanced tertiary standards and discharged into the Tweed River south of the intersection of Chinderah bay drive and Wommin Bay Road.

The improved quality of discharge will provide reuse opportunities for non residential purposes.



Recycled Water Project - Les Burger Field

In 2008 plans commenced to use tertiary treated effluent from the Hastings Point Wastewater Treatment Plant to irrigate the Les Burger Rugby League Sports Fields. This initiative will reduce the facilities annual town water consumption by an average of 180 ML/year.



Demand Management Strategy

In 2007 a draft Demand Management Strategy (DMS) was prepared for the urban water cycle, which includes waste-water management. The DMS aims to deliver, amongst other things, a range of waste-water management options including reducing sewer inflows through water conservation and identifying options for the use of recycled water to reduce (a) demand on the town water supply and (b) discharge volumes to local waterways.



Recycled Water Project - Condong Sugar Mill

Since 2007 recycled water from the Murwillumbah Wastewater Treatment Plant has been used as cooling water in the electricity co-generation process at the Condong Sugar Mill. This initiative has reduced demand on the town water consumption by an average of 584 ML each year.

Water quality in the Rous River has also been improved due to this initiative due to an increase in the treatment standards of the wastewater and a reduction in discharge volumes into this waterway.



Grey-Water Reuse

In 2007 Council sought to increase awareness about domestic [greywater reuse](http://www.tweed.nsw.gov.au) by placing state government fact sheets on the website. www.tweed.nsw.gov.au



Pump Station Telemetry

In 2007 the Shire-wide pump station monitoring telemetry system was upgraded to improve monitoring of the network for operating efficiency and incident responses.



Sewer Overflow Points

In 2007 Council conducted an audit of its sewerage network to identify potential sewer overflow points in the shire. The aim of this initiative was to minimise the risk of pollution incidents by allowing Council to prioritise risks and allocate resources accordingly.



Sewage Overflow Abatement Strategy

In 2007 a Sewage Overflow Abatement Strategy was developed to reduce the likelihood of sewer overflows and improve response techniques should they occur. The Strategy has informed the development of five capital works program to be implemented from July 2008.



Murwillumbah Advanced Tertiary Treatment Plant

In 2007 the a 3 ML/day Tertiary Treatment Plant module was added to the Murwillumbah WWTP to achieve Advanced tertiary treatment standards and to allow for wastewater reuse at the Condong Sugar Mill in the cogeneration process.



Development Servicing Plan for Sewerage Services

In 2007 a Development Servicing Plan (DSP) for Sewerage Services was finalised to enable Council to levy contributions where the anticipated development will or is likely to increase the demand for sewerage services. The principal purpose of the DSP is to identify the demand for capacity in sewerage infrastructure as a result of development and to provide for that capacity through development contributions.



Integrated Water Cycle Management Strategy

In 2006 Council adopted an Integrated Water Cycle Management (IWCM) Strategy to provide a framework and long term focus on the integrated delivery of water supply, wastewater and stormwater services.

The IWCM Strategy defines the catchment, water resources and urban water characteristics of the Tweed district and to plan for and manage the critical issues of:

- The ability of existing surface waters to adequately service future populations
- The impacts of urban stormwater and effluent on the Lower Tweed Estuary
- The impacts of agricultural runoff on the Upper Tweed River and Bray Park Weir.

Implementation of the twenty-six priority actions identified in the IWCM is ongoing.

Hastings Point Wastewater Treatment Plant

In 2005 a WWTP was upgraded to service Cabarita, Bogangar, Hastings Point and Pottsville. Wastewater is treated to Tertiary standards and discharged via dune disposal system east of the plant.



Reclaimed Water Management Strategy

In 2005 Council completed an Environmental Impact Statement (EIS) Report to assess nine options for upgrading Banora Point and Tweed Heads West Wastewater Treatment Plants. The upgrades are required to cater for predicted future population growth in these areas and to protect the environmental values of the Lower Tweed Estuary. Following a rigorous evaluation process Council's preferred short term option is to upgrade the wastewater treatment plants to produce reuse quality wastewater for domestic non-potable reuses in new developments and capital investment in catchment rehabilitation, and discharge of unused water to Terranora Creek.

A further option is also identified in the longer term to treat wastewater to reuse standards with unused water being discharged to deep sea release.

The EIS was placed on exhibition in May 2008 and all submissions are currently being assessed.



Recycled Water Project - Plantation Irrigation

Since 2004 treated effluent from the Uki Wastewater Treatment Plant has been used to irrigate 8.75 Ha of *Eucalyptus* trees that are grown as Koala food for the Currumbin Wildlife Sanctuary. Branches are harvested from these trees to feed Koalas at the Currumbin Wildlife Sanctuary. The system has been design to utilise 100% of the treated effluent.



Uki Wastewater Treatment Plant

In 2004 a WWTP was constructed to service Uki village. Wastewater is treated to secondary standards and discharged to via on-site plantation irrigation



24 Hour Emergency Response Line

In 2003 Council established a twenty-four hour emergency response line in order to respond to out-of-hours sewer and water incidents (e.g. pump station overflows) in a more effective manner. This initiative has significantly reduced the impacts of sewer incidents on the surrounding environment.



On-Site Sewage Management

On-site sewage management systems (OSSMS), such as septic tanks and absorption trenches or aerated water treatment systems and irrigation systems, are intended to enable residences and businesses in un-sewered areas to dispose of wastewater in a way that does not threaten public health, damage the environment or create a nuisance.

In 2002 Council developed a program to improve the management of OSSMS in the shire. The program was developed in response to growing concerns about the potential environmental and human health risks associated with the failure of OSSMS.

Key aspects of the program include:

- A requirement for all system owners to obtain an 'approval to operate' their systems.
- Education of homeowners to raise awareness about the issue and help them to improve and maintain the performance of their OSSMS.
- Inspections of OSSMS throughout the shire and the allocation of a risk rating for each inspected system. The risk rating determines the frequency of ongoing inspections.
- Issuing improvement notices such as de-sludging of the primary treatment tank, replacing or repairing failing effluent land application areas and installing biological septic tank outlet filters.



Murwillumbah Wastewater Treatment Plant

In 2001 the WWTP was upgraded to service Murwillumbah and surrounding areas. Wastewater is treated to tertiary standards and discharged to the Rous River.



Kingscliff Wastewater Treatment Plant

In 1998 a WWTP was upgraded to service Kingscliff and surrounding areas. Wastewater is treated to secondary standards and discharged into the Tweed River south of the intersection of Chinderah bay drive and Wommin Bay Road.



Trade Waste Policy

In 1997 Council developed a policy for the disposal of trade waste to sewer. The policy is based around a `user pay' system to encourage water efficiency and lower sewer discharge levels from commercial and industrial activities.



Tumbulgum Wastewater Treatment Plant

In 1996 a WWTP was constructed to service Tumbulgum village. Wastewater is treated to Tertiary standards and discharged in to the Tweed River east of the village.



Banora Point Wastewater Treatment Plant

In 1995 a WWTP was upgraded to service Banora Point, Tweed Heads South and surrounding areas. Wastewater is treated to tertiary standards and discharged at into Terranora Inlet near the Dry Dock.



Liquid Trade Waste

In 1992 Council established a Trade-Waste Program to help manage the volume and strength of trade waste discharges to the sewage system. The program is based around monitoring of licensed premises in the Trade Waste Register.



Tyalgum Wastewater Treatment Plant

In 1990 a WWTP was constructed to service Tyalgum village. Wastewater is treated to secondary standards and discharged via on-site pasture irrigation.



Recycled Water Project - Pasture Irrigation

Since 1990 treated effluent from the Tyalgum Wastewater Treatment Plant has been used to irrigate pasture on Treatment Plant land. Each year this initiative reduces discharge to local waterways by an average of 25 ML/year.



Tweed Heads West Wastewater Treatment Plant

In 1988 a WWTP was upgraded to service Tweed Heads, Tweed Heads West and surrounding areas. Wastewater is treated to secondary standards and discharged Terranora inlet adjacent to the Pacific Highway.



Recycled Water Project - Golf Course Irrigation

Since 1987 recycled water from the Banora Point Wastewater Treatment Plan has been used to irrigate sections of the Coolangatta Tweed Heads Golf Club golf course. Each year this initiative reduces discharge to local waterways by an average of 250 ML/year.



Response Indicators – Waste Water Management

Indicator:	02/03	03/04	04/05	05/06	06/07	07/08
Waste-Water Discharges						
Volume of waste-water discharged to local waterways (ML)	7153	6947	7510	7526	6968	7713
Volume of waste-water reused instead of being discharged to local waterways (ML)	244	354	353	291	286	341

Source: Tweed Shire Council Water Unit

Indicator:	02/03	03/04	04/05	05/06	06/07	07/08
On-Site Sewage Management Systems						
No. of approvals to operate issued	N/A	320	409	393	166	152
No. of Inspections	N/A	N/A	N/A	600	420	244
No. of Improvement Notices	N/A	N/A	N/A	300	250	220

Source: Tweed Shire Council Building & Environmental Health Unit

Related Topics

[Built Environment](#)

[Waterway Health](#)

SOLID WASTE MANAGEMENT








CONDITION

At a Glance

Council contracts out the collection of household waste, recycling, optional green waste services, public litter bins and provides a bi-annual bulky household waste collection. The contractor undertakes the day-to-day management of the Stotts Landfill and all activities on that site, including the operation of the current putrescible and inert landfill cell and composting operations. The contractor sub-contracts the operations of the tip shop and Materials Recovery Facility (i.e. sorting of recyclables).

PRESSURE

At a Glance

Environmental Pressures Associated with Solid Waste Management include:	Icon
Climate Change: <ul style="list-style-type: none"> • Indirect greenhouse gas emissions associated with the consumption of goods and services • Directed greenhouse gas emissions associated with waste collection and disposal 	
Construction Waste – Historically, this waste from this sector has represented as significant percentage of the waste stream	
Domestic Waste - Over 30% of the total waste stream is from the domestic sector	
Commercial & Industrial Waste – is the fastest growing waste stream in the shire, representing over 30% of the waste stream in 07/08	
Landfill Leachate – heavy rainfall and associated infiltration of the landfill site	
These pressures are likely to increase in proportion to population	

Pressure Indicators

Indicator: Solid Waste 2005/06	Total (Tonnes)	Landfill (Tonnes)	Recycled (Tonnes)	% Recycled	% of Total Waste Stream
Domestic	27,649	21,089	6,560	23.72	32.46
Comm. and Industrial	16,890	14,525	0	0	19.83
Construction	33,373	23,512.5	9,860.50	29.54	39.18
Green Waste	2,796	0	2,796	100	3.28
Hazardous Waste	617	617	0	0	0.72
Hard Rubbish Clean Up	1,506	500	1006	66.80	1.77
Other	2,346	2,346	0	0	2.75
TOTAL	85,177.0	62,589.5	20,222.5	23.74	99.99

Indicator: Solid Waste 2006/07	Total (Tonnes)	Landfill (Tonnes)	Recycled (Tonnes)	% Recycled	% of Total Waste Stream
Domestic	25,560	17,956	6,604	25.84	29.86
Comm. and Industrial	18,804	18,804	0	0	21.96
Construction	26,922	16,028	10,894	40.47	31.45
Green Waste	7,639	0	7,639	100	8.92
Hazardous Waste	848	848	0	0	0.99
Hard Rubbish Clean Up	1,788	500	1,288	72.04	2.09
Other	4,046	4,046	0	0.00	4.72
TOTAL	85,607	58,182.0	26,425.0	30.84	99.99

Indicator: Solid Waste 2007/08	Total (Tonnes)	Landfill (Tonnes)	Recycled (Tonnes)	% Recycled	% of Total Waste Stream
Domestic	32,698.41	23,356.80	9,341.61	28.57*	35.71
Comm. and Industrial	26,692.38	26,692.38	0**	0**	29.15
Construction	15,365.92	4,274.35	11,091.57	72	16.78
Green Waste	9,537.60	0	9,537.60	100	10.42
Hazardous Waste	694.28	694.28	0	0	0.76
Hard Rubbish Clean Up	1,877.01	887.01	1,000	53.27	2.05
Other	4,691.42	46,92.21	0	0	5.12
TOTAL	91,557.02	55,894.89	30,970.78	33.83	99.99

Source: Tweed Shire Council Waste Management Section

* This figure includes materials recovered for sale at the Tip Shop. ** Cardboard recycling services are not included. Commercial and Industrial Recycling Services are provided for co-mingled recyclables, however the volumes of recyclables collected cannot be quantified at this time because the collection service also picks up the dedicated recycling bins from multiple occupancy dwellings. This issue is being addressed.

RESPONSE

Each response seeks to address one or more identified pressure. Responses are listed in order from newest to oldest. This format gives regular readers of the SoE Report easy access to the most recent initiatives while allowing infrequent readers to view a catalogued history of responses.

Waste Management Education

Refer to [Environmental Education and Capacity Building](#) for details of waste management education initiatives.

Landfill Receipts

Responsibility: Building & Health Unit
Status: Ongoing

In 2008 Council placed a standard condition of consent on construction and demolition activities. The condition requires that landfill disposal receipts be kept as a record of proper disposal methods.



Bin Audits

Responsibility: Waste Management Unit
Status: Completed in 2008

In 2008 Council's Waste Contractor conducted random audits of domestic wheelie bins to identify pressures on the recycling system such as common contaminants. This information will be used to inform community recycling campaigns.



Solid Waste Management Strategy

Responsibility: Waste Management Unit
Status: Ongoing

In 2007 Council adopted a waste management strategy (WMS) to enable Council and the community to implement sustainable waste management practices. The WMS has been prepared in accordance with the waste management hierarchy and the principles enshrined in the guidelines and best-practice principles of the NSW Department of Environment and Conservation's Model Waste and Recycling Collection Contracts.



E-Waste Collection

Responsibility: Waste Management Unit
Status: Ongoing

In 2007 Council commenced an e-waste drop off program in response to an emerging waste management issue. Around 98% of electronic waste (e-waste) can be recycled but items in the hard rubbish collection service indicated that the majority of unwanted e-waste was not being recycled. The first e-waste drop-off day (June 2007) resulted in nearly 6 tonnes of e-waste being taken to the

local landfill by shire residents. The second e-waste drop off day (October 2007) resulted in over 17 tonnes being collected. Refer to [Response Indicators](#) for exact volumes.



Free Metal Collection Service

Responsibility: Waste Management Unit

Status: Ongoing

In 2007 a free metal collection service for derelict motor vehicles, abandoned farm machinery and unwanted white goods was established. Two contractors collect the unwanted metal materials, with Council facilitating the collection process through taking information from the public. For residents, this free service means whitegoods such as washing machines, fridges and dryers can be collected all year round, rather than taking up room in the shed waiting for Council's six-monthly household cleanup.



Landfill Gate Pricing

Responsibility: Waste Management Unit

Status: Completed in 2007

In 2007 the gate prices for disposing of waste at the landfill was amended to encourage builders to sort their waste into recyclables (e.g. concrete / metals), re-usables (e.g. wood) and waste.

The latest construction waste figures (refer to Pressure Indicators Table above) show a significant increase in the recycling rates for this waste stream. The reduced gate fee for sorted builders waste has provided an economic incentive for source separation of builders waste prior to delivery at the landfill.



Commercial Recycling Program

Responsibility: Waste Management Unit

Status: Ongoing

In 2007 a commercial waste recycling program was developed to reduce the volumes of commercial waste going to landfill. 240L wheelie bins for recycling are provided at a subsidized price to encourage increased recycling rates in the commercial sector. 222 bins are in operation in 2007/08. Quantifying the volumes of commercial waste that is recycled is not possible at this stage because the bins are collected along with recycling bins from multiple occupancy dwellings. This reporting issue will be rectified in the future, however at this stage the figures for commercial waste recycling (refer to solid waste indicators table) are listed as zero.



Public Place Recycling

Responsibility: Waste Management Unit

Status: Ongoing

In 2006 Council initiated a trial of public litter bins that incorporate recycling facilities. These bins have been installed at over 10 locations throughout the shire and the results of the trial will be used to determine the viability of a shire-wide recycling service for public litter bins.



Multiple Occupancy Dwellings

Responsibility: Waste Management Unit

Status: Ongoing

In 2005 Council established a kerb-side recycling service for multiple occupancy dwellings (e.g. units) to encourage wider participation in the domestic recycling program.



Green Waste Collection

Responsibility: Waste Management Unit

Status: Ongoing

In 2005 Council established a domestic green waste collection service to reduce environmental weed infestations from illegal dumping (e.g. over the back fence) and the amount of garden waste being disposed of in the waste section of domestic rubbish bins. Green waste bins are collected fortnightly and the contents is mulched at the local landfill and sold for \$15/m³. Refer to Response Indicators for volumes of domestic green waste that have been prevented from going to landfill due to this service.



Domestic Recycling Service - 70/30 to 50/50

Responsibility: Waste Management Unit

Status: Completed in 2005

In 2004 the divider in the 240 litre rubbish bin was moved from the 70:30 division (70% for garbage, 30% for recycling) to 50:50 (50% for garbage, 50% for recycling). This initiative was in response to a community survey which clearly indicated that there was insufficient room for recyclables with the current configuration.



Landfill Gas Management

Responsibility: Waste Management Unit

Status: Ongoing

In 2003 a methane gas extraction system was constructed at Stotts Landfill. The system captures the methane produced by rotting vegetative matter that is buried in the landfill (e.g. food scraps) and uses it to generate electricity. 300 kilowatts is supplied into the national electricity grid every hour, which is enough to power about 11 houses.

A more significant environmental outcome is the prevention of methane emissions to the atmosphere. As a greenhouse gas, methane is twenty-two times more harmful than CO₂ and capturing it for electricity generation prevents an average of 10,000 tonnes of CO₂(equivalent) from entering the atmosphere. This is equivalent to taking 2,000 cars off the road for a year.



Waste Wise Events

Responsibility: Waste Management Unit

Status: Ongoing

In 2003 Council commenced a program to improve waste management at festivals and events throughout the shire. A waste management trailer was developed to supply recycling, composting and rubbish bin to festival organisers. A guide was also developed to encourage stallholders and food vendors to avoid non-recyclable or non-biodegradable packaging for food and drinks.



Waste Oil Recycling

Responsibility: Waste Management Unit

Status: Ongoing

In 2002 a purpose built waste oil recovery facility was constructed at the Stotts Landfill. Dropping off waste oil is free of charge and provides ratepayers with an environmentally responsible option for disposing of their waste oil (e.g. engine oil).



Brick and Concrete Recycling

Responsibility: Waste Management Unit

Status: Ongoing

In 2001 Council and the shires waste contractor developed a program to recycle brick and concrete at the Stotts landfill.



Farm Chemical Container Collection

Responsibility: Waste Management Unit

Status: Ongoing

Since 2000 Council has participated in the national Drum Muster Program to promote recycling of used farm chemical containers.

The drum muster program results in large volumes of waste being diverted from landfill and a significant reduction in the potential for land and water contamination from inappropriately disposed chemical containers. Refer to Response Indicators for volumes of containers collected as part of this program.



Materials Recovery Facility

Responsibility: Waste Management Unit

Status: Ongoing

In 1991 Council and the shires waste contractor constructed a Materials Recovery Facility at the Stotts Landfill to sort domestic recyclables including paper, glass, plastic and metals ready for transport to reprocessing facilities. This initiative formed the 'downstream' component of the household recycling service.



Household Recycling Service

Responsibility: Waste Management Unit

Status: Ongoing

In 1990 Council introduced a monthly curbside collection of recyclable materials. In 1995 a partition was installed in the 240L wheelie bins to allow for the simultaneous collection of waste and recyclable materials.



Landfill Leachate Management

Responsibility: Waste Management Unit

Status: Ongoing

Since the late 1980's Council has implemented ongoing works to manage the impact of leachate on downstream waterways and groundwater at the local landfill. Leachate is rainfall that percolates through the landfill extracts nutrients and impurities from the buried waste.

Leachate management is undertaken in the following way:

- Stormwater is diverted away from landfill areas to reduce percolation volumes.
- Collection ponds below the landfill areas capture leachate and prevent it from escaping into the surrounding environment.
- Vetiver grass is planted on capped landfill areas and sloping batters of the landfill areas.

- Vetiver grass on the capped landfill areas are irrigated using leachate pumped from the collection ponds. This process helps to remove large volumes of nutrients and impurities from the leachate water (i.e. taken up by the Vetiver grass).
- Floating rafts of Vetiver grass are also used in the leachate ponds for the same purpose.
- Ongoing monitoring of surface and groundwater occurs to ensure leachate management is meeting the required standard.
- A pilot trial commenced in 2008 to biologically treat the leachate in order to reduce pollutants, and improve the quality of the leachate for reuse or release.



Hard Rubbish Collection

Responsibility: Waste Management Unit
Status: Ongoing

Since around 1979 Council has provided a twice-yearly collection of domestic rubbish, which because of its nature (e.g. shape, size), is unable to be disposed of in the normal weekly garbage collection service. Known as the Household Cleanup Campaign This service is available to all residents who receive a weekly domestic garbage collection service. Items that can be reused or recycled are separated before the remainder goes to landfill. Refer to Pressure Indicators for volumes of waste collected and recycled as part of this service.



Weekly Curbside Collection

Responsibility: Waste Management Unit
Status: Ongoing

Since the early 1960's Council's waste contractor has provided curbside collection of household rubbish. The wheelie bin was introduced to the shire in 1997. Approximately 88% of shire households now make use of the curbside collection service.



Response Indicators

Indicator:	03/04	04/05	05/06
Recyclables – kilograms per capita per annum			
Tweed Shire	187	186	194
State Average	155	155	170

Source: Department of Local Government Comparative Information www.dlg.nsw.gov.au

Indicator:	03/04	04/05	05/06	06/07	07/08
Recycling Rates by Sector					
% of Domestic Waste Recycled	15.7	18.5	23.72	25.94	33.35
% of Commercial & Industrial Waste Recycled	N/A	N/A	0	0	0
% of Construction Waste Recycled	N/A	N/A	29.54	40.47	72.00

Source: TSC Waste Management Section

Indicator: Drum Muster	00 - 04	04/05	05/06	06/07	07/08	Total
No. of used farm chemical containers collected and recycled	4,100	1,400	2,500	1,809	2,287	12,096

Source: TSC Waste Management Section

Indicator: Green Waste Collection	05/06	06/07	07/08	Total
Volume of green waste collected and recycled (tonnes)	2,796	7,639	9537	17,176

Source: TSC Waste Management Section

Indicator: Electronic Waste Recycling	06/07	07/08	Total
Volume of e-waste collected and recycled (tonnes)	5.80	17.23	23.03

Source: TSC Waste Management Section

Related Issues

[Built Environment](#)

[Atmosphere](#)

[Environmental Education & Capacity Building](#)

TRANSPORT INFRASTRUCTURE








CONDITION

At a Glance

- In 2007 there were 55,200 vehicles registered in the shire and 54,700 licensed drivers and riders. This equates to more than 1 vehicle per license.
- By 2010 transport will be the single biggest source of direct greenhouse gas emissions in the shire. (TSC 2003)
- Burning one litre of unleaded petrol releases 2.6kg of CO₂ emissions directly into the atmosphere (AGO, 2005)
- Tweed Shire Council has responsibility for approximately 1200 km of shire roads.
- The Tweed Shire has an extensive pedestrian and cycle-way network. To find out about your local infrastructure go to www.tweed.nsw.gov.au

PRESSURE

At a Glance

A dependence on vehicle based transport is placing many adverse pressures the natural environment including:	Code
Climate Change— vehicle related emissions are forecast to become the single biggest source of greenhouse gas emissions by 2010	 CLIMATE CHANGE
Stormwater Pollution –impervious surfaces associated with transport infrastructure leads to stormwater discharges and associated pollution of local waterways	 DIFFUSE
Road Kills – transport infrastructure and vehicle numbers leads to a proportional increase in wildlife injuries and road kills	 ROAD KILL
Roadside Vegetation - roads and the associated roadside vegetation maintenance increase the potential for weed dispersal and habitat modification	 ROADSIDE MOWING
Native Vegetation Clearing - transport infrastructure and the associated urban footprint leads to a reduction in the size, function and connectivity of natural ecosystems	 HABITAT
These pressures are likely to increase in proportion to population	

Pressure Indicators - Transport

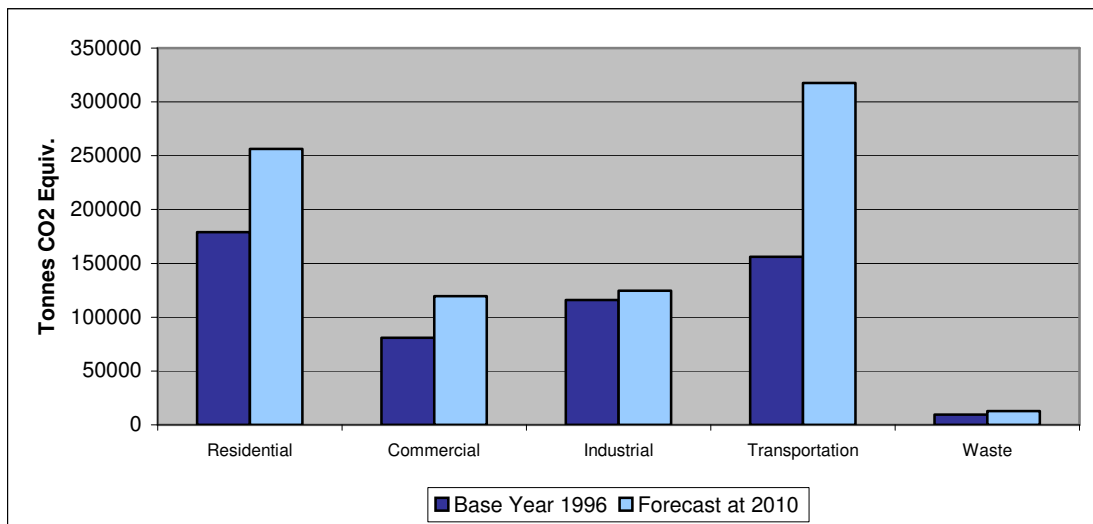
Indicator: Residents / Licenses / Vehicles	1997	2001	2006	2007
Shire population	67,082	74,380	82,955	84,564*
Vehicle registrations	37,666	43,560	53,594	55,315
Registrations per shire resident	0.56	0.58	0.65	0.65
Licensed drivers and riders	N/A	47,162	53,342	54,700
Licenses per resident	N/A	0.63	0.64	0.65
Vehicles per license	N/A	0.92	1.00	1.01

Sources: Population data [Australian Bureau of Statistics Census Data](#) Registrations and Licenses NSW RTA www.rta.nsw.gov.au
*Population projection

Indicator: Single Occupant Vehicle Travel	04/05	05/06	06/07	07/08
Percentage of passenger vehicles with one occupant	N/A	64%	N/A	N/A

Source: Tweed Shire Council survey.

Indicator: Total Community CO₂ Emissions in 1996 and 2010 (Forecast Year)



Source: TSC 2003

RESPONSE

Each response seeks to address one or more identified pressure. Responses are listed in order from newest to oldest. This format gives regular readers of the SoE Report easy access to the most recent initiatives while allowing infrequent readers to view a catalogued history of responses.

Pottsville CBD – High Pedestrian Activity Zone

Responsibility: Engineering & Operations Division

Status: Completed in 2008

In 2008 the Pottsville Central Business District was identified as a high pedestrian activity zone. A 40km/h speed limit and street-scaping was installed to calm traffic and improve pedestrian safety. Improving pedestrian access within the town centre will facilitate walking and hopefully reduce the number of vehicle trips particularly for residents within walking distance to the town centre.



Murwillumbah Service Lane – Shared Zone

Responsibility: Engineering & Operations Division
Status: Completed in 2008

In 2008 Proudsfoot Lane in Murwillumbah was identified as a shared zone. Signage and street-scaping was installed to calm traffic and improve pedestrian safety. A 10km/h speed limit was also established to reduce vehicle speeds in the laneway. Improving pedestrian access within the town centre will facilitate walking and hopefully reduce the number of vehicle trips, particularly for residents within walking distance to the town centre. The stormwater system also allows for infiltration of water into the garden beds to reduce the impacts of stormwater pollution on the Tweed River.



Carpooling Directory

Responsibility: NRM Unit – Sustainability Program
Status: Ongoing

In 2008 Council placed a web-based [carpool directory](#) on its website to reduce reliance on the single occupant private motor vehicle by promoting alternative modes of transport.



Town Walks

Responsibility: NRM Unit – Sustainability Program
Status: Ongoing

In 2008 Council placed a number of [urban walking trails](#) on its website to encourage active transport in the shire.



Road Mortality Hotspots

Responsibility: Engineering & Operations Division
Status: Completed in 2007

In 2007 *Koala Black Spot* road signs were installed on sections of Clothiers Creek Road to encourage motorists to watch out for wildlife in these areas.



Public Transport Directory

Responsibility: Community & Cultural Services Unit
Status: Ongoing

In 2006 Council developed a web-based [public transport directory](#) to reduce reliance on the private motor vehicle by promoting alternative modes of transport.



S.94 Contributions

Responsibility: Engineering & Operations Division
Status: Ongoing

In 2005 the S.94 Contribution Plan for bus shelters was amended to reflect the increases in construction costs. The aim of the plan is to enable the levying of developer contributions for the provision of bus shelter facilities. Bus shelters are required to meet the expected demand for such facilities generated by residential population growth within the Shire, particularly in areas of new subdivision or development.

In 2005 the S.94 Contribution Plan for cycleways was amended to reflect increases in construction costs. A key aim of the plan is to enable the levying of contributions which will be required to fund the cost of providing cycleway as a consequence of increased demand generated by development in the Shire.



Cycleway and Footpath Directory

Responsibility: Engineering & Operations Division
Status: Ongoing

In 2000 Council developed a web-based [cycle-way and footpath directory](#) to reduce reliance on the private motor vehicle by promoting alternative modes of transport. This directory was revamped in 2008.



Cycleways & Shared Paths

Responsibility: Engineering & Operations Division
Status: Ongoing

Council continues to build upon the extensive network of cycleways and shared paths throughout the shire. A key aim of this infrastructure is to reduce reliance on the private motor vehicle by facilitating alternative modes of travel.

Refer to the [Footpath and Cycleway Directory](#) for locations and routes of cycleways.

Refer to [Response Indicators](#) for total length of cycleways / shared paths constructed to date.



Footpaths

Responsibility: Engineering & Operations Division
Status: Ongoing

Council continues to build upon the extensive network of footpaths throughout the shire. A key aim of this infrastructure is to reduce reliance on the private motor vehicle by facilitating walking and improving access to public transport routes.

Refer to the [Footpath and Cycleway Directory](#) for locations and routes of cycleways.

Refer to [Response Indicators](#) for total length of cycleways / shared paths constructed to date.



Roadside Vegetation Maintenance

Responsibility: Engineering & Operations Division
Status: Ongoing

Refer to [Council Operations](#) for details of initiatives that aim to reduce the impact of roadside maintenance on native vegetation and local biodiversity.



Tweed Coast Cycleway

Responsibility: Engineering & Operations Division
Status: Due for completion in 2009

In 2000 Council commenced construction of a 28km long cycleway / shared path along the ocean foreshore from Kingscliff to Pottsville. The missing link, an 800m section between Salt and Casuarina is due to be completed in 2009.



Community Road Safety Plan

Responsibility: Engineering & Operations Division
Status: Ongoing

In 1997 Council developed a road safety plan for the shire. The aim of the plan is to reduce the incidence, severity and cost of road crashes to the local Tweed Shire community through a combined approach of consultation, research, education, enforcement, promotion, engineering and coordination.

The bicycle objective is to *implement strategies to reduce the risks involved with bicycle travel.*

The pedestrian objective is to *reduce the risk of injury to all ages through education and encourage engineering remediation in black spot areas.*



Tweed Bicycle Plan

Responsibility: Engineering & Operations Division
Status: Ongoing

In 1995 Council developed a shire-wide bicycle plan to create a strategic approach to the implementation of cycle infrastructure in the shire.



Response Indicators

Indicator: Active Transport Infrastructure	04/05	05/06	06/07	07/08
Total length of new footpath constructions (metres)	2400	3989	4300	3789
Total length of new bikeway constructions (metres)	2500	2324	2400	1489
Total number of new bus shelter constructions	3	0	0	7
Total number of new taxi shelter constructions	N/A	6	2	0

Source: Tweed Shire Council Works Unit

Related Topics

[Built Environment](#)

[Atmosphere](#)

NOISE MANAGEMENT





CONDITION

At a Glance

In today's society, noise levels are increasingly impinging on our work, recreation and personal lives. Tolerance of noise is subjective, depending on circumstances and individual sensitivity. Council aims to address noise issues on their merit and attempts to resolve situations through all reasonable and practical measures such as community education, conflict resolution and the application of legislation.

PRESSURE

At a Glance

Key noise related pressures include	Code
Conflicting land-uses associated with population growth and changing land-use patterns. Key issues associated with this pressure include barking dogs and trail bikes.	 CHANGING LAND USE
Reduced interaction between neighbours, which reduces the likelihood of noise issues being resolved through communication and compromise.	 COMMUNITY
These pressures are likely to increase in proportion to population	

Pressure Indicators

Indicator:	05/06	06/07	07/08
Noise Complaints			
Barking Dogs	268	315	168
Crowing Roosters	N/A	6	6
Trail Bikes	25	88	55
Industrial / Commercial Activities	18	30	35
Loud Music / Parties	10	17	21
Home Businesses	7	17	11
Pool Pumps / Air Conditioners / Other Pumps or Motors	9	23	28
Construction Activities	3	23	11
Other (e.g. Hobbies)	18	25	22
TOTAL	358	544	357

Source: Tweed Shire Council_Dataworks_Noise Pollution + Barking Dogs

Note: All noise complaints have been identified, regardless if multiple complaints have been made by the same person about a single issue.

RESPONSE

Each response seeks to address one or more identified pressure. Responses are listed in order from newest to oldest. This format gives regular readers of the SoE Report easy access to the most recent initiatives while allowing infrequent readers to view a catalogued history of responses.

Trail Bikes

Responsibility: Building & Health Unit

Status: Ongoing

In 2005 council refined a process to reduce neighbourhood conflict arising from the recreational use of trail bikes. The process involves mediation between parties to facilitate a compromise in the use of trail bikes, for example the establishment of restricted riding times and days.



Animal Keeping Guidelines

Responsibility: Regulatory Services Unit

Status: Ongoing

In 2000 Council introduced a set of Animal Keeping Guidelines to protect the well being of animals kept in urban areas and to ensure these animals do not create a noise or odour nuisance.



Aircraft Noise

Responsibility: Building & Health Unit

Status: Ongoing

In 1998 Council introduced a standard condition of consent for new dwellings likely to be affected by aircraft noise. This condition requires the installation of adequate soundproofing.



Air Conditioning Noise

Responsibility: Building & Health Unit

Status: Ongoing

In 1998 Council introduced a requirement as part of exempt developments for a minimum three metre setback from the property boundary for the installation of air conditioning units.



Construction Noise

Responsibility: Building & Health Unit

Status: Ongoing

In 1994 Council introduced standard conditions of consent to manage noise from construction activities. These conditions include restricting operating hours for heavy machinery.



Neighbourhood Noise

Responsibility: Building & Health Unit

Status: Ongoing

Since the early 1980's Council has responded to neighbourhood noise issues in a way that aims to resolve the noise related dispute between neighbours through communication, compromise and regulatory means where required.



Barking Dogs

Responsibility: Regulatory Services Unit

Status: Ongoing

Since the early 1980's Council has sought to address the issue of barking dogs by responding to complaints, providing educational material to dog owners and enforcing legislation where required.



Management Gap: Council does not have a Noise Management Policy to address noise amenity issues associated with conflicting land uses.

Recommendation: Develop a Noise Management Policy and integrate into planning framework.

Status: In 2008 work commenced on the development of a Noise Management Policy.

Related Issues

[Built Environment](#)

NATURAL & CULTURAL HERITAGE

CONDITION





Natural and cultural heritage defines our sense of place. Heritage places and objects provide cultural and physical links with the past, with the history of human habitation, and with the evolution of plants, animals and the physical landscape.

At a Glance

- National Parks and Nature Reserves make up 15% of the shire. To find out about the shires parks and reserves visit www.npws.nsw.gov.au
- Nature Reserves in the shire include Limpinwood, Stotts Island, Cudgen and Nullum Nature Reserves.
- There are over 250 identified Aboriginal heritage sites in the shire. For information visit www.environment.nsw.gov.au or call the NSW Department of Environment and Conservation on (02) 9585 6470.
- The shire has a number of cultural and heritage facilities including the Tweed River Art Gallery, the Coolamon Cultural Centre, the Tweed River Regional Museum, public halls, community centres and three regional libraries.

PRESSURE

At a Glance

Pressures on natural and cultural heritage include:	Code
Land clearing for changes of landuse	 CHANGING LAND USE
Vandalism	 VANDALISM
Neglect & natural weathering of sites	 WEATHERING
Lack of wider community engagement about local heritage issues	 ENGAGEMENT

RESPONSE

Each response seeks to address one or more identified pressure. Responses are listed in order from newest to oldest. This format gives regular readers of the SoE Report easy access to the most recent initiatives while allowing infrequent readers to view a catalogued history of responses.

Social Plan (2009)

Responsibility: Community & Cultural Services Unit

Status: Due for completion in 2009

In 2008 a review of the 2005-09 Social Plan commenced. The review is being undertaken with ongoing community input and seeks to incorporate a range of social issues and responses that were not identified in the existing plan.



Youth Policy

Responsibility: Community & Cultural Services Unit

Status: Completed in 2008

In 2008 Council adopted a policy to recognise young people's needs in existing consultative, planning and service functions and to ensure that young people's needs are catered for. The policy provides a framework for all Tweed Council employees and elected members to engage with and include young people in all Council activities. Policy development was informed by the 2004 Youth Survey and 2006 Youth Needs Analysis.



Historical Walks

Responsibility: Community & Cultural Services Unit

Status: Completed in 2008

In 2008 Council and North Coast Area Health Service developed a series of brochures on historical walks in Murwillumbah, Tweed Heads and Kingscliff. The brochures seek to encourage healthy active living by engaging with local history while walking.



Aboriginal Reconciliation Statement

Responsibility: Community & Cultural Services Unit

Status: Ongoing

In 2007 Council adopted two aboriginal reconciliation statements to acknowledge the traditional owners and custodians of the land and to recognise the vital importance of the Aboriginal and Torres Strait Islander peoples' contribution to strengthening and enriching our region and our community.



Anzac Day

Responsibility: Community & Cultural Services Unit

Status: Ongoing

In 2007 Council adopted a policy to formalise its involvement in the annual Anzac Day services.



Tweed Place Making and Public Art Policy

Responsibility: Community & Cultural Services Unit

Status: Ongoing

In 2007 Council adopted a Place Making and Public Art Policy to provide a blueprint to guide the shires approach to public art and to formalise the process by which Council manages and preserve existing and future cultural resources.



Art Gallery Collections

Responsibility: Community & Cultural Services Unit

Status: Ongoing

In 2007 a policy was developed with the aim of promoting a greater understanding and enjoyment of the Visual Arts and Crafts through the acquisition, preservation, display and conservation of the region's visual arts and crafts heritage.



Museum Collections

Responsibility: Community & Cultural Services Unit

Status: Ongoing

In 2007 a policy was adopted to enhance the depth and importance of the museum collections by approaching collecting in a manner that reflects the Tweed Region as a whole, single entity. The Collection Policy of Tweed River Regional Museum has a primary focus on collecting for exhibitions, educational purposes, research and archiving. The policy supersedes the Interim Collection Policy of the Tweed River Regional Museum Strategic Plan, 2004.



Tweed River Regional Museum Strategic Plan

Responsibility: Community & Cultural Services Unit

Status: Ongoing

In 2004 a strategic plan was developed to guide the future direction of the shires Museum sites. The Memorandum of Understanding between Council and the three historical societies provided for the development of the Tweed River Regional Museum.



Social Plan (2005 - 2009)

Responsibility: Community & Cultural Services Unit

Status: Completed in 2004

In 2004 Council adopted a Social Plan as a vehicle to implement community programmes and projects and to identify emerging policies to increase community wellbeing. The plan makes a range of recommendations to maximise social wellbeing including encouraging social participation and development of young people, increasing capacity for care of the elderly and working with human and health services to develop a coordinated approach to service delivery in the Tweed community.



Community Based Heritage Study

Responsibility: Community & Cultural Services Unit

Status: Completed in 1996

In 1995 / 1996 a community based heritage study was undertaken for the shire. The study was based around community consultation to determine the culturally significant moveable and built environment. The study has been used to inform sections of Council's Development Control Plan.



City of the Arts

Responsibility: Community & Cultural Services Unit

Status: Completed in 2005

Every two years the New South Wales State Government nominates a regional centre as the State's City of the Arts. In 2003 the Premier announced that Tweed Shire was to become the 5th City of the Arts. Over the two years approximately 25,000 people were involved in the City of the Arts cultural program which aimed to inspire creativity, local identity, sense of place and promote quality of life. The program achieved outstanding success and far exceeded all expectations. More information on the City of the Arts initiatives and programs can be found in the 'community' section of www.tweed.nsw.gov.au



Tweed Museum

Responsibility: Community & Cultural Services Unit

Status: Ongoing

In 1999 the historical societies at Murwillumbah, Tweed Heads, Uki and South Arm began working together to create a single regional museum for the Tweed operating over three sites, resulting in a Memorandum of Understanding with Tweed Shire Council in 2004.

In 2004 the Collection of Tweed River Regional Museum was created through an amalgamation and transfer of ownership to Council of the collections of the historical societies of Murwillumbah, Tweed Heads and Uki & South Arm.

Each separate collection evolved over time and a range of factors lead to the shaping of the collections as they are today. Over many decades, museum volunteers in the Tweed Shire have built an outstanding cultural resource about the people, places and history of the area. This includes significant object and photograph collections as well as archives, research files and oral histories.

In 2007 a process was initiated to create a single site to house collections from the existing sites.



Tweed Cultural Policy

Responsibility: Community & Cultural Services Unit

Status: Ongoing

In 1999 Council adopted a cultural policy to provide a framework for the coordination and management of the Tweed's cultural resources, as well as enabling a cohesive and strategic approach to ongoing cultural development.



World Heritage Sites

Responsibility: NSW Department of Environment & Climate Change

Status: Ongoing

In 1996 Mount Warning National Park, Nightcap National Park and Border Ranges National Park were added to the World Heritage List because of their exceptional natural beauty and ecological importance.



Response Indicators

Indicator: Cultural Site Visits	02/03	03/04	04/05	05/06	06/07	07/08
Number of Library Visits	273,918	265,821	296,488	291,722	N/A	317,337
Number of Art Gallery Visits	20,157	28,098	51,456	50,022	69,149	54,588
Number of Museum Visits	N/A	N/A	N/A	N/A	N/A	1,146

Source: Richmond -Tweed Libraries & TSC Community and Cultural Services Unit

Related Topics

[Built Environment](#)

[Bushland and Biodiversity](#)

[Environmental Education & Capacity Building](#)

ENVIRONMENTAL EDUCATION & CAPACITY BUILDING



CONDITION




At a Glance

Community engagement and participation is a key ingredient to successfully addressing local environmental issues. Community participation:

- Gives a human face to environmental issues.
- Empowers people to become active agents of sustainable and equitable development.
- Promotes an understanding that communities are pivotal to changing attitudes towards environmental issues.

PRESSURE

At a Glance

Pressures that affect high levels of community participation in helping to address environmental issues include:	Code
Barriers to volunteerism such as time constraints, lack of resources to support volunteers, training requirements, insurance issues and lack of awareness about the existence of local environmental volunteer groups	 VOLUNTEER
Lack of community awareness and engagement about local environmental issues such as waterway health, water supply, bushland and biodiversity, soil management, waste management, climate change, etc	 ENGAGEMENT
Lack of institutional awareness and capacity	 CAPACITY

RESPONSE

Each response seeks to address one or more identified pressure. Responses are listed in order from newest to oldest. This format gives regular readers of the SoE Report easy access to the most recent initiatives while allowing infrequent readers to view a catalogued history of responses.

Treasures of the Tweed Mural

Responsibility: Community & Cultural Services Unit

Status: Ongoing

In 2008, Job Futures in partnership with Council, Tweed Landcare and Murwillumbah Services Club commenced a public art project along 700m of the Murwillumbah flood levee wall. The *Treasures of the Tweed Mural* highlights the regions unique threatened flora, fauna and ecological communities and aims to create an iconic landmark for the local area. The initiative is scheduled for completion in 2010.



NRM Project Inventory

Responsibility: NRM Unit – Biodiversity Program

Status: Ongoing

In 2008, Council initiated the creation of a database linked to a computer mapping system to collate and store information on NRM projects being undertaken with the Shire. This project will allow NRM managers to more accurately document, target, plan and monitor on-ground works funded from a range of sources. This more systematic approach will also increase transparency and improve access to external grant funding. It is intended that the database will be reviewed annually.



Bushland Mapping Update

Responsibility: NRM Unit – Biodiversity Program

Status: Ongoing

In 2008, Council initiated a review of the vegetation mapping used for the Tweed Vegetation Management Strategy 2004 which was based on aerial photography from September 2000 and July 2001. The updated mapping will reflect changes in the landscape between these dates and more recent aerial photography from May 2007. In addition to providing a useful indicator of environmental change (e.g. land clearing), more accurate and contemporary vegetation mapping will assist in land use planning, development control, bushfire management and habitat restoration, initiatives.



Council-supported Environmental Committees

Responsibility: NRM Unit – Biodiversity Program. NRM Unit – Waterways Program

Status: Ongoing

Since the early 1990's Tweed Shire Council has supported community based committees that seek to improve environmental outcomes within the shire. In 2008 these committees included:

- Tweed River Committee
- Tweed Coastal Committee
- Koala Beach Wildlife Habitat Management Committee
- Tweed Coast Dunecare Advisory Committee

The community interests on these committees have an important role in directing and advising Council (and other natural resource managers) on environmental projects and expenditure as well as improving communication with the broader community including volunteers.

Refer to [Catchment Management](#) for more detail on these committees.



Environmental Education Officer

Responsibility: Waste Management Unit
Status: Ongoing

In 2008 Council created a full time position to implement environmental education initiatives within the shire, particularly in the areas of waste management, water efficiency, waterway health, biodiversity conservation, floodplain management and sustainability and climate change.



Energy Monitoring Equipment for High Schools

Responsibility: NRM Unit – Sustainability Program
Status: Due for completion late 2008

In 2008 every high school between Clarence Valley in the south, Kyogle Shire in the west and Tweed Shire in the north was offered free energy monitoring equipment and associated support material to enable students to conduct energy and greenhouse gas audits of their schools. Known as the Power to Make a Difference Program the initiative was funded through a \$40,000 donation from Easy Being Green Pty/Ltd.



Sustainable Living Centre

Responsibility: Waste Management Unit, Water Unit, NRM Unit
Status: Ongoing

In 2008 Council opened a purpose built environmental education centre at the new Kingscliff Sewage Treatment Plant. Known as the Sustainable Living Centre the facility is set to become Council's environmental education hub, housing interactive exhibits, product showcases and a state of the art training room. The aim of the centre is to help to raise awareness about local and planetary environmental issues while providing practical advice on how to become part of the solution.



Extension and Advocacy

Responsibility: NRM Unit
Status: Ongoing

The 2007 formation of Council's Natural Resource Management Section has strengthened the organisations capacity to respond to enquiries from individuals and community groups, provide specialist environmental advice to other sections of council, liaise and coordinate environmental programs with state and federal agencies, seek external funding and facilitate NRM partnerships and promote sound management of natural resources



DECC Residential Rebate Program

Responsibility: NSW Department of Environment & Climate Change

Status: Up for review June 2009?

In 2007 and 2008 Council approached the NSW Department of Environment and Climate Change to run a series of advertisements and editorials in Council's weekly newsletter (Tweed Link) to promote the DECC Residential Rebate Program. The rebate program offers households up to \$1,500 for rainwater tanks, up to \$1,200 for solar hot water and up to \$300 for ceiling insulation. In March 2008 the Tweed Local Government area rated third highest in the state for the number of rebates claimed for solar hot water system and the highest in the state (outside of Sydney metropolitan areas) for rainwater tank rebates.



Climate Action Tips

Responsibility: NRM Unit – Sustainability Program

Status: Completed in 2008

In 2007 and 2008 Council ran a series of climate action tips in the Tweed Link to raise awareness about climate change and the role we all must play in helping to reduce greenhouse gas emissions. Topics included carbon foot-printing, energy efficiency, water efficiency, waste management, active transport, rebate opportunities, food miles, carbon sequestration and biodiversity conservation.



Showerhead and Light Globe Giveaway No. 3

Responsibility: NRM Unit – Sustainability Program

Status: Ongoing

In 2007, Council partnered with Fieldforce Environmental to offer households an improved version of previous showerhead and light globe giveaways. Still funded via the NSW Greenhouse Gas Abatement Scheme (GGAS), the Enviro Saver Program included free installation of all showers and incandescent lights within the home. The installation component of the program was required because GGAS evaluation of giveaways throughout the state determined that a large number of lights and showers were not being installed by the householder. To maximise water saving benefits Council also asked Fieldforce to install an aerator on the kitchen tap and a flush converter in single flush toilets. This part of the program is funded by Council's Water Unit.

The Retrofit Program is ongoing with more than 44% of shire households taking advantage of the giveaway and installation initiatives as of June 2008. Refer to [Response Indicators](#) for details of current participation rates, greenhouse gas savings and water savings.



Tweed Naturally Art Awards

Responsibility: NRM Unit – Biodiversity Program

Status: Ongoing

In 2007, Council in conjunction with Wildlife Art Australia helped establish the Tweed Naturally Art Awards to focus community attention on the unique and internationally significant plants, animals, habitats, natural landscapes and conservation issues of the Tweed region. The event is an annual art exhibition and the publication of a detailed catalogue which becomes a permanent record of the

artworks and accompanying educational descriptions. Tweed Landcare Inc also benefits from the voluntary donations from the sale of works. The awards are run as part of the annual Tweed River Festival.



Environmental Education Strategy

Responsibility: NRM Unit – Sustainability Program, Waste Management Unit

Status: Due for completion in 2008.

In 2007, Council commenced development of an Environmental Education Strategy to assist with the effective allocation of educational resources and to progress towards the long term vision for environmental education and community capacity building.



Volunteers Policy

Responsibility: OHS Unit

Status: Ongoing

In 2007, a Volunteers Policy was developed to help in overcoming the barriers to volunteerism, such as training requirements and a lack of resources for materials.



Water-Wise Schools Program

Responsibility: NRM Unit – Sustainability Program, Water Unit

Status: Ongoing

In 2007, Council commenced a program that provides assistance for schools to participate in the [Water-Wise Schools Program](#), an initiative aimed at promoting a greater respect for water in terms of its ecological values and human uses.



Showerhead and Light Globe Giveaway No. 2

Responsibility: NRM Unit – Sustainability Program

Status: Completed in 2006

In 2006, Council joined with six other north coast councils to promote a showerhead and light globe giveaway being run by Easy Being Green Pty/Ltd. The giveaway kit consisted of one water saving showerhead and six energy saving light globes. For every kit given away, Easy Being Green donated \$2 towards climate change education in the region. 22,000 kits were given away in the region (6,968 in the Tweed) and \$44,000 was raised for climate change education. The funds are managed by the Northern Rivers Group on Energy, with a portion being used supply and install energy monitoring equipment in high schools throughout the region. Refer to Energy Monitoring Equipment in Local Schools (above) for more information on this initiative.



Tweed Community Catchment Nursery

Responsibility: NRM Unit – Waterways Program

Status: Ongoing

In 2006, Council established a plant nursery to supply local native species for riparian revegetation projects in the shire. Located at the Uki Wastewater Treatment Plant the nursery propagates locally collected seed for use by the Riparian Projects Team and local Landcare groups.

The community nursery also acts as a training venue for community members interested in learning plant production techniques.



Recycle Right DVD

Responsibility: Water Management Unit

Status: Ongoing

In 2007 Council produced an educational DVD titled 'Recycle Right'. The DVD aims to dispel some of the myths about recycling, while promoting the three R's "Reduce, Reuse and Recycle. A key feature of the DVD is a behind the scenes look at what happens to domestic recyclables after they are emptied into the rubbish truck. The DVD has been supplied to all schools in the shire and upon request to community groups or residents wanting to know more about waste management in the Tweed Shire.



Catchment Activity Model

Responsibility: NRM Unit – Sustainability Program

Status: Ongoing

In 2006, Council created a z-scale working model of the Tweed catchment. Housed in a box trailer, the [Catchment Activity Model](#) (CAM) visits local schools and festivals to help people:

- Develop an appreciation for how everything in the environment is interconnected.
- Understand how their own actions and those of others affect the environment.
- Understand the importance of behaviour change to help protect the environment.
- Identify ways they can alter their own behaviours to help protect the environment.

For more information, including heaps of photos visit www.tweed.nsw.gov.au 'environment' 'educational resources'.

Refer to [Response Indicators](#) below for statistics on CAM demonstrations.



Waters of the Tweed Booklets

Responsibility: NRM Unit – Waterways Program

Status: Completed in 2005

In 2005, the fourth in a series of environmental education booklets was produced. The aim of the Waters of the Tweed Booklets is to help inform the Tweed community about the state of the estuarine reaches of the Tweed and Rous River systems.



Showerhead and Light Globe Giveaway No. 1

Responsibility: NRM Unit – Sustainability Program

Status: Completed in 2005

In 2005, Council partnered with NECO Pty Ltd to giveaway 2,000 energy and water saving kits to shire residents. The kits comprised of one water saving showerhead and five energy saving light globes. The kits were funded via the NSW Greenhouse Gas Abatement Scheme and were given away in less than two days. To be eligible for the kits, residents were required to exchange their old showerhead for the new one. This was done to increase the likelihood of installation. The results of the Sustainable Households Project (see below) was used to promote the giveaway and dispel the misconception that water saving showerheads don't deliver a good quality shower. Lessons learnt from the giveaway informed future efforts to promote household water and energy efficiency in the shire.



Sustainable Households Project

Responsibility: NRM Unit – Sustainability Program

Status: Completed in 2005

In 2005, Council, in partnership with the NSW Department of the Environment and Country Energy implemented a case study project to raise awareness about simple actions to reduce a household carbon footprint. Twenty-three local households participated in a year long case study to quantify the water, energy, greenhouse gas and monetary savings achieved through the use of three-star water efficient showers, compact fluorescent light globes and green power electricity. To view the results of the project go to www.tweed.nsw.gov.au 'your environment' 'climate change'.



Tweed / Kenya Mentoring Program

Responsibility: NRM Unit – Waterways Program, Water Unit

Status: Ongoing

In 2003, the Tweed Community, under the leadership of Tweed Shire Council, initiated the Tweed Kenyan Mentoring Program. The program aims to improve community and environmental health for Kenyan families, by increasing access to safewater and sanitation, while building individual skills and capacity and maintaining bonds of friendship and support with the Tweed Community.

The program is funded via a voluntary wage deduction by a number of Tweed Shire Council staff and supplemented with donations by local businesses and community groups to make an annual project budget. The budget supports employment of one full-time staff member who coordinates a range of projects from an office in Kiberia, a township on the outskirts of Nairobi.

In 2007 a Council officer travelled to Kenya to oversee the construction of a solar powered water treatment facility for the rural community of Obambo-Kadenge. In November 2008 the nearby community of Ohaya will host another Council officer who will oversee the construction of a second water treatment facility.

The construction of water treatment facilities provides access to something most of us take for granted - clean and safe drinking water. Increasing access to safe water has an immediate benefit to community health by reducing exposure to diseases such as typhoid, cholera and polio and dysentery. Due to severe poverty, villagers cannot afford to boil or treat their water in any way, and so as well as walking long distances to collect it, they are affected by contaminants from cattle, agriculture and domestic runoff. Safe water immediately decreases infant mortality and improves community productivity by reducing household expenditure on medicines and allowing children more opportunity to attend school. To find out more about the Tweed / Kenyan Mentoring Program visit www.tweed.nsw.gov.au/kenya



Directory of Community Resources

Responsibility: Community & Cultural Services Unit
Status: Ongoing

In 2003, Council established a web based directory of local community groups and volunteer organisations. The [Directory of Community Resources](#) is a good starting point for anyone wishing to engage with community groups in the local area, such as Landcare or ratepayer associations.



Tweed Shire Council Website

Responsibility: Information Technology Unit, NRM Unit – Sustainability Program
Status: Ongoing

In 2001, Council began to actively promote local environmental management via its website. A wide range of information on environmental issues and responses is provided on the council website to inform and motivate the community to participate in the preservation and enhancement of the shires natural assets. www.tweed.nsw.gov.au



Cigarette Butt Litter Prevention

Responsibility: NRM Unit – Sustainability Program
Status: Ongoing

In 2001, Council commenced a program to educate cigarette smokers about the cumulative impact of cigarette butt litter on local waterways. Initiatives include the free supply of portable ashtrays to smokers (distributed through local shops such as cafés and tobacconists) the installation of 'bin ya butts' ashtrays at butt litter hotspots throughout the shire (target areas include hotels, taxi ranks etc) and media campaigns (such as street banners, bus shelter signage and print media).



Stormwater Education Assessment (SEA) Program

Responsibility: Building & Health Unit
Status: Completed in 2004

In 2001, a three year program was implemented across Tweed, Byron and Ballina areas to educate businesses about the impact of stormwater pollution on waterway health. Through education and site assessments the program provided businesses with specific operational improvements to reduce pollutants entering the stormwater system.



Tweed River Festival

Responsibility: NRM Unit

Status: Ongoing

In 2001, Council established the annual Tweed River Festival to raise awareness about the important role that the shires waterways play in our culture, economy and ecology. The week long festival is usually held in October each year and culminates with a lantern parade along the waters edge at Jack Evans Boat Harbour. Other activities include a networking and information exchange day known as the Catchment Catch-up, the Tweed Naturally Art Awards and guided canoe tours of the Tweed River and coastal creeks. In 2008 a paddle board race was also added to the event list.



World Environment Day

Responsibility: NRM Unit

Status: Ongoing

In 2000, Council and a number of local community groups established the annual World Environment Day Celebration for the shire. The event is held at the beginning of June each year and seeks to raise awareness about local environmental issues and the role the community can play in helping to address them.



The Tweed Shire Resource Room

Responsibility: Water Unit, NRM Unit

Status: Ongoing

In 1998, Council created a resource room to house a wide range of environmental education material including posters, activity books, information sheets and videos. The Resource Room is located in the Murwillumbah Library and is open to teachers, students and the general public each Tuesday from 3pm to 5pm. For more information visit www.tweed.nsw.gov.au 'environment' 'educational resources'.



Phosphorous Reduction Campaign

Responsibility: Building & Health Unit

Status: Completed in 2001

Between 1996 and 2001 Council ran a community awareness and education program designed to stem the threat and cost of blue - green algal blooms and other nuisance plant growth in waterways. The program focused on the need for responsible use of water and care for waterways particularly through the reduction of phosphorous input to sewerage and stormwater systems from detergents and household cleaning agents.



Landcare Support

Responsibility: NRM Unit

Status: Ongoing

Council and Tweed Landcare Inc. have been collaborating since 1997 to help conserve and enhance the local environment through resource sharing, networking and liaison and the establishment of project partnerships relating to on-ground works, support for NRM volunteers and NRM capacity building throughout the shire.



Stormwater Pollution Information Sheets

Responsibility: NRM Unit – Waterways Program

Status: Completed in 1996

In 1996, Council created a set of information sheets to inform the Tweed community about stormwater pollution issues and solutions. Sheets were produced to provide advice for gardeners, builders, owners of septic tanks and users of household cleaners and chemicals. The sheets are still available on the Council website.



School Excursions & Talks

Responsibility: NRM Unit – Sustainability Program, Water Unit, Waste Management Unit

Status: Ongoing

In the late 1990's Council began to develop a range of excursions for local schools to learn more about how their local area is managed. Excursions include visits to the local landfill, Kingscliff Wastewater Treatment Plant, Bray Park Water Treatment Plant and the Sustainable Living Centre. School talks are provided upon request and cover issues such as climate change, biodiversity, waste management and the natural and urban water cycle.

Refer to [Response Indicators](#) for statistics on school excursions and visits.



Domestic Waste Management Education

Responsibility: Waste Management Unit

Status: Ongoing

In 1991, to compliment the introduction of a curbside collection recycling service Council began to educate shire residents about waste management at home. Recent resources and initiatives include the [Household Recycling Guide](#), [Household Composting Guide](#), 3D model of a working compost bin, cost price compost bins and worm farms, and green waste collection bins. Refer to the [Solid Waste Management Indicators](#) to see how these resources are helping to manage waste generation, divert waste from landfill and increase recycling rates.



Local Government Week – Bus Tours

Responsibility: Office of the General Manager

Status: Ongoing

In the early 1990's Council created an annual bus tour to raise awareness about local infrastructure, issues and projects. The tour is free to shire residents and runs in July / August each year.



National Water Week

Responsibility: Water Unit, NRM Unit – Sustainability Program

Status: Ongoing

Since the early 1990's Council has encouraged local participation in National Water Week by running a range of activities (e.g. poster competitions) for local schools and TAFE campuses. Artwork produced through these activities is often used in Council's water education campaigns. Most recently, entries have been used to generate stickers and information cards for hotel bathrooms.



Response Indicators

Indicator:	05/06	06/07	07/08
Council's Environmental Education Services			
No. of Catchment Activity Model Demonstrations	14	20	11
No. of School Students (Excursions) to Council Facilities	363	560	957
No. of Information Sessions at Local Schools / TAFE	N/A	Approx 25	Approx 10
No. of Information Sessions for Business / Industry	N/A	2	1
No. of Information Sessions for Community Groups	Approx 4	7	5

Source: TSC Community & Natural Resources Division

Indicator:	04/05	05/06	06/07	07/08	Total
Household Retrofits					
No. of Households Retrofitted	560	3,208	8,635	4,036	16,439
3 Star WELS Showerheads	1,400	8,021	9,372	3,638	22,431
3 Star WELS Tap Aerators	0	0	1,771	836	2,607
Flush Converters for Single Flush Toilets	1,000	500	142	214	1,856
Compact Fluorescent Light Globes	10,000	65,274	170,803	73,562	319,639
Annual Water Savings – Million Litres (estimated)	11	64	207	85	367
Annual GhG Savings – Tonnes CO ²	560	3,208	8,635	4,036	16,439

Source: Tweed Shire Council Natural Resource Management Unit

Note: 04/05 & 05/06 retrofits were product giveaways only, so water and GhG savings have been calculated using an assumed 40% installation rate. Retrofits after 05/06 included installation, so a 100% installation rate has been assumed to calculate savings.

Indicator: Water Tank Rebates	07/08
No. of State Government Rainwater Tank Rebates received in the Tweed Shire	241
Value of State Government Rainwater Tank Rebates received in the Tweed Shire	\$126,250

Source: NSW Department of Environment and Climate Change

Related Topics

[Human Settlement](#)

[Catchment Management](#)

[Atmosphere](#)



INTRODUCTION

Catchment management is reported under three themes:

1. [Waterway Health.](#)
2. [Bushland and Biodiversity.](#)
3. [Soils.](#)

This approach is purely for reporting purposes. It is important to note that an integrated approach to catchment management is being progressively implemented by a number of organisations including, but not limited to:

- Northern Rivers Catchment Management Authority (NRCMA)
- Tweed Shire Council - Natural Resource Management Unit
- Council-supported Environmental Committees
 - - Tweed River Committee
 - - Tweed Coastal Committee
 - - Koala Beach Wildlife Habitat Management Committee
 - - Tweed Coast Dunecare Advisory Committee
- Tweed Landcare Inc
- Far North Coast Weeds
- NSW Department of Environment and Climate Change (DECC)
- NSW Department of Primary Industries (DPI)

Northern Rivers Catchment Management Authority

The Northern Rivers Catchment Management Authority (NRCMA) is one of thirteen CMAs established across NSW in January 2004. It is a statutory authority with a Board that reports directly to the Minister for the Climate Change, Environment and Water.

CMAs were established to engage regional communities in natural resource management (NRM).

A key responsibility of the NRCMA is to facilitate, together with the Northern Rivers community, the development and implementation of a 10-year Catchment Action Plan. The Northern Rivers CAP is a strategic document for the sustainable management of natural resources within our catchments. It contains targets that guide NRCMA investment over the next decade. For more information visit www.northern.cma.nsw.gov.au

Tweed Council Natural Resource Management

The Tweed Shire Council Natural Resource Management (NRM) Unit was created in 2007 as part of a Council restructure. The NRM Unit is responsible for managing, rehabilitating and conserving the natural environment of the Tweed Shire. This involves developing management plans and implementing projects, as well as providing advice on environmental policies and procedures.

The NRM Unit has five key program areas:

1. Biodiversity
2. Waterways
3. Coastline
4. Floodplains & Sustainable Agriculture
5. Sustainability & Climate Change

Tweed River Committee

The Tweed River Committee was formed in 1992. It comprises of Community Representatives, State Government Agencies, Councillors and Tweed Shire Council staff. The committee meets every two months and advises Council on issues related to the implementation of the Tweed Estuary Management Plan and Tweed Vegetation Management Strategy. Projects which address issues such as water quality, river bank stability, recreational use and education are initiated by the committee.

Tweed Coastal Committee

The Tweed Coastal Committee was formed in 1995. It comprises of representatives from each of the Tweed Coast villages, State Government Agencies, Councillors and Tweed Shire Council staff. The role of the committee is to oversee implementation of projects protecting the three coastal estuaries of the Tweed, and comprehensive coastal issues such as weed control. The coastal committee advises Council on its management of coastal assets and implements projects identified in the Tweed Coastal Estuaries Management Plan.

Koala Beach Wildlife Habitat Management Committee

The Koala Beach Estate is a 500 lot residential development located between Pottsville and Hastings Point. The estate covers about 380ha of which nearly 300ha has been set aside for environmental protection. Residents of the estate contribute a special environmental levy which is used to implement a number of management plans and development consent conditions aimed at the ongoing protection, management and restoration of the estate's considerable environmental values. These works are directed by the Koala Beach Wildlife Habitat Management Committee which meets bi-monthly and consists of representatives of Council, the Australian Koala Foundation and local residents.

Tweed Dunecare Coordinating Committee

The Tweed Dunecare Coordinating Committee formed in the early 1990's. It is a sub-committee of the Tweed Coastal Committee and provides coordination and assistance to Tweed Coast Dune Care and Coast Care groups.

Tweed Landcare Inc.

Tweed Landcare Incorporated formed in 1997. It is a non-profit community organisation working in the Tweed catchment to achieve long-term ecological sustainability. They support Landcare, Bushcare, Rivercare and Coastcare projects within the community through education, advice, on-ground participation, networking, consultation and assistance with access to resources.

To get involved, or for information on catchment management initiatives being undertaken by Tweed Landcare visit www.tweedlandcare.org.au

Far North Coast Weeds

Far North Coast Weeds (FNCW) is a Local Control Authority under the Noxious Weeds Act, 1993 and is responsible for administering the Noxious Weed Act for the Ballina, Byron, Kyogle, Lismore City, Richmond Valley and Tweed Councils. Its vision is to protect and enhance the environment on the Far North Coast by managing the impact of noxious weeds on all classes of land within the

County District and actively encourage best practice techniques and land use. For more information visit www.fncw.nsw.gov.au

NSW Department of Primary Industries

NSW Department of Primary Industries acts in partnership with industry and other public sector organisations to foster profitable and sustainable development of primary industries in New South Wales. The department was formed in July 2004 with the amalgamation of Mineral Resources NSW, NSW Agriculture, NSW Fisheries and State Forests NSW. For more information visit www.dpi.nsw.gov.au

WATERWAY HEALTH



CONDITION

At a Glance

- The Tweed catchment is both rugged and compact. It covers an area of approximately 1100 km². It is comprised of numerous smaller sub-catchments.
- The river has three major arms, the Rous, Oxley and Tweed.
- The **Rous River** joins the Tweed River at Tumbulgum in the upper estuary, with the Oxley joining the Tweed further upstream at Byangum.
- Terranora and Cobaki Broadwaters are large shallow tidal wetlands in the lower estuary. They join the main river via Terranora Inlet, near Tweed Heads. The broadwaters are fed by Bilambil, Duroby and Cobaki Creeks.
- The Tweed River discharges into the Pacific Ocean at Point Danger.
- **Cudgen Creek** has its mouth near the township of Kingscliff. It follows a meandering course, 9.4km in length from Cudgen Lake at Bogangar.
- **Cudgera Creek** meets the sea at Hastings Point. It has a reasonably straight channel and follows a 3.5km course north from Pottsville. It has three major branches, Christies Creek opposite the mouth, Palmvale Creek which branches off at North Pottsville, and Cudgera Creek continues to the south. Cudgera Creek has a relatively small catchment of approximately 50km².
- **Mooball Creek** is the largest and most southern of the three creeks. The waterway runs parallel to the coastal dunes, extending approximately 9km south from its mouth at Potts Point. Mooball Creek has a catchment of approximately 117km².
- **Riparian Vegetation** Refer to the [Bushland and Biodiversity](#) section of this report for details on the type and condition of riparian vegetation in the shire.
- **Water Quality** in all of the Shires waterways is impacted by runoff from adjacent landuses, and in some sections of the river, the discharge of treated sewage effluent.

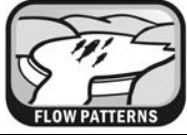








Waterways and Sub-catchments



<p>Oxley River Tributaries Tyalgum Creek (f) North Pumpenbil (f) South Pumpenbil (f) Brays Creek (f) Back Creek (f) Hopping Dicks Creek (f) Wollumbin Creek (f)</p> <p>Rous River Tributaries Pat Smith Creek (f) Numinbah Creek (f) Couchy Creek (f) Hopkins Creek (f) Jacksons Creek (f) Crystal Creek (f) Nobbys Creek (f) Dungay Creek (c) Mayal Creek (c) Dulguigan Creek (c) Wobil Creek (c)</p> <p>Coastal Waterways Cudgen Lake (e) Cudgen Creek (e) Cudgera Creek (e) Mooball Creek (e)</p>	<p>Tweed River Tributaries Kunghur Creek (f) Perch Creek (f) Byrill Creek (f) Commissioners Ck into Doon Doon Ck (f) Chowan Ck into Rolands Ck (f) Smiths Creek (f) <i>Oxley River (f)</i> Dunbible Creek (c) Condong Creek (c) Mayal Creek (c) <i>Rous River (c)</i> Leddays Creek (c) <i>Terranora Broadwater / Inlet (e)</i></p> <p>Terranora Broadwater Tributaries Bilambil Creek (c) Duroby Creek (c) <i>Cobaki Broadwater (e)</i></p> <p>Cobaki Broadwater Tributaries Cobaki Ck into Pigabeen Ck (c)</p> <p>Southern Waterways Crabbes Creek (f) Burringbar Creek (f)</p>	<p>f = freshwater e = estuarine c = combined (i.e. freshwater and estuarine sections within the same waterway)</p>
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PRESSURE

At a Glance

Key Pressures on Waterway Health include:	Pressure Icon
Barriers to fish passage (weirs, road crossings and floodgates).	
Acid sulphate soil runoff (low pH and metals discharging to waterways).	
Invasive environmental weeds in riparian vegetation.	
Loss of riparian vegetation and catchment clearing.	
Point source pollution (sewage effluent discharges)	
Diffuse source pollution (stormwater, agricultural runoff, failing on-site sewage management systems, erosion of topsoil).	
Stock access to waterways leading to erosion and fouling of water.	
River water extraction and alteration of natural flow regimes.	
Stream bank erosion from high flow events and boat wake.	

Pressure Indicators

Indicator: Exceedence Percentages of Freshwater Objectives (Upper Tweed River)

Parameter	pH	Dissolved Oxygen	Suspended Solids	Total Phosphorus	Total Nitrogen	Chlorophyll a	Faecal Coliforms
Units:	pH	mg/L	mg/L	mg/L	mg/L	ug/L	No/100mL
Freshwater Quality Objectives	6.5 to 9	> 6	< 20	<0.10	< 0.75	< 10	< 150

2001/02	0%	29.5%	4.9%	12.3%	10.7%	0%	43.5%
2002/03	0%	5.7%	2.8%	11.4%	8.6%	N/A	25.7
2003/04	0%	0%	5%	5%	22%	N/A	39%
2004/05	0%	0%	0%	0%	7%	N/A	33%
2005/06	0%	20%	7%	7%	0%	N/A	13%
2006/07	10%	10%	3%	3%	0%	N/A	12.5%
2007/08	0%	0%	0%	8.9%	0%	0%	34.0%

Indicator: Exceedence Percentages of Estuarine Water Objectives

(Chinderah Reach, Tweed Estuary, Rous River)

Parameter:	pH	Dissolved Oxygen	Suspended Solids	Total P	Total N	Chlorophyll a	Faecal Coliforms
Units:	pH	mg/L	mg/L	mg/L	mg/L	ug/L	No/100mL
Estuarine Water Quality Objectives	7 to 9	> 6	< 10	< 0.05	< 0.5	< 10	< 14 raw shellfish < 150 primary contact
2001/02	0%	15%	5.1%	12.1%	15.4%	N/A	31.4% raw shellfish 7.3% primary contact
2002/03	0%	22.8%	5.3%	19.3%	21%	N/A	26.3% raw shellfish 7% primary contact
2003/04	4.3%	24.6%	10%	31.9%	24.6%	N/A	31.9% raw shellfish 5.8% primary contact
2004/05	0%	17%	55%	47%	7%	N/A	30% raw shellfish 6% primary contact
2005/06	0%	42%	58%	56%	9%	N/A	38% shellfish 0% primary contact
2006/07	6%	35%	29%	59%	0%	N/A	53% shellfish 0% primary contact
2007/08	0%	28.1%	53.1%	37.5%	31.3%	12.5%	35.7% shellfish 14.3% primary contact

Source: Tweed Shire Council Water Unit

Indicator:

Number of State Government Licenses for Discharges to Waterways

Refer to <http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx>

Indicator:	06/07	07/08
Water Pollution Complaints by Type		
Erosion and Sedimentation	2	2
Sewerage Overflows	0	1
Septic Tanks	1	2
Unidentified Scum Layer	6	0
Unidentified Plume / Leachate	2	0
Dead Animals (including fish kills & marine life)	1	0
Dewatering – discharge to watercourse / stormwater system	7	0
Commercial / Industrial discharges to watercourse / stormwater system	3	4
Acid Sulfate Soils Runoff	1	1
Litter	0	0
Other	3	3
TOTAL	26	13

Source: Tweed Shire Council Dataworks_Water Pollution & EPA pollution hotline. *Excludes complaints relating to town water supply.

RESPONSE

Each response seeks to address one or more identified pressure. Responses are listed in order from newest to oldest. This format gives regular readers of the SoE Report easy access to the most recent initiatives while allowing infrequent readers to view a catalogued history of responses.

Education & Capacity Building

Refer to [Environmental Education and Capacity Building](#) for details of waterway health initiatives that have a specific education and/or capacity building focus.

Water Quality Monitoring / Data Assessment Program

Responsibility: NRM Unit – Waterways Program

Status: Due for completion in 2009.

In 2007 Council initiated a comprehensive review of 7 years worth of water quality monitoring results in the Tweed estuary. This work will be used to identify key issues and develop targeted responses.



Fish Passage Barrier Removal

Responsibility: NRM Unit – Waterways Program

Status: Ongoing

Since 2007 Council has been working with the NSW Department of Primary Industry's Fisheries Management to remove unused waterway structures that obstruct fish movement (e.g. old road crossings, weirs, log sills). The program forms part of a larger state wide approach coordinated by NSW Fisheries and also ties into Council's Cobaki and Terranora Broadwater Management Plan.

A study performed by NSW Fisheries revealed a total of 89 fish-passage obstructions through the Shire, with 15 of these identified as a high priority for removal. Council aims to remove one fish-passage obstruction per year and ensure any new culverts constructions are fish friendly.

Structures already removed through the program include an old crossing at Rowlands Creek, an unused weir at Durroby Creek and structures at Stokers Siding, Burringbar and Crystal Creek.



River Health Grants Scheme

Responsibility: NRM Unit – Waterways Program

Status: Ongoing

In 2007 Council developed a river health grants scheme to promote and support riparian land management in priority sub-catchments within the Shire. Council provides subsidies to landholders to undertake works on their property including water troughs, fencing off creek banks from stock access, weed management and revegetation. Refer to [Response Indicators](#) for results of the scheme to date.



Riverbank Policy

Responsibility: NRM Unit – Waterways Program

Status: Ongoing

In 2007 Council adopted a policy to manage riverbank stabilisation works in accordance with the Tweed River Estuary Bank Management Plan, November 1998.



Byrill Creek Sub-catchment Riparian Rehabilitation Project

Responsibility: NRM Unit – Waterways Program

Status: Ongoing

In 2006 Council sought to conserve and enhance one of the best examples of riparian vegetation in the shire by funding bush regeneration contractors to undertake weed control works on seventeen properties in the Byrill Creek Sub-catchment, which equates to fourteen kilometres of stream length and forty-eight hectares of weed suppression.



Bray Park Weir Pool Riparian Management

Responsibility: NRM Unit – Waterways Program

Status: Ongoing

In 2006 Council sought to enhance riparian vegetation and waterway health by restricting stock access to the weir pool where the town water supply is extracted from. Working with the landholder, council has provided infrastructure to water cattle away from the river banks, allowing the river to be fenced off and revegetated with native species. A 1.2 km section of the Tweed River will be rehabilitated through this project. Work is continuing in this area in 2008/09.



Oxley Cove Peninsular Vegetation Rehabilitation Works

Responsibility: NRM Unit – Waterways Program

Status: Ongoing

In 2006 Councils Riparian Projects Team commenced rehabilitation works at the eastern end of Oxley Cove peninsular, on the banks of the Tweed River at Banora Point. Wetland and swamp oak vegetation communities are being cleared of weeds to allow natural regeneration of native plants and preservation of fauna habitat. This area is one of the largest stands of publicly owned native vegetation in the lower estuary. A significant objective of Councils work in the area is to reduce illegal rubbish dumping and destructive vehicle use in the area by controlling access. Work is continuing in this area in 2008/09.



Tweed Community Catchment Nursery

Responsibility: NRM Unit – Waterways Program

Status: Ongoing

In 2006 Council established a plant nursery to supply local native species for riparian revegetation projects in the shire. Located at the Uki Wastewater Treatment Plant the nursery propagates locally collected seed for use by the Riparian Projects Team and local Landcare groups.

The community nursery also acts as a training venue for community members interested in learning plant production techniques.



Knox Park Artificial Wetland

Responsibility: NRM Unit – Waterways Program

Status: Ongoing

In 2005 Council constructed a small artificial wetland at the inlet and outlet points of Knox Park Pond in Murwillumbah. The aim of the wetland is to improve the quality of stormwater runoff being discharged into the Tweed River.



Lower Estuary River Bank Stabilisation

Responsibility: NRM Unit – Waterways Program

Status: Completed in 2005

In 2005 Council completed major river bank stabilisation projects at Chinderah and Oxley Cove Canal Estate, Banora Point. Approximately 200m of eroding riverbank was armoured with rock.



Tyalgum Weir Pool Revegetation

Responsibility: NRM Unit – Waterways Program

Status: Ongoing

In 2005 Council began work in conjunction with Tweed Landcare to revegetate areas adjacent to the weir pool at Tyalgum. Major plantings take place during the annual Wollumbin Festival, with around 1,000 trees being planted each year. This project will improve the quality of riparian habitat in the area and is a step towards managing water problems which are occasionally experienced in the Tyalgum Weir pool.



Floodgate Modifications

Responsibility: NRM Unit – Sustainable Agriculture Program

Status: Ongoing

In 2004 Council and Tweed Valley cane farmers began floodgate modifications to help improve water quality in cane drains and associated waterways. The project involves the installation of tidal

floodgates on high priority cane drains on the coastal floodplain to improve tidal flow and fish passage. Refer to [Response Indicators](#) in the [Soils](#) section for the number of floodgates modified to date.



Riparian Projects Team

Responsibility: NRM Unit – Waterways Program

Status: Ongoing

In 2004 Council established a work team consisting of four full time employees to help improve the health of riparian vegetation in the shire through weed management and revegetation projects in key locations.



Tweed Coast Estuaries Management Plan

Responsibility: NRM Unit – Waterways Program

Status: Ongoing

In 2004 a management plan for the Tweed Coast estuaries of Cudgen, Cudgera and Mooball Creeks was completed. A key aim of this document is to conserve and enhance the ecological and recreational values of these small barrier estuaries.



Estuarine Vegetation Monitoring Program

Responsibility: NRM Unit – Waterways Program

Status: Ongoing

In 2003, following the identification of a number of monitoring requirements for the [Tweed River Entrance Sand Bypass Project](#) a study was commissioned to map mangroves, saltmarsh and seagrass communities within the lower Tweed estuary using aerial photographs. The monitoring results are compared to baseline data collected prior to the bypassing system operation.



Lavender Creek Riparian Vegetation Project

Responsibility: NRM Unit – Waterways Program

Status: Ongoing?

In 2003 stormwater treatment systems and riparian rehabilitation were undertaken in Lavender Creek, Murwillumbah to reduce the impacts of urban stormwater runoff into the Tweed River.



Tyalgum Sewage Treatment Plant Riparian Rehabilitation Project

Responsibility: NRM Unit – Waterways Program

Status: Ongoing

In 2002 Council's Riparian Projects Team began rehabilitating a 1.6 km long section of Pumpenbil Creek adjacent to the site of the Tyalgum STP. This project has proven very challenging with harsh conditions (e.g. frost) taking a severe toll on seedlings. Drought, flood, heat, damage by wallabies and stock and most recently severe frost have meant that progress at this site has been slower than at most other riparian projects. Progress is continuing however, with a total of 2200 trees being established this season, and weed control complete through approximately 500 metres of the site.



Wastewater Treatment and Disposal

Responsibility: Water Unit

Status: Ongoing

Refer to the [Wastewater Management](#) section of this report for actions and outcomes that seek to reduce the impacts of Sewage Treatment Plant discharges and failing on-site sewage management system on waterway health.



Stormwater Quality Improvement Devices

Responsibility: NRM Unit – Waterways Program

Status: Ongoing

Stormwater Quality Improvement Devices (SQID's) continue to be installed on high priority stormwater outfalls. To date, SQID's have been installed at the following locations:

- Tweed Heads South industrial and commercial area. In 2001 a litter boom and large gross pollutant trap were placed on the open channel that drains into Ukerebagh Passage, which is an important estuarine wetland.
- Duffy Street, Tweed Heads South. In 2002 a litter trap and artificial wetland were constructed on open stormwater drain that drains into Ukerebagh Passage.
- Knox Park Pond and Lavender Creek, Murwillumbah. In 2003 riparian plantings occurred along Lavender Creek and wetland plantings at the inlet and outlet points of Knox Park Pond.
- Cudgen Creek, Kingscliff. In 2001 two litter traps were installed on stormwater lines that drain into Cudgen Creek at Kingscliff.
- Commercial area, Kingscliff. In 2003 litter traps were installed in the gully pits along the main commercial area of Kingscliff.
- Cabarita Beach. In 2006 ten litter traps were installed in the stormwater system at Cabarita Beach.



On-Site Sewage Management Strategy

Responsibility: Building & Health Unit
Status: Ongoing

In 2002 Council adopted an On-Site Sewage Management Strategy and began implementation of an associated program to improve the management of waste-water treatment devices in un-sewered areas.



Stormwater Treatment Devices

Responsibility: Planning & Regulation Division
Status: Ongoing

Since April 2000 all new subdivisions and major developments in the shire have been required to install stormwater quality treatment devices in accordance with the Tweed Urban Stormwater Quality Management Plan, 2000. Options include (but are not limited too) artificial wetlands that cover a minimum of 5% of the land to be subdivided, end of pipe stormwater treatment devices and infiltration basins in suitable soil types.



Water Quality Data Base

Responsibility: NRM Unit – Waterways Program
Status: Ongoing

In 2001 Council established a water quality database in order to manage the data collected over many years. The water quality database allows Council to carry out statistical analysis of data, to identify trends in water quality. A comprehensive review of water quality monitoring programs is being conducted in 2008.



Urban Stormwater Quality Management Plan

Responsibility: Engineering & Operations Division
Status: Ongoing

In 2000 an Urban Stormwater Quality Management Plan was prepared for the urban areas of Murwillumbah, Tweed Heads and surrounding areas and Tweed Coast villages. The purpose of the plan is to ensure urban stormwater management is addressed by Council and that issues are incorporated into the planning, budgetary and ongoing works activities of Tweed Shire Council.



Tweed River Estuary Bank Management Plan

Responsibility: NRM Unit – Waterways Program

Status: Ongoing

In 2000 the Tweed River Committee completed a management plan to address the issues of existing and on-going bank erosion and morphological changes of the Tweed Estuary, including the Rous River up to Kynnumboon, Terranora Inlet, Terranora Creek, and the entrance to Cobaki Broadwater.



Cobaki Broadwater Management Plan

Responsibility: NRM Unit – Waterways Program

Status: Ongoing

In 1998 the Tweed River Committee completed a management plan for the Cobaki Broadwater to help conserve and enhance the high scenic and ecological value of the area.



Biodegradable Bait Bags

Responsibility: Building & Health Unit

Status: Completed in 1998?

In 1996 Council organised the world's first trial production of biodegradable plastic bait bags. Approximately 30,000 bags were produced for retail sale in the local area. During 1997, further developments on this project included participation in a joint initiative to lobby the State and Federal Governments. Refer to the 2001 State of the Environment Report for more information on this initiative.



Upper Tweed Estuary Management Plan

Responsibility: NRM Unit – Waterways Program

Status: Ongoing

In 1996 the Tweed River Committee completed a management plan for the Upper Tweed Estuary. The plan was developed to build upon the Lower Tweed Estuary Management Plan.

Terranora Broadwater Management Plan

Responsibility: NRM Unit – Waterways Program

Status: Ongoing

In 1994 the Tweed River Committee completed a management plan for the Terranora Broadwater to deliver an integrated program of measures and works to achieve a range of commercial, recreational and environmental outcomes.

Tweed Estuary Management Studies & Lower Tweed Estuary Management Plan

Responsibility: NRM Unit – Waterways Program

Status: Ongoing

In 1990 the Lower Tweed River Management Studies were initiated by the NSW Department of Public Works Estuary Management Program. These studies set out the intrinsic natural values of the Lower Tweed Estuary reflected by its variety of habitats and wildlife, scenic qualities and various opportunities for recreation. The studies also identified the demands being placed upon the waterway by and expanding population. It was clear that a comprehensive river management plan was required to protect the valuable attributes of the waterway and to ensure present and future generations would be able to enjoy them to the full. The studies culminated in the Lower Tweed Estuary Management Plan (1991) which set out an overall concept for ecologically sustainable management of the waterway. The plan distinguished between the different character of the Main Arm of the Tweed River and the Terranora System.

Management Gap: There is a lack of management plans for waterways in the upper catchment.

Recommendation: Systematically develop management plans for waterways in the upper catchment.

Response Indicators

Indicator: River Health Grants	06/07	07/08
Number of landholders participating in the scheme (cumulative)	15	23
Kilometres of riverbank under improved management (cumulative)	9.7	13

Source: TSC NRM Unit – Waterways Program

Indicator: Barriers to Fish Passage	06/07	07/08
No. of barriers removed to improve fish passage	3	2

Source: TSC NRM Unit – Waterways Program

Indicator: Stock Access to Waterways	06/07	07/08
Length of riverbank fenced to restrict stock access	8.8km	2.7km

Source: TSC NRM Unit – Waterways Program

Additional Response Indicators:

[Acid Sulfate Soil Management Initiatives](#)

[Waste Water Management Indicators](#)

Related Issues

[Built Environment](#)

[Water Supply](#)

[Wastewater Management](#)

[Environmental Education and Capacity Building](#)

[Bushland and Biodiversity](#)

BUSHLAND & BIODIVERSITY

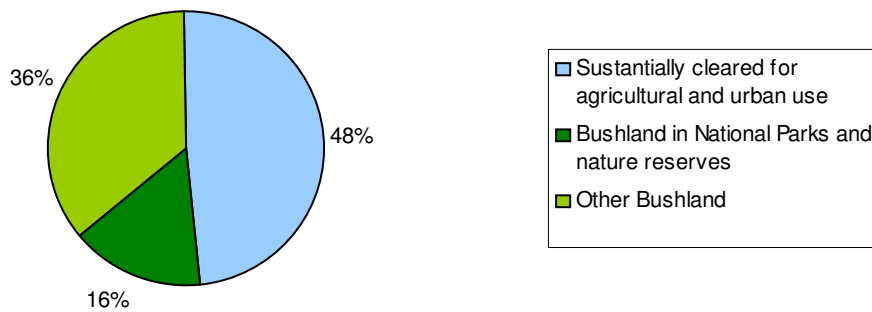


CONDITION

At a Glance

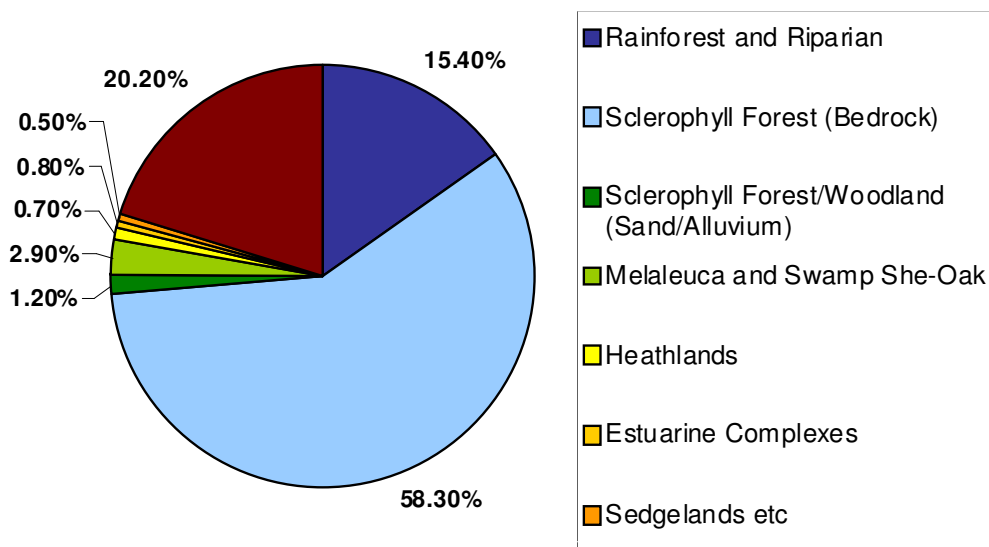
- Tweed Shire occupies a unique and complex landform dominated by the remnant caldera of the Mt Warning shield volcano. It is one of the best and largest examples of its type in the world and is listed on the NSW Geological Heritage Register.
- The Tweed region is regarded nationally and internationally as a significant centre for biodiversity.
- About half of the Shire is covered by bushland (52%, 68571ha). Most of this occurs in steeper areas and outside National Parks. (NPs = 16% area and 29% bush).
- Figures compiled by the Australian Nature Conservation Agencies State of the Environment Report (1996) suggest that the region supports more species of bird, fish, amphibian, and mammals than Kakadu, and a similar numbers of reptiles. Only in the wet tropics are similar numbers of species found within these animal groups.
- There are at least 50 distinct vegetation communities within the Shire. Many of these highly depleted, inadequately conserved or listed as Endangered under the Threatened species Conservation Act 1995 (TSC Act).
- Approximately 80% of all bushland in Tweed Shire has high (or very high) conservation status. Much of this occurs outside of National Parks and along the coastal strip.
- The Shire supports over 200 significant plant species. Under the TSC Act, one is thought to be extinct, 25 are endangered and 29 are vulnerable to extinction. In addition, some 96 species are ROTAP listed (ROTAP is a national non-regulatory schedule).
- Many of plants species found on the Tweed are highly localised. Some 55 species are essentially confined to Tweed Shire.
- It is estimated that the region supports Australia's highest concentration of Threatened plant species.
- The Shire supports over 100 significant animal species (105 spp.). Under the TSC Act, 17 are listed as Endangered and 88 are considered Vulnerable.
- The region supports over 50 species of migratory birds protected under international agreements (JAMBA, CAMBA).
- Stott's Is Nature Reserve, which is an excellent example of the vegetation that once existed over parts of the Tweed River floodplain, is one of a number of areas declared as Critical Habitat under the TSC act.
- Rainforests within Tweed's National Parks are listed on the UNESCO World Heritage Register.

Bushland Cover in the Tweed Shire



Source: TSC 2004 c

Bushland Communities in the Tweed Shire














Source: TSC 2004 c

PRESSURE

At a Glance

Some key processes that threaten native fauna and flora within the Shire include:	Code
Clearing and fragmentation of native vegetation associated with urban and other development especially along the coast. Recognised at State and National levels as a Key Threatening Process.	HABITAT
Draining of swamps and wetlands. Recognised at the State level as a Key Threatening Process.	FLOW PATTERNS
Invasion of coastal plant communities by bitou bush and other weeds. Recognised at the State level as a Key Threatening Process.	WEEDS

<p>Restoration of coastal plant communities affected by sand mining. Much of the Tweed Coast is covered by post-mining regeneration and requires significant intervention to restore it to a near-natural state.</p>	
<p>Degradation of riparian habitats by camphor laurel, privet and numerous exotic vines. Riparian habitats have been decimated through out the Tweed and the remaining areas are almost universally degraded by the invasion of these species. Recognised at the State level as a Key Threatening Process.</p>	
<p>Grazing and disturbance by cattle in riparian and wetland areas. Cattle are commonly able to graze within these sensitive habitats without restriction, causing erosion, sedimentation, pollution, physical damage to trees and other habitat and facilitating weed invasion.</p>	
<p>Degradation of native vegetation at bushland edges from weed invasion. Fragmentation of natural areas due to clearing creates edges which enable weed invasion and other undesirable influences. Invasion and establishment of lantana and exotic grasses are recognised at the State level as a Key Threatening Process.</p>	
<p>Suppression of native regrowth by camphor laurel and other exotic species - While many exotic weeds persist for the early phases of regeneration, and are eventually out competed by slower-growing but longer-lived native species, camphor laurel is both fast growing and long-lived (300-400yrs). Without active management regrowth forests dominated by camphor laurel may well persist indefinitely.</p>	
<p>Predation on native fauna by cats, dogs and foxes. These animals prey on many small native mammals, birds, reptiles and frogs. Recognised at State and National levels as a Key Threatening Process</p>	
<p>Competition from exotic birds such as the Indian Myna. This species has only arrived on the Tweed in the last few years but is recognised internationally as one of the top 100 most invasive alien species. It forms aggressive colonies and nests in tree hollows, potential threatening many parrots, cockatoos, owls, possums and gliders.</p>	
<p>Competition and poisoning of native fauna by cane toads. This species is also recognised internationally as one of the top 100 most invasive alien species. It is also poisonous to native species (particularly reptiles) that commonly attempt to eat them.</p>	
<p>Altered fire patterns. Bushfires that are too frequent are recognised at the State level as a Key Threatening Process.</p>	
<p>Roadside vegetation management. Large numbers of threatened plants occur along roadsides on the Tweed.</p>	
<p>Road mortality of native fauna. Cars and trucks represent a considerable threat to some species especially those confined to populated coastal areas. Road kills account for a major source of mortality for koalas in Tweed Shire.</p>	

For more detail on state significant key threatening processes visit:

www.threatenedspecies.environment.nsw.gov.au/tsprofile/home_threats.aspx

Pressure Indicators

Bushland Mapping

The bushland mapping initiative which commenced in 2008 will assist in the development of vegetation indicators to determine how pressures on bushland and biodiversity are changing over time.

Indicator: Land Clearing	05/06	06/07
Area (Ha) of rural bushland cleared	N/A	N/A
Area (Ha) of coastal vegetation cleared	N/A	N/A

Note: While accurate information on land clearing is currently not available, the indicator appears to flag this data collection as a future action for Council.

Indicator: Fires	02/03	03/04	04/05	05/06	06/07	07/08
Area of public land burnt (hectares)	1242	1455	1905	1310	N/A	1107
Total number of Rural Fire Services incidents	550	445	579	436	497	N/A

Source: Rural Fire Services

Additional Indicators

Pest Animal indicators have not been identified for the Tweed Shire at this stage. To find out more about pest animals in Australia visit:

www.nationalparks.nsw.gov.au/npws.nsf/Content/Pests+and+other+threats

Recommendation for Further Action: Initiate a process to improve the environmental pressure indicators for bushland and biodiversity management.

RESPONSE

Each response seeks to address one or more identified pressure. Responses are listed in order from newest to oldest. This format gives regular readers of the SoE Report easy access to the most recent initiatives while allowing infrequent readers to view a catalogued history of responses.

Biodiversity Program Overview

Biodiversity is one of five key program areas covered by [Council's Natural Resource Management Unit](#). The Biodiversity Program has grown out of the [Tweed Vegetation Management Strategy 2004](#) which was adopted by Council in April 2007 and includes a range of actions under the following themes:

1. **Biodiversity Planning Reforms** - Reforms to support and streamline Council's planning, development assessment and operational functions relating to biodiversity.
2. **Community Awareness and Understanding** - Projects that raise Council's profile on biodiversity protection and management. Educating the local community on biodiversity values. Providing a point of contact for the community on biodiversity issues. Refer to [Environmental Education & Capacity Building](#) for information on these initiatives.
3. **Council Capacity Building** - Increasing Council's capacity to efficiently and proactively address biodiversity and natural resource issues. Refer to [Environmental Education & Capacity Building](#) for information on these initiatives.
4. **Monitoring and Research Partnerships** - Collaborative research to answer important ecological questions related to biodiversity management and policy in the Shire. Monitoring of existing biodiversity management programs and policy.
5. **TSC Bushland Estate** - Coordination and management of natural areas owned or controlled by Tweed Shire
6. **Biodiversity Incentives** - Incentives and support for on-ground works on public and private land. Main target areas include: 1) Bushland Management and Rehabilitation; 2) Threatened Species and Communities; 3) Management of Threatening Processes.

Biodiversity DCP

Responsibility: NRM Unit – Biodiversity Program; Planning and Regulation
Status: completion expected mid 2009

In 2008, Council, with support from the Northern Rivers Catchment Management Authority, initiated the preparation a model Development Control Plan (DCP) to provide detailed guidance on acceptable standards for biodiversity and habitat management aspects of proposed developments. While a Biodiversity DCP was a key recommendation of the Tweed Vegetation Management Strategy 2004 the preparation of a model plan will allow local circumstances to be accommodated while providing a more a coordinated approach to recent State Government NRM reforms.



Habitat Management Plan Policy

Responsibility: NRM Unit – Biodiversity Program; Planning and Regulation
Status: completion late 2008

In 2008, Council initiated the preparation of a policy to guide the scope and content of management plans used to guide ecological restoration and ongoing management of habitat utilised by native flora and fauna. These plans are commonly required as a condition of development consent, to remedy unauthorised works and to guide habitat restoration works funded or overseen by Council. It is likely that the policy will be incorporated into the Biodiversity DCP.



Lower Tweed Range EEC and Threatened Species Project

Responsibility: NRM Unit – Biodiversity Program
Status: completion expected mid 2009

This project was initiated in 2008 with support from the Northern Rivers Catchment Management Authority. The project will implement habitat restoration works within bushland remnants on private and public land targeting Endangered Ecological Communities (EECs) Threatened species and threatening processes at sites in the lower Tweed Range area. Other components of the project include preparation and review of site action plans and management agreements, community consultation, on site training and monitoring.



Unauthorised Land Clearing

Responsibility: NRM Unit – Biodiversity Program; Planning and Regulation
Status: ongoing

With the creation of the Natural Resource management Unit in 2007, council officers have taken a more active role in preventing unauthorised land clearing and tree removal particularly along the coastal strip. This has been approached through the use of signage, visual screens, planting of replacement trees, media exposure and legal remedies.



Draft Tweed LEP 2008 – Stage 1

Responsibility: NRM Unit – Biodiversity Program; Planning Reforms;
Status: completion expected late 2008

In 2006, NSW Government introduced legislation requiring councils to prepare a new principal Local Environmental Plan (LEP) in accordance with a standard template prepared by the Department of Planning. In Tweed Shire a two stage process was adopted. Stage 1 involved the integration of LEP 2000 and components the draft LEP 2000 Amendment 21 which arose from the Tweed Vegetation Management Strategy 2004. This task involved a partial review of Environmental Protection and Waterway zone mapping, drafting and review of several NRM-related LEP clauses and map overlay provisions



Koala Beach Wildlife Habitat Management

Responsibility: NRM Unit – Biodiversity Program
Status: ongoing

In 2008, Council continued to carry out habitat restoration and monitoring works within the Koala Beach Estate. Works carried out in 2008 included monitoring of Koalas, Blossom Bats, Glossy Black-Cockatoos, Planagales and Arthraxon grass, bushfire hazard reduction works, increased ranger patrols, improved signage, tree planting, fox control and bushland restoration. These works are overseen by the Koala Beach Wildlife Habitat Management Committee.



Blossom Bat Habitat Restoration Plan

Responsibility: NRM Unit – Biodiversity Program
Status: Completion late 2008

In 2008 a plan of management was commenced to guide the restoration of Blossom Bat habitat on a number of public land parcels between Hastings Point and Kingscliff. The plan and its implementation was negotiated through the development consent process to compensate for the clearing of Coast Banksia for the Casuarina Beach and Salt developments. Coast Banksia is a critical food resource for this nectar-feeding bat. Implementation of the plan will commence once the plan is finalised.



Bushfire Management

Responsibility: NRM Unit – Biodiversity Program
Status: Ongoing

In 2008 Council created a full time position within the Natural Resource Management Unit. Part of the Bushland Officers role includes bushfire management initiatives for biodiversity conservation and asset protection. Bushfire management works include establishment of a fire-trails register (in conjunction with the Rural Fire Service), upgrading and maintenance of asset protection zones at the interface between urban and bushland areas and a comprehensive review of the shires bushfire risk management plan. This review will take a more regional approach to bushfire risk management by encompassing Tweed, Byron and Ballina Local Government Areas.



Indian Myna Bird Control

Responsibility: NRM Unit – Biodiversity Program
Status: Ongoing?

In 2008 Council appointed a project officer to coordinate a monitoring and control program for Indian Myna Birds in the shire. Key components of the program include monitoring of abundance and distribution, community based trapping and investigation of other control measures, such as shooting and nest removal.

Indian Myna Birds only arrived on the Tweed in the last few years but they are recognised internationally as one of the top 100 most invasive alien species. They form aggressive colonies which chase many native birds away, and compete for nest in tree hollows, potentially threatening many parrots, cockatoos, owls, possums and gliders.



Bushland Reserves

Responsibility: NRM Unit – Biodiversity Program
Status: Ongoing

In 2008, management of Council's bushland reserves was transferred from the Recreation Services Unit to the newly established NRM Unit. This initiative was accompanied by the engagement of a full-time Bushland Officer responsible for coordinating the management of bushland areas owned or under the control of Council.



Rabbit Control

Responsibility: Entomology Unit
Status: Ongoing

In 2007 Council conducted a preliminary rabbit control program following the proliferation of rabbit populations urban areas along parts of the Tweed coast and in parts of Murwillumbah. Monitoring of rabbit populations is continuing with further abatement strategies being considered.



Fox Control

Responsibility: Entomology Unit; NRM Unit – Biodiversity Program
Status: Ongoing

In 2007 Council commenced a fox control program that consists primarily of:

- Controlling foxes in and adjacent to Koala Beach where foxes have been identified as a key threatening process on the nesting and survival of the endangered Bush Stone-curlew (*Burhinus grallarius*).
- Responding to public alerts regarding the location, fumigation, and destruction of fox dens in the shire.

The European or Red Fox (*Vulpes vulpes*) is an introduced predator of native and domestic wildlife and is known to occur within the Tweed Shire. Where foxes occur on rural lands, the NSW Rural Lands Protection Board, in consultation with land owners, manage their control. In urban areas there is little in the way of effective control due to the restrictions on lethal baiting, and the aversion of foxes to more conventional trapping methods.



Koala Road Mortality Hotspots

Responsibility: Engineering and Operations

Status: Completed

In 2007 *Koala Black Spot* road signs have been installed on sections of Clothiers Creek Road to encourage motorists to watch out for wildlife in these areas.



Camphor Harvesting Guidelines

Responsibility: NRM Unit – Biodiversity Program

Status: Completion expected late 2008

In 2007 Council commenced development of *Guidelines for Harvesting Camphor Laurel for Biomass Supply to Cogeneration Plants*. The aim of the document is to provide landholders and industry with information to manage the environmental impacts of harvesting Camphor Laurel for biomass supply, in particular;

- Legislation and consent requirements that affect Camphor Laurel harvesting.
- Site assessment to identify suitable harvest areas that do not impact upon local biodiversity.
- Site restoration to prevent reinfestation by Camphor Laurel and/or other invasive environmental weeds.



Biodiversity Program Commencement

Responsibility: NRM Unit – Biodiversity Program

Status: Ongoing

In 2006 the Tweed River Committee initiated the shires Biodiversity Program to implement a range of actions under the Tweed Vegetation Management Strategy, 2004.



Green Waste Collection

Responsibility: Waste Management Unit

Status: Ongoing

In 2005 Council established a residential green-waste collection service. The kerb-side collection of green waste has helped to reduce the incidence of garden escapee's through illegal dumping. Refer to the [Waste Management](#) section for more detail.



Planning Reforms & the Local Environment Plan

Responsibility: NRM Unit – Biodiversity Program, Planning Reforms Unit

Status: integrated into draft LEP 2008 – Stage 1.

In 2004 Council commenced integration of statutory aspects of the Vegetation Management Plan into the revised Local Environmental Plan consistent with the NSW State Government standard template.



Pandanus Plant Hopper Control

Responsibility: Entomology Unit

Status: Ongoing

Since 2004 Council has sought to reduce the impact of Pandanus dieback, caused by the flatid insect (*Jamella Australiae*) through tree injection with the systemic insecticide *imidacloprid*.

Tweed Vegetation Management Strategy 2004

Responsibility: NRM Unit – Biodiversity Program, Planning Reforms Unit

Status: completed 2004, Adopted May 2007.

In 2004 Council completed a [Vegetation Management Strategy](#) for the shire. The strategy builds upon the 1998 Vegetation Management Plan and its aims include:

- Identifying significant natural and environmentally sensitive areas in the Tweed that require protection and management.
- Identifying significant issues associated with the administration and management of Tweed's remnant vegetation by local and state governments.
- Identifying practical mechanisms Tweed Shire Council can implement to protect and enhance Tweed's natural assets and to promote catchment management and native biodiversity.
- Promoting a cooperative and integrated approach between Tweed Shire Council, relevant State government bodies and the Tweed community in achieving the above objectives.



Bushland Friendly Nursery Scheme

Responsibility: NRM Unit – Biodiversity Program, Planning Reforms Unit

Status: Ongoing?

In 2003 Council joined the Bushland Friendly Nursery Scheme, a joint initiative between the North Coast Weed Advisory Committee (NCWAC) and 17 North Coast Councils from Taree to the Tweed. Plan nurseries who participate in the voluntary program are required to:

- Not propagate, sell or knowingly distribute the 87 environmental weeds listed by the BFNS.

- Encourage the public to plant local native alternatives and help stop the spread of environmental weeds.



Cadagi Tree Removal Program

Responsibility: Recreation Services Unit

Status: Completed in 2003

In 2003 Council undertook a tree removal and replacement program, targeting the Cadagi Tree, *Eucalyptus torellianas*, from Council streets. The trees have excessive leaf and fruit fall which end up in local waterways.



Tweed Coast Bitou Bush Management

Responsibility: NRM Unit – Biodiversity Program

Status: Ongoing

In 2002 Council and Far North Coast Weeds commenced an aerial spraying and on-ground weed control program to reduce the occurrence of bitou bush along the Tweed Coast. These works have proven to be successful so far, with ongoing work required to prevent reinfestation.



Development Approval Conditions

Responsibility: Planning & Regulation Division

Status: Ongoing

Since 2000 Council has required all new developments to implement weed control and bushland management as part of their condition of consent.



Companion Animal Control

Responsibility: Regulatory Services Unit

Status: Ongoing

In 1999 the Companion Animals Act was introduced in an effort to reduce the incidence of environmental disturbance caused by roaming cats and dogs. Council has the primary responsibility for the implementation of the Act and has complimented the aims of the legislation with education campaigns to promote responsible pet ownership, regular micro-chipping and registration days and the establishment of off-leash dog exercise areas throughout the shire.



North Tumbulgum Wildlife Corridor Rehabilitation Project

Responsibility: NRM Unit – Biodiversity Program

Status: Completed in 1999

In 1997 Council commenced a project identified in the Upper Tweed River Estuary Management Plan to link the core habitat area of lowland subtropical rainforest on Stotts Island with the Rous River Wetland at the confluence of the Rous and Tweed Rivers (Stotts Island represents one third of all the remaining lowland subtropical island rainforest in Australia).

This project represents a successful partnership between Council and the community with the involvement of community volunteers, school groups and work-for-the-dole crews to both revegetate and rehabilitate existing vegetation with over 5000 native trees and shrubs. The project owes much of its success to the many work for the dole participants who have taken part and their skilful coordination and sponsorship by Tweed Training and Enterprise Company. This project received the RiverCare 2000 Bronze award and was the only work for the dole project to be recognised in this award scheme.



Koala Habitat Mapping

Responsibility: Planning Reforms Unit

Status: completed 1996

In 1996 the Australian Koala Foundation completed a [Tweed Coast Koala Habitat Atlas](#) on behalf of Tweed Shire Council. The objectives of the initiative were to:

- Quantify tree preferences and habitat utilisation;
- Delineate areas of Primary and Secondary Koala Habitat;
- Examine the relationship of this information in terms of State Environmental Planning Policy No 44 (Koala Habitat);
- Identify threatening processes; and
- Recommend measures to provide Koala populations with a measure of long term viability.



Tweed Vegetation Management Plan 1999

Responsibility: Planning Reforms Unit

Status: completed 1999

In 1996 Council commissioned a Vegetation Management Plan with support from Greening Australia, NSW Environmental Restoration and Rehabilitation Trust and Environment Australia. This work resulted in the Tweed Vegetation Management Plan 1999 and involved detailed vegetation mapping, assessment of ecological values, and recommendations covering a wide range of Council interests including changes to the LEP.

Refer to Tweed Vegetation Management Strategy (2004) for details of the updated document.



Tree Preservation Orders

Responsibility: Planning Reforms Unit

Status: ongoing

In 1990 and 2004 Council sought to conserve local biodiversity through the establishment of tree preservation orders for rare and significant trees in the shire. Locations of rare and significant trees are now geo-referenced in Council's geographic information system.



Related Issues

- [Human Settlement](#)
- [Soils](#)
- [Waterway Health](#)
- [Environmental Education & Capacity Building](#)
- [Council Operations](#)

SOIL MANAGEMENT



CONDITION

At a Glance




- Soil groups in the Tweed include coastal sands, krasnozems, alluvials, yellow earths, red podzolics and chocolate soils. (TSC 2003a)
- Much of the floodplain areas have Potential and Actual Acid Sulfate Soils close to the surface. (TSC 2000 b)

More Information

- A full description of soil types in the Tweed Catchment is contained in Appendix 2 of the Tweed Shire State of the Environment Report 2002/03.
- Detailed soil maps for the Tweed region are available from the [NSW Department of Environment and Climate Change](#).

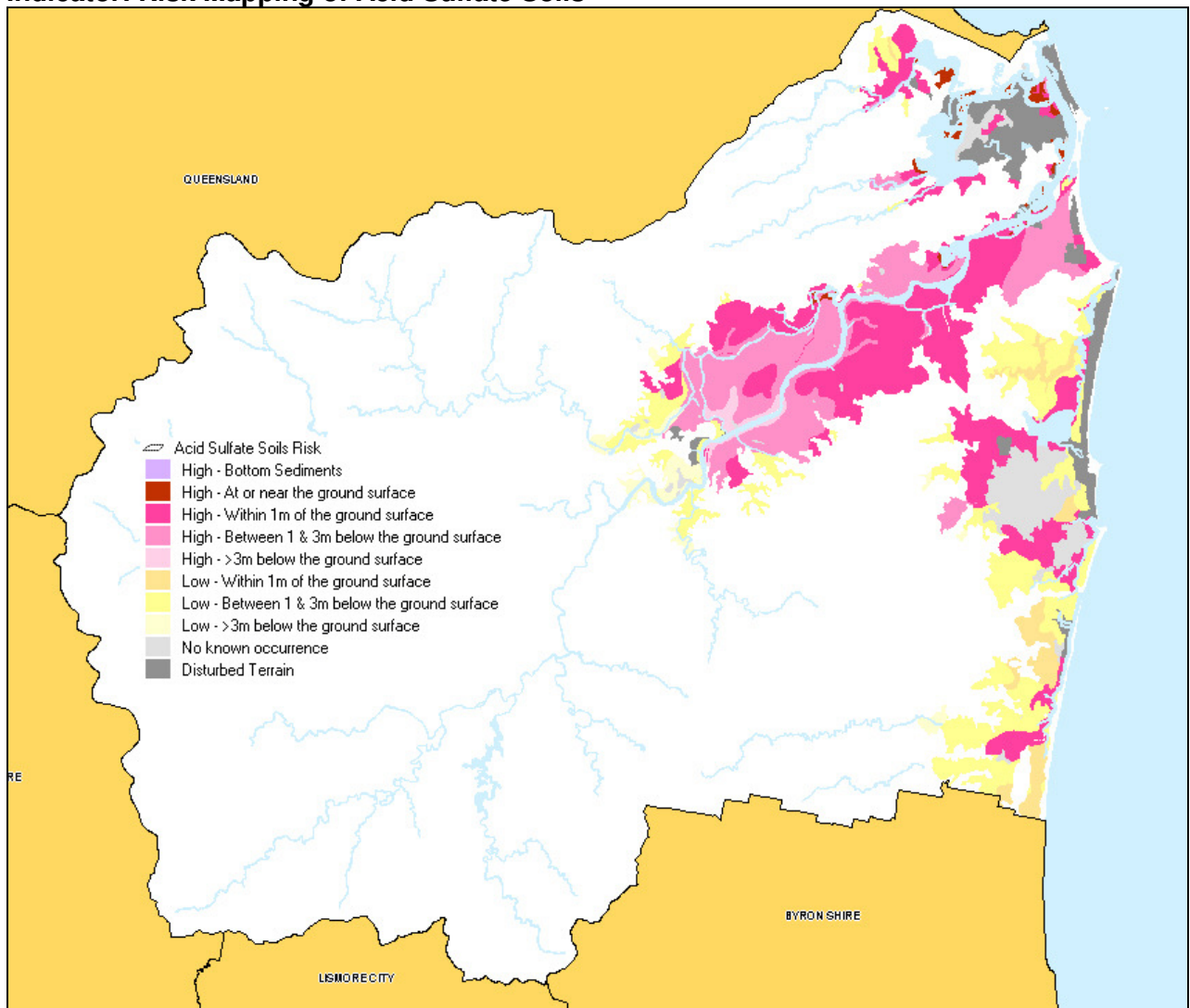
PRESSURE

At a Glance

Key pressures on the soil landscape include:	Icon
Acid sulfate soils, which in turn leads to: <ul style="list-style-type: none"> • Land degradation and reduced productivity in agricultural areas. • Water quality degradation and the associated impacts on aquatic life. 	
Erosion and sedimentation associated with agricultural and construction activities	
Changing land-use patterns	
Contaminated land	Contaminated Land

Pressure Indicators

Indicator: Risk Mapping of Acid Sulfate Soils



Indicator: Acid Sulfate Soil Classifications	02/03	06/07
Area of land with a high risk (acid sulfate soil) classification	13,714Ha	13,714Ha
Area of land with a low risk (acid sulfate soil) classification	6,118Ha	6,118Ha
Percentage of the shire with a high risk (acid sulfate soil classification)	10.5%	10.5%

Source: Tweed Shire Council_Floodplain Officer

Note: While the area of land with high / medium / low risk classifications for acid sulfate soils has remained static over a number of years, increases in the number of construction works on the coastal floodplain has increased the potential for environmental impacts due to acid sulfate soils.

Indicator: Acid Sulfate Soil Hotspots	Size
Cudgen Creek	799 Ha
Dulguigan	681 Ha
McLeods Creek – Main Trust Canal	2137 Ha

Source: Department of Natural Resources

Indicator: Additional High Risk Acid Sulfate Soil Areas	Size
South Murwillumbah – Blacks Drain	--
Murwillumbah – Lavender Swamp	--
Tyngalga	--

Source: Tweed Shire Council_Natural Resource Management

Indicator: Contaminated Land	02/03	07/08
No. of sites on EPA contaminated land register*	194	194

Source: NSW EPA_Contaminated Land Register

Additional Indicators

Changing Land Uses: Refer to the [Built Environment](#) section of this report.

RESPONSE

Each response seeks to address one or more identified pressure. Responses are listed in order from newest to oldest. This format gives regular readers of the SoE Report easy access to the most recent initiatives while allowing infrequent readers to view a catalogued history of responses.

Vegetative Filter Strips

Responsibility: NRM Unit - Sustainable Agriculture Program

Status: Ongoing

In 2007 Council, in partnership with state government agencies and local landholders commenced a program to plant vegetative filter strips (*Lomandra*, couch grass & native trees) along a number of floodplain waterways to reduce the impacts of acid sulphate soil runoff and erosion / sedimentation. An example of where this has occurred is Johnsons Creek, Condong.



Greenhouse Gas Monitoring Study

Responsibility: NRM Unit - Sustainable Agriculture Program

Status: Due for completion late 2008.

In 2006 Council co-hosted a research project by the National Australian University to compare greenhouse gas emissions from acid sulfate soils and non-acid sulfate soils in cane paddocks.

Preliminary results indicates that emissions of CO₂ from ASS are in the top of the range for agricultural soils, emissions of N₂O from N-fertilised soils appear to be much higher than expected from agricultural soils and that ASS are sources of atmospheric CH₄ particularly when very wet when their emissions are comparable with rice fields and wetlands.

How representative these figures are for the industry to be revealed by the results of next stage of study.



ARC Linkage Project: Reducing export of ASS products

Responsibility: NRM Unit - Sustainable Agriculture Program

Status: Completed in 2006

Between 2005 and 2008 Council co-hosted a research project by Australian Research Council with the principal objective of developing innovative, scientifically-sound, practicable, floodplain management techniques to reduce the impacts on estuary and coastal water quality from ASS drainage products.

The results of the study highlighted that there were no evidence of extensive saline intrusion into cane as a result of tidal flushing, that tidal flushing helps to maintain higher groundwater levels next to the drain and so result in lower Al and Fe concentrations and that the upper catchment is the main source of contaminants discharged from Black's Drain. It was recommended for remedial work to focus on certain localized drains in the upper catchment. Remedial work will be undertaken (2008-11) as part of a project funded by the NSW Environmental Trust.



Cane Farming Best Practice Guidelines

Responsibility: NSW Sugar Milling Cooperative

Status: Ongoing

In 2005 the NSW Department of Environment and Climate Change and the NSW Sugar Milling Cooperative developed a set of best practice guidelines for cane farming in acid sulfate soil areas. To view the guidelines visit www.nswsugar.com.au



In-Filling of Cane Drains

Responsibility: NRM Unit - Sustainable Agriculture Program

Status: Ongoing

In 2005 Council, in partnership with state government agencies and local landholders commenced a drain in-filling program and associated laser levelling of caneland across the shire seeking to improve caneland production and downstream water quality via improved management of acid sulphate soils. To date, works have occurred at Eviron, Bray Park, Christies Creek, Murwillumbah, Kynnumboon, Tygalgah and Chinderah.



Farmland Protection Project

Responsibility: NRCMA

Status: Ongoing?

In 2004 the Northern Rivers Catchment Management Authority, with participation from Tweed Council sought to protect important farmland from urban and rural residential development by mapping farmland and developing planning principles.

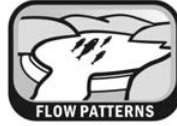


Floodgate Modification

Responsibility: NRM Unit - Sustainable Agriculture Program

Status: Ongoing

In 2000 Council, in partnership with state government agencies commenced a program to improve tidal flow and fish passage through floodgate modification in drains and creeks on the floodplain. Refer to the [Response Indicators](#) for details on how many floodgates have been modified to date.



Acid Sulfate Soil Management Plan for Minor Works

Responsibility: NRM Unit - Sustainable Agriculture Program

Status: Ongoing

In 2000 Council introduced a management plan to reduce the impact of acid sulfate soils associated with minor construction activities.



Development Approvals

Responsibility: Planning & Regulation Division

Status: Ongoing

In 2000 Council introduced a requirement for development approval for any works which may result in the disturbance of potential acid sulfate soils.



Acid Sulfate Soil Mapping

Responsibility: NRM Unit - Sustainable Agriculture Program

Status: Completed in 1999

In 1999 Council completed a mapping project to identify the likely occurrence of acid sulfate soils within the shire. This information is now contained within Council's Geographic Information System and is used to inform land use planning and development approval processes.



Contaminated Land Policy

Responsibility: Environment & Health Unit

Status: Ongoing

In 1999 Council resolved to manage contamination within the Shire by formerly adopting a policy on contaminated lands.

Supporting services and instruments include contaminated land assessments and the requirement for pre-demolition testing for soil beneath concrete slabs to identify if soil contamination from insecticides (i.e. termite control) is present.

Targeted Pressures: Contaminated Land

Response Indicators

Indicator: Cane drain in-filling	06/07	07/08
Length (km) of cane drains filled	12.8	17.5

Source: Tweed Council NRM Unit

Indicator: Flood Gate Modifications	2000 to 2005	05/06	06/07	07/08
Number of floodgates modified for fish passage and tidal flushing	9	8	14	6

Source: Tweed Council NRM Unit

Indicator: Buffer / Filter Strip Plantings	06/07	07/08
Length (km) of waterways planted out with vegetative filter strip	3.9	6.1

Source: Tweed Council NRM Unit

Indicator: Erosion and Sediment Control Enforcement	04/05	05/06	06/07	07/08
No. of Clean Up Notices issued.	N/A	0	20	N/A
No. of Penalty Infringement Notices issued under the EP&A Act*	2	2	33	N/A

Source: Tweed Shire Council Dataworks_Erosion & Sediment Control
Environmental Planning and Assessment Act 'failure to comply with conditions of consent'

Related Issues

- [Built Environment](#)
- [Waterway Health](#)
- [Bushland and Biodiversity](#)
- [Environmental Education & Capacity Building](#)
- [Atmosphere](#)



CONDITION

This section of the report deals with two environmental themes:

1. Climate change mitigation and adaptation at the local level.
2. Local air quality.



At a Glance


- Australia has the highest per capita level of greenhouse gas emissions in the developed world (28 tonnes CO² per person)
- The average household produces about eight tonnes of carbon dioxide (CO²) per year from direct energy use (e.g. electricity)
- In 1994–95, 53% of energy combusted in Australia was due to household consumption. This comprised both energy used within the household (direct from the meter) and energy used via the household consumption and manufacturing of domestically produced goods and services
- Between 1983–84 and 2003–04, energy use in the residential sector grew by 52% or an average of 2.2% per year.
- Fossil fuels (coal, natural gas, oil) are used to generate approximately 92% of electricity in Australia.
- Some electricity is available from renewable sources (8%) such as wind-generated and hydro-electricity plants. Consumers can purchase electricity from renewable sources through the Green Power Scheme.
- Despite being one of the cleanest sources of energy, solar energy was used in less than 5% of Australian households in 2005.

(ABS, 2004)

PRESSURE

At a Glance

Climate change pressures include (but are not limited too):	Icon
Population increase and economic growth with in turn leads to: Endpoint greenhouse gas emissions associated with increased demand for electricity and other energy sources. Embodied greenhouse gas emissions associated with increasing levels of material consumption. Endpoint greenhouse gas emissions associated with increased vehicle numbers and fossil fuel consumption.	
Identifying and responding to the climate change risks (adaptation)	

Local air quality pressures include (but are not limited too):	Icon
Airborne particulate matter originating from cane fires, bush fires, vehicles, industry etc.	

Climate Change Pressure Indicators

Indicator:	1996	2001
Direct Emissions from Fuel & Electricity Use		
Shire Population	66,534	73,821
*Total Shire Emissions (tonnes CO ² e)	561,264	768,161

Source: TSC 2003

Indicator:	1983/84	1993/94	2003/04
Residential Energy Consumption			
Annual per capita energy use in Australia (Gigajoules)	17.7	19.3	20.9

Source: ABS 2004

Indicator: Use Of Energy In The Household By Purpose And Related Greenhouse Gas Emissions – 2005	Energy use %	Emissions %
Appliances(a)	30	53
Heating water	27	28
Cooking	4	6
Heating and cooling	39	14
Total	100	100

(a) Includes lighting. Source: Australian Greenhouse Office 2005, Your Home Technical Manual.

Additional Indicators

[Built Environment](#)

Indicators of Local Air Quality Pressures

Indicator: Number of State Government Licenses Relating to Atmospheric Emissions
Refer to http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx

Indicator: Air Pollution Complaints - By Type	06/07	07/08
Sewage Odours	12	5
Dust – Construction Sites, Quarries, Uncovered Loads etc	15	8
Spray Drift from Pesticides	1	2
Backyard Burning	4	5
Domestic Wood Heaters	2	1
Commercial & Industrial Activities	10	10
Animal Odours – e.g. poultry, flying foxes	5	4
Other	4	8
Total	53	43

Source: Tweed Shire Council Dataworks_Air Pollution

Indicator: Cane Fires	03/04	04/05	05/06	06/07	07/08
Percentage of cane burnt before harvest (approx)	90%	93.4%	83%	86%	80%

Source: NSW Sugar Milling Cooperative

Additional Indicators

Bush Fires: Refer to the [Bushland & Biodiversity](#) section of this report.

RESPONSE

Each response seeks to address one or more identified pressures. Responses are listed in order from newest to oldest. This format gives regular readers of the SoE Report easy access to the most recent initiatives while allowing infrequent readers to view a catalogued history of responses.

Climate Change Mitigation - Council Operations

Refer to [Council Operations](#) for details of emission reduction initiatives for council activities.

Climate Change Mitigation – Community

Refer to [Community Capacity Building](#) for details of community emission reduction initiatives implemented by Council.

Climate Change Adaptation Study

In 2008 Tweed and Byron Shire Council's successfully applied for \$50,000 from the Federal Governments Department of Climate Change to conduct a climate change risk assessment process and develop a climate change adaptation plan for each shire. Stage one of the initiative will commence in September 2008.



Regional Collaborations

In 2006 Council assisted with the establishment of the Northern Rivers Group on Energy (NRGe). The group consists of representatives from Clarence Valley, Richmond, Ballina, Byron, Lismore, Kyogle and Tweed Councils. The group meets every two months to discuss local and regional opportunities to reduce greenhouse gas emissions. Initiatives have included the Power to Make a Difference Program in local high schools and the soon to be established regional carpooling program for the northern rivers.



Emissions Reduction Target

In 2003 Council set an emission reductions target for itself and the community being:

- 20% below 1996 levels by 2010 for Council Operations
- Per capita 20% below 1996 levels by 2010 for the community sector.



Cities for Climate Protection (CCP) Program

In 1997 Council joined the [CCP](#) Program, an international initiative that assists local governments to reduce greenhouse gas emissions in their shire. Progress through the CCP Program includes:

Milestone 1

In 1999 Council completed a greenhouse gas audit for council and community sectors.

Milestone 2

In 2003 Council established an emissions reduction target for the shire (see above).

Milestone 3

In 2003 Council adopted a [Local Action Plan for Greenhouse Gas Reduction](#) which identifies a range of initiatives to progress towards the reduction targets.

Milestone 4

In 2003 Council implemented a range of Local Action Plan initiatives and quantified the abatement achieved.

Milestone 5

In 2005 Council completed a re-inventory and quantification of all actions implemented to date.

CCP+

In 2005 Council joined CCP Plus, an extension program for councils who had completed the milestone framework of CCP. Council joined this phase of the program to demonstrate its ongoing commitment to climate change mitigation and adaptation.



Cane Fires

Responsibility: NSW Sugar

Status: Ongoing

In 2008 the Condong Cogeneration Facility was completed. Located at the Condong Sugra Mill the facility produces renewable electricity from bagasse, cane leaf, camphor laurel and sawmill residue. The initiative is a joint venture between the N.S.W. Sugar Milling Cooperative and Delta Electricity and will mean a reduction and ultimately an elimination of cane fires in the Tweed Valley. In addition to the local air quality benefits, the facility is capable of generating more than half the annual power requirements of the Tweed. The project will result in the reduction of greenhouse gas emissions associated with the consumption of coal-powered electricity by approximately 180,000 tonnes each year. For further information contact Delta Electricity on 1800 817 711.



Response Indicators

Indicator: Climate Change Mitigation	'00 to '04	04/05	05/06	06/07	07/08	Total
Tonnes of greenhouse gases not emitted as a result of Council initiatives (CO ² equivalent)	20,859	8,111	12,080	35,053	41,000	117,103

Source: TSC Natural Resource Management Unit

Indicator: Renewable Energy Use	03/04	04/05	05/06	06/07	07/08
Number of households in the shire choosing Green Power as their electricity supply option	153	856	989	1552	5206
Percentage of Council's electricity consumption sourced from Green Power supplies	0	0	0	0	0

Data Set: Postcodes 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490. Source: Country Energy

Related Topics

- [Built Environment](#)
- [Waste Management](#)
- [Water Supply](#)
- [Transport](#)
- [Environmental Education and Capacity Building](#)
- [Bushland and Biodiversity](#)
- [Council Operations](#)



In 2002 Council initiated a process to integrate an Environmental Management System into its existing Occupational Health and Safety System. The objective of this process is *to make the protection and safeguarding of the natural environment an integral part of Council operations.*

Council strives to achieve this objective through policies and procedures, staff training and inductions, risk assessments, incident and accident reporting, site specific management plans, project management plans, workplace auditing and a commitment to continual improvement. Collectively these components are known as the Tweed Shire Council Operational Management System (OMS)

POLICIES & PROCEDURES

Workplace Environmental Safety Protocol

In 2008 Council's Executive Management Team adopted the new Workplace Environmental Safety Protocol. The protocol identifies resource efficiency, pollution minimisation, greenhouse gas reduction, sustainable purchasing, training and continuous improvement as necessary requirements *to make the protection and safeguarding of the natural environment an integral part of Tweed Shire Council operations.*

Environmental Design Guidelines for New Council Facilities

In 2008 Council's Executive Management Team adopted a set of environmental design guidelines for new council facilities. The aim of the guidelines is to ensure new council buildings (and renovations to existing buildings) have improved environmental performance. Within these specifications particular attention is given to passive solar design, alternative power supply options, solar hot water, glazing, lighting, cooling, landscaping and innovative design features.

OMS Manual

In 2007 a manual was developed that details responsibilities, risk assessments, environmental purchasing requirements, project management and a range of other operational issues for OHS and ES.

Energy & Water Monitoring

In 2007 Council commenced a subscription service to track energy and water consumption for all sites and facilities. Part of the service includes threshold triggers to advise of anomalies in consumption so they can be investigated further. Council is aiming to reduce resource consumption and greenhouse gas generation through improved asset management and accountability.

Staff Training and Inductions

In 2005 a process was established to inform new staff members of their roles and responsibilities in relation to environmental management. The induction covers key

policies and procedures, risk assessments, incident / accident reporting and a range of practical actions to reduce the environmental impact of their workplace activities.

Local Government Award Winner

In 2004 the OMS won the management improvement category in the local government awards for the integration of environmental safety into the occupational health and safety framework.

Standard Operating Procedures

In 2003 environmental hazard controls were incorporated into Standard Operating Procedures to reduce the risk of environmental harm from operational activities. This approach has laid a solid foundation on which to embed environmental safety throughout all levels of the organisation.

Risk Assessment and Incident and Accident Reporting

In 2003 environmental risk assessments and incident / accident reporting became standard procedure for operational activities.

Improved Framework for Environmental Safety

Through the OMS, Tweed Council has established a sound basis for ongoing improvements to its day to day operations, specifically waste management, green procurement, energy and water efficiency, greenhouse gas reduction, pollution minimisation and biodiversity conservation.

OMS Progress towards Environmental Safety

Refer below for details of operational improvements in the areas of energy efficiency, water efficiency, waste management, fleet management, biodiversity conservation and contracts / tenders.

ENERGY MANAGEMENT



Solar lighting at the Cudgen Footbridge, Kingscliff



Energy efficient lighting being installed in the Council Chambers

Solar Streetlight

In 2008 Council's first solar powered streetlights were installed. One is located outside the Murwillumbah Auditorium and the other is located on the Cudgen Creek Footbridge, Kingscliff. More installations are planned in key locations throughout the shire.

Solar Heating for Pools

In 2008 solar pool heating was installed at the Kingscliff and South Tweed Pools. This initiative is expected to deliver significant energy savings and greenhouse gas reductions. Savings made through reduced energy bills at these facilities will help to fund future energy efficiency initiatives.

Streetlight Trials

In 2008, Council in conjunction with Country Energy commenced a small scale trial of energy efficient streetlights in Murwillumbah. Two varieties of energy efficient lights are being trialled to determine which is the most suitable for wider applications.

Office Air Conditioning System

In 2008 rationalisation of the air conditioning system began with the installation of a variable speed drive and adjustments to the hours of operation. Both these measures have contributed to power savings of approximately 40,000kWh per year and greenhouse gas savings of approximately 40 tonnes of CO₂ per year.

Server Virtualisation

In 2008 Council commenced a process known as *server virtualisation*. The number of physical servers for the computer network is reduced by sourcing services from the virtual environment. Less physical servers mean less energy consumption to power the servers, but more significantly it means less energy consumption to keep the server room cool. Total energy savings and greenhouse gas abatement is yet to be calculated.

Workshop Lighting

In 2008 a process was established to improve the energy efficiency of workshop 'high bay' lights. When the existing 400 watt mercury vapour lights expire they are replaced with 85 watt compact fluorescent lights. Any new high bay installations are also fitted out with the 85 watt compact fluorescent lights. Total energy savings and greenhouse gas abatement is yet to be calculated.

Office Meeting Rooms

In 2008 the fluorescent lights in the meeting rooms and Council Chambers at the Murwillumbah Administration Centre were replaced with lights that are 30% more efficient while delivering the same light output. This measure has achieved power savings of approximately 3,000kWh per year and greenhouse gas savings of approximately 3 tonnes of CO₂ per year.

Staff Workstations

In 2008 the transition to more energy efficient computers for staff workstations commenced. When complete this initiative will result in power savings of approximately 25,000kWh per year and greenhouse gas savings of approximately 25 tonnes of CO₂ per year.

Outdoor Lighting

In 2007 Council began a process to progressively improve the energy efficiency of outdoor lighting in council reserves (e.g. bollard lighting along the coastal foreshore). When the existing mercury vapour lights (MVL) expire they are replaced with compact fluorescent lights (CFL). 50 watt MVL are replaced with 14 watt CFL, 80 watt MVL are replaced with 25 watt CFL, 125 watt MVL are replaced with 40 watt CFL and 160 watt MVL are replaced with 40 watt CFL. Total energy savings and greenhouse gas abatement is yet to be calculated.

Office Printers

In 2007 Council began a process to rationalise the number of office printers, faxes and photocopiers in the Murwillumbah Administration Centre through the use of multi-function devices. Through this initiative a work unit can use a single machine for printing, photocopying and facsimile, thereby reducing electronic waste generation and improving energy efficiency by only having a single machine running instead of three. Total energy savings and greenhouse gas abatement is yet to be calculated.

Energy Savings Action Plan

In 2005 Council developed an Energy Savings Action Plan (ESAP) to manage operational energy consumption and associated energy efficiency initiatives. Implementation of the ESAP is ongoing and include energy efficiency initiatives listed above.

Staff Workstations

In 2004 the energy efficiency computer monitors for staff workstations was improved by 200% with the replacement of CRT monitors with LCD monitors. This initiative resulted in annual electricity savings of more than 24,000 kWh and annual greenhouse gas savings of close to 25 tonnes of CO₂.

Office Lighting Retrofit

In 2001 the lighting efficiency at the Murwillumbah Administration Centre was improved by more than 50% through delamping and replacement with energy efficient tubes. This initiative resulted in annual electricity savings of more than 50,000 kWh and annual greenhouse gas savings of close to 50 tonnes of CO₂.

Revolving Energy Fund

In 2000 Council established a process to set aside monetary savings achieved through energy efficiency initiatives as a way of funding future energy efficiency measures. The majority of Council's energy efficiency retrofits are implemented via this fund.

WATER MANAGEMENT



Rainwater Tanks

Council is committed to reducing demand on the town water supply and demonstrating community leadership in water conservation through the installation of rainwater tanks on public facilities and council infrastructure.

In 2008 a slimline rainwater tank was installed at the entrance to the Murwillumbah Administration Centre. Water from the tank is used to top up the water feature at the front of the building.

In 2007 a 10,000 litre rainwater tank was installed at the Sustainable Living Centre. Water from the tank is used to flush toilets and wash clothes.

Installations of rainwater tanks will continue to occur at every opportunity to maximise water conservation outcomes.

Waterless Urinals

Council is committed to reducing demand on the town water supply and demonstrating community leadership in water conservation through the installation of waterless urinals throughout the shire.

In 2008 waterless urinals were installed in public toilets at Casuarina and Chillingham Community Centre.

In 2006 waterless urinals were installed in male staff toilets at the Murwillumbah Administration Centre.

In 2005 waterless urinals were installed in the male toilets at the South Tweed Health and Community Centre.

Installations will continue to occur at every opportunity to maximise water efficiency outcomes.

Recycled Water

Refer to the [Wastewater Management Chapter](#) of this report for details of recycled water initiatives.

Water Efficient Beach Showers

Since 2001, all the beach showers in the shire have been three-star water efficient.

Irrigation Practices

Since 2000 irrigation practices in parks and gardens have been progressively improved in a number of ways including timing to occur predominantly in the evening to reduce evaporation loss, active monitoring of grass growth and weather conditions to minimise water use, increased use of low water use plants and grass species and investigations into alternative supplies of water for irrigation purposes e.g. recycled water.

WASTE MANAGEMENT & GREEN PROCUREMENT



Picture: a few examples of recycled plastic products being used in local parks

Paper Savings

In 2008 Council's Executive Management Team endorsed the proposal to reduce the environmental impact of administration activities by agreeing to the following ongoing actions:

- Purchase office paper made from 50% recycled stock and 50% plantation stock.
- Make double sided printed the default print function throughout the organisation.

Recycled Plastic Products

In 2007 Council's Asset Management Section developed a standard procurement list that includes park benches, picnic settings, bollards and boardwalk planks made from recycled plastic. The use of recycled plastic reduces maintenance costs, particularly in coastal environments while demonstrating community leadership in green purchasing.

Office Waste Minimisation / Green Procurement

In 2006 Council's Executive Management Team adopted an Office Waste Minimisation Protocol to reduce the environmental impact of administration activities. The protocol identifies all of the waste streams within the office environment and nominates a range of sustainable purchasing and waste management actions to reduce the environmental footprint of administration activities.

Toner Cartridge Recycling

In 2003 toner cartridge recycling was established in the Murwillumbah Administration Centre. Since that time the system has been expanded to all office facilities including the Banora Point Laboratory, Tweed Office and Murwillumbah Works Depot.

A small amount of revenue is generated (approx \$300 per year) through the recycling program and this money is donated to Landcare Australia as part of the Cartridges for Planet Ark Campaign.

Landfill Gas Management

In 2003 a methane gas extraction system was constructed at Stotts Creek landfill. The system captures the methane produced by rotting vegetative matter (e.g. food scraps) and uses it to generate electricity. This electricity is then sold back into the national electricity grid. Capturing the methane instead of letting it escape into the atmosphere prevents an average of 10,000 tonnes of CO²(equivalent) from entering the atmosphere. This is equivalent to taking 2,000 cars off the road for one year.

Paper Recycling

In 1996 paper recycling was established in the Murwillumbah Administration Centre. Work to reduce the environmental impact of paper consumption has been ongoing since this time. In 2003 a process was established to ensure all staff are supplied with a desktop paper recycling box and this now forms part of the OMS induction for new staff.

Lunch Room Recycling

In 2005 recycling bins were set up in the tea-rooms and staff lunch room. The bins collect co-mingled recyclables generated from staff lunches and tea-breaks (e.g. milk bottles, drink cans etc).

Metal Recycling at the Depot

In 2006 metal recycling bins were set up at the Murwillumbah Works Depot to collect copper, brass, steel etc. When full the bins are collected by a local waste contractor. Staff are required to return recyclable materials to the depot when working off-site.

Recommendations:

Develop Waste Minimisation Protocols for other council sites e.g. works depot.

Develop a 'green procurement checklist' for incorporation into Council's *Procurement Policy*.

Expand recycling facilities to all locations.

Develop a record keeping process to track waste generation and recycling rates at Council facilities.

BIODIVERSITY CONSERVATION



Picture: a staff tree planting day at Uki.

Roadside Vegetation Management

In 2007 Council resolved to identify, in co-operation with the National Parks and Wildlife Service, rare and endangered tree species within road reserves, to ensure that no undue damage is done to them in the process of normal road activities.

Under the *Roads Act 1993*, Tweed Shire Council is responsible for maintaining the local road network, including the roadside vegetation.

The main reason for controlling roadside vegetation is to provide adequate site distances for the safe movement of vehicles and pedestrians. However in many parts of the shire, the road reserve also contains important remnants of native vegetation.

The goal of roadside vegetation management is to maintain adequate site distances along roadsides without causing unnecessary damage to native vegetation in the road reserve. Council strives to achieve this goal through appropriate procedures, staff training and a commitment to continual improvement.

Roadside Vegetation Management 'Wick Wipe' Trial

Between 2000 and 2002 Council conducted a trial project to improve the management of roadside vegetation. The trial was to assess how cost and performance effective a 'wick wipe' process is when compared with the traditional method of tractor slashing the roadsides. The concept of the process is that the wick wiping reduces the quantity of taller undesirable vegetation species and encourages the growth of shorter ground covering species that do not require the same level of maintenance (i.e. not as much slashing required). Although the cost effectiveness of the wick wipe process was not proven, Council learnt some valuable lessons in terms of what types of roadside vegetation would benefit from this type of management.

Project Management Plans

In 1995 Council established a Project Management Plan (PMP) process to collate documents held by the project overseer containing all the information relevant to the site and activity to be undertaken. This includes:

- Planning assessment documents and consent/approval conditions.
- Relevant management plans including environmental management requirements.
- Relevant Standard Operating Procedures and Work Method Statements.

Through the PMP process Council is able to identify, prioritise and manage environmental impacts associated with its construction activities.

FLEET MANAGEMENT



Picture: A few examples of Council initiatives to reduce the environmental impact of its vehicle fleet.

Bicycle Fleet

In 2008 Council introduced a bicycle fleet into its operations to reduce local greenhouse gas emissions, provide leadership to the community, demonstrate the benefits of bikes for corporate travel and increase staff opportunities for healthy active transport. Refer below for staff participation rates.

Targeted Pressures: Climate Change

Passenger Vehicle Fleet

In 2006 Council amended its lease-back agreement for passenger vehicles to encourage vehicle downsizing (i.e. smaller, more fuel efficient cars). Small and mid-sized vehicle options were improved and cheaper lease fees were established for these cars when compared to the traditional 'company car'.

This initiative has proven to be very successful with more than 90% of staff with lease-back vehicles choosing to downsize their vehicle. It is important to note that this initiative has been complimented by the decision of Council's executive staff to downsize their own vehicles.

Targeted Pressures: Climate Change

Executive Management Vehicles

In 2007 Council's executive staff traded their luxury six cylinder vehicles for more fuel efficient cars to lead by example and encourage staff with lease-back vehicles to choose smaller, more fuel efficient cars.

Diesel Vehicles

In 2006 Council listed diesel powered passenger vehicles as an option for lease-back passenger vehicles. The initiative sought to reduce fuel consumption and associated greenhouse gas emissions.

Hybrid Vehicles

In 2005 Council purchased a mid-sized hybrid fuel sedan for use within council's passenger vehicle fleet. The initiative sought to provide community leadership on reducing transport related greenhouse gas emissions while 'testing the water' on the suitability of hybrid vehicles in a non-metropolitan setting (e.g. servicing down time). The performance of the vehicle exceeded expectations and proved very popular with staff. A second hybrid vehicle was purchased in 2007 and a third was purchased in 2008.

Vehicle Fleet Indicator – Fuel Consumption	04/05	05/06	06/07	07/08
Average volume of ULP per vehicle (litres)	3649	3398	2816	3034
Average volume of diesel per vehicle (litres)	4348	3978	3538	3976
Combined average per vehicle (litres)	4086	3783	3300	3686

Source: TSC Works Unit

Bicycle Fleet Indicator – Staff Participation	07/08
No. of staff inducted into bicycle fleet	25

Source: TSC NRM Unit

CONTRACTS AND TENDERS

Council regularly seeks tenders for services that include:

- Civil works design and project management
- Product supply (as a preferred supplier)
- Site works and site restoration
- Manufacture, supply and delivery of specific goods and services

Council has sought to improve the environmental outcomes associated with contracts and tenders through the implementation of the following:

- General environmental protection controls included in tender specifications.
- The submission of Environmental Management Plans is generally required for works in or adjacent to environmentally sensitive areas.
- Details of the development application conditions are included in the tender specifications to allow tenderers to familiarise themselves with the conditions of consent.
- Tender evaluations consider the environmental 'track record' of the company.

Recommendation for Further Action: Conduct a thorough review of tender specifications, contract conditions and compliance procedures to identify areas of improvement for environmental management outcomes.

Environmental Design Guidelines for Council Facilities

Refer to OMS Policies and Procedures.

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