



## **State of the Environment Report**

2008 / 2009

**THIS PAGE IS BLANK**

## **Built Environment**

Iain Lonsdale: Senior Strategic Planner  
Petria Jukes: Town Planner  
Lindsay McGavin: Coordinator Major Development Assessment  
Rowena Michel: Senior Town Planner  
Sandy Pimm: Specialist Planner - Ecologist

## **Water Supply**

Anthony Burnham: Manager Water  
Bob Croft: Asset Management Officer

## **Solid Waste Management**

Adam Faulkner: Coordinator Waste Management

## **Waste-water Management**

Anthony Burnham: Manager Water  
Grant Malcolmson: On-Site Sewage Management Officer

## **Transport**

Ray Clarke: Road Safety Officer  
Trevor Harris: Infrastructure Engineer

## **Noise and Air**

Doreen Harwood: Coordinator Environment and Health

## **Culture and Heritage**

Gary Corbett: Manager Community and Cultural Services

## **Environmental Education and Capacity Building**

Dan Walton: Sustainability Program Leader  
Sascha Piotrkowski: Environmental Education Officer

## **Waterway Health**

Jane Lofthouse: Coordinator Natural Resource Management  
Tom Alletson: Waterways Program Leader

## **Bushland and Biodiversity**

Tom Alletson: Waterways Program Leader  
Mark Kingston: Biodiversity Program Leader  
David Hannah: Senior Environmental Scientist  
Clive Easton: Entomologist

## **Soil Landscape**

Sebastian Garcia-Cuenca: Sustainable Agriculture Program Leader

## **Atmosphere**

Dan Walton: Sustainability Program Leader

## **Council Operations**

Ian Kite: Manager Works Unit  
Stewart Brawley: Manager Recreation Services Unit  
Paula Telford: Corporate Performance Officer  
Tony Bennett: Senior Contracts Engineer  
Ross McLennon: Assistant Revenue Officer  
Dan Walton: Sustainability Program Leader

## **Disclaimer**

While this report has been prepared exercising all due care and attention, no representation or warranty, expressed or implied is made to the accuracy, completeness or fitness for the purpose in respect to any user's purpose.

## **Recycled Paper**

Original hardcopies of this publication have been printed on 100% recycled stock.



What is the State of the Environment Report? .....	1
<b>HUMAN SETTLEMENT .....</b>	<b>3</b>
BUILT ENVIRONMENT .....	5
WATER SUPPLY .....	19
WASTE-WATER MANAGEMENT .....	27
SOLID WASTE MANAGEMENT .....	38
TRANSPORT INFRASTRUCTURE .....	49
NOISE MANAGEMENT .....	55
LOCAL AIR QUALITY .....	59
NATURAL AND CULTURAL HERITAGE .....	62
ENVIRONMENTAL EDUCATION AND CAPACITY BUILDING .....	67
<b>CATCHMENT MANAGEMENT .....</b>	<b>85</b>
WATERWAY HEALTH.....	89
BUSHLAND AND BIODIVERSITY .....	104
SOILS AND SUSTAINABLE AGRICULTURE .....	119
<b>ATMOSPHERE.....</b>	<b>127</b>
CLIMATE CHANGE MITIGATION.....	125
CLIMATE CHANGE ADAPTATION .....	126
<b>COUNCIL OPERATIONS .....</b>	<b>129</b>
POLICIES AND PROCEDURES.....	131
ENERGY MANAGEMENT .....	132
WATER MANAGEMENT .....	134
WASTE MANAGEMENT AND GREEN PROCUREMENT .....	134
BIODIVERSITY CONSERVATION .....	136
FLEET MANAGEMENT .....	137

# 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.

With this knowledge, Council can allocate its environmental management resources more effectively and improve its strategic planning framework to progress towards ecological sustainability.

**THIS PAGE IS BLANK**

## HUMAN SETTLEMENT

This section of the report includes:

Built Environment

Water Supply

Waste-Water Management

Solid Waste Management

Transport Infrastructure

Noise

Local Air Quality

Natural and Cultural Heritage

Environmental Education and Capacity Building

**THIS PAGE IS BLANK**



# 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 population is located in the Tweed Heads area, which consists of Tweed Heads, Tweed Heads South, Tweed Heads West, Bilambil, Terranora, Banora Point, Fingal Head and Kingscliff. (ABS 2006).
- 25% of the shire 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 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 shire population by 40,000+ people in the next twenty years.

## PRESSURE

### At a Glance

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

<ul style="list-style-type: none"> <li>- Point source waterways pollution (e.g. waste-water)</li> <li>- Liquid trade-waste management</li> </ul>	
<p><b>Brownfields Commercial / Industrial Development</b> (e.g. in-fill development in existing industrial estates)</p> <ul style="list-style-type: none"> <li>- Demands on the water supply catchment</li> <li>- Waste management</li> <li>- End-point greenhouse gas emissions (transport and electricity)</li> <li>- Diffuse source waterways pollution (e.g. stormwater)</li> <li>- Point source pollution (e.g. waste-water) to waterways</li> <li>- Liquid trade-waste management</li> </ul>	
<b>These pressures are likely to increase in proportion to population</b>	

### Pressure Indicators

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

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

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

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

<b>Indicator: No. of Development Applications</b>	<b>01/02</b>	<b>02/03</b>	<b>03/04</b>	<b>04/05</b>	<b>05/06</b>	<b>06/07</b>	<b>07/08</b>	<b>08/09</b>
Tweed Shire	1632	2178	1906	1719	1707	1696	1385	1018
State Average	727	742	765	789	705	N/A	N/A	N/A

Data: All Development Applications.

Source: [DLG Comparative Information](#) and Tweed Shire Council (TSC) Development Assessment Unit

<b>Indicator: Number of New Land Parcels</b>	<b>04/05</b>	<b>05/06</b>	<b>06/07</b>	<b>07/08</b>	<b>08/09</b>
Industrial	9	0	10	33	25
Residential	839	339	130	243	218
Roadworks	29	14	27	2	1
Rural	63	31	38	56	4
Rural / Residential	7	0	13	0	0
<b>Total</b>	<b>947</b>	<b>384</b>	<b>218</b>	<b>304</b>	<b>248</b>

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

<b>Indicator: Number of New Constructions</b>	<b>04/05</b>	<b>05/06</b>	<b>06/07</b>	<b>07/08</b>	<b>08/09</b>
Commercial / Industrial	1	3	2	1	0
Commercial / Residential	5	5	5	4	1
Commercial	37	22	27	97	27

<b>Indicator:</b>	<b>04/05</b>	<b>05/06</b>	<b>06/07</b>	<b>07/08</b>	<b>08/09</b>
<b>Number of New Constructions</b>					
Industrial	18	20	8	19	5
Other (e.g. roadworks)	18	16	22	48	18
Residential	565	531	457	537	356
Rural	25	35	27	56	9
Rural / Residential	4	2	4	5	7
<b>Total</b>	<b>673</b>	<b>634</b>	<b>552</b>	<b>767</b>	<b>423</b>

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

### Land Use Planning

Tweed Shire Council's land use planning involves the formulation of strategies to conserve and restore 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.

### Specific Land Use Planning Initiatives

Specific land use planning initiatives for environmental management are listed below 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.

Icons at the end of each response represent the pressure being targeted.

### Draft Local Environment Plan (2010)

*Responsibility: Planning and 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 Draft TLEP 2010 in the standard template format. The Draft LEP 2010 reflects the intent of TLEP 2000 however is represented in the new template format and accompanied by reviewed format for the mapping of information. Including zone maps, development standards are now mapped, as is bushland, heritage items and other considerations.



## **Tweed Urban and Employment Land Strategy 2009**

*Responsibility: Planning and Regulation Division*

*Status: Ongoing*

On 17 March 2009, Council resolved to adopt the Tweed Urban and Employment Land Release Strategy, prepared by GHD and the Council's Planning Reforms Unit.

Urban Land: In 2004 Tweed Futures identified the need to guide sustainable growth and change, and to safeguard the Tweed's natural environment and associated lifestyles. Through the implementation of this goal Council will need to revise its strategic directions for urban growth in the Tweed. The current Urban Release Strategy was adopted by Council in 1991 and presented a clear road map for urban growth in the Tweed. However with current trends there will be a likely shortage of urban land within the Shire within the next two decades.

The Tweed Shire Urban Release Strategy revises current proposals for urban growth and development and presents an urban growth strategy for the next 25 years. The strategy identifies a bank of suitable land that should be brought forward should need and demand arise. However, Council, in adopting the findings of the strategy reaffirmed their position of land use policy by identifying the preferred option to deal with growth and change as follows:

“Rely on Existing Zoned Areas and Increase the Density of Development in Key Urban Areas”

This option would see Council maintain the existing residential zoned lands subject to a review of residential density in key urban areas such as Tweed Heads Town Centre, Murwillumbah and Kingscliff through a process of locality planning. This would likely involve increasing the height limit in these areas to accommodate the additional expected population. The advantages of this option would be that it could be used as a tool to revitalise these centres (especially Tweed Heads) and bring investment into these areas that can also contribute to public infrastructure. It would also increase the likelihood of these centres achieving higher order social and infrastructure services (e.g. health and education) commensurate with the larger population. Given the existing level of unit production in Tweed Shire is around 35% of new dwellings there is scope to increase this to the 40% target suggested by the State government in the Far North Coast Regional Strategy. However, higher densities often lead to increased social issues (this would need to be carefully monitored) and would change the social fabric of these areas as they evolve and grow. It would also have immediate visual impacts as taller buildings appear and the urban form changes. Traffic and public transport issues will increase in importance as density increases and congestion problems occur.

Employment Land: Similarly, the Tweed Urban and Employment Land Release Strategy (TUELRs) identified a bank of land (to be subject of further investigation) that could be brought forward for employment purposes should need and demand arise.

In determining a suitable supply of sites to accommodate a land release program the Strategy has undertaken a Land Suitability Analysis. Industrial developers typically have a series of key requirements in identifying a suitably located site for their business. These factors include:

- The land must be flood free in order for business to feel secure.
- Proximity to transport options including major roads.
- Easy access for trucks and into the site.
- The topography of the land for cost-effective development.
- Proximity to existing industrial land to allow for less impact on the region.
- Proximity to existing industrial land to allow industry clustering opportunities.
- A buffer other land uses such as residential.

These factors have been matched against the following physical environmental constraints comprising:

- Environmental (open space, acid sulfate soils, contaminated lands etc.).
- Vegetation management (SEPP 14, SEPP 26, Koala Habitat).
- Threatened species and vegetation management.
- Agricultural land.
- Bushfire management.
- Topography.
- Land susceptibility to climate change impacts.
- Flood liable land.
- Airport noise.

The TUELRS sets a program for release of land, which is to be balanced against need and demand at the relevant time. The strategy requires that, all Greenfield sites identified for further investigation, if deemed appropriate for rezoning are to be master-planned prior to the rezoning process to ensure that orderly, sustainable and sufficient use of land. Each potential employment land release area (or group of areas) will require an amendment to the Tweed LEP, and may require Development Control Plan provisions, a Section 94 Contributions Plan and/or a planning agreement with Tweed Shire Council. A planning proposal would be required by the NSW State government.



### Smart Housing Tips

*Responsibility: Planning and Regulation Division. NRM Unit – Sustainability Program*

*Status: Ongoing*

In 2009 Council added content to its website on designing and building a home that is more comfortable to live in, cheaper to run and has minimal impact on the environment. To view this information visit <http://www.tweed.nsw.gov.au/PlanDevBuild/SmartHousing.aspx>



### Hastings Point Height Limit

*Responsibility: Planning and Regulation Division*

*Status: Ongoing*

In November 2008 Council resolved to amend the Tweed Development Control Plan (Tweed DCP) in relation to development south of the Cudgera Creek Bridge at Hastings Point.

This has the effect of limiting the building height from three storeys to two. Following this decision at the 18 November meeting, Council decided to refuse a development application for a three storey complex of seven units on the corner of the Tweed Coast Road and Young Street at Hastings Point.

The purpose of the amendment to the Tweed DCP is to restrict the potential impact of future development arising before the completion of a Hastings Point Locality Plan and DCP, which will provide site and development-specific guidelines for Hastings Point.

In July 2005 Council decided to amend the Tweed Local Environment Plan (LEP) 2000 to reduce the maximum height of buildings south of Cudgera Creek Bridge at Hastings Point from three storeys to two storeys. However, after receiving advice from the NSW Department of Planning, Council decided to abandon the draft LEP process in December 2006, in light of the need to provide a broader strategic context to building heights across the Tweed Shire. In response to the community concern about the scale of new development occurring in Hastings Point, Council engaged the services of a consultant in August 2007 to determine if the three-storey height and density controls under the Tweed LEP 2000 were appropriate for development in Hastings Point. The study covered the residential area south of the Cudgera Creek Bridge, which consisted of 44 lots. The consultant, Ruker and Associates, and Council's staff held two consultation workshops with the study area residents, landowners and representatives of the Hastings Point Progress Association. This feedback was used to finalise the study report. The report concluded that the existing controls under the Tweed LEP and DCP were not adequate to guide the development of three storey and larger multi-dwelling developments, which could have a significant impact on the character of a small coastal village like Hastings Point.



### **Pottsville Locality Based Development Code**

*Responsibility: Planning and Regulation Division*

*Status: Ongoing*

A draft Locality Plan, prepared Architectus Pty Ltd on behalf of Tweed Shire Council, was released for public comment during 2008, however, Council resolved on 12 August 2008 to reassess the Village's potential to support a retail supermarket in response to a Developer's Court challenge for a retail supermarket in the Seabreeze Estate, which was later dismissed by the Court.

Since then Council's Planning Reforms Unit have undertaken further detailed analysis of the Village centre and broader general improvements to the earlier exhibited Draft Plan. The overarching principle of the document is to guide development which reaffirms the broad settlement pattern of Pottsville through a framework that fosters active consideration of environmental constraints whilst maintaining and enhancing the existing 'connected villages' structure. The village centre is to be consolidated as the primary activity hub for the Pottsville community by increasing its opportunity for retail, commercial and accommodation development, encouraging a range and mix of business and community uses, improving the quality of the public domain and enriching the experience of its users.

The Draft Locality Based Development Code is due for exhibition in October 2009.



## Kings Forest

*Responsibility: Planning and Regulation Division*

*Status: Ongoing*

Kings Forest is a State Significant Site under the provisions of State Environmental Planning Policy Major Development. The NSW Department of Planning is considering a Part 3(A) application under the *Environmental Planning and Assessment Act (1979)* for a Concept Plan for a mixed residential / commercial / recreational development. The proposal includes a site specific Koala Plan of Management and other environmental management plans. The development is likely to be staged over ten to twenty years with an approximate population of 10,000 people.



## Cobaki Lakes

*Responsibility: Planning and Regulation Division*

*Status: Ongoing*

Cobaki Lakes is a Major Project application under the provisions of Part 3(A) of the *Environmental Planning and Assessment Act (1979)*. The NSW Department of Planning is the consent authority and is considering a Concept Plan proposal for a residential subdivision including town centre, open space, schools and roads. The proposal includes management plans addressing ecological, stormwater, flood, acid sulfate soils, groundwater and bushfire issues. The proposal will allow for a new population of approximately 12,000 people and will be staged over ten to twenty years.



## Nightcap Village

*Responsibility: Planning and Regulation Division*

*Status: Ongoing*

Nightcap Village is a development proposal for the staged construction of a new village with an expected population of approximately 1000 people.

Conditions have been imposed regarding environmental rehabilitation of existing areas including the riparian zone, a 50 metre buffer to the Tweed River, prohibiting cats and dogs for threatened species protection, water and sewerage including full funding of all aspects by the developer and community association and management of Aboriginal archaeology including an Aboriginal Heritage Display.

A condition has also being imposed regarding the formulation and approval of a design code for the Village to guide future built form.



## Area E

*Responsibility: Planning and Regulation Division*

*Status:*

The LEP Amendment to rezone Area E Residential 2(c) was gazetted in 2007. Development of the site can not be commenced until after the exhibition and adoption of a site specific DCP, s94 plan

and other documents to guide development of the site. Area E is a Greenfield site in Terranora that will accommodate approximately 4000 people over the 182ha site area. The site is heavily constrained and borders a fragile environmental wetland at the northern end of the site. Council is acting with extreme care to ensure that development of the site and rehabilitation and management of the wetland and other environmental areas is undertaken in a sustainable manner, guiding this through the policy preparation process. The policy process will also include a site specific Wetland Rehabilitation Plan and Stormwater Management Plan, prepared to the satisfaction of Council.



### Development Control Plan Amalgamation

*Responsibility: Planning and 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 applicable to a particular type of development or 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 principles.
3. Form part of a range of documents that provides guidance 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.



### Environmental Enforcement Levy

*Responsibility: Planning and 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

*Responsibility: Planning and Regulation Division*

*Status: Ongoing*

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.





## Planning Reforms

*Responsibility: Planning and 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 establishing general urban footprints and including provisions to conserve significant environmental areas.

This work continued in 2008/09 with extensive consultation between Tweed Shire Council and the NSW Department of Planning in relation to the preparation of the Draft Tweed LEP 2010.



## Building Reforms

*Responsibility: Planning and Regulation Division*

*Status: Repealed in 2008*

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.

In April 2008 Section A14 was repealed, with the major land-forming controls being incorporated into DCP A5.



### 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). 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](http://www.basix.nsw.gov.au)



### Tweed Vegetation Management Strategy 2004

*Responsibility: NRM Unit – Biodiversity Program*

*Status: Ongoing*

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

In 2008/09 work continued to implement the TVMS through drafting of the Tweed LEP 2010 with the findings being translated into comprehensive mapping overlay to be included within the LEP.



## Constructed Wetlands

*Responsibility: Planning the Regulation Division*

*Status: Ongoing*

In 2002 Council introduced a requirement for greenfields development to incorporate constructed wetlands into their design to help reduce the impacts of urban stormwater on local waterways. Well designed wetlands help to prevent sediments, organic matter and nutrients (such as phosphorous and nitrogen) from entering local waterways.



## Socio-Economic Development Controls

*Responsibility: Planning and 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

*Responsibility: Planning and Regulation Division*

*Status: Ongoing*

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 and Regulation Division*

*Status: Ongoing*

In 2000 Council began to introduce 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 and Regulation Division*

*Status: Superseded by BASIX in 2004*

In 2000 Council sought to improve the energy efficiency of new housing stock in the shire by adopting DCP 39 – Energy Smart Homes Policy. Before being superseded by BASIX in 2004, DCP 39 included requirements for northern orientation of living spaces, ceiling insulation, breezeways, roof eaves and solar hot water.



## Tweed Urban Stormwater Quality Management Plan

*Responsibility: Engineering and 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 sustainable design features including grid interactive solar power, heat pump hot water, rainwater supply for toilets, gardens and washing machines, 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. Proceeds from the sale of the Smart House were used to design and build Council's environmental education trailer, the Catchment Activity Model (CAM). Refer to [Environmental Education and Capacity Building](#) for more information about CAM.



## Local Environment Plan (2000)

*Responsibility: Planning and 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 and 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.

In August 2008, Council adopted an amendment to The Tweed DCP, part A5 Subdivision Manual to take into account Council's Floodplain Risk Management Study and Plan, in particular the requirements of Part 3 of the Tweed Valley Floodplain Risk Management Study – Habitable Land Use on the Floodplain. This reflects changes to relevant legislation and the certification procedures for Subdivision Works – Accredited Certifiers.



## Local Environment Plan (1987)

*Responsibility: Planning and 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 restore those areas within the shire identified as being of significant environmental value. One of the strategies used by LEP (1987) was the creation of environmental protection zones in the shire.



## S.94 Contribution Plans

*Responsibility: Planning and 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	08/09
<b>Greenfields Development and Habitat Restoration</b>			
Area of bushland (ha) restored by landowner before handover to Council	N/A	26.6	0
Area of bushland under active restoration prior to handover to Council	N/A	146	>200

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

Source: TSC Planning and Regulation Division

Indicator:	06/07	07/08	08/09
<b>Unauthorised Clearing Response</b>			
Number of environmental compliance orders issued by Council	N/A	12	2
Number of compliance investigations, reporting and/or restoration actions	N/A	3	15

Source: TSC Planning and Regulation Division

Indicator:	Prior to '06	06/07	07/08	08/09
<b>Stormwater Treatment</b>				
Number of constructed wetlands	N/A	N/A	N/A	N/A
Number of pollutant traps installed	N/A	N/A	N/A	N/A

Source: TSC Planning and Regulation Division

Indicator:	04/05	05/06	06/07	07/08	08/09
<b>Water Pollution Penalty Infringement Notices (PIN's)</b>					
No. of PIN's issued under <i>POEO Act</i> *	2	3	2	N/A	N/A
No. of PIN's issued under <i>EPandA Act</i> **	2	2	33	N/A	N/A

Source: TSC Planning and 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](#)

[Waste-water Management](#)

[Solid Waste Management](#)

[Transport Infrastructure](#)

[Catchment Management](#)

[Atmosphere](#)

# WATER SUPPLY




## CONDITION

### At a Glance

- The Tweed River is the primary source of water for the town water network. During periods of low flow in the freshwater reaches of the Tweed River, water is released from Clarrie Hall Dam and flows down the Tweed River to the Bray Park Weir where it is extracted and pumped to the nearby Water Treatment Plant and treated to drinking quality standards.
- The treated water is pumped via 24+ pumping stations, through more than 660 kilometres of water supply pipelines to 41 reservoirs throughout the shire. These reservoirs have a storage capacity of 113 Mega Litres (ML).
- 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 costs.
- The cost of treating one million litres (one mega-litre) of water is approximately \$170.
- Full details of the water supply network, including treatment processes can be found at: [www.tweed.nsw.gov.au/water](http://www.tweed.nsw.gov.au/water)

## 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"> <li>○ Degraded water quality.</li> <li>○ Reduced riverine habitat.</li> <li>○ Reduced flooding of riparian zones, floodplains and wetlands.</li> <li>○ An increase in algal blooms.</li> <li>○ Erosion of river channels. (DEC 2004).</li> </ul>	 FLOW PATTERNS
Energy use and the greenhouse gas emissions associated with treatment and supply of water.	 CLIMATE CHANGE
<b>These pressures are likely to increase in proportion to population.</b>	

### Pressure Indicators – Water Supply

Indicator: Catchment Inflow	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09
Annual Rainfall Figures for Bray Park (mm)	1592	764	1409	1371	1375	1419	886	1665	2018

Source: TSC Water Unit

**Bray Park Water Treatment**

<b>Indicator:</b> <i>Percentage Compliance with Drinking Water Guidelines</i>	<b>Physical</b> (Turbidity, etc)	<b>Micro-biological</b> (Total Coliforms)	<b>Chemical</b> (pH, mineral content etc)
2006/07	99.96%	97.32%	91.30%
2007/08	100%	100%	99.6%
2008/09	100%	100%	94.38%

Source: TSC Water Unit

**Uki Water Treatment**

<b>Indicator:</b> <i>Percentage Compliance with Drinking Water Guidelines</i>	<b>Physical</b> (Turbidity, etc)	<b>Micro-biological</b> (Total Coliforms)	<b>Chemical</b> (pH, mineral content etc)
2006/07	100%	98.06%	98.14%
2007/08	100%	100%	99.27%
2008/09	100%	100%	98.55%

Source: TSC Water Unit

**Tyalgum Water Treatment**

<b>Indicator:</b> <i>Percentage Compliance with Drinking Water Guidelines</i>	<b>Physical</b> (Turbidity, etc)	<b>Micro-biological</b> (Total Coliforms)	<b>Chemical</b> (pH, mineral content etc)
2006/07	99.84%	99.02%	96.75%
2007/08	99.27%	100%	91.4%
2008/09	94.42%	100%	98.62%

Source: TSC Water Unit

**Annual Water Consumption by Sector including (% of annual total)**

<b>Mega - litres per year</b>	Residential	Commercial	Industrial	Rural	Institutional	Bulk Sales	Public Uses	Leakage	<b>Total</b>
1991	5815 (63%)	1584 (17%)	201 (2%)	162 (2%)	185 (2%)	100 (1%)	242 (3%)	902 (10%)	<b>9190</b> (100%)
1995/96	5163 (60%)	1400 (16%)	144 (2%)	150 (2%)	171 (2%)	70 (1%)	257 (3%)	1170 (14%)	<b>8526</b> (100%)
2000/01	5833 (60%)	1827 (19%)	211 (2%)	171 (2%)	195 (2%)	105 (1%)	260 (3%)	1081 (11%)	<b>9683</b> (100%)
2005/06	5703 (60%)	1563 (16%)	241 (3%)	166 (2%)	170 (2%)	57 (1%)	241 (3%)	1245 (13%)	<b>9386</b> (100%)
2006/07	6004 (64%)	1401 (15%)	143 (1%)	47 (0%)	209 (2%)	38 (0%)	258 (3%)	1465 (15%)	<b>9566</b> (100%)
2007/08	5251 (59.43%)	1015 (11.49%)	242 (2.74%)	154 (1.74%)	600 (6.79%)	66 (0.75%)	181 (2.05%)	1327 (15.01%)	<b>8836</b> (100%)
2008/09	5441 (62.98%)	1142 (13.22%)	212 (2.45%)	110 (1.27%)	436 (5.05%)	79 (0.91%)	162 (1.88%)	1057 (12.24%)	<b>8639</b> (100%)

Source: TSC Water Unit



## Annual Residential Water Consumption

	Population Connected to Town Water	Annual Residential Consumption (Megalitres)	Annual Residential Consumption Per Person (Litres)	Daily Residential Consumption Per Person (Litres)
2000/01	64,624	5,833	90,261	<b>247</b>
2001/02	65,614	6,215	94,721	<b>260</b>
2002/03	66,604	5,552	83,358	<b>228</b>
2003/04	67,594	5,690	84,179	<b>231</b>
2004/05	68,584	5,996	87,426	<b>240</b>
2005/06	69,574	5,703	81,970	<b>225</b>
2006/07	70,564	6,004	85,086	<b>233</b>
2007/08	71,554	5,251	73,385	<b>201</b>
2008/09	72,544	5,441	75,003	<b>205</b>

**Indicator - Surface Water and Groundwater Extraction:** [NSW Department of Water and Energy](#) 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.

Icons at the end of each response represent the pressure being targeted.

### 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.



### Demand Management Strategy

The preparation of a Water Supply Demand Management Strategy (DMS) is a key component of the Tweed Shire Council (TSC) Integrated Water Cycle Management (IWCM) Strategy and is required for compliance under the Department of Water and Energy Best Practice Management of Water Supply and Sewerage Guidelines (May 2007).

In January 2009 Council adopted Stage 1 of the DMS for residential areas. The installation of water efficient appliances and rainwater tanks connected to toilets, laundry and outdoor use is made mandatory in all new developments. Similar installations are also encouraged for existing homes. This could mean that the amount of drinking water being used by new residential homes would be reduced by approximately 36 per cent or 80,000L per year (per average-sized household). Other recommendations will also save water such as a water loss management program and residential education programs.

Stage 2 is being finalised to address water demand management for the non-residential sector (commercial / industrial uses). Its recommendations should be available by the end of 2009. For more information on the DMS visit [www.tweed.nsw.gov.au/water](http://www.tweed.nsw.gov.au/water)



## Integrated Water Cycle Management Strategy - Phase 2

Integrated Water Cycle Management (IWCM) is an approach to ensure safe and reliable water supplies without compromising the ecological function of the water catchment. It is based around a holistic approach to managing water supply, waste-water, stormwater and waterway health within long-term strategic planning goals.

In February 2009 Council commenced the second phase of an Integrated Water Cycle Management (IWCM) Strategy for the shire. This phase includes studies to better define issues and look at ways of managing them. The studies estimate population and water demand projections, examine water supply and water extractions from the environment, and increase the amount of water supplied from alternative sources such as recycled water and rainwater tanks. This process results in the adoption of long-term strategies for the integrated delivery of water supply, sewerage and stormwater services. Studies undertaken recently include:

- Tweed Shire Demand Management Strategy
- Tweed Shire Drought Management Strategy
- Tweed Shire Recycled Water Opportunities Report
- Risk Based Water Quality Management Plan
- Tweed Shire Water Loss Management Program – Leakage Report
- Tweed District Water Supply Augmentation Options Report – Course Screening



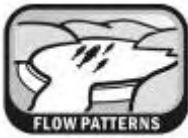
## Excess Water Charge for High Consumers

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 (detailed below) 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 require Council to release water from [Clarrie Hall Dam](#) to match river inflows during dry periods of less than the 95% flow. Other water extractors (e.g. irrigators) will be given cease to pump directives during such events.



### 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 the free community retrofit program has evolved, including participation rates, water savings and greenhouse gas abatement.



### 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. To view the latest information regarding water restrictions and triggers visit [www.tweed.nsw.gov.au/water](http://www.tweed.nsw.gov.au/water)



### 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 - Phase 1

Integrated Water Cycle Management (IWCM) is an approach to ensure safe and reliable water supplies without compromising the ecological function of the water catchment. It is based around a holistic approach to managing water supply, waste-water (sewage), stormwater and waterway health within long-term strategic planning goals.

In 2006 Council adopted the first phase of an Integrated Water Cycle Management (IWCM) Strategy for the shire. It included 26 actions to improve the way water is utilised within the Shire.



## Rainwater Tank Policy

In 2005 Council adopted a [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 outlines the necessary requirements to protect the public water supply from cross connection with private rainwater tanks.



## 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 [Waste-water Section](#) of this report for more details.



### Recycled Water Projects

In the mid 1980's Council commenced its first recycled water project by supplying irrigation water to the Tweed-Coolangatta Golf Course. Refer to [Waste-water Section](#) of this report for details of recycled water 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 including the establishment of the River Health Grants.



### 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 downstream at the Bray Park weir, treated and pumped via a network of over 660km of pipes to reservoirs throughout the shire. The town water network services over 80% of the shire population. For more information on the urban water cycle visit [www.tweed.nsw.gov.au/water](http://www.tweed.nsw.gov.au/water)

### Groundwater Management

Groundwater use is managed by the [NSW Department of Water and Energy](#). 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.

<b>Indicator: User Pays Water Pricing</b>	<b>02/03</b>	<b>03/04</b>	<b>04/05</b>	<b>05/06</b>	<b>06/07</b>	<b>07/08</b>	<b>08/09</b>
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

<b>Indicator: Daily Consumption Per Person</b>	<b>00/01</b>	<b>01/02</b>	<b>02/03</b>	<b>03/04</b>	<b>04/05</b>	<b>05/06</b>	<b>06/07</b>	<b>07/08</b>	<b>08/09</b>
Daily residential consumption per capita (Litres)	247	260	228	231	240	225	233	201	205

Source: Tweed Shire Council Water Unit

## **Related Topics**

[Built Environment](#)

[Waste-water Management](#)

[Waterway Health](#)

[Environmental Education and Capacity Building](#)

# WASTE-WATER MANAGEMENT





## CONDITION

### At a Glance

- Waste-water is the water borne wastes of a community. It contains approximately 0.1% pollutants by weight, with the remaining 99.9% being pure water.
- Waste-water is generated by 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.
- The average daily consumption of town water hovers around 200 litres per person. About 65% of this is returned to the waste-water system within minutes.
- Once in the system, the waste-water drains to 144+ pumping stations which transfer it to the nearest Waste-water Treatment Plant (WwTP) for disposal or recycling.
- Treatment Plants are located at Banora Point, Hastings Point, Kingscliff, Murwillumbah, Tumbulgum, Tyalgum and Uki.
- 90% of waste-water that enters the treatment plants is treated to tertiary standards (treatment standards are explained below).
- Council's waste-water network services approximately 82% of the shire population.
- On-Site Sewage Management Systems (e.g. septic tanks) service approximately 18% of residents in the shire.
- Definitions:
  - *Primary Treatment* – 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 Treatment* – follows primary treatment and typically is a biological process designed to remove 85 % of the biological oxygen demand and suspended solids of the waste-water. Also ammonia is typically converted to nitrate.
  - *Tertiary Treatment* – 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 waste-water. 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 waste-water 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 used to describe waste-water being treated to a level where it can be used for commercial applications, residential outdoor use, toilet flushing and clothes washing.

## PRESSURE

### At a Glance

Environmental pressures associated with waste-water management include:	Code
Discharge of treated waste-water 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 adjacent waterways	 DIFFUSE
Greenhouse gas emissions associated with: <ul style="list-style-type: none"> <li>• Energy input for the treatment and disposal of waste-water.</li> <li>• Methane generation from the treatment process.</li> </ul>	 CLIMATE CHANGE
<b>These pressures are likely to increase in proportion to population.</b>	

### Waste-water Management Indicators

	Population serviced by sewer (%)	Total volume of waste-water (ML)	Waste-water discharged to waterways (ML)	Waste-water reused (ML)	Number of sewer overflows
<b>2002/03</b>	81.7	7808	6925	244 (3.1%)	37
<b>2003/04</b>	82.2	7599	6613	356 (4.7%)	26
<b>2004/05</b>	82.7	8250	6874	376 (4.6%)	32
<b>2005/06</b>	82.7	8776	7536	267 (3.0%)	5**
<b>2006/07</b>	81.7*	7253	6063	340 (4.7%)	37
<b>2007/08</b>	82.15	7892	6749	303 (3.8%)	53
<b>2008/09</b>	82.37	8958	7262	740 (8.3%)	41

Source: Tweed Shire Council Water Unit

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

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

NOTE: This table has been revised to reflect corrections made to source data in September 2008.

Indicator: Liquid Trade Waste	Number of liquid trade waste generators
2002/03	511
2003/04	523
2004/05	523
2005/06	484
2006/07	460*
2007/08	460
2008/09	468

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 (OSSMS)	No. of new OSSMS built	Total No. of OSSMS (approx)	No. of approvals to operate issued	No. of site inspections carried out	No. of improvement notices issued
2002/03	103	4000	N/A	N/A	N/A
2003/04	152	6000	320	N/A	N/A
2004/05	165	6342	409	N/A	N/A
2005/06	120	6450	393	600	300
2006/07	120	6580	166	420	250
2007/08	92	6672	152	244	220
2008/09	136	6808	550	589	400

Source: Tweed Council Environmental Health Unit

## 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.

Icons at the end of each response represent the pressure being targeted.

### Banora Point Waste-water Treatment Plant Upgrade

*Responsibility: Water Unit*

*Status: Ongoing*

In March 2009 Council committed to a \$30 million upgrade of the Banora Point and West Tweed Waste-water Treatment Plant (WwTP) sites.

The upgrade of the two WwTP sites is required to improve waste-water quality in order to meet the Department of Environment, Climate Change and Water (DECCW) criteria, to provide waste-water services for the predicted increases in population in Tweed/Banora catchment area and to meet community water quality expectations. The new plant is considered to be vital to meet the demands of the existing and expected population growth and is a critical component of the strategic planning for the waste-water catchment. Without an increase in the capacity of the WwTP's development in the Cobaki, Terranora and Bilambil areas would not be able to proceed.



### Recycled Water Project – Chinderah Golf Course

*Responsibility: Water Unit*

*Status: Ongoing*

In 2009 Council began supplying recycled water from the Kingscliff WwTP to the Chinderah Golf Course for irrigation purposes. This initiative will reduce demand on the Cudgen groundwater aquifer as well as reducing waste-water discharge to the Tweed River by up to 100 mega litres per year.

## Recycled Water Project - Les Burger Field

*Responsibility: Water Unit*

*Status: Ongoing*

In 2009 Council began supplying recycled water from the Hastings Point WwTP to irrigate the Les Burger Rugby League Sports Fields. This initiative will reduce the facilities annual town water consumption by an average of 180 mega-litres per year.



## Kingscliff Waste-water Treatment Plant Upgrade

*Responsibility: Water Unit*

*Status: Completed November 2008*

In 2008 the new Kingscliff WWTP was opened. It is a \$45-million facility with an initial capacity of treating waste-water from 25,000 people but has been designed to be upgraded to a capacity of 50,000 people. The facility serves the villages of Kingscliff, Fingal Head, Chinderah, South Kingscliff (Salt) and Casuarina. The treatment process for the plant must meet the stringent waste-water discharge requirements that were determined during its Environmental Impact Study. A further requirement was that the process needed to be simple to operate and extremely robust to guard against shock loads on the plant. The treatment process is undertaken in three stages.

The primary treatment involves fine screening, grit removal and odour control. The secondary treatment sees the waste-water enter an anaerobic reactor, then an oxidation tank before entering a secondary anoxic zone, then a secondary aerobic zone, followed by clarification.

The tertiary treatment sees the waste-water enter a secondary pump station, followed by filtration, chlorination and then de-chlorination. The resulting waste-water quality discharged by the treatment plant has very low nutrient limits, making it a world-class treatment facility. The plant has a maximum nitrogen limit of five milligrams per litre and phosphorus limit of 0.3 milligrams per litre. Following treatment, waste-water is released to the Tweed Estuary at intersection of Chinderah bay drive and Wommin Bay Road, Chinderah.

A recycled water scheme with the adjoining Chinderah Golf Course reduces waste-water discharge volumes on the estuary by up to 100 mega-litres per year.



## Demand Management Strategy (2007)

*Responsibility: Water Unit*

*Status: Ongoing*

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 waste-water 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

*Responsibility: Water Unit*

*Status: Ongoing*

In 2007 Council began supplying recycled water from the Murwillumbah Waste-water Treatment Plant to the Condong Sugar Mill for use as cooling water in the electricity co-generation process. This initiative has avoided additional demand on the town water supply by an average of 584 mega litres each year and improved water quality in the Rous River by reducing discharge volumes to this waterway.



## Grey-water Reuse

*Responsibility: Water Unit*

*Status: Ongoing*

In 2007 Council sought to increase community awareness about domestic grey-water reuse through the promotion of NSW government fact sheets. To view these fact sheets visit [www.tweed.nsw.gov.au/water](http://www.tweed.nsw.gov.au/water) and click on 'water saving tips'.



## Pump Station Telemetry Upgrade

*Responsibility: Water Unit*

*Status: Completed in 2007*

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 Audit

*Responsibility: Water Unit*

*Status: Completed in 2007*

In 2007 Council conducted an audit of its waste-water network to identify potential 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

*Responsibility: Water Unit*

*Status: Completed in 2007*

In 2007 a Sewage Overflow Abatement Strategy was developed to reduce the likelihood of waste-water 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

*Responsibility: Water Unit*

*Status: Completed in 2007*

In 2007 the Tertiary Treatment Plant module was added to the Murwillumbah WwTP to achieve advanced tertiary treatment standards to allow for waste-water reuse at the Condong Sugar Mill in the cogeneration process.



## Development Servicing Plan for Waste-water Services

*Responsibility: Water Unit*

*Status: Completed in 2007*

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



## Integrated Water Cycle Management Strategy

*Responsibility: Water Unit*

*Status: Ongoing*

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, waste-water 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 Waste-water Treatment Plant Upgrade

*Responsibility: Water Unit*

*Status: completed in 2005*

In 2005 the Hastings Point WwTP was upgraded to service Cabarita, Bogangar, Hastings Point and Pottsville. Waste-water within this catchment is treated to tertiary standards and discharged via dune disposal system east of the plant.

In 2009 a recycled water scheme was implemented supplying irrigation water to the nearby Les Burger Sports Fields. Refer above for details.



## Recycled Water Management Strategy

*Responsibility: Water Unit*

*Status: Completed in 2005*

In 2005 Council completed an Environmental Impact Statement (EIS) Report to assess nine options for upgrading Banora Point and Tweed Heads West Waste-water 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 waste-water treatment plants to produce recycled water for domestic non-potable applications 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 waste-water to recycled water 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 - Uki Plantation Irrigation

*Responsibility: Water Unit*

*Status: Ongoing*

Since 2004 Council has supplied recycled water from the Uki WwTP to irrigate 8.75 Ha of *Eucalyptus* trees. Branches are harvested from these trees to feed Koalas at the Currumbin Wildlife Sanctuary. The system has been designed to utilise 100% of the treated waste-water from Uki village.



## Uki Waste-water Treatment Plant

*Responsibility: Water Unit*

*Status: Completed in 2004*

In 2004 a WwTP was constructed to service Uki village. Waste-water is treated to secondary standards and recycled via on-site plantation irrigation (detailed above).



## 24 Hour Emergency Response Line

*Responsibility: Water Unit*

*Status: Ongoing*

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



## On-Site Sewage Management

*Responsibility: Environment and Health Unit*

*Status: Ongoing*

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 waste-water 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 system.
- Inspections of systems throughout the shire to allocate a risk rating. 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 waste-water land application areas and installing biological septic tank outlet filters.



## Murwillumbah Waste-water Treatment Plant Upgrade

*Responsibility: Water Unit*

*Status: Completed in 2001*

In 2001 the Murwillumbah WwTP was upgraded to tertiary standards to improve discharge impacts on the Rous River.



## Kingscliff Waste-water Treatment Plant Upgrade

*Responsibility: Water Unit*

*Status: Completed in 1998*

In 1998 the Kingscliff WwTP was upgraded to secondary standards to reduce discharge impacts on the Tweed River. The discharge point for the Kingscliff WwTP is at the intersection of Chinderah Bay Drive and Wommin Bay Road, Chinderah.



## Trade Waste Policy

*Responsibility: Water Unit*

*Status: Ongoing*

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



## Tumbulgum Waste-water Treatment Plant

*Responsibility: Water Unit*

*Status: Completed in 1996*

In 1996 a WwTP was constructed to service Tumbulgum village. Waste-water is treated to tertiary standards and discharged in to the Tweed River downstream of the village.



## Banora Point Waste-water Treatment Plant Upgrade

*Responsibility: Water Unit*

*Status: Completed in 1995*

In 1995 the Banora Point WwTP was upgraded to tertiary standards to reduce discharge impacts on Terranora Inlet. The discharge point is beneath the Highway overpass on Dry Dock Road, Tweed Heads South.



## Liquid Trade-waste Program

*Responsibility: Water Unit*

*Status: Ongoing*

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



## Recycled Water Project - Tyalgum Pasture Irrigation

*Responsibility: Water Unit*

*Status: Ongoing*

Since 1990 Council has supplied recycled water from the Tyalgum Waste-water Treatment Plant to irrigate pasture on Treatment Plant land. This initiative reduces waste-water discharge to local waterways by an average of 25 mega litres per year.



## Tyalgum Waste-water Treatment Plant

*Responsibility: Water Unit*

*Status: Completed in 1990*

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



## Tweed Heads West Waste-water Treatment Plant Upgrade

*Responsibility: Water Unit*

*Status: Decommissioned in 2008*

In 1988 the Tweed Heads West WwTP was upgraded to secondary standards to reduce discharge impacts on Terranora Inlet. The discharge point is beneath the Highway overpass on Dry Dock Road, Tweed Heads South.

In 2008 the WwTP was decommissioned with waste-water from the service catchment being treated at the Banora Point WwTP.





## **Banora Point Recycled Water Project - Golf Course Irrigation**

*Responsibility: Water Unit*

*Status: Ongoing*

Since 1987 recycled water from the Banora Point Waste-water Treatment Plan has been used to irrigate sections of the Coolangatta Tweed Heads Golf Club golf course. This initiative reduces waste-water discharge to local waterways by an average of 250 mega litres per year.



### **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 Creek Resource Recovery Centre including the operation of the current putrescibles landfill, inert landfill cell and greenwaste processing. 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"> <li>• Indirect greenhouse gas emissions associated with the consumption of goods and services</li> <li>• Directed greenhouse gas emissions associated with waste collection and disposal</li> </ul>	
Construction Waste – Concrete and rubble recycling represents the majority of waste materials recovered from this waste stream	
Domestic Waste - Over 30% of the total waste stream is from the domestic sector	
Commercial and Industrial – an uptake in the co-mingled and cardboard recycling has slightly improved this waste sectors performance	
Landfill leachate – heavy rainfall and associated infiltration of the landfill site	
<b>These pressures are likely to increase in proportion to population</b>	

**Pressure Indicators**

<b>Indicator: Solid Waste 2005/06</b>	<b>Total (Tonnes)</b>	<b>Landfill (Tonnes)</b>	<b>Recycled (Tonnes)</b>	<b>% Recycled</b>	<b>% of Total Waste Stream</b>
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
<b>TOTAL</b>	<b>85,177.0</b>	<b>62,589.5</b>	<b>20,222.5</b>	<b>23.74</b>	<b>99.99</b>

<b>Indicator: Solid Waste 2006/07</b>	<b>Total (Tonnes)</b>	<b>Landfill (Tonnes)</b>	<b>Recycled (Tonnes)</b>	<b>% Recycled</b>	<b>% of Total Waste Stream</b>
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
<b>TOTAL</b>	<b>85,607</b>	<b>58,182.0</b>	<b>26,425.0</b>	<b>30.84</b>	<b>99.99</b>

<b>Indicator: Solid Waste 2007/08</b>	<b>Total (Tonnes)</b>	<b>Landfill (Tonnes)</b>	<b>Recycled (Tonnes)</b>	<b>% Recycled</b>	<b>% of Total Waste Stream</b>
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
<b>TOTAL</b>	<b>91,557.02</b>	<b>55,894.89</b>	<b>30,970.78</b>	<b>33.83</b>	<b>99.99</b>

<b>Indicator: Solid Waste 2008/09</b>	<b>Total (Tonnes)</b>	<b>Landfill (Tonnes)</b>	<b>Recycled (Tonnes)</b>	<b>% Recycled</b>	<b>% of Total Waste Stream</b>
Domestic	30919.77	22222.73	8697.04	28.12	30.63
Comm. and Industrial	24357.60	23036.10	1321.50	5.42	24.13
Construction	16492.70	9147.78	7344.92*	44.53	16.33
Green Waste	8845.20	0	8845.20	100	8.76
Hazardous Waste	2580.44	2580.44	0	0	2.55
Hard Rubbish Clean Up	1779.40	585	1194.40	67.12	1.76
Other	4958.76	4958.76	0	0	4.91
VENM (clean fill)	11006.74	0	11006.74	100	10.90
<b>TOTAL</b>	<b>100940.6</b>	<b>62530.81</b>	<b>38409.80</b>	<b>38.05</b>	<b>99.97</b>

Source: Tweed Shire Council Waste Management Section

\* This figure includes materials recovered for sale at the Tip Shop

## 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.

Icons at the end of each response represent the pressure being targeted.

### Waste Management Education

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

### New Bin System

*Responsibility: Waste Management Unit*

*Status: Ongoing*

2008/2009 will be the final reporting year using the divided garbage / recycling bin system. In December 2009 single households, multi units and some commercial premises will be provided with a multi bin system. The multi bin system is designed on best practice resource recovery and aims to improve recycling yields and quality from the kerbside collected materials. It will consist of a 140L red lid bin for garbage (collected weekly) a 240L yellow lid bin for recycling (collected fortnightly) and an optional green lid bin (collected fortnightly) for garden refuse. It is anticipated that the multi-bin system, in conjunction with community education initiatives will significantly increase recycling percentages in the shire.



## Fluorescent Light Globe Recycling

*Responsibility: Waste Management Unit*

*Status: Ongoing*

In 2009 Council commenced a recycling program to help keep fluorescent lights out of landfill. While ordinary incandescent lamps can be disposed via the kerbside collection service, fluorescent tubes, compact fluorescent light (CFL) globes and some other high intensity lamps contain mercury and require special consideration for appropriate disposal.



## Street-level Recycling

*Responsibility: Waste Management Unit*

*Status: Ongoing*

In 2008 Council began to install recycling facilities in public spaces, often called street-level recycling. Priority areas in the first phase of the roll-out include high pedestrian areas such as shopping precincts and popular Council parks. The new system compliments kerbside recycling services and helps to divert waste from landfill by providing the community with the opportunity to recycle bottles, cans, paper and plastic while in public places.



## Landfill Receipts

*Responsibility: Building and 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 2008/09 Council participated in a Waste Composition Audit to determine the weight of bins, how much recyclables were being lost in the waste stream, and contamination in the bins. The Audit was conducted to NSW Department of Environment Climate Change and Water (DECCW) best practice and has provided valuable data on characterisation of the domestic waste stream.



## Clean Fill Diversion

*Responsibility: Waste Management Unit*

*Status: Ongoing*

Virgin excavated natural material (i.e. clean fill) represents over 10% of the construction waste stream. Clean fill is a valuable resource that is stockpiled and used on-site for revegetation and occasional daily cover of the tip face. It is reported as a recyclable product in the pressure indicator table for 2008/09 (shown above).



## Solid Waste Management Strategy

*Responsibility: Waste Management Unit*

*Status: Ongoing*

In 2007 Council adopted a Waste Management Strategy 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 DECCW Model Waste and Recycling Collection Contracts. The Strategy, a precursor for the new multi-bin system, formed the basis of new a Collection Contract that was tendered and awarded in 2009.



## Electronic Waste Recycling

*Responsibility: Waste Management Unit*

*Status: Ongoing*

In 2007 Council commenced an electronic waste (e-waste) drop off program in response to the emerging waste management issue. Around 98% of 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. 20382 kilograms of e-waste was recycled in 2008/2009. Refer to [Response Indicators](#) for total volumes of e-waste recycled to date.



## 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. A contractor collects the unwanted metal materials, with Council facilitating the collection process through promotion and administration. 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. A review of landfill practices in 2008 saw the reduced prices for concrete, metals, rubble, and green waste continue, however the builders sorted fee was removed. The 2007/2008 recycling figures for this waste stream were over-reported and a natural adjustment can be seen in 2008/2009. Refer to pressure indicator tables (above) for recycling figures.



## 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 bins for recycling are provided at a subsidized price to encourage increased recycling rates in the commercial sector. 357 bins are in operation in 2008/09.



## 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. There are currently 303 multi unit dwelling recycling bins being serviced weekly.



## Green Waste Collection

*Responsibility: Waste Management Unit*

*Status: Ongoing*

In 2005 Council established a domestic green waste collection service to reduce the amount of garden waste being disposed of via the waste section of domestic rubbish bins. Green waste bins are collected fortnightly and the contents mulched at the Stotts Creek Resource Recovery Centre for commercial and private sales. Refer to [Response Indicators](#) for volumes of domestic green waste that have been diverted from landfill due to this service.



## Landfill Gas Management

*Responsibility: Waste Management Unit*

*Status: Ongoing*

In 2003 a methane gas extraction system was constructed at Stotts Creek Resource Recovery Centre. 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. 400 kilowatts is supplied into the national electricity grid every hour, which is enough to power about 300 homes.

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

2051763m<sup>3</sup> of landfill gas was combusted in 2008/2009. The average methane composition of the landfill gas is 53%. The resulting quantity of methane in landfill gas for combustion from the facility is 1087434.39m<sup>3</sup>



## Waste Wise Events

*Responsibility: Waste Management Unit*

*Status: Ongoing*

In 2003 Council introduced a recycling service for festival and events in the shire. Rubbish and recycling bins are supplied to festival organisers upon request. To compliment this service, fact sheets on how to run a waste-wise event are also supplied to festival organisers, including a stallholders and food vendors guide to avoid non-recyclable or non-biodegradable packaging for food and drinks.





## Waste Oil Recycling

*Responsibility: Waste Management Unit*

*Status: Ongoing*

In 2002 a waste oil recovery facility was constructed at the Stotts Creek Resource Recovery Facility. The service 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 divert construction waste from landfill by recycling brick and concrete at the Stotts Creek Resource Recovery Centre.



## Farm Chemical Container Collection

*Responsibility: Waste Management Unit*

*Status: Ongoing*

Since 2000 Council has participated in the national Drum Muster Program to promote collection and 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 to date.



## Materials Recovery Facility

*Responsibility: Waste Management Unit*

*Status: Ongoing*

In 1991 Council and the shire waste contractor constructed a Materials Recovery Facility at the Stotts Creek Resource Recovery Centre to sort domestic recyclables including paper, glass, plastic and metals ready for transport to reprocessing facilities. This facility forms the 'downstream' component of the household recycling service.



## Household Recycling Service

*Responsibility: Waste Management Unit*

*Status: Ongoing*

In 1990 Council introduced a monthly kerbside 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. In late 2009 a multi-bin system was introduced based on best practice resource recovery and aims to improve recycling yields and quality from the kerbside collection service.



## 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 landfill component of the Stotts Creek Resource Recovery Centre. Leachate is rainfall that percolates through the landfill extracting 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.



## 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. Metal items are recovered at the landfill for recycling. Refer to Pressure Indicators for volumes of waste collected and recycled as part of this service.



## Weekly Kerbside Collection

*Responsibility: Waste Management Unit*

*Status: Ongoing*

Since the early 1960's Council's waste contractor has provided kerbside collection of household rubbish. The wheelie bin was introduced to the shire in 1997. Approximately 88% of shire households are serviced by weekly kerbside collection.



## Response Indicators

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

Source: Department of Local Government Comparative Information [www.dlg.nsw.gov.au](http://www.dlg.nsw.gov.au)

Indicator: Recycling Rates by Sector	% of Domestic Waste Recycled	% of Commercial and Industrial Waste Recycled	% of Construction Waste Recycled
2003/04	15.7	N/A	N/A
2004/05	18.5	N/A	N/A
2005/06	23.72	0	29.54
2006/07	25.94	0	40.47
2007/08	33.35	0	72.00
2008/09	28.12	5.42	44.53

Source: TSC Waste Management Unit

<b>Indicator: Specialised Recycling Services</b>	<b>No. of farm chemical containers recycled</b>	<b>Tonnes of green waste recycled</b>	<b>Tonnes of electronic waste recycled</b>	<b>No. of fluorescent lights recycled (approx)</b>
2000 - 2004	4100	-	-	-
2004/05	1400	-	-	-
2005/06	2500	2796	-	-
2006/07	1809	7639	5.80	-
2007/08	2287	9537	17.23	-
2008/09	3606	8845.20	20.38	300
<b>TOTAL</b>	12096	17176	43.41	300

Source: TSC Waste Management Unit

## **Related Issues**

[Built Environment](#)

[Atmosphere](#)

[Environmental Education and 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.
- Tweed Shire Council has responsibility for approximately 1200 km of shire roads and an extensive pedestrian and cycle-way network. To find out about your local infrastructure go to [www.tweed.nsw.gov.au/roadstraffic](http://www.tweed.nsw.gov.au/roadstraffic)
- By 2010 transport will be the single biggest source of direct greenhouse gas emissions in the shire. (TSC 2003)
- With an additional 40,000+ people anticipated to be living the shire by 2030, investment in walking and cycling infrastructure will be an important tool in managing road congestion in urban centres.

## 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	 <p>CLIMATE CHANGE</p>
Stormwater Pollution –impervious surfaces associated with transport infrastructure leads to stormwater discharges and associated pollution of local waterways	 <p>DIFFUSE</p>
Road Kills – transport infrastructure and vehicle numbers leads to a proportional increase in wildlife injuries and road kills	 <p>ROAD KILL</p>
Roadside Vegetation - roads and the associated roadside vegetation maintenance increase the potential for weed dispersal and habitat modification	 <p>ROADSIDE MOWING</p>
Native Vegetation Clearing - transport infrastructure and the associated urban footprint leads to a reduction in the size, function and connectivity of natural ecosystems	 <p>HABITAT</p>
<p><b>These pressures are likely to increase in proportion to population</b></p>	

**Pressure Indicators - Transport**

<b>Indicator: Residents / Licenses / Vehicles</b>	<b>1997</b>	<b>2001</b>	<b>2006</b>	<b>2007</b>
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

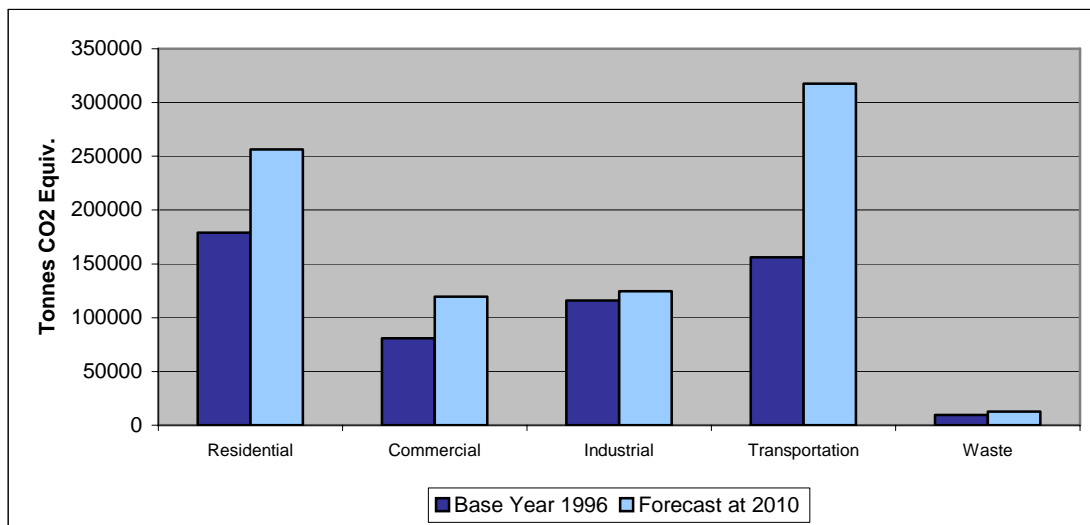
Sources: Population data [Australian Bureau of Statistics Census Data](#) Registrations and Licenses NSW RTA [www.rta.nsw.gov.au](http://www.rta.nsw.gov.au)  
 \*Population projection

<b>Indicator: Single Occupant Vehicle Travel</b>	<b>2006</b>
Percentage of passenger vehicles with one occupant	64%

Source: Tweed Shire Council survey.

**Indicator: Total Community CO<sub>2</sub> 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.

Icons at the end of each response represent the pressure being targeted.

### **Northern Rivers Carpool**

*Responsibility: NRM Unit – Sustainability Program*

*Status: Ongoing*

In 2009 Council, in partnership with six other Northern Rivers council's launched a staff carpool website to provide commuters with a practical alternative to single occupant vehicle travel. Northern Rivers Carpool will be available to the wider community early 2010. For more information visit [www.nrcarpool.org](http://www.nrcarpool.org)



### **Pottsville CBD – High Pedestrian Activity Zone**

*Responsibility: Engineering and 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 and 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.



## Town Walks

*Responsibility: NRM Unit – Sustainability Program*

*Status: Ongoing*

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



## Road Mortality Hotspots

*Responsibility: Engineering and 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. In 2009 additional signage was installed along the Tweed Coast. This was accompanied by a media campaign to raise awareness about how to reduce the incidence of road mortality for local wildlife.



## Public Transport Directory

*Responsibility: Community and 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 public transport as an alternative mode of transport.



## S.94 Contributions

*Responsibility: Engineering and 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 cycle-ways 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 cycle-ways as a consequence of increased demand generated by development in the Shire.





## Cycle-ways and Footpaths

*Responsibility: Engineering and Operations Division*

*Status: Ongoing*

Council continues to build upon the network of cycle-ways and footpaths throughout the shire. A key aim of this infrastructure is to reduce reliance on the private motor vehicle by providing infrastructure that promotes safe and convenient walking and cycling.

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

Refer to [Response Indicators](#) for total length of cycle-ways and footpaths constructed in recent years.



## Roadside Vegetation Maintenance

*Responsibility: Engineering and 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 and Operations Division*

*Status: Due for completion in 2010*

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 likely to be completed in 2010.



## Community Road Safety Plan

*Responsibility: Engineering and 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 and 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.

In 2009 work began on the comprehensive review of the plan to reflect new urban land releases and linkages with attractors such as town centres and community facilities.



## Response Indicators

Indicator:	04/05	05/06	06/07	07/08	08/09
<b>Active Transport Infrastructure</b>					
Total length of new footpath constructions (metres)	2400	3989	4300	3789	1682
Total length of new bikeway constructions (metres)	2500	2324	2400	1489	1482
Total number of new bus shelter constructions	3	0	0	7	9
Total number of new taxi shelter constructions	N/A	6	2	0	0

Source: Tweed Shire Council Works Unit

## Related Topics

[Built Environment](#)

[Atmosphere](#)

# NOISE MANAGEMENT



## CONDITION

### At a Glance

In today's society, nuisance noise levels are increasingly imposing on our work, recreation and personal lives. Tolerance of noise is subjective, depending on circumstances and individual sensitivity. Nuisance noise can also escalate to offensive levels due to such characteristics as its volume, pitch and duration. Council aims to address nuisance 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 provisions within relevant legislation. Proactive measures to mitigate nuisance noise levels are primarily addressed in strategic land use planning and development control.

## 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, trail bikes and industrial/commercial activities. Emerging however is the impact from the use of residential-based equipment such as air conditioners, swimming pool pumps and water heat pumps.	
Reduced interaction between neighbours, which reduces the likelihood of noise nuisance issues being resolved through communication, compromise and tolerance.	
<b>These pressures are likely to increase in proportion to population</b>	

Note: In 2008 the Department of Planning introduced the State Environmental Planning Policy (SEPP) - Exempt and Complying Development Codes. The SEPP overrides Council's Development Control Plan provisions for Exempt and Complying Development including Council's introduced provisions for a minimum 3m boundary set back requirements for the positioning of air conditioning units in an attempt to mitigate nuisance noise impacts (see response). The SEPP reduces the placement of domestic air conditioning units to within 450mm to side and rear boundaries.

### Pressure Indicators

Indicator:	05/06	06/07	07/08	08/09
<b>Noise Complaints</b>				
Barking Dogs	268	315	168	N/A
Crowing Roosters	N/A	6	6	11
Trail Bikes	25	88	55	30
Industrial / Commercial Activities	18	30	35	20
Loud Music / Parties	10	17	21	13
Home Businesses	7	17	11	7
Pool Pumps / Air Conditioners / Heat Pumps	9	23	28	22
Construction Activities	3	23	11	13
Traffic / Motor Vehicles	-	-	-	9
Other (e.g. Hobbies)	18	25	22	12
<b>TOTAL</b>	<b>358</b>	<b>544</b>	<b>357</b>	<b>137</b>

Source: Tweed Shire Council\_ECM\_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 whilst allowing infrequent readers to view a catalogued history of responses.

Icons at the end of each response represent the pressure being targeted.

### Environmental Noise Management Policy

*Responsibility: Building and Environmental Health Unit*

*Status: Ongoing*

In 2009 Council commenced preparation of a Public and Environmental Health Strategic Management Plan which will underpin the Draft Environmental Noise Management Policy (currently under development). The Policy endeavours to communicate Council's approaches to noise management.



### Community Noise Control Fact Sheet

*Responsibility: Building and Environmental Health Unit*

*Status: Ongoing*

In 2008 the Department of Environment, Climate Change and Water reviewed the current legislation following community and stakeholder consultation. In response to the amendments introduced in 2009 Council amended its development control requirements and prepared a community noise guide leaflet to alert the Tweed Community to the new changes.



### Trail Bikes

*Responsibility: Building and Environmental 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, and where relevant legislative controls, 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 and Environmental Health Unit*

*Status: Ongoing*

In 1998 Council introduced requirements for the consideration of any new noise sensitive developments likely to be affected by aircraft noise in proximity to the Gold Coast Airport and its flight paths. These requirements provided for certain activities to be excluded and the adequate assessment of permissible developments to minimise noise impact.



## Air Conditioning Noise

*Responsibility: Building and Environmental 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 and Environmental 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 and Environmental 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.



## 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.



## Related Issues

[Built Environment](#)

# LOCAL AIR QUALITY



## CONDITION

### At a Glance

- Tweed Shire Council's main air quality responsibilities are in respect of small businesses, domestic premises and urban planning.
- Council also has issues arise from rural and natural environment sources due to its mix of residential and rural areas.
- Historically, air quality in the Tweed Shire has been heavily impacted by the cane harvesting season however an emerging issue trend is odour problems for residential areas in close proximity to flying fox roosts.

## PRESSURE

### At a Glance

Local air quality pressures include (but are not limited too):	Icon
Airborne particulate matter originating from cane fires, bush fires, vehi domestic wood heaters, industrial activities etc.	
Reduced interaction between neighbours, which reduces the likelihood of issues being resolved through communication, compromise and tolerance.	
<b>These pressures are likely to increase in proportion to population</b>	

## Indicators of Local Air Quality Pressures

<b>Indicator:</b> <b>Number of State Government Licenses Relating to Atmospheric Emissions</b> Refer to <a href="http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx">http://www.environment.nsw.gov.au/prpoeoapp/searchregister.aspx</a>
---

Indicator:	06/07	07/08	08/09
<b>Air Pollution Complaints - By Type</b>			
Sewage Odours	12	5	7
Dust – Construction Sites, Quarries, Uncovered Loads etc	15	8	4
Spray Drift from Pesticides	1	2	0
Backyard Burning	4	5	12
Domestic Wood Heaters	2	1	4
Commercial and Industrial Activities	10	10	4
Animal Odours – e.g. poultry, flying foxes	5	4	8
Vehicles	-	-	7
Other	4	8	3
<b>Total</b>	<b>53</b>	<b>43</b>	<b>49</b>

Source: Tweed Shire Council ECM\_Air Pollution

<b>Indicator: Cane Fires</b>	<b>03/04</b>	<b>04/05</b>	<b>05/06</b>	<b>06/07</b>	<b>07/08</b>	<b>08/09</b>
Percentage of cane burnt before harvest (approx)	90%	93.4%	83%	86%	80%	N/A

Source: NSW Sugar Milling Cooperative

### Additional Indicators

**Bush Fires:** Refer to the [Bushland and 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.

Icons at the end of each response represent the pressure being targeted.

### Smoking in Public Places

*Responsibility: Building and Environmental Health Unit*

*Status: Ongoing*

In 2009 Council introduced development control alerts in response to the Smoke-Free Environment legislation. Currently Council maintains a position of prohibiting defined smoking areas adjoining public thoroughfares. In addition further consideration of smoking in public places is being considered as part development of a Public and Environmental Health Strategic Management Plan.



### Cane Fires

*Responsibility: NSW Sugar*

*Status: Ongoing*

In 2008 the Condong Co-generation Facility was completed. Located at the Condong Sugar Mill the facility produces renewable electricity from bagasse, cane leaf, camphor laurel and sawmill residue. The initiative is a joint venture between the NSW 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 the equivalent of 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 of CO<sub>2</sub> each year. For further information contact Delta Electricity on 1800 817 711.





## Burning off within the Tweed Shire

*Responsibility: Building and Environmental Health Unit*

*Status: Ongoing*

In 2006 Council instigated legislative procedures to be included within the listing of Part 2 and/or 3 of Schedule 8 of the Protection of the Environment Operations (Clean Air) Regulation 2002. The listing will allow Council to prohibit all burning of vegetation and domestic waste in the open or in an incinerator without an approval.



## Flying Fox Camps

*Responsibility: DECCW; Building and Environmental Health Unit*

*Status: Ongoing*

In 2006 Council commissioned an odour study to investigate odour complaints arising from a flying fox camp site located within a rural residential area. The study will support the further investigation and subsequent management options for flying fox camps within Tweed Shire.



## Backyard Burning

*Responsibility: Building and Environmental Health Unit*

*Status: Ongoing*

Since the early 1990's Council has maintained a policy position to prohibit backyard burning in residential areas for the purposes of neighbourhood amenity. Prior to that time green-waste was commonly disposed of via backyard burning. A practice which generates a significant amount of smoke due to the poorly dried vegetation.



# NATURAL AND 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](http://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](http://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, numerous public halls and 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 and 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.

Icons at the end of each response represent the pressure being targeted.

### **Social Plan (2009)**

*Responsibility: Community and Cultural Services Unit*

*Status: Due for completion 2010.*

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.

In 2009 the review progressed the plan to draft form.



### **Youth Policy**

*Responsibility: Community and 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 and 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 and 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.



## Tweed Place Making and Public Art Policy

*Responsibility: Community and 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 and Cultural Services Unit*

*Status: Ongoing*

In 2007 Council adopted a policy 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 and Cultural Services Unit*

*Status: Ongoing*

In 2007 Council adopted a policy 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.



## Social Plan (2005 - 2009)

*Responsibility: Community and 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 and 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 and 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](http://www.tweed.nsw.gov.au)



## Tweed Museum

*Responsibility: Community and 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 and 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.



## Tweed Cultural Policy

*Responsibility: Community and 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 and 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:	02/03	03/04	04/05	05/06	06/07	07/08	08/09
<b>Cultural Site Visits</b>							
Number of Library Visits	273,918	265,821	296,488	291,722	N/A	317,337	351,955
Number of Art Gallery Visits	20,157	28,098	51,456	50,022	69,149	54,588	58,248
Number of Museum Visits	N/A	N/A	N/A	N/A	N/A	1,146	N/A

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

## Related Topics

[Built Environment](#)

[Bushland and Biodiversity](#)

[Environmental Education and Capacity Building](#)

# ENVIRONMENTAL EDUCATION AND CAPACITY BUILDING

## CONDITION




### At a Glance

Community engagement and participation is a key ingredient to successfully address 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, rare and endangered species, invasive weeds, feral animals and habitat fragmentation.	 ENGAGEMENT
Lack of institutional awareness and capacity to proactively respond to local and global environmental issues.	 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.

Icons at the end of each response represent the pressure being targeted.

### Council Rates Incentive Goes Green

*Responsibility: Revenue and Customer Service Unit. NRM Unit – Sustainability Program.*

*Status: Ongoing*

In 2009 Council introduced energy and water saving retrofit packages into the existing rates incentive scheme to encourage ratepayers to reduce the environmental footprint of their homes. The rates incentive scheme was introduced in 1987 to increase rate income to Council during the early months of the year. Under the new scheme first prize is a \$3000 energy saving and water efficient retrofit package or a holiday to the value of \$2500. The second prize winner will receive a \$2000 energy saving and water efficient retrofit package or a holiday to the value of \$1500, while the third prize is a \$1000 energy efficiency package, or a holiday to the value of \$500.

Winners will have the option to have their homes audited to identify ways to improve the water and energy efficiency of their homes. Likely options for prizes include energy efficient fridges, water efficient washing machines, pool pump maintenance, timers for standby power appliances, window tinting and rainwater tanks. All three prize winners for 2009 chose the retrofit prize over the holiday package.



## Cycling Proficiency Workshops

*Responsibility: NRM Unit – Sustainability Program*

*Status: Completed June 2009*

Despite the old saying 'it's like riding a bike', cycling is actually a learned skill which can deteriorate with lack of use. In June 2009 Tweed Shire Council in conjunction with AustCycle Training offered Tweed residents the opportunity to improve their cycling skills with the help of an accredited AustCycle trainer. The free courses were held in Murwillumbah, Pottsville and Banora Point.

Quality education and training allows more people to ride bikes, keeps bike riders safe and having fun as well as effectively using what is possibly the most efficient machine ever invented – the bicycle. Course attendees learnt balancing, pedalling and manoeuvring skills safely, and then acquired the knowledge and skills to negotiate traffic and ride in groups.



## Waste-wise Schools

*Responsibility: Environmental Education Officer*

*Status: Ongoing*

In 2009 Council developed a Waste-wise schools program. The program provides support for schools to establish school-wide recycling and composting systems and includes additional activities such as the litter free lunch activity. For more information on the Waste-wise schools program refer to issue 592 of the Tweed Link (December 2008) available at [www.tweed.nsw.gov.au](http://www.tweed.nsw.gov.au)

Refer to response indicators for details of school participation rates.



## Website Update – Water

*Responsibility: Water Unit*

*Status: Completed February 2009*

In 2009 the water and waste-water section of the website was updated to include a range of water saving fact sheets including a D.I.Y home water audit, the availability of rebates, how to read your water meter and room by room guides to creating a water-wise home. To view the fact sheets go to [www.tweed.nsw.gov.au/water](http://www.tweed.nsw.gov.au/water)





## On-line Water Consumption Calculator

*Responsibility: NRM Unit – Sustainability Program. Water Unit*  
*Status: completed February 2009*

In 2009 Council developed an on-line water calculator so residents can use data from their water bills to calculate how much water they use each day. The tool converts household bi-annual water bills to a daily consumption per householder. The calculator allows householders to benchmark their water consumption against the shire average and daily target.



## NRM Community Support Officer

*Responsibility: NRM Unit – Sustainability Program / NRCMA*  
*Status: Ongoing*

In October 2008 Council, in partnership with the Northern Rivers Catchment Management Authority (NRCMA) created a position within the Natural Resource Management (NRM) Unit of Council to foster increased community knowledge and understanding of natural resources and their sustainable management, and highlight opportunities for community involvement in NRCMA and Tweed Shire Council's NRM unit projects and initiatives.



## Council Staff Tree Planting Day

*Responsibility: NRM Unit – Waterways Program*  
*Status: Completed October 2008*

In October 2008 Council staff from the Community and Natural Resources Division undertook the final stages of a revegetation project on land around the Uki Waste-water Treatment Plant. Over 500 trees were planted along the riparian zone of a tributary to Smiths Creek. Previous stages of the project involved fencing the cattle off from the creek and providing water troughs. The aim of the revegetation project is for Council to demonstrate best practice for waterway management and grazing on its own land. An additional benefit of the project is capacity building within the organisation with regard to land management practices and catchment rehabilitation.



## Environmental Guide to the Tweed Coast

*Responsibility: NRM Unit – Coastline Program*

*Status: Completed October 2008*

In October 2008 Council published an *Environmental Guide to the Tweed Coast* to inform and educate residents and shire visitors about the Tweed Coast, its special features and how we can help to conserve the Tweed's high biodiversity and natural areas. Copies of the booklet are available from Visitor Information Centres, Council offices and Libraries. Copies have also been supplied to local schools.



## Tweed River Projects DVD

*Responsibility: NRM Unit – Waterways Program*

*Status: Completed October 2008*

In October 2008 Council produced an educational DVD which details the Council's natural resource management initiatives on the Tweed River. The 15 minute DVD is a snapshot of Council's NRM projects which encompass riparian habitat rehabilitation, bank erosion, stormwater treatment, acid sulfate soil management, boating facilities, ecosystem health monitoring and the Tweed River Festival.



## Climate Action Kids

*Responsibility: Environmental Education Officer / Tweed CAN*

*Status: Ongoing*

In 2008, Council in partnership with Tweed Climate Action Now developed an in-class activity educate students about how to reduce their carbon footprint. Through the lesson students can learn a few simple ways on how to take action on climate change by switching off lights, reducing lunch box waste and travelling smart to get to school.



## Treasures of the Tweed Mural

*Responsibility: Community and Cultural Services Unit*

*Status: Ongoing*

In 2008, Council in partnership with Job Futures, 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 2009 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, sustainability and climate change.



## Assistance for Landcare Groups on Public Land

*Responsibility: NRM Unit – Waterways Program*

*Status: Ongoing*

In 2008 Council formalised a program of providing assistance to Landcare groups undertaking riparian rehabilitation works on public land. Council is able to supply trees, mulch, advice and in some circumstances professional support from bush regeneration contractors. Four areas where these works are occurring are Uki, Byangum, Barney's Point and Bilambil.



## Energy Monitoring Equipment for High Schools

*Responsibility: NRM Unit – Sustainability Program*

*Status: Stage 2 due for completion early 2010.*

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 from the 'showerhead and light globe giveaway number two' (detailed below).

In 2009 a project officer was appointed through Lismore City Council to provide follow-up support for all participating schools.



## 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 Kingscliff Waste-water 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 inspire the adoption of sustainable behaviours in everyday life by raise awareness about environmental issues and community based solutions.



## 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 and Climate Change*

*Status: Reviewed annually*

In 2007 and 2008 Council approached the NSW Department of Environment, Climate Change and Water (DECCW) to run a series of advertisements and editorials in Council's weekly newsletter, the Tweed Link to promote the DECCW Residential Rebate Program. The rebate program offers households up to \$1,500 for rainwater tanks, up to \$1,200 for solar hot water and until 30 June 2008, up to \$300 for ceiling insulation. Refer to [Response Indicators](#) for figures on successful rebate applications in the shire.



## 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 practical action role we can all take 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: Ceased December 2008.*

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 previous giveaway initiatives 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.

At the completion of the program in December 2008 more than 50% of shire households has improved their energy and water efficiency via the program. Refer to [Response Indicators](#) for details of participation rates, greenhouse gas savings and water savings.



## Caldera 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 (now known as the Caldera 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: Ongoing*

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. Competing priorities have meant a delay in finalisation of this strategy in 2009.



## Volunteers Policy

*Responsibility: OHS Unit*

*Status: Ongoing*

In 2007 Council adopted a Volunteers Policy to help in overcoming the barriers to volunteerism, such as training requirements and a lack of resources for materials. Since its adoption the policy has contributed to increased communication and partnerships between Tweed Shire Council and volunteer environment groups such as Landcare and Dunecare.



## Water-Wise Schools Program

*Responsibility: NRM Unit – Sustainability Program, Water Unit*

*Status: Ongoing*

In 2007, Council commenced the [Water-Wise Schools Program](#) to provide resources and assistance for schools to promote a greater respect for waters vital role in ecosystem health and human survival.



## 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 to 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 Waste-water 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 propagation techniques.



## Recycle Right DVD

*Responsibility: Water Management Unit*

*Status: Superseded in 2009*

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 was 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. Much of the DVD content has been superseded by the introduction of the multi-bin system.



## 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](http://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.



## Catchment Catch-up

*Responsibility: NRM Unit – Waterways Program*

*Status: Ongoing*

In 2005 Council launched an annual forum on catchment management as part of the Tweed River Festival. The catchment catch-up is a chance for Tweed residents, environmental professionals and Council staff to present information and exchange news in the field of natural resource management in the Tweed Valley.



## Sustainable Households Project

*Responsibility: NRM Unit – Sustainability Program*

*Status: Completed in 2005*

In 2005, Council, in partnership with Country Energy and the NSW Department of the Environment Climate Change and Water 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. The projects final report is available at [www.tweed.nsw.gov.au/sustainability](http://www.tweed.nsw.gov.au/sustainability)



## 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 Kenya 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 Tweed Shire Council staff (matched dollar for dollar by Tweed Shire Council) 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, an informal 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 hosted another Council officer who oversaw 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 / Kenya Mentoring Program visit

[www.tweed.nsw.gov.au/kenya](http://www.tweed.nsw.gov.au/kenya)



## Directory of Community Resources

*Responsibility: Community and 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 conservation and restoration of the shires natural assets. [www.tweed.nsw.gov.au](http://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 and 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 Caldera Art Awards and guided walks of the Tweed River and coastal creeks. In 2008 a paddle board carnival 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 celebrates the ecological diversity of the region, raises awareness about local environmental issues and seeks to inspire the community to 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/education/educationhome.aspx](http://www.tweed.nsw.gov.au/education/educationhome.aspx)



## Phosphorous Reduction Campaign

*Responsibility: Building and 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.



## Tweed Link

*Responsibility: Communications and Marketing Unit*

*Status: Ongoing*

Since it was first published in 1998, Council's weekly newsletter has been used to raise awareness of local environmental issues, inform the community of council's environmental management initiatives and to engage the community in environmental action. More than 38,000 copies are distributed to shire residents each week via Australia Post and since July 2009 the Tweed Link has been printed on 100% post consumer recycled paper.

Archived copies of the Tweed Link: [www.tweed.nsw.gov.au/linkweb/TweedLinkDetail.aspx](http://www.tweed.nsw.gov.au/linkweb/TweedLinkDetail.aspx)



## Landcare Support

*Responsibility: NRM Unit*

*Status: Ongoing*

Since 1997 Council and Tweed Landcare Inc. have been collaborating to help conserve and restore 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 Fact 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 and 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 Stotts Creek Resource Recovery Centre, Kingscliff Waste-water 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 kerb-side 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, cost price compost bins/worm farms and optional green waste collection bins. To find out more about these resources visit <http://www.tweed.nsw.gov.au/YourEnvironment/WasteMgt.aspx>



## Local Government Week

*Responsibility: Office of the General Manager*  
*Status: Ongoing*

In the early 1990's Council created an annual bus tour as part of NSW Local Government Week. The aim of the tours was to raise awareness about local infrastructure, issues and projects and sites visited included the landfill, water treatment plants, waste-water treatment plants and bush revegetation sites.

In 2009 the bus tours were replaced with a 'family fun day' that includes information stalls across the four operational divisions of Council. The fun day provides the community with an opportunity to enjoy a day in the park while having easy access to information on works programs, natural resource management initiatives, land use planning, community services and regulatory services.



## 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	08/09
<b>Council's Environmental Education Services</b>				
No. of Catchment Activity Model Demonstrations	14	20	11	13
No. of School Students (Excursions) to Council Facilities	363	560	957	N/A
No. of Information Sessions at Local Schools / TAFE	N/A	25	10	11
No. of Information Sessions for Business / Industry	N/A	2	1	0
No. of Information Sessions for Community Groups	4	7	5	4
No. of Schools Participating in the Waste-wise Program	-	-	-	5

Source: TSC Community and Natural Resources Division

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

Source: Tweed Shire Council Natural Resource Management Unit

Note: 04/05 and 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.

<b>Indicator:</b> <b>NSW Government Rebates in the Tweed Shire</b>	<b>07/08</b>	<b>08/09</b>
No. of Rainwater Tank Rebates (cumulative)	217	427
No. of Solar Hot Water Rebates (cumulative)	193	1516
No. of Insulation Rebates (cumulative)	65	300
No. of Washing Machine Rebates (cumulative)	N/A	332
Total No. of Rebates (cumulative)	475	2575

Source: NSW Department of Environment, Climate Change and Water

## **Related Topics**

[Human Settlement](#)

[Catchment Management](#)

[Atmosphere](#)



# CATCHMENT MANAGEMENT

This section of the report includes:

[Waterway Health](#)

[Bushland and Biodiversity](#)

[Soils and Sustainable Agriculture](#)

**THIS PAGE IS BLANK**

Catchment management is reported under three themes:

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

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 Industry and Investment

### **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](http://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, conserving and rehabilitating the natural environment of the Tweed Shire. This involves developing management plans, implementing projects and providing advice on environmental policies and procedures.

The NRM Unit has five key program areas:

1. Biodiversity
2. Waterways
3. Coastline
4. Floodplains and Sustainable Agriculture
5. Sustainability and 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 bi-monthly 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 aimed at conserving and restoring ecosystem health in the three coastal estuaries of the Tweed. The coastal committee advises Council on coastal asset management 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 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 conserve and restore bushland habitat. 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](http://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. It's 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](http://www.fncw.nsw.gov.au)

## **NSW Department of Industry and Investment**

NSW Department of Industry and Investment (formerly 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.industry.nsw.gov.au](http://www.industry.nsw.gov.au)

# WATERWAY HEALTH

## CONDITION

### At a Glance

- The Tweed Shire is also a geographical catchment. That is, the Tweed River and coastal tributaries sit wholly within the shire boundaries. This alignment of geographical and local government boundaries creates a range of unique opportunities for catchment management including alignment of goals for urban water cycle management with natural resource management.
- The **Tweed River** catchment is both rugged and compact (1100 km<sup>2</sup>). It 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 River** joining the Tweed further upstream at Byangum.
- The lower estuary is dominated by Terranora and Cobaki Broadwaters, large shallow tidal wetlands. They join the Tweed 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, Tweed Heads.
- **Cudgen Creek** meets the sea 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 which continues to the south. Cudgera Creek has a relatively small catchment of approximately 50km<sup>2</sup>.
- **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 117km<sup>2</sup>.
- **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



### 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)

### 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)

### Coastal Waterways

- Cudgen Lake (e)
- Cudgen Creek (e)
- Cudgera Creek (e)
- Mooball Creek (e)

### 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)
- Oxley River (f)*
- Dunbible Creek (c)
- Condong Creek (c)
- Mayal Creek (c)
- Rous River (c)*
- Leddays Creek (c)
- Terranora Broadwater / Inlet (e)*

### Terranora Broadwater Tributaries

- Bilambil Creek (c)
- Duroby Creek (c)
- Cobaki Broadwater (e)*

### Cobaki Broadwater Tributaries

- Cobaki Ck into Pigabeen Ck (c)










### Southern Waterways

- Crabbes Creek (f)
- Burringbar Creek (f)

f = freshwater  
 e = estuarine  
 c = combined  
 (i.e. freshwater and estuarine sections within the same waterway)

## PRESSURE

### At a Glance

Key Pressures on Waterway Health include:	Pressure Icon
Barriers to fish passage (weirs, road crossings and floodgates).	
Acid sulfate 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 (waste-water treatment plant 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
<b>Freshwater Quality Objectives</b>	<b>6.5 to 9</b>	<b>&gt; 6</b>	<b>&lt; 20</b>	<b>&lt;0.10</b>	<b>&lt; 0.75</b>	<b>&lt; 10</b>	<b>&lt; 150</b>
<b>2001/02</b>	0%	29.5%	4.9%	12.3%	10.7%	0%	43.5%
<b>2002/03</b>	0%	5.7%	2.8%	11.4%	8.6%	N/A	25.7
<b>2003/04</b>	0%	0%	5%	5%	22%	N/A	39%
<b>2004/05</b>	0%	0%	0%	0%	7%	N/A	33%
<b>2005/06</b>	0%	20%	7%	7%	0%	N/A	13%
<b>2006/07</b>	10%	10%	3%	3%	0%	N/A	12.5%
<b>2007/08</b>	0%	0%	0%	8.9%	0%	0%	34.0%
<b>2008/09</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A
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
<b>Estuarine Water Quality Objectives</b>	<b>7 to 9</b>	<b>&gt; 6</b>	<b>&lt; 10</b>	<b>&lt; 0.05</b>	<b>&lt; 0.5</b>	<b>&lt; 10</b>	<b>&lt; 14 raw shellfish &lt; 150 primary contact</b>
<b>2001/02</b>	0%	15%	5.1%	12.1%	15.4%	N/A	31.4% raw shellfish 7.3% primary contact
<b>2002/03</b>	0%	22.8%	5.3%	19.3%	21%	N/A	26.3% raw shellfish 7% primary contact
<b>2003/04</b>	4.3%	24.6%	10%	31.9%	24.6%	N/A	31.9% raw shellfish 5.8% primary contact
<b>2004/05</b>	0%	17%	55%	47%	7%	N/A	30% raw shellfish 6% primary contact
<b>2005/06</b>	0%	42%	58%	56%	9%	N/A	38% shellfish 0% primary contact
<b>2006/07</b>	6%	35%	29%	59%	0%	N/A	53% shellfish 0% primary contact
<b>2007/08</b>	0%	28.1%	53.1%	37.5%	31.3%	12.5%	35.7% shellfish 14.3% primary contact
<b>2008/09</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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>



<b>Indicator:</b> <b>Water Pollution Complaints by Type*</b>	<b>06/07</b>	<b>07/08</b>	<b>08/09</b>
Erosion and Sedimentation	2	2	4
Sewerage Overflows	0	1	2
Septic Tanks	1	2	1
Unidentified Scum Layer	6	0	4
Unidentified Plume / Leachate	2	0	1
Dead Animals (including fish kills and marine life)	1	0	1
Dewatering – discharge to watercourse / stormwater system	7	0	0
Commercial / Industrial discharges to watercourse / stormwater system	3	4	3
Acid Sulfate Soils Runoff	1	1	2
Litter	0	0	0
Waterway Health	-	-	4**
Other	3	3	1
<b>TOTAL</b>	<b>26</b>	<b>13</b>	<b>23</b>

Source: Tweed Shire Council Dataworks\_Water Pollution and EPA pollution hotline.

\*Excludes complaints relating to town water supply. \*\* New reporting category established 2008/09.

<b>Indicator:</b> <b>Fisheries Resources</b>	<b>Saltmarsh (ha)</b>	<b>Mangroves (ha)</b>	<b>Seagrass (ha)</b>
2006/07	90	438	87

Source: Department of Primary Industries

Note: the most recent information on the status of fisheries resources in NSW, incorporating the Tweed Catchment is available in the report 'Status of Fisheries Resource in NSW 2006/07' available at [www.dpi.nsw.gov.au/research/areas/systems-research/wild-fisheries/outputs/2008/972](http://www.dpi.nsw.gov.au/research/areas/systems-research/wild-fisheries/outputs/2008/972)

## 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.

Icons at the end of each response represent the pressure being targeted.

### Education and 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.

### Estuary Ecosystem Health Report Card

*Responsibility: NRM Unit – Waterways Program*

*Status: Completed June 2009*

In June 2009 Council completed a detailed investigation into the estuary ecosystem health of Terranora and Cobaki Broadwaters. Information on water quality, fish populations, seagrass and mangrove uptake of effluent related nutrients was combined to provide a score from A to F for estuary health.

Overall the health of our estuarine system was found to be 'C' (fair). This score strongly supports the case that we must improve management of our upper catchments and urban runoff if we are to maintain the broadwaters as healthy habitats for local biodiversity and recreational use into the future.

The Estuary Ecosystem Health Report Card format is extremely effective in communicating scientific data to convey complex ecological concepts to the community. It is hoped that through a greater appreciation of the state of our waterways, people will be more motivated to reduce their own

impacts in our waterways as well as acting as advocates for waterway health when interacting with friends, neighbours and government agencies.

To view the report card and accompanying technical report visit <http://www.tweed.nsw.gov.au/Waterways/WaterwaysHealth.aspx>



### **Bilambil Creek and Charles Bay Reserve Riparian Corridor Project**

*Responsibility: NRM Unit – Waterways Program*  
*Status: Ongoing*

In 2009 Council, working cooperatively with Landcare and landholders commenced work on the revegetation of the northern bank of the Bilambil Creek estuary from Bilambil Village to Terranora Broadwater. The project will result in the establishment of a riparian corridor approximately 3 kilometres long. Works include weed control, planting and fencing to restrict stock access. Works will have immediate benefit on water quality and the condition of streambanks. Project costs shared by Tweed Shire Council and Australian Government Caring for our Country Grants.



### **Cudgera Creek Baseline Ecological Assessment**

*Responsibility: NRM Unit – Waterways Program*  
*Status: Completed October 2009*

In October 2009, Council undertook investigations into biological components of the Cudgera Creek estuary. The assessment was in response to community concerns regarding environmental impacts of agricultural and urban development on Cudgera Creek. The assessment has been presented in a report and monitoring will continue as required to track any long-term trends in the health of this waterway. The study shows that due to a combination of agricultural and urban development the Cudgera Creek estuary ecosystem is not as healthy as a comparable, undeveloped coastal creek.



### **Byrrell Creek Riparian Rehabilitation Project Expanded**

*Responsibility: NRM Unit – Waterways Program*  
*Status: Completed April 2009*

In March 2009 Council received an Environmental Trust Grant of \$80,000 over two years to allow for the expansion of the existing Byrrell Creek Riparian Project to May 2011.

In 2005 Council commenced work on the Byrrell Creek Riparian Restoration Project with funding from the NSW Environmental Trust.

This area has been identified as having the best remaining example of riparian vegetation in the Tweed Valley and abuts Mebbin and Wollumbin National Parks.

The number of properties involved in the project is 19. The continued investment in this project by the Environmental Trust will allow Council and the Tweed River Committee to focus on sustaining the existing outcomes of the project (14km creek bank under restoration). The NSW Environmental Trust funding will be used to undertake weed and cattle control in new areas, over a total of 5 km of creek bank.



## 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 Duroby Creek and structures at Stokers Siding, Burringbar and Crystal Creek.

In 2009 Slippery Crossing on the Oxley River (Old Lismore Road, Byangum) was modified to improve fish passage. This was a \$120,000 project funded by Tweed Shire Council and NSW Fisheries.



## 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.

In 2008 Council expanded its successful River Health Grants Scheme to include riparian land within the Terranora and Cobaki Broadwater catchments. The decision was made in anticipation of a

study’s recommendations that rehabilitation of streams flowing to Cobaki and Terranora Broadwaters will be critical to ensure their long term ecological health of these waterways.

This inclusion will enable both landholders and Council to work together in maintaining the ecological health of the broadwaters, as well as Bilambil, Duroby, Piggabeen and Cobaki Creeks.



**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.



**Byrrill 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 Byrrill 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 restore 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 water troughs and a diary lane allowing the river to be fenced off and revegetated with native species. A 1.2 km section of the Tweed River is being rehabilitated through this project. Work continued 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 Waste-water 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 propagation techniques.



### **Knox Park Constructed Wetland**

*Responsibility: NRM Unit – Waterways Program*

*Status: Ongoing*

In 2005 Council constructed small wetlands at the inlet and outlet points of Knox Park Pond in Murwillumbah. The aim of the wetlands is to improve the quality of stormwater runoff being discharged to the Tweed River via Lavendar Creek.



### **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 is improving 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 and Sustainable Agriculture](#) 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. This team of dedicated bush regenerators works year round on projects including the Community Catchment Nursery, Tyalgum Weir Pool revegetation and Oxley Cove Peninsula revegetation. The Riparian Projects Team also provides support to volunteer environmental groups undertaking bushland revegetation in riparian zones.



### 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 restore 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. This project has been further enhanced by the Knox Park constructed wetland initiative of 2005.



## Riparian Rehabilitation Project - Tyalgum Waste-water Treatment Plant

*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 Waste-water Treatment Plant. This project has proven very challenging with harsh conditions taking a severe toll on seedlings. Drought, flood, heat, grazing 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 in conjunction with ongoing weed control.



## Waste-water Treatment and Disposal

*Responsibility: Water Unit*

*Status: Ongoing*

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



## Stormwater Litter Traps

*Responsibility: NRM Unit – Waterways Program*

*Status: Ongoing*

Stormwater litter traps continue to be installed on high priority stormwater outfalls. To date, traps have been installed at the following locations:

- Tweed Heads South industrial and commercial area. In 2001 a litter boom and 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 constructed wetland were installed on an 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 to 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 and 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. Refer to the Waste-water section for details of strategy implementation to date.



## Stormwater Treatment Devices

*Responsibility: Planning and Regulation Division*

*Status: Ongoing*

Since April 2000 all new subdivisions and major developments in the shire have been required to install stormwater treatment devices in accordance with the Tweed Urban Stormwater Quality Management Plan, 2000. Options include (but are not limited too) constructed wetlands that cover a minimum of 5% of the land to be subdivided, end of pipe stormwater treatment devices (e.g. litter traps) 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 was conducted in 2008 and helped to inform the production of the 2009 Estuary Ecosystem Health Report Card.



## Urban Stormwater Quality Management Plan

*Responsibility: Engineering and Operations Division / Planning and Regulation 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 the Cobaki Broadwater Management Plan to establish a planning framework aimed at conserving and restoring the ecological value and recreational amenity of the area.



## Biodegradable Bait Bags

*Responsibility: Building and Health Unit*

*Status: Ceased 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 the Upper Tweed Estuary Management Plan to compliment the management framework for the lower Tweed Estuary.

## 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 and 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 ecological function of the water. 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 Broadwater.

## Response Indicators

Indicator:	06/07	07/08	08/09
<b>River Health Grants</b>			
Number of landholders participating in the scheme (cumulative)	15	23	39
Kilometres of riverbank under improved management (cumulative)	9.7	13	20

Source: TSC NRM Unit – Waterways Program

<b>Indicator: Barriers to Fish Passage</b>	<b>06/07</b>	<b>07/08</b>	<b>08/09</b>
No. of barriers removed to improve fish passage (cumulative)	3	8	14

Source: TSC NRM Unit – Waterways Program

<b>Indicator: Stock Access to Waterways</b>	<b>06/07</b>	<b>07/08</b>	<b>08/09</b>
Length of riverbank fenced to restrict stock access (cumulative)	8.8km	11.5km	17

Source: TSC NRM Unit – Waterways Program

### **Additional Response Indicators**

[Soils and Sustainable Agriculture](#)

[Waste-water Management](#)

### **Related Issues**

[Built Environment](#)

[Water Supply](#)

[Waste-water Management](#)

[Environmental Education and Capacity Building](#)

[Bushland and Biodiversity](#)

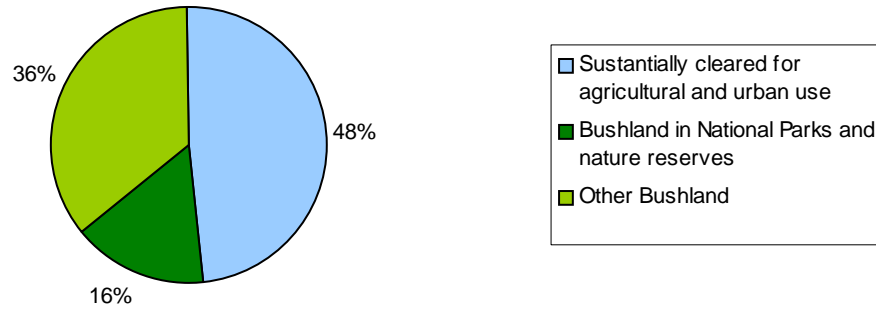
# BUSHLAND AND BIODIVERSITY

## CONDITION

### At a Glance

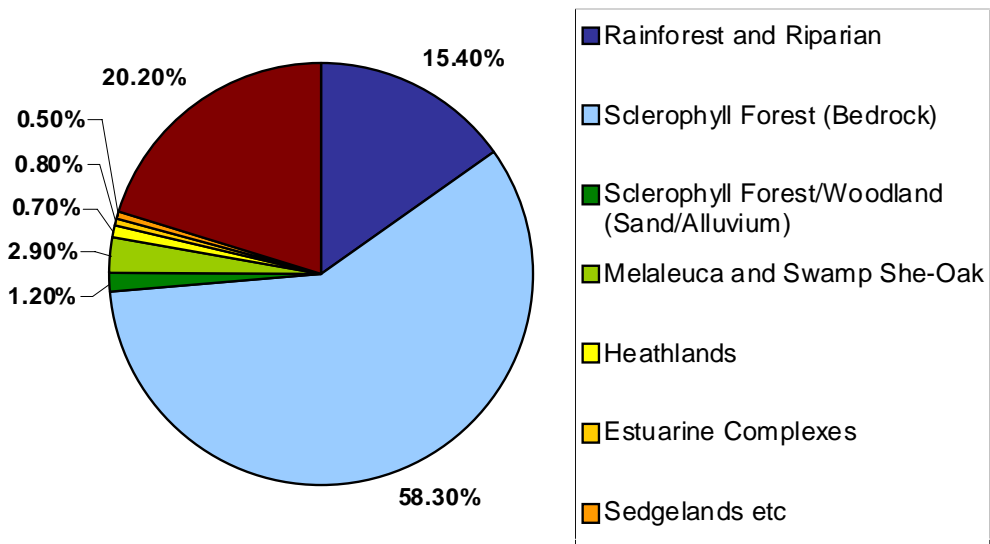
- The Tweed catchment occupies a unique and complex landform dominated by the remnant caldera of the Mt Warning / Wollumbin shield volcano. It is one of the best and largest examples of its type in the world and is listed on the NSW Geological Heritage Register.
- The Tweed region is regarded nationally and internationally as a significant centre for biodiversity. 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.
- 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). 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)*.
- The region supports over 50 species of migratory birds protected under international agreements.
- 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 *Threatened Species Conservation Act (1995)*, 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).
- It is estimated that the region supports Australia's highest concentration of Threatened plant species.
- Many of plants species found on the Tweed are highly localised. Some 55 species are essentially confined to Tweed Shire.
- The Tweed Catchment supports over 100 significant animal species (105 spp.). Under the *Threatened Species Conservation Act (1995)*, 17 are listed as Endangered and 88 are considered Vulnerable.
- Stotts Island 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 *Threatened Species Conservation Act (1995)*.
- 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
<b>Clearing and fragmentation of native vegetation associated with urban and other development especially along the coast.</b> Recognised at State and National levels as a Key Threatening Process.	 HABITAT
<b>Draining of swamps and wetlands.</b> Recognised at the State level as a Key Threatening Process.	 FLOW PATTERNS
<b>Invasion of coastal plant communities by bitou bush and other weeds.</b> Recognised at the State level as a Key Threatening Process.	 WEEDS

**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.



**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.



**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.



**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.



**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.



**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



**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.



**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.



**Altered fire patterns.** Bushfires that are too frequent are recognised at the State level as a Key Threatening Process.



**Roadside vegetation management.** Large numbers of threatened plants occur along roadsides on the Tweed.



**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.



For more detail on state significant key threatening processes visit:  
[www.threatenedspecies.environment.nsw.gov.au/tsprofile/home\\_threats.aspx](http://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	08/09
Area (Ha) of rural bushland cleared	N/A	N/A	N/A
Area (Ha) of coastal vegetation cleared	N/A	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	08/09
Area of public land burnt (hectares)	1242	1455	1905	1310	N/A	1107	N/A
Total number of Rural Fire Services incidents	550	445	579	436	497	N/A	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](http://www.nationalparks.nsw.gov.au/npws.nsf/Content/Pests+and+other+threats)

## 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.

Icons at the end of each response represent the pressure being targeted.

### 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 and 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 and 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.

## Tweed Byron Bush Futures

*Responsibility: NRM Unit – Biodiversity Program*

*Status: ongoing until December 2011*

Tweed Shire Council and Byron Shire Council have been awarded a \$1.7 million grant to conserve and restore significant areas of urban bushland and encourage greater community involvement in caring for the environment. Tweed Shire Council will lead and administer the project over the next three years. The grant was awarded by the NSW Environmental Trust under the Urban Sustainability Major Projects Program.

On-ground works will focus on habitat protection and restoration, management of stormwater pollution, removal of rubbish, pest species management and interpretive signage.

Priority sites will be selected on the basis of a comprehensive audit of bushland areas.

A major focus of the project will be a community and organisational engagement campaign aimed at promoting sustainable management solutions.

Project objectives are to:

- Remove weeds and encourage natural regeneration at targeted sites.
- Protect bushland subject to inappropriate human use.
- Reduce threats to bushland posed by domestic pets and exotic fauna.
- Reduce stormwater and urban pollution impacts on bushland and adjacent waterways.
- Remove rubbish from bushland areas.
- Increase resident and community involvement in sustainable behaviours including urban bushland management.
- Improve resident and community understanding of the environmental issues at the urban bushland interface.
- Increase institutional awareness and support for improved management of urban bushland.

The project will complement other natural resource management initiatives managed by Tweed and Byron Councils, community groups, individual landholders, and State agencies. A steering committee is overseeing the project, consisting of representatives from both councils, Tweed Landcare Inc. and Brunswick Valley Landcare Inc.



## Mitchell's Rainforest Snail Research Project

*Responsibility: NRM Unit – Biodiversity Program*

*Status: ongoing*

In 2009 the critically-endangered Mitchell's Rainforest Snail (*Thersites mitchellae*) became the subject of a local research project. Natural resource management staff from Tweed, Byron and Ballina Councils have teamed up with Southern Cross University students and staff to undertake ecological research on the threatened species. There are believed to be less than 500 individual snails left in the world, with the entire population confined to mainly coastal areas between Lennox Head and the Tweed Valley. Stotts Island Nature Reserve is one of very few areas in NSW declared as 'critical habitat' as it supports the largest known population of Mitchell's Rainforest Snail.





## Aerial Survey for Vine Weed Mapping

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

*Status: Completed April 2009*

In March 2009 environmental consultants working for Tweed Shire Council took to the air to map the location and extent of infestations of Madeira Vine.

Madiera Vine (*Anredera cordiflora*) is a plant native to South America which grows prolifically on our river and creek banks, smothering and killing mature trees and preventing the regeneration of native seedlings. It is clearly visible at this time of year as it emerges into long creamy white flowers in the canopy of its host trees. The spread of introduced vine weeds in NSW is recognised as a key threat to the conservation of our native flora and fauna. Because of this, the NSW Environmental Trust has provided Tweed Shire Council with a grant to map Madeira Vine and another serious weed, Cats Claw Creeper. Mapping these weeds will allow Council to develop a strategic approach to their management. As well as mapping weeds, the Environmental Trust grant will be used to fund weed control at priority sites.



## Tweed Coast Weed Management

*Responsibility: NRM Unit – Biodiversity Program*

*Status: Ongoing*

In late 2008 Tweed Shire Council was successful in obtaining \$35 000 in funding through the Northern Rivers Catchment Management Authority (NRCMA) for onground works to improve the condition and resilience of natural vegetation communities along the Tweed coast.

The NRCMA through its Northern Rivers Catchment Action Plan - Coastal Theme, supports NSW Government coastal policy and planning processes that encourage local government to develop and implement Coastal Zone Management Plans. This project will implement priority actions contained within a number of coastal plans of management pertinent to the Tweed Coast.

Council will also contribute \$10 000 to the project from its Biodiversity Program budget.

The project will compliment established and ongoing bitou bush control and natural resource management works undertaken by coastal land managers and dunecare groups. They will facilitate the restoration of biodiversity values within high conservation value vegetation communities and protect threatened species and their habitats.

A number of environmental weeds, including Asparagus Fern, Glory Lily, Morning Glory Vine, Mother of Millions and other succulents will be targeted by contractors across 40 hectares of high conservation value vegetation at nine separate locations within the Tweed Coast Reserve, while less intensive treatment will be undertaken by Council staff across a further 60 hectares.

It is expected that this project will reduce the incidence and density of environmental weeds, minimise the risk of new invasions, provide support for volunteer groups working in the coastal reserve and heighten community awareness of the benefits of environmental weed control.



## 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 natural resource management reforms.



## Habitat Management Plan Policy

*Responsibility: NRM Unit – Biodiversity Program; Planning and Regulation*

*Status: Ongoing*

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 native habitat utilised by 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. Competing priorities have caused a delay in the preparation of this plan, which is now scheduled for completion in 2010.



## 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 responding to preventing unauthorised land clearing and tree removal particularly along the coastal strip. Approaches include the use of ‘shame’ 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: Completed 2009.*

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 the 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. Refer to the [Built Environment](#) section for more detail on the LEP review.



## Koala Beach Wildlife Habitat Management

*Responsibility: NRM Unit – Biodiversity Program*

*Status: Ongoing*

In 2009, Council continued to carry out habitat restoration and monitoring works within the Koala Beach Estate. Works carried out in 2009 built upon previous works and 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: Ongoing*

In 2008 a plan of management 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 source 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 established a full time position of Bushland Officer 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 has led to 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 species. They form aggressive colonies which chase many native birds away, and compete for nest in tree hollows, threatening many hollow nesting species including 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 Natural Resource Management 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 in 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 of fox dens in the shire through fumigation and destruction of dens.

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. Additional fauna advisory signage has been installed along the Tweed Coast in 2009.



### 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. The Program is managed by Council’s Biodiversity Program Leader within the Natural Resource Management Unit.



### 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 and 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*. The program has helped to maintain Pandanus tree health along the Tweed Coast.



## 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. 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.

In 2008/09 the TVMP was used to inform vegetation management land use planning controls with the Tweed Local Environment Plan.



## Bushland Friendly Nursery Scheme

*Responsibility: NRM Unit – Biodiversity Program, Planning Reforms Unit / Far North Coast Weeds*

*Status: Ongoing*

In 2003 Council joined the Bushland Friendly Nursery Scheme (BFNS), 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.

In 2009 a second round of the BFNS booklets were published and distributed to participating nurseries for supply to customers.



### 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 tree is an environmental weed in the area and has excessive leaf and fruit fall which end up in local waterways when planted in urban nature strips.



### 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.

In November 2008 two important projects were completed to address weed control in coastal High Conservation Value vegetation. All weeds were targeted in the first project focussing on Crown land from Hastings Point to Black Rocks. The second project saw Bitou Bush specifically targeted through the NRCMA’s Bitou Bush Threat Abatement Plan.

The NRCMA has developed these projects to assist with managing weed infestations on public land, with Council being contracted to undertake the works in the coastal zone. This work, undertaken by Council staff, contractors and assisted by DuneCare groups along the Coast, has resulted in a significant decrease in the area covered by Bitou Bush and other weeds. The Tweed is the Northern Containment Zone for Bitou Bush and the aim is to stop the spread of this noxious weed back into Queensland, where it has been successfully controlled.



### Development Approval Conditions

*Responsibility: Planning and 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. This condition has helped to reduce the ecological impact of new development by improving communication of environmental issues and requirements to developers prior to any on-ground work.





## 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 in suitable locations throughout the shire.



## North Tumbulgum Wildlife Corridor Rehabilitation Project

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

*Status: Completed 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 Nature Reserve with the Rous River Wetland at the confluence of the Rous and Tweed Rivers (Stotts Island Nature Reserve 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.

In 2009, significant community concern at the increasing pressures on koala habitat resulted in a re-prioritisation of Councils natural resource management resources to help improve koala habitat management in the shire.



**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 to ensure any development or change of land-use in proximity to these sites is managed appropriately.



**Related Issues**

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

# SOILS AND SUSTAINABLE AGRICULTURE

## CONDITION

### At a Glance




- Soil groups in the Tweed catchment include coastal sands, krasnozems, alluvials, yellow earths, red podzolics and chocolate soils. (TSC 2003a)
- Much of the floodplain area of the Tweed catchment has 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](#).

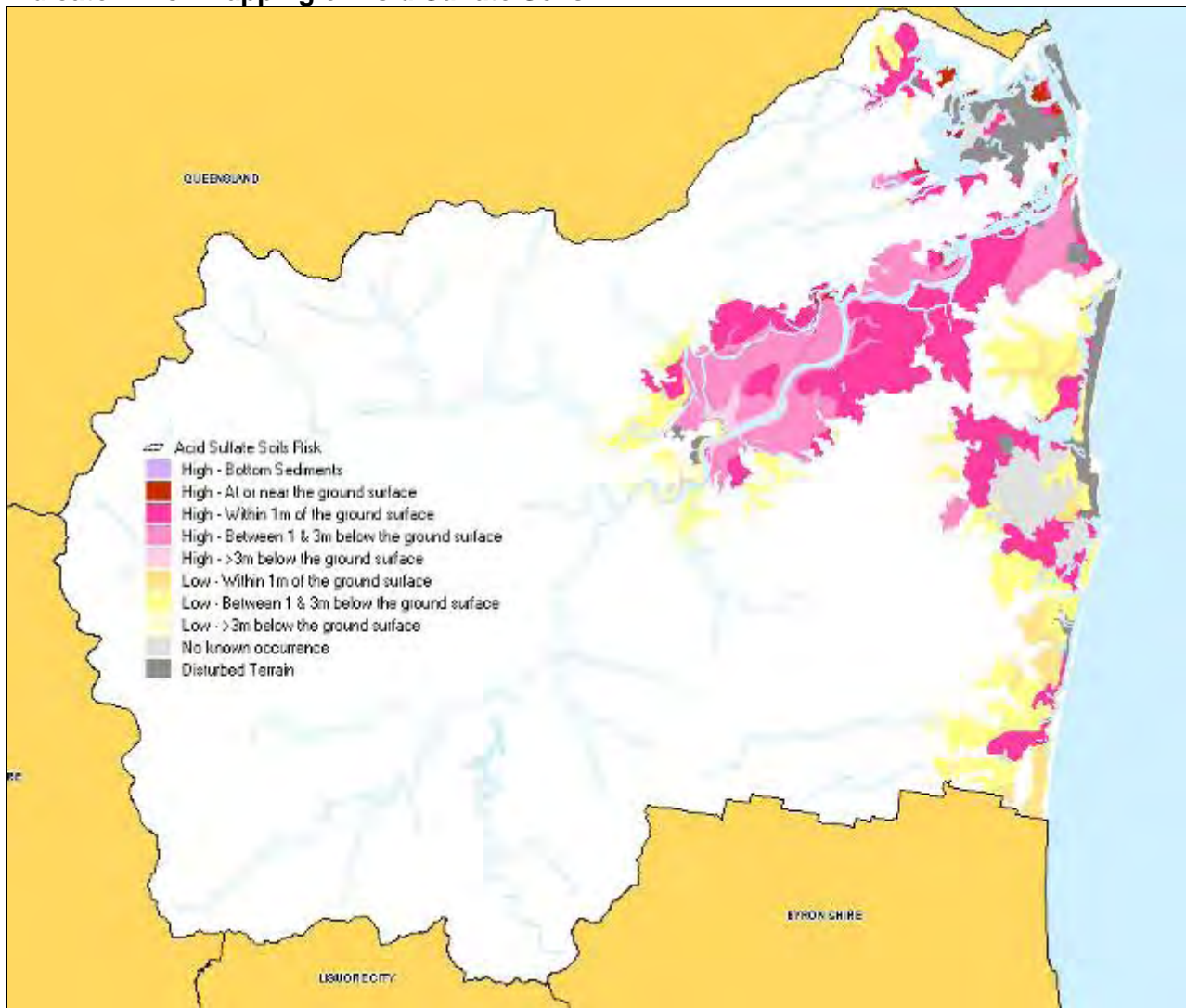
## PRESSURE

### 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"> <li>• Land degradation and reduced productivity in agricultural areas.</li> <li>• Water quality degradation and the associated impacts on aquatic and marine ecosystems.</li> </ul>	 <p>ACID SULFATE SOILS</p>
Erosion and sedimentation associated with agricultural and construction activities	 <p>DIFFUSE</p>
Changing land-use patterns	 <p>CHANGING LAND USE</p>
Contaminated land	Contaminated Land

**Pressure Indicators**

**Indicator: Risk Mapping of Acid Sulfate Soils**



Indicator:	02/03	08/09
<b>Acid Sulfate Soil Classifications</b>		
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	--
Tyngah	--

Source: Tweed Shire Council\_Natural Resource Management

Indicator: Contaminated Land	02/03	08/09
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.

Icons at the end of each response represent the pressure being targeted.

**Sustainable Agriculture Program**

*Responsibility: NRM Unit - Sustainable Agriculture Program*

*Status: Ongoing*

In 2009 Council expanded its Floodplain Program to include all agricultural landscapes. The focus of the newly created Sustainable Agriculture Program is to build the environmental capacity of agricultural landholders for enhanced social, economic and ecological values of farmland in the shire. The Sustainable Agriculture Program is managed by the Sustainable Agriculture Program Leader within the Natural Resource Management Unit of Council. It is anticipated that expanding the scope of the former Floodplain Program will lead to a more holistic approach to agricultural land-use management in the shire.



**Blacks Drain Remodelling**

*Responsibility: NRM Unit - Sustainable Agriculture Program*

*Status: Due for completion 2011*

In 2008 Council was successful in obtaining \$100,000 from the NSW Environmental Trust, Urban Sustainability Grant to reduce acid sulfate related pollutant (e.g. iron, aluminium, sulfuric acid) export from Blacks Drain, a well known acid sulfate soil hotspot located in South Murwillumbah. Works include reducing drain depth and increasing drain width to retain drainage capacity without disturbing the acid sulfate soil layer. These works will prevent further oxidation and transport of sulfidic materials to local waterways.



## Bray Park Wetland Rehabilitation

*Responsibility: NRM Unit - Sustainable Agriculture Program*

*Status: Due for completion 2011*

In 2008 Council was successful in obtaining \$200,000 from the NSW Environmental Trust, Urban Sustainability Grant to improve the biodiversity values of the Bray Park Wetland. Planned works include rehabilitation of the wetland with weed removal and revegetation, improved public access to the adjacent parkland and interpretive signage to educate the local community of the important function the wetland plays in terms of habitat for local biodiversity.



## Floodgate Modifications 2008

*Responsibility: NRM Unit - Sustainable Agriculture Program*

*Status: Completed*

In November 2008 Council's Natural Resources Management Unit (NRM) completed a two-year \$180,000 rehabilitation project which was partially funded (\$100,000) by the Australian Government Environmental Trust. The aim of the project was to retrofit 10 traditional one-way valve floodgates to become environmentally-friendly tidal floodgates.

This project takes the number of Shire's modified floodgates to 28, not including the winch operated gates. The new tidal floodgates have resulted in several environmental and economic benefits on the Tweed floodplain which include:

- Restoration of water quality in degraded creeks and drains while retaining farms profitability.
- Improved passage for aquatic organisms and improved habitat.
- Restored connectivity between the river and creeks/drains that feed into the floodplain.
- Reduced growth of aquatic weeds and consequent spraying needs.
- Prevented and minimised damage to the river through tidal, regular dilution and neutralisation of acidity and other acid sulfate soil related pollutants in creeks and drains.
- Adoption and dissemination of best management practices by Tweed cane growers.

This floodplain project, along with others, was made possible through the ever-growing interest and collaboration of canefarmers and other floodplain landholders. There is now a high level of water quality awareness and waterway management on the floodplain in the Shire.

Landholders are increasingly aware of the benefits of restoring a more natural character to drainage channels.



## 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 and native trees) along a number of floodplain waterways to reduce the impacts of acid sulphate soil runoff and erosion / sedimentation. Examples of where these works have occurred include Johnsons Creek Condong, Blacks Drain

South Murwillumbah, McLeods Creek Duranbah, Leddays Creek Tumbulgum and Mooball Creek Wooyung.

In 2009 the initiative was rebadged as 'green banks' and allocated a two year budget from external funding sources.

Refer to [Response Indicators](#) for length of drains planted to date.



## Greenhouse Gas Monitoring Study

*Responsibility: NRM Unit - Sustainable Agriculture Program*

*Status: Ongoing*

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

Preliminary results indicates that emissions of CO<sub>2</sub> from ASS are in the top of the range for agricultural soils, emissions of N<sub>2</sub>O from N-fertilised soils appear to be much higher than expected from agricultural soils and that ASS are sources of atmospheric CH<sub>4</sub> 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.

2008/09 update: next round of studies have not proceeded as planned. For up-to-date status of study contact Council's Sustainable Agriculture Program Leader.



## ARC Linkage Project: Reducing export of ASS products

*Responsibility: NRM Unit - Sustainable Agriculture Program*

*Status: completed in 2008*

Between 2005 and 2008 Council co-hosted a research project by the 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 Acid Sulfate Soils 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 Aluminium and Iron 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 commenced in 2008 and is due for completion in 2011 as part of a project funded by the NSW Environmental Trust.



## Regional Floodplain Network

*Responsibility: NRM Unit - Sustainable Agriculture Program*

*Status: Ongoing*

In 2005 the Regional Floodplain Network was established to support collaborative on-ground work and research projects that enhance sustainable and innovative farming practices and encourage best management of critical coastal environments substantially affected by acid sulfate soils.

The network is made up of a variety of organisations, government agencies and individuals engaged in the delivery of coastal floodplain natural resource management from Taree to the Tweed.



## Cane Farming Best Practice Guidelines

*Responsibility: NSW Sugar Milling Cooperative*

*Status: Ongoing*

In 2005 the NSW Department of Environment, Climate Change and Water and the NSW Sugar Milling Cooperative developed a set of leading practice guidelines for cane farming in acid sulfate soil areas. To view the guidelines visit [www.nswsugar.com.au](http://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 levelling of cane-land across the shire to improve cane-land 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, Tyngalah and Chinderah.



## Farmland Protection Project

*Responsibility: NRCMA / TSC Planning and Regulation Division*

*Status: Ongoing?*

In 2004 the Northern Rivers Catchment Management Authority (NRCMA), with participation from Tweed Council sought to protect important farmland from urban and rural residential development by mapping farmland and developing planning principles. For more information on the status of this initiative contact Council's Planning and Regulation Division.





## Floodgate Modifications 2000 to 2007

*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. This management plan has helped to raise community awareness of acid sulfate soil issues and management responses.



## Development Approvals

*Responsibility: Planning and 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. The requirement has helped to raise community awareness of acid sulfate soil issues and management responses.



## 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 and 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

Floodplain Management	Length of cane drains in-filled (km)	No. of floodgates modified	Length of cane drains planted with vegetative filter strip (km)
2000 to 2005	-	9	-
2005/06	-	8	-
2006/07	12.8	14	3.9
2007/08	17.5	6	6.1
2008/09	3.5	2	3.0
Total	33.8	39	12.7

Source: Tweed Council NRM Unit

## Related Issues

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

# ATMOSPHERE

**THIS PAGE IS BLANK**





## CONDITION

### At a Glance

- Australia has the highest per capita level of greenhouse gas emissions in the developed world (28 tonnes CO<sup>2</sup> per person)
- The average household produces about eight tonnes of carbon dioxide (CO<sup>2</sup>) 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)
- Solar power generation and solar hot water is gaining popularity in the shire, evidenced by the number of successful rebate applications and systems on rooftops.

## 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)	

## Climate Change Pressure Indicators

Indicator: Direct Emissions from Fuel and Electricity Use	1996	2001
Shire Population	66,534	73,821
*Total End-point Emissions for the Shire (tonnes CO <sup>2</sup> e)	561,264	768,161

Source: TSC 2003

Indicator: Residential Energy Consumption	1983/84	1993/94	2003/04
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
<b>Total</b>	<b>100</b>	<b>100</b>

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

## Additional Indicators

[Built Environment](#)

[Waste Management](#)

[Transport](#)

## RESPONSE

### CLIMATE CHANGE MITIGATION

#### Council Operations

Since joining the Cities for Climate Protection Program as a pilot council in 1997 (detailed below), Tweed Shire Council has undertaken a number of initiatives to reduce its own carbon footprint including:

- Energy efficiency retrofits of existing facilities.
- Adoption of design guidelines for construction of new Council facilities.
- Fuel efficiency measures within the vehicle fleet.
- Methane harvesting from the Stotts Creek Resource Recovery Centre.

Refer to [Council Operations](#) for details of these emission reduction initiatives and the volume of greenhouse gas reduction to date.

#### Community

Tweed Shire Council has undertaken a range of initiatives to promote the reduction of household carbon footprints including:

- Sustainable Households Pilot Project
- Household energy and water retrofit program
- Promotion of government rebates

- Cycleway and footpath infrastructure

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

## 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, [www.nrcarpool.org](http://www.nrcarpool.org)

## 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.

These targets will need to be reviewed post 2010 in order to chart progress and establish a new goal of greenhouse gas reduction for the shire.

## 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.

## CLIMATE CHANGE ADAPTATION

### Climate Change Adaptation Plan

In 2008 Tweed Shire Council and Byron Shire Council successfully applied for \$50,000 from the Federal Government Department of Climate Change to conduct a climate change risk assessment process and develop a climate change adaptation plan for each shire. The risk



assessment process was completed March 2009, with the climate change adaptation plan process due to commence July 2009.

### **Coastline Management**

In the 20th century, the global average sea level rose by 17 cm and sea levels are projected to continue to rise. There is strong national and international evidence supporting a projected rise of up to 40 cm by 2050, and 90 cm by 2100, for the NSW coastline.

Coastal land has been subject to natural coastal hazards for thousands of years, including coastal erosion and coastal flooding. Projected sea level rises will increase these hazards, and NSW needs to plan now for these long-term impacts to minimise social and economic disruption.

To support sea level rise adaptation, the NSW Government has prepared a [Draft Sea Level Rise Policy Statement](#). This sets out the Government's approach to sea level rise, the risks to property owners from coastal processes and assistance that Government provides to councils to reduce the risks of coastal hazards.

The draft Policy Statement includes sea level planning benchmarks which have been developed to support consistent consideration of sea level rise in land-use planning and coastal investment decision-making. The adopted benchmarks are for a rise relative to 1990 mean sea levels of 40 cm by 2050 and 90 cm by 2100. These benchmarks represent the Government's guidance on sea level rise projections for use in decision-making and are not regulatory standards.

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

For up-to-date information on Tweed Shire Council response to Coastline Hazard Management and the NSW Government's Draft Sea Level Rise Policy Statement contact the Natural Resource Management Unit on 02 6670 2400.

### **Floodplain Management**

Since 1987 a sea level of 2.65m AHD has been used for Flood Modelling in Tweed Shire. This level is around 0.4m higher than the seal level adopted by adjoining Councils.

Although the 0.4m was adopted for reasons other than climate change (overestimation of storm surge etc compared to later work), it now gives Tweed flood modelling a built in allowance for sea level rise due to climate change.

In October 2008, the NSW Department of Environment and Climate Change (DECC) issued a guideline for incorporating climate change variables into flood studies. The guideline recommends the following variables be modelled in flood studies to examine the impacts of climate change.

For sea level rise:

- 0.18m (Low Level Ocean Impacts)
- 0.55m (Mid Range Ocean Impacts)
- 0.91m (High Level Ocean Impacts)
- For increased rainfall intensity:
  - 10% in peak rainfall and storm volume
  - 20% in peak rainfall and storm volume
  - 30% in peak rainfall and storm volume

The modelling analyses is to inform the Floodplain Risk Management Study process, by identifying areas that are susceptible to increased flood levels and risk due to climate change.

The Floodplain Risk Management Study is then to formulate responses to this increased risk which could include:

- Revised flood planning (floor heights, fill heights) levels, building additional Floodways and levees; or,
- Accepting increased frequency of inundation, loss of residential freeboard and increased flood damages

Council resolved in 2008 to:

- Incorporate climate change variables into the revision of the 2005 Tweed Valley Flood Study
- Incorporate the results of this modelling into the Tweed Valley Floodplain Risk Management Study and Plan
- Address climate change variables in the Coastal Creeks Flood Study

For up-to-date information on floodplain management in response to climate change impacts and DECC guidelines contact Council's Engineering and Operations Division on 02 6670 2400.

## Response Indicators

<b>Indicator: Climate Change Mitigation</b>	<b>'00 to '04</b>	<b>04/05</b>	<b>05/06</b>	<b>06/07</b>	<b>07/08</b>	<b>08/09</b>	<b>Total</b>
Tonnes of greenhouse gases not emitted as a result of Council initiatives (CO <sup>2</sup> equivalent)	20859	8111	12080	35053	41000	25673	142776

Source: TSC Natural Resource Management Unit

<b>Indicator: Renewable Energy Use</b>	<b>03/04</b>	<b>04/05</b>	<b>05/06</b>	<b>06/07</b>	<b>07/08</b>	<b>08/09</b>
Number of households in the shire choosing Green Power as their electricity supply option	153	856	989	1552	5206	N/A
Percentage of Council's electricity consumption sourced from Green Power supplies	0	0	0	0	0	0

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

## Related Topics

Human Settlement

[Built Environment](#)

[Catchment Management](#)

[Council Operations](#)

# COUNCIL OPERATIONS

**THIS PAGE IS BLANK**

## **Environmental Management System**

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 environmental stewardship 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 AND 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 goals for reducing the environmental footprint of 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 Environmental Safety (ES).

### **Energy and 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**

### **Power Factor Correction**

In 2009 Council installed a power factor correction system in the Murwillumbah Civic Centre. Initial results indicate an 8% reduction in total annual energy consumption due to this initiative. Investigations are planned for other facilities that may benefit from power factor correction.

### **Solar Streetlights**

In 2009 Council installed a solar streetlight at the Cudgen boat-ramp and another at the Skate Park, Tweed Heads South.

In 2008 Council installed a solar streetlight at the Civic Centre, Murwillumbah and another at the Cudgen Creek Footbridge, Kingscliff.

### **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 at these facilities. Quantification of these savings is yet to occur.

### **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. In 2009 council electricians used the results of these trials to replace a series of council owned 80 watt mercury vapour streetlights in Kingscliff with 42 watt compact fluorescent lights.

### **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 CO<sub>2</sub> per year.

### **Server Virtualisation**

In 2008 Council commenced a process known as *server virtualisation*. The number of physical servers for the computer network was 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.

## **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 CO<sub>2</sub> per year.

## **Staff Workstations**

In 2009 the transition to more energy efficient computers for staff workstations was completed. This initiative is reducing power consumption by approximately 25,000kWh per year and greenhouse gas savings of approximately 25 tonnes of CO<sub>2</sub> 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.

## **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.

## **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 CO<sub>2</sub>.

## **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 CO<sub>2</sub>.

## **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

In 2005 Council began to install rainwater tanks on public facilities and community infrastructure on a case by case basis. In 2008 Council developed a set of design guidelines for new Council facilities which recommended rainwater tanks on all new constructions. Examples of rainwater tanks on Council facilities include the Murwillumbah Administration Centre, Chinderah Sustainable Living Centre and the Chinderah Mechanical and Electrical Depot.

### Waterless Urinals

In 2003 Council began to install waterless urinals in public toilets and community facilities. In 2008 Council developed a set of design guidelines for new Council facilities which recommended waterless urinals on all new constructions. Examples of waterless urinal installations can be found in public toilets at Casuarina and Uki and the community centres at South Tweed Heads and Chillingham.

It is important to note that the installation of waterless urinals requires water input upstream of these fixtures to flush scale build up in the buildings waste-water plumbing. This is commonly achieved with hand-basins, toilets and showers being installed upstream of the waterless urinals.

### Recycled Water

Refer to the [Waste-water Management](#) 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, using less than 9 litres per minute. Beach showers are also 'press button' activated, automatically turning off after approximately 10 seconds.

### 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 AND GREEN PROCUREMENT

### Tweed Link

In July 2009 Council's weekly community newspaper, the *Tweed Link* was printed on 100% post consumer recycled paper for the first time. With more than 38,000 copies of the Tweed Link distributed to residents each week, the shift to recycled paper has significantly reduced the environmental impact of Council's paper usage. Benefits of using recycled paper include:

1. Energy savings - producing paper from recovered fibre uses about 50 per cent less energy than manufacturing paper from raw pulp.
2. Water conservation - producing paper from recovered fibre uses up to 60 per cent less water than manufacturing paper from raw pulp.
3. Bushland conservation - buying paper with a recycled content saves trees and helps to reduce land degradation.
4. Diversion of materials from landfill - buying recycled products closes the loop on recycling and ensures valuable resources are not sent to landfill.



## 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.

These actions have helped to reduce Council's office paper consumption by approximately 40% whilst greatly reducing the environmental impact of administration activities.

## 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.

In 2009 toner cartridge recycling was suspended to allow for investigations into suitable OHS procedures relating to spilt toner dust.

## Landfill Gas Management

In 2003 a methane gas extraction system was constructed at Stotts Creek Resource Recovery Centre. 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. 400 kilowatts is supplied into the national electricity grid every hour, which is enough to power about 300 homes.

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

2051763m<sup>3</sup> of landfill gas was combusted in 2008/2009. The average methane composition of the landfill gas is 53%. The resulting quantity of methane in landfill gas for combustion from the facility is 1087434.39m<sup>3</sup>

## 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.

Between 2007 and 2009 paper recycling systems have been implemented at all Council sites.

## **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) to help demonstrate Council's commitment to recycling within the staff body.

## **Metal Recycling**

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.

## **BIODIVERSITY CONSERVATION**

### **Perch Creek Bridge Replacement**

In 2009 the wooden bridge over Perch Creek, west of Uki was replaced with a concrete bridge. A number of controls were put in place to minimise the environmental impact of construction activities with a particular emphasis on mitigating the impacts on insectivorous bats that roost under the wooden bridge, the threatened Giant Barred Frog in the stream habitat and endangered vegetation adjacent to the worksite. Details of the environmental management actions of Council's Works Unit can be found in the 9 July 2009 edition of the Tweed Link available at [www.tweed.nsw.gov.au](http://www.tweed.nsw.gov.au)

### **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, communication with local communities 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 roadside vegetation management that have contributed to improvements in management practices and procedures.

## **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**

### **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. In 2009 the bicycle fleet expanded by four more bicycles.

Refer below for staff participation rates.

### **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.

In 2009, an internal report was submitted to Council highlighting key outcomes of this initiative, including 97,000 litres of fuel savings and greenhouse gas reductions of 120 tonnes of CO<sub>2</sub>e.

### **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.

In 2009 hybrid vehicles were added to the vehicle list for lease-back.

<b>Vehicle Fleet Indicator – Fuel Consumption</b>	<b>04/05</b>	<b>05/06</b>	<b>06/07</b>	<b>07/08</b>	<b>08/09</b>
Average litres of ULP per vehicle	3649	3398	2816	3034	N/A*
Average litres of diesel per vehicle	4348	3978	3538	3976	N/A*
Combined litres per vehicle	4086	3783	3300	3686	N/A*

Source: TSC Works Unit

\* Fuel consumption indicators are currently being reviewed.

<b>Bicycle Fleet Indicator – Staff Participation</b>	<b>07/08</b>	<b>08/09</b>	<b>08/09</b>
No. of staff inducted into bicycle fleet (cumulative)	25	34	37

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.

## Environmental Design Guidelines for Council Facilities

Refer to [OMS Policies and Procedures](#).

- Australian Bureau of Statistics** (1991, 1996, 2001,2006) – *Census Data*
- Department of Environment and Heritage** (2001) *National State of the Environment Report 2001*, Canberra, ACT.
- Department of Local Government (1999)**, *Environmental Guidelines – State of Environment Reporting by Local Government – Promoting Ecologically Sustainable Development*. South Sydney, New South Wales
- Department of Local Government (2004)**, *Comparative Information on NSW Local Councils, 2004*. South Sydney, New South Wales
- Far North Coast Weeds (2003)** *Correspondence with TSC for SoE Report*. Lismore, NSW.
- Hornsby Shire Council (2003)**, *State of the Environment Report 2002/2003*, Hornsby, New South Wales.
- May, P (2001)** *Strategic Planning in Local Government – Myths, Justifications and Possibilities*, University of New England
- McDonald, W.J.F. and Elsol, J.A.** (1984) *Moreton Region Vegetation Map Series: Summary Report and species checklist for Caloundra, Brisbane, Beenleigh and Murwillumbah Sheets*. Qld Department of Primary Industries.
- New South Wales Department of Environment and Conservation** (2004) *NSW State of the Environment Report*, Sydney, NSW.
- Periott, G. (1997)** *The Importance of Riparian Vegetation to the Health and Stability of Aquatic Systems*, Literature review conducted on behalf of Tweed Shire Council.
- Pressy, R.L. and Griffith, S.J.** (1992) *Vegetation of the Coastal Lowlands of Tweed Shire, Northern New South Wales: Plant Communities, Species and Conservation*. Proc. Linn. Soc. NSW.
- Tweed Shire Council** (1996) *State of the Environment Report 95/96*, Murwillumbah, NSW.
- Tweed Shire Council** (2006a) *Tweed Shire Council Management Plan 06-09*, Murwillumbah, New South Wales.
- Tweed Shire Council** (2004a) *Tweed Shire Council Social Plan 2005-2009*, Murwillumbah, NSW.
- Tweed Shire Council** (2004b) *Tweed Shire Strategic Plan 04-24*, Murwillumbah, NSW.
- Tweed Shire Council** (2004 c) *A New Approach to Bushland Management in the Tweed*, Murwillumbah, NSW
- Tweed Shire Council** (2000a) *Tweed Local Environmental Plan 2000*, Murwillumbah, NSW.
- Tweed Shire Council** (2000b) *Tweed Urban Stormwater Quality Management Plan 2000*, Murwillumbah, NSW.
- Tweed Shire Council** (2003) *Tweed Shire Local Action Plan for Greenhouse Gas Reduction*, Murwillumbah, NSW.
- Tweed Shire Council** (2006b) *Tweed Integrated Water Cycle Management – Context Study and Strategy*, Murwillumbah, NSW.
- Tweed Shire Council** (2003) *Waste Collection and Disposal Strategy*, Murwillumbah NSW.
- Tweed Shire Council** (2008) *Workplace Environmental Safety Protocol*, Murwillumbah, NSW.

### Website Acknowledgements

[www.deh.gov.au](http://www.deh.gov.au)

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

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

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

[www.northern.cma.nsw.gov.au](http://www.northern.cma.nsw.gov.au)

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

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





Customer Service | 1300 292 872 | (02) 6670 2400

[tsc@tweed.nsw.gov.au](mailto:tsc@tweed.nsw.gov.au)  
[www.tweed.nsw.gov.au](http://www.tweed.nsw.gov.au)

Fax (02) 6670 2429  
PO Box 816  
Murwillumbah NSW 2484