ANNUAL REPORT

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PORT STEPHENS COUNCIL 2011 - 2012

Port Stephens
C·O·U·N·C·I·L

The Annual Report 2011-2012 has been prepared in accordance with the provisions of Sections 428 and 428A of the Local Government Act 1993 and Local Government (General) Regulation 2005.

The Annual Report 2011-2012 was adopted by Port Stephens Council on 27 November 2012.

Contents

Port Stephens	2
Our treasured environment	4
Our community	6
Our towns	8
Helping out	10
Our heritage	12
Our changing climate	14
Our water	16
Getting around	18
Our waste	20
Our air	22
Our amenity	24
Looking after the land	26
Our rivers	28
Our groundwater	30
Our land ecosystems	32
Caring for the koala	34
Our water ecosystems	36
Our coast and port	38
Threats to our treasured environment	40

PORT STEPHENS

Residents and tourists alike are attracted to Port Stephens because of its natural beauty, magnificent waterways and rural character. There is a substantial estuarine system with a surface area over 100 square kilometres. Coastal sand barriers and estuarine deposits in the east, and low hills and floodplains in the west dominate the landform of the LGA.

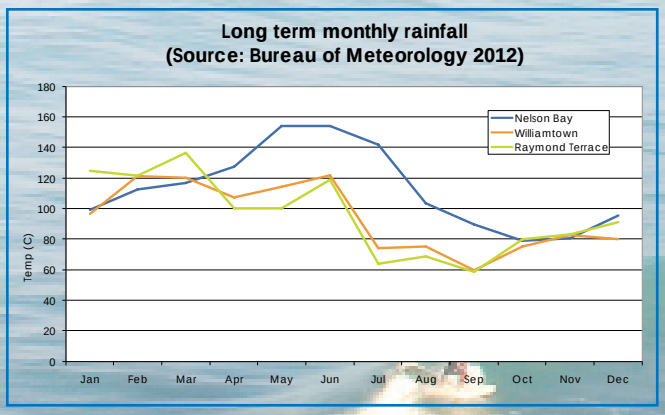
Port Stephens contains a substantial variety of its ecosystems such as open forest, rainforest, riparian forest, coastal swamp forests, woodland, heath and sedge land and a number of these locations are also classified as nationally, State or regionally significant.

Did you know?

Aborigines have lived in Port Stephens for thousands of years. In the early years of white settlement, it was thought there were about 400 Aborigines living around the estuary - by 1873, it was thought there were only 50 Aborigines. In the 2011 Census, there were 2,328 people of Aboriginal and Torres Strait Islander descent in the Port Stephens LGA.

Port Stephens LGA contains 64 species of fauna threatened with extinction and 21 flora species threatened with extinction. Of these, 14 fauna species and 6 flora species are facing a very high risk of extinction in New South Wales and 2 species are critically endangered, meaning they are facing an extremely high risk of extinction in NSW in the immediate future. Port Stephens is also home to at least 11 ecological communities that are threatened with extinction as well as at least 45 bird species that are listed under international treaties agreed between the Australian Government and Japan, China and the Republic of Korea. Port Stephens is known for its koala population that has become iconic to the area.

Port Stephens LGA has almost 127 km2 of waterway (13% of the LGA), 189 km^2 of land protected under the National Parks and Wildlife Act (19% of the LGA), almost 35 km^2 of State Forests (3.5% of the LGA), 9.1 km^2 of public community land (almost 1% of the LGA) and 4.2 km^2 of Crown land (just over 0.4% of the LGA).



In December 2005 the NSW Government established the Port Stephens–Great Lakes Marine Park which extends from Cape Hawke Surf Life Saving Club to Birubi Beach Life Saving Club and includes offshore waters to the 3 nautical mile limit of State waters. Port Stephens and the Karuah River are included as well as all their creeks and tributaries to the tidal limit. The Park covers an area of approximately 98, 000 hectares.

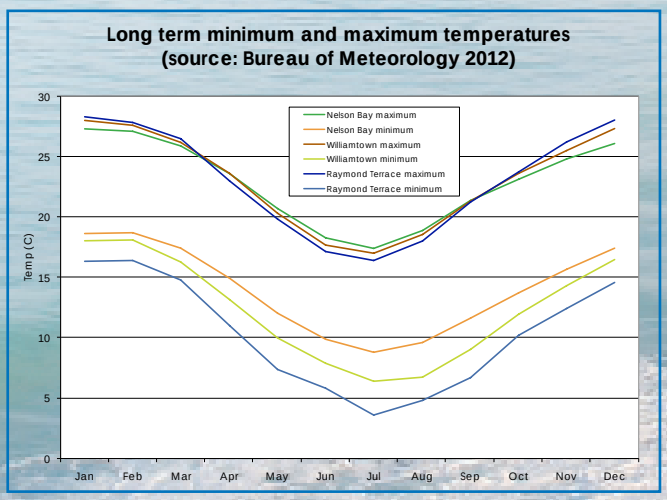
The Park's diverse marine life includes many species of dolphins, turtles, fish, seabirds and seaweeds along with threatened species such as the Gould's petrel, little tern, grey nurse shark dugong and green turtle. Humpback whales travel along the coastline during their annual migration north to breeding grounds.

The Port and its surrounding environment are used extensively for tourism and recreation, as well as supporting a large professional fishing and oyster growing industry. Port Stephens has become a major recreational, tourist and retirement centre, as well as a place people choose to live and work.

Continued rates of high population growth and development are placing considerable pressure on the social, cultural and environmental characteristics of Port Stephens. The physical footprint associated with current population in Port Stephens is large. The dispersed settlement pattern generates high-energy consumption rates in terms of transport impacting on our environment.

Many areas of significance to Aboriginal people are located within Port Stephens, including shell middens, scarred trees, occupation and Ceremonial Sites and places of spiritual value. The exact location of the various sites is restricted information. In the area stretching from Wallis Lakes to Newcastle, there are 37 recorded Ceremonial Sites (stone arrangements, bora grounds, carved trees and burial sites), 115 recorded campsites (mia mia, scarred tree, open campsite, shelter with deposit, well, fish trap, abraded grooves and quarries) and over 100 middens.

The 2007 report by the Intergovernmental Panel on Climate Change (IPCC) concludes that climate change and associated sea level rise (SLR) are inevitable with anticipated increases in ocean levels and increased frequency and severity of flood



producing rainfall and storm events in many locations. Sea levels are estimated to have risen 0.07 metres over the last fifty years. This report and the CSIRO estimate further rises up to 0.91 metres between now and the year 2100.

Council has a duty of care to consider projected sea level rises and associated impacts when planning for the future. The main areas of consideration are flooding, engineering, infrastructure and planning, in addition to significant impacts on the natural environment.

Sea level rise, and the wider impacts of climate change, will impact on the lives and wellbeing of Port Stephens residents, particularly those living in the low lying and coastal areas. More work will need to be undertaken in relation to planning for the effects of increased instances of extreme heat, particularly on our aging population.

Council's intention is that our environment be maintained and improved for the well-being of our community.

"We in Port Stephens are gifted with outstanding natural capital and valued assets of coastal and estuarine significance that require, for their conservation, a collective custodial role from us all. These fragile assets are highly valued for their natural resources and their recreational amenity comprising a rich marine and terrestrial biodiversity, all requiring our custodial care and responsibility including their transfer intact, to future generations."

Darrell, Shoal Bay

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CASE STUDY

Our Community Strategic Plan

Port Stephens Council has developed a ten year plan which identifies the main priorities and aspirations of the community.

The Port Stephens Community Strategic Plan addresses civic leadership, social, environmental and economic issues in an integrated manner, and is based on social justice principles of equity, access, participation and rights.

In accordance with the State Government legislation, Council prepared the Integrated Plans through extensive community consultation.

In 2008 Council formed a Port Stephens Futures Reference Group that comprised stakeholders from various State agencies, business groups and community groups. In May 2009 Council held two Futures Forums where the main strategies were refined and formed the bases of Council's first set of Integrated Plans, adopted in June 2010.

To inform the revised Integrated Plans, Council conducted three workshops with the community and Councillors – one in each Ward – to validate the strategic directions and to identify the community's priorities for Council over the next four to ten years. The workshops were held at Nelson Bay on 14 October, 2010; Salt Ash on 15 October, 2010; and Raymond Terrace on 22 October, 2010.

In addition, Council held a Forum with its Residents Panel on 4 November 2010. More than 100 members of the Port Stephens community attended, together with the Mayor and Ward Councillors, and Executives and staff of Council.

The Integrated Plans are organised into five focus areas: Our Citizens, Our Lifestyle, Our Environment, Our Economy and Our Council. There are 33 activities that Council is undertaking to meet the objectives of the "Our Environment" area of the Integrated Plans.

OUR treasured environment

Port Stephens Council looks after a Local Government Area (LGA) that stretches from the Hunter River to the northern shores of Port Stephens and from the Paterson River in the west to the Pacific Ocean. The LGA covers an area of 976 km^2 (including 127 km^2 of waterway) and represents about one tenth of one percent of New South Wales.

The LGA has a resident population of about 65,000 and a unique environment which attracts more than 1.4 million visitors per year.

The LGA is nestled between the internationally-recognised Hunter Estuary Wetlands Ramsar site and the Myall Lakes Ramsar site. Both sites are important as feeding and roosting sites for birds. Over 250 bird species have been recorded in the Hunter Estuary Wetlands Ramsar site, including 45 species listed under international migratory conservation agreements with China, Japan and South Korea.

The waterway of the Port Stephens Estuary has been gazetted as a Marine Park and zoned by the NSW Marine Parks Authority, including all of creeks and tributaries to the limit of tidal influence and NSW waters to the three nautical mile limit. The zoning plan (which commenced on 21 April 2007) covers multiple uses including fishing and boating while protecting the special marine biodiversity of Port Stephens.

Approximately one fifth of the Port Stephens LGA is protected in the National Parks Estate. This covers some of the state significant Watagans to Port Stephens "green corridor", with areas protected as the Worimi Conservation Lands, the Tilligerry State Conservation Area, Karuah and Medowie conservation areas, Wallaroo National Park and Columbey National Park.

The 4200-hectare Worimi Conservation Lands in the eastern part of the LGA are managed to ensure the protection of the natural and cultural values of the Stockton Bight landscape, while providing access for the general public and promoting safe and sustainable recreational and commercial use. The area is co-managed by the Aboriginal Traditional Owners, the Worimi people, and NPWS through a Board of Management established under the National Parks and Wildlife Act.

CASE STUDY

Stockton Bight

Stockton Bight is a unique sand dune system that runs for 32 kilometres from Stockton to Birubi Point, with the windblown sand deposits accumulating some 6 to 7 thousand years ago and now covering an area of about 78 km^2 and 40 to 50 metres deep.

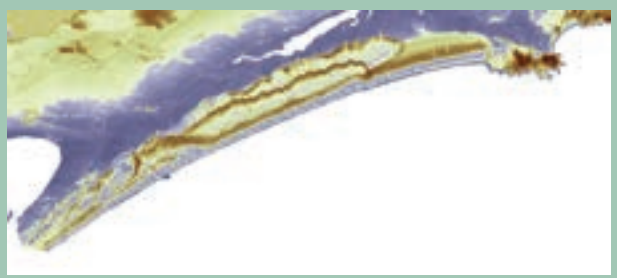
Stockton Bight has high conservation value due to its rich Aboriginal heritage, and forms part of an important cultural landscape with special significance for the Worimi people, who have lived on and used the land and waters for cultural activities and food gathering for many thousands of years.

Stockton Bight provides habitat for a range of threatened and endangered species, including Purple Donkey Orchid *(Divris arenaria)* the Newcastle Doubletail orchid *(Diuris praecox)*, the spotted-tailed quoll *(Dasyurus maculatus)*,the long-nosed potoroo *(Potorous tridactylus)*, the swift parrot *(Lathamus discolor)* and the white-bellied sea-eagle *(Haliaeetus leucogaster)*.

More than half of Stockton Bight is protected when the Worimi Conservation Lands were proclaimed in February 2007, forming a 4,438 hectare conservation area across the Bight.

Some parts of Stockton Bight are under mining leases, with the mineral sands used in glass manufacturing and are a major source of construction and foundry sand.

Eighty per cent of the sand dunes are vegetated, with the dominant vegetation an open forest known as Coastal Sand Apple–Blackbutt Forest, which has a canopy of Smooth-barked Apple *(Angophora costata)* and Blackbutt *(Eucalyptus pilularis)* with occasional Red Bloodwood *(Corymbia gummifera)*, an understorey that includes old man banksia *(Banksia serrata)* with an open groundcover of grasses and Bracken Fern *(Pteridium esculentum).*



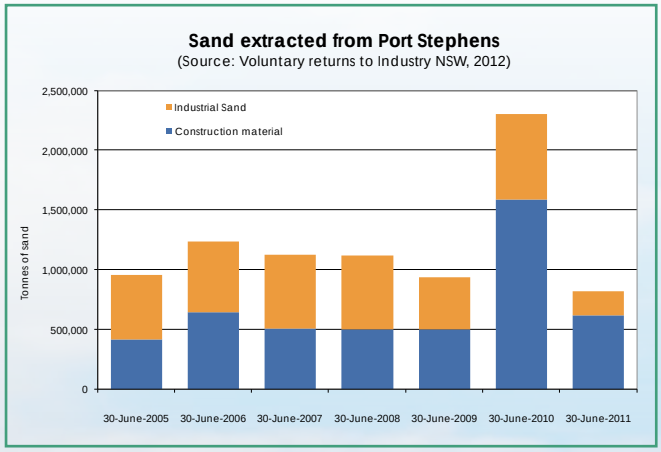
Throughout Stockton Bight, wetlands can be found in the intervening lowland swales between some of the dunes. Rainwater infiltrates the sand dunes of Stockton Bight to create a freshwater aquifer capable of supplying 14,000 million litres of freshwater every year.

The unvegetated dunes of Stockton Bight are the largest continuous mobile sand mass in the southern hemisphere.

Did you know?

According to the 2002 "Shifting Sands at Stockton Beach" report commissioned by Newcastle City Council, the construction of the Newcastle breakwalls and the dredging of the Port channel have resulted in approximately 6 million cubic metres less sand travelling northward over the last 200 years to replenish the Stockton dunes and beaches of Port Stephens.

Coastal sand barriers and estuarine deposits in the east, and low hills and floodplains in the west dominate the landform of the Port Stephens LGA. The sandy Tomaree Peninsula, with its volcanic outcrops and the floodplain of the Hunter, Paterson and Williams Rivers, dominates the geology of the Port Stephens area. The Tomaree Peninsula is underlain by carboniferous bedrock. Some outpourings of the volcanic rock can be seen in the Tomaree hills.



More than one third of the Port Stephens LGA overlays the Tomago Tomaree Stockton Groundwater Sources, which contain good quality water that supplies 20% to 25% of the Lower Hunter's drinking water needs provides important baseflows to surface rivers and tidal creeks and supports a number of groundwater-dependent ecosystems (terrestrial vegetation, wetlands, coastal sand dune systems).

In the middle of the LGA is the 2,800 hectare Grahamstown Dam, the Lower Hunter's major urban water supply dam, supplying on average 40% of the region's drinking water needs. Half of the inflow for the dam comes from water pumped from the Williams River through the Balickera Canal and Tunnel. To regulate activities that may affect water quality entering the groundwater sources or Grahamstown Dam, Hunter Water has a Special Area Regulation over more than one third of the Port Stephens LGA.

"We moved here for the serenity and the beautiful rural surrounds compared to the hustle and bustle of the city."

Karen, Eagleton

Three quarters of the Port Stephens LGA has been classified as having a high probability of occurrence of acid sulfate soils. Acid sulfate soils are naturally occurring soils containing iron sulfides, which when exposed to air produce sulfuric acid. They are widely distributed around the eastern Australian coastline and if disturbed can cause kills of fish and oysters, and destruction of fish nursery habitat as well as loss of aquatic biodiversity.

Port Stephens has a diverse landform, diverse flora and fauna and range from dunal heaths to mangroves and forests. Port Stephens, as part of the Hunter region, is of biogeographic and scientific significance as it supports a transition between the northern and southern ecological communities on the coast of NSW. Port Stephens is known for its koala population that has become iconic to the area.

Port Stephens is truly a unique physical environment.

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OUR community

The Port Stephens community continues to grow, with a population increase of 2.1% over the last few years. The 2011 ABS census shows that 64,807 people call Port Stephens home.

According to the NSW Department of Planning, this trend is set to continue with the population predicted to increase to 74,500 people by the year 2016, reaching 87,900 people by the year 2036.

Port Stephens is known as having an older population.

The 2011 ABS census shows the population continuing to experience an increase in the proportion of aged residents, with 19.3% of residents now aged over 65 years compared to 13.3% in the previous 2006 ABS Census. Across Australia, the proportion of residents aged over 65 years is 14%.

Not so well known is the fact that Port Stephens also has a young population with 31.1% of residents aged less than 25 years which is nominally down on the previous census figure of 33.4%. Across Australia, the proportion of residents aged less than 25 years is 32.6%. Despite the slight percentage decline in this younger age group, the actual numbers of people in this age group has increased by an additional 535 residents.

There are slightly more women than men in Port Stephens. In Port Stephens 50.8% of the population is female, whereas across Australia the number is 50.6%.

In 2011, 28.8% of people living in Port Stephens were attending an educational institution. Of these, 29.0% were in primary school, 22.9% in secondary school and 15.1% in a tertiary or technical institution.

Across the LGA, more people than the national average stopped their education at primary or secondary level and there were significantly less people with a university or tertiary qualification (7.7% in Port Stephens compared to 14.3% for the Australian population).

Did you know?

The earliest known Europeans to live in Port Stephens were five convicts who had escaped from Sydney in 1790. They were discovered in 18 August 1795 when the HMS Providence (WR Broughton) entered the Port to avoid wild weather. One convict had died and the remaining four left with HMS Providence a week later, one or two of the convicts leaving their wives and children behind.

Of all the people in Port Stephens who reported being in the labour force in the week before Census night, 56.1% were employed full time compared to the national average of 59.7%.

The median weekly income for households in Port Stephens is $999, which is significantly less than the median weekly income for households across Australia of $1,234.

Our LGA has significantly less residents who were born overseas; 83.1% of residents were born in Australia compared to 69.8% for the population across Australia. In Port Stephens, 74.1% of people had both parents born in Australia and 14.6% of people had both parents born overseas.

In Port Stephens, 92.2% of people only speak English at home, compared to the national average of 76.8%. There are only 4.6% of Port Stephens households where two or more languages are spoken, compared to the national average of 20.4%.

Population settlement is dispersed throughout the local government area which spans 979 square kilometres. Residents have a choice of a range of living settings ranging from rural to urban lifestyles.

"The RAAF moved us here 15 years ago for a new beginning. Now we don't want to leave, there are so many opportunities for the kids and we are in the centre of everything."

Linda, Raymond Terrace

Overall residents are highly car dependent with 91.4% of households having a motor vehicle with 53.8% of households having more than 1 vehicle. This is attributed to various factors such as the dispersed population settlement, limited public transport services, and lifestyle choices.

In Port Stephens, on the day of the Census, 68.7% of employed people drove to work, whereas the national average was 60.2%. For many residents Port Stephens is also where they work with over 50% of residents surveyed by Council indicating that they work in the Port Stephens LGA.

In our LGA we have significantly more private unoccupied dwellings with 18.1% in Port Stephens compared to the national average of 10.7%.

Single stand-alone separate dwellings are the main form of home dwelling structure accounting for 82.4% of dwellings with 79.4% of dwellings comprising three or more bedrooms. This is higher than the national average where 75.6% of dwellings are stand-alone and 73.9% have three or more bedrooms.

In contrast medium density developments such as semi detached dwellings, townhouses, flats and units account for 15.4% of dwellings in Port Stephens whereas the national average is 23.5% of dwellings.

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CASE STUDY

Project Aware on the coast

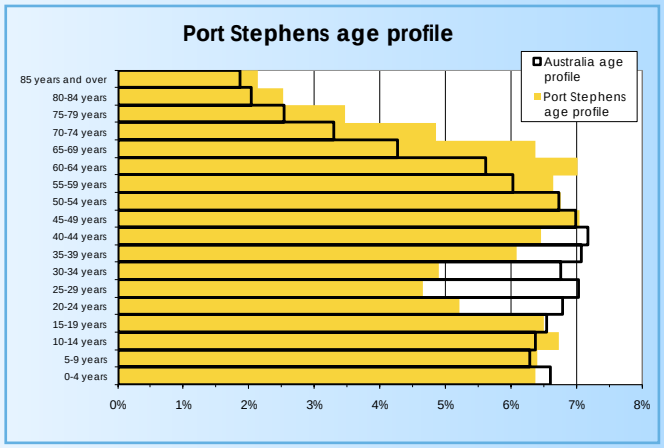
We have an amazing coast.

Port Stephens Council has been facilitating community awareness of our unique coast through a program called “Project AWARE on the coast” which focuses on rocky shore intertidal zones and seagrass habitats in Port Stephens. The aim is to increase community awareness and reduce degradation of these sensitive areas, and build the capacity of participants to effect long term beneficial change.

Participants attend a series of lectures and field trips which are conducted by expert presenters and guides as well as preparing and delivering a group research presentation on a rocky shore creature. An innovative and important part of this program is the requirement for all participants to undertake a community education project to pass on some of the knowledge that they have learned to a broader audience. Throughout this process participants are supported by the program coordinator, scientific experts and community volunteers.

Port Stephens Council has delivered five courses since 2008. The 2012 course was held from March to May, with 23 participants. Council contributes $5,000 to the program, with an additional funding sought and received every year. Participants receive a comprehensive resource folder with extensive information and supporting publications. Upon completion of the course and the community project, a presentation night is held to congratulate the participants and thank sponsors.

Participants of Project AWARE on the coast courses have reported a range of benefits from attending the program. These include greater knowledge of marine life and better identification skills, greater confidence in presenting and communicating environmental knowledge, and the opportunity to build relationships with community members and government agencies. This program is a great example of what can be achieved with a relatively small investment of money.



OUR towns

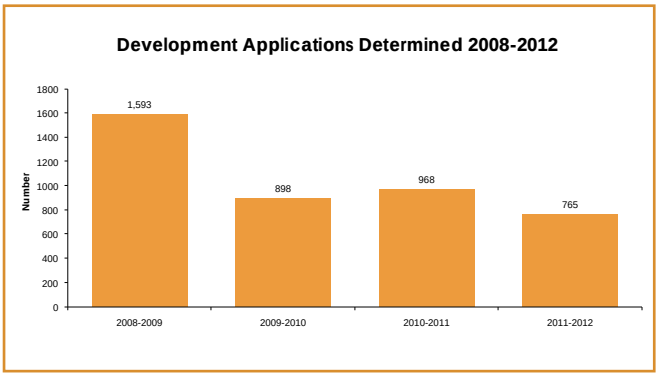
The environment of the Port Stephens area offers a diversity of lifestyles for a range of demographics. The settlement pattern of Port Stephens consists of dispersed towns and villages that provide challenges for the funding and provision of infrastructure and services particularly public transport and provision of medical and educational services.

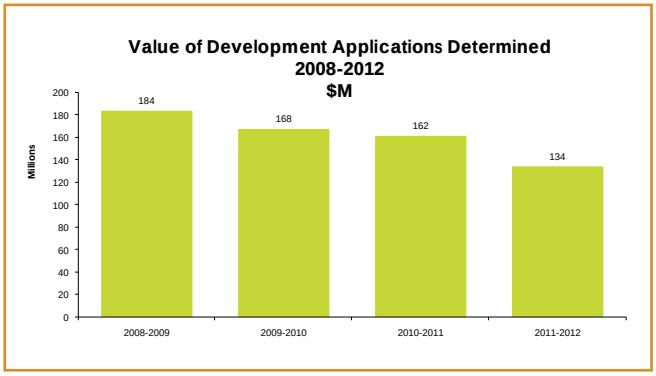
The Lower Hunter Regional Strategy was endorsed by State Government in October 2006. It sets the directions from the State Government for the major residential growth, employment generating options and, in conjunction with the Lower Hunter Regional Conservation Plan, establishes environmental and conservation priorities for the Lower Hunter until 2031. The Strategy predicts a population growth of 160,000 in the region by 2031.

The key contents of the Lower Hunter Regional Strategy for the Port Stephens area include two major urban release areas at Kings Hill and Medowie; employment land at Tomago/ Williamtown; growth in the major regional centre of Raymond Terrace; and, growth in the tourism precinct of Nelson Bay.

Port Stephens LGA faces a range of opportunities and challenges, which include:

- An ageing of the population profile
- A declining supply of land with urban potential
- A dispersed settlement pattern
- A high dependence on motor vehicles
- Significant impacts due to climate change and sea level rise





- Significant environmental assets (eg. the coast, the waterways, and constraints (eg. flooding, acid sulfate soils)
- The impact of military aircraft noise
- Areas of economic growth, such as Tomago and Williamtown
- The regional airport with ready access to other centres

The primary growth corridor of the LGA stretches in the north from the recently rezoned North Raymond Terrace (Kings Hill) to the regional centre of Raymond Terrace, to the emerging enterprise corridor of Heatherbrae and then is anchored in the south by the Tomago Industrial Precinct.

"Our challenge has always been balancing the management of our natural assets with increased development of industry and housing."

Bruce, Salt Ash

In addition there is considerable "infill" as a result of the development of undeveloped zoned residential land within the existing urban area.

It is expected that Raymond Terrace as a regional centre will undergo considerable change in order to deliver a broader range of business and community services to a wide catchment. Mixed use development in the regional centre, including housing, will be strongly encouraged.

It is also expected that selective intensification of existing urban areas with the development of medium density housing within centres will occur.

Most commercial areas are anticipated to meet demand up to 2031 by either intensifying existing development, utilising underused sites in the commercial area, or by minor additions to the commercially zoned land. There is generally an adequate supply of industrial land in Port Stephens to cater for future local needs and for industries meeting the needs of external markets.

Newcastle Airport, RAAF Base Williamtown, Tomaree industrial area and the Port of Newcastle will be major economic drivers for the LGA. It is important that infrastructure, particularly transport infrastructure, is adequate to meet the needs of these areas.

Transport remains a big challenge for the LGA. Public transport availability is limited and its usage is very low and there is a high dependence on motor vehicles. As the population grows, and centres intensify, the viability of public transport should increase, but it will require additional measures to be able to reach sufficient high service levels to make it an attractive alternative to the car. The development of pedestrian and cycle paths is also very important because these travel modes have the potential to replace the very short trips that constitute the majority of motor vehicle movements.

Finally, climate change and accompanying sea level rise presents a range of challenges to the LGA. Council has undertaken analysis to determine the likely highest risks from climate change. The impacts of climate change will be profound.

Did you know?

Port Stephens LGA is generally low lying, though there are a number of sizeable hills. The highest in the LGA is Red Hill 293 metres, followed by Gilmore Lookout 232 metres, Glenurie Hill 196 metres, Brandy Hill 184 metres, Mount Torrance 184 metres, Seaham Hill 178 metres, Gan Gan Hill 161 metres and Tomaree Head at 150 metres.

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CASE STUDY

Possum Magic

You might hear them in the dead of night, or see the results of their curiosity in the morning. Many of us live with them, maybe without even knowing it. The nocturnal tree-dwelling marsupial possum finds a home where they can (just like the koala and the kangaroo they have a pouch in which they carry their young).

There are 23 described species of possum in Australia.

There are some very rare possums, like Leadbeater's Possum *(Gymnobelideus leadbeateri)* and the Mountain Pygmy-possum *(Burramys parvus)* both listed as endangered with extinction under the Federal Environment Protection and Biodiversity Conservation Act 1999.

The most familiar and abundant of the many Australian possum species are the Brushtail possum *(Trichosurus vulpecula)* and the Common Ringtail possum *(Pseudocheirus peregrinus)*. Brushtail Possums and the Scaly-tailed Possum are endemic in Australia, which means they are only found here.

All possums are protected under the NSW National Parks and Wildlife Act 1974 and it is illegal to kill or catch and release them without a licence.

In NSW, possums face a range of ongoing threats to their survival including the loss of habitat, increasing competition for den and nest sites, increased mortality from motor vehicle impacts, predation from domestic pets, poisoning, disease and illegal capture and dumping.

In response to the ongoing loss of habitat and to avoid interactions with domestic animals, possums will occupy available dark recesses such as a garage or unsealed roof cavity or chimney. Residents may also enhance the local habitat of possums by providing supplementary food resources through the planting of fruit, vegetable and/or ornamental gardens.

HELPING out

Port Stephens Council is committed to facilitating the involvement of the public in the development, improvement and co-ordination of local government in this area, as spelt out in the Council's Charter. Volunteers help out on sporting facilities, parks, reserves, community halls, environmental projects, cemeteries, libraries and providing advisory support to name a few.

The role that volunteers play should not be underestimated. Port Stephens Council supports over 50 committees and more than 800 registered volunteers. In addition, volunteers work in all spheres of the community including health and welfare, emergency services, arts and culture, heritage, environment and conservation, sport and recreation, education and youth development. Volunteer activities complete projects, provide services and maintain facilities that otherwise would be lost.

Did you know?

The first known record of bitou bush in Australia was collected from the Stockton Bight area in 1908. A mature bitou bush can produce up to 48,000 seeds in a year, with peak seed production generally between June and September. Seeds can last up to ten years in the soil. Bitou bush has been declared an environmental weed in Australia, New Zealand, France, the Islands of St. Helena (South Atlantic Ocean) and Sicily.

A community with a high rate of volunteer participation is an indicator of a well-functioning community.

Working under the banner of Landcare, Coastcare, Bushcare or Tidy Towns, volunteers often combine natural area work with park and reserve maintenance. These groups undertake weed removal, native planting, litter collection, walking track maintenance, managing vehicle access through fencing and gates, water quality testing, vegetation surveys, erosion control, educational signage and more.

In the formal reserves, volunteers work on garden bed maintenance, the installation of park furniture, shelters, mowing and BBQ maintenance. Working in their high visibility clothing they are often mistaken for council officers but without their continuous efforts the quality of our bushland and parkland areas would not be the high standard the community has come to expect.

The Ngioka Centre at Nelson Bay is a horticultural therapy centre that propagates native plants for council rehabilitation and landscaping projects and for sale to the general public and external companies. In addition, the centre provides a facility for the education and therapy of people with a disability and disadvantaged people. Volunteers assist in the care and management of the centre, propagate and market plants for sale and arrange courses and activities for training, rehabilitation, therapy and recreation in horticulture and related activities.

The Port Stephens Schools Environmental Awards have been running for almost a decade and are a great way for schools to showcase their environmental achievements and recognise the hard work of staff and students. The Schools Environmental Awards were held in November 2011, with half the schools in the area entering. In addition to Port Stephens Council, this year Tomago Aluminium was a major sponsor, and Solo Resource Recovery and the Hunter-Central Rivers Catchment Management Authority were minor sponsors.

The entries for the Port Stephens Schools Environmental Awards show that schools are coming up with new and interesting ways of working to improve their environment, and engage students in environmental learning. This year it was impossible to separate the top winners for the awards.

The joint winners of the School Environmental Management Plan Award were Medowie Christian School which aims to "educate students and the school community in sustainable living, learning environments and land care" and St Philips Christian College which has been developing various environmental activities, such as composting and worm farming, vegetable gardening and tree planting.

> ***"It's a great area and community and we'd like to keep it that way. If we didn't do our volunteer work council wouldn't be able to maintain the area to the same condition."***
>
> ***Arthur, Fingal Bay***

The joint winners of the Social and Civic Participation Award were Grahamstown Public School for their programs that allowed the school and students to engage with the wider community, reinforcing school's environmental commitment and Tomaree High School for their impressive activities that involved the school and students interacting with the wider community, such as the Aboriginal inspired bead sculpture and the establishing of a wildlife corridor.

The joint winners of the Resource Management Award were Raymond Terrace Public School for the way in which they utilised available resources and opportunities to contribute to their vegetable gardens, chicken coop, composting and watering activities and Tanilba Bay Public School for the way in which the school took advantages of available resources and opportunities.

The joint winners of the School Curriculum Award were Iona Public School for the extent to which they incorporated environmental education across all key learning areas and Bobs Farm Public School for their Sustainability and Me program aims to "enhance students understanding of sustainability and how their own actions and choices relate to a sustainable environment."

The joint winners of the School Grounds Award were Soldiers Point Public School for their activities within the school grounds, such as the establishment of a frog pond, tree planting, composting, recycling, vegetable gardens and nest boxes and Tomaree Public School for their Eco Teams which carry out activities such as recycling, watering, weeding and planting, and have helped to foster citizenship and civic responsibility.

The joint winners of the Best New Initiative Award were Hinton Public School for the establishment of an aquaponics system that creates opportunities for students to learn about growing vegetables through various methods and Irrawang Public School and Thou-Walla Family Centre who have worked closely to create special places where young children can be actively involved in gardening and learning more about the environment, and their Kid's Patch program.

CASE STUDY

Beating the Bitou at Birubi

Bitou bush is a highly invasive shrub that takes over. The State Government says it poses the single greatest threat to NSW coastal ecosystems and coastal biodiversity. If it continues to expand unabated, within a decade there will be no area of the NSW coast unaffected. Since the arrival of *Chrysanthemoides monilifera* subsp. *rotundata* (bitou bush) from South Africa in 1908, it has spread to occupy approximately 80% of coastal NSW.

Within NSW, bitou bush poses a direct threat to at least 55 threatened plant species, three endangered plant populations and 15 endangered ecological communities (EEC) listed under the Threatened Species Conservation Act. In addition, there are potentially many other plant species and ecological communities that are under threat for which limited information is available, particularly with respect to fauna.

Port Stephens Council and the Anna Bay Birubi Point Reserves Hall and Tidy Towns Committee obtained a $19,910 Federal Government Community Action Grant in 2012 for dune rehabilitation at Birubi Beach. This grant provided over 10,000 native plants and a Conservation Volunteers Australia team to remove the bitou bush and replace it with native plants.

Since 2006, Council and the Committee have been working to remove the bitou bush and have revegetated the beach with 35,000 plants. The beach now demonstrates the success of this work with healthy and diverse native vegetation covering the dunes.

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OUR heritage

Port Stephens has some fantastic heritage, whether it is 'cultural' or 'natural' heritage.

Cultural heritage comprises both indigenous and non-indigenous (historic) heritage and takes physical and/or non-physical forms. Physical forms are generally places or objects showing evidence of occupation, such as buildings, roads, stone tools, engraving sites, midden deposits and scarred trees. Non-physical forms may include places which have intangible qualities such as people's associations with or feelings for a place, including those of spiritual, customary or cultural significance like songs, stories, cultural practices and initiation / ceremonial / story places.

Aboriginal people have always had culturally specific associations with the natural landscape, making their cultural values inseparable from natural values. As a result, land use change that destroys or degrades the natural landscape impacts directly upon Aboriginal cultural values.

Many areas of significance to Aboriginal people are located within Port Stephens, including shell middens, scarred trees, occupation and ceremonial sites and places of spiritual value. The exact location of the sites is restricted information. In the area stretching from Wallis Lake to Newcastle there are 37 recorded Ceremonial Sites (stone arrangements, bora grounds, carved trees and burial sites), 115 recorded campsites (mia mia, scarred tree, open campsite, shelter with deposit, well, fish trap, abraded grooves and quarries) and over 100 middens.

Did you know?

There are 138 shipwrecks on the Australian National Shipwreck Database located near Port Stephens. The earliest recorded wreck is an unidentified vessel that was wrecked just north of the Port in 1801 (the earliest identified vessel is the sailing ship Contest wrecked in 1807). The most recent is the paddle steamer Kate Thompson that was wrecked in 1972 near Tea Gardens.

The Worimi comprised a number of tribes including the Garuagal, Maiangal, Gamipingal, Garrawerrigal, Buraigal, Warringal, Birroongal, Birrimbai, Yeerungal and Wallamba.

In 1830 Robert Dawson described the Worimi Tribe as utilising spears and shields, wearing belts of opossum fur, and using combs formed from the leg bones of kangaroos. The ocean was an important source of food for the Worimi people in the Port Stephens, and this was noted in many sources. Fish hooks were made from oyster and pearl shells and yellow gum from the Grass Tree was used in manufacture to affix the disparate elements together. Spears were also used for fishing, made from the flowering stem of the Grass Tree or Gymea Lily, with prongs of ironbark used on the tips. Other hunting tools and weapons were also manufactured from plants, including Boomerangs, which were made from wild Myrtle.

As well as utilising plant resources in tool manufacture, many were also used as food resources. The Gymea Lily's young flowering spikes were fire roasted and eaten after being soaked in water. Wild Cape Gooseberries grew on the nearby Cabbage Tree Island and were a highly prized food resource. Other items such as Fern root and daisy yam were a supplement to diet, especially when there was a scarcity of the primary food resource of fish.

"The government recognises the tangible and intangible as cultural heritage. This is important because the land and all species is what the identity of the Aboriginal people is based on. Land to Aboriginal people is the most significant part of our culture. This is why it is called Earth Mother."

Carol, Nelson Bay

Council's responsibility for heritage management is primarily enshrined in two pieces of state legislation, the Heritage Act 1977 and the Environmental Planning and Assessment Act 1979. Relevant Commonwealth legislation includes the Environment Protection and Biodiversity Conservation Act 1999, which establishes the National Heritage List and the Commonwealth Heritage List (for Federal Government properties), and the Historic Shipwrecks Act 1976.

The NSW Heritage Act 1977 defines environmental heritage as being 'those buildings, works, relics, or places of historic, scientific, cultural, social, archaeological, natural, or aesthetic significance for the state'. Relics are further defined as any deposit, object, or material evidence, relating to the (non Aboriginal) settlement of New South Wales and which is 50 or more years old. Environmental heritage includes items, relics, works, movable heritage, places and landscapes of historic, cultural, natural, scientific, social, spiritual, archaeological, architectural and aesthetic significance.

Port Stephens is nestled between the internationally-recognised Hunter Estuary Wetlands Ramsar site and the Myall Lakes Ramsar site and has the World Heritage Barrington Tops to the west. Barrington Tops is part of the Gondwana Rainforests of Australia, one of the few places on earth that contain plants and animals which remain relatively unchanged from their ancestors in the fossil record. The area was inscribed on the World Heritage List in 1986 and included on the National Heritage List in 2007.

Port Stephens has one property on the Commonwealth Heritage List being the Williamtown RAAF Base, noting that the area is important as the operational and training focus for Australia's jet fighter aircraft.

The State Heritage Register lists 10 properties in Port Stephens

to be of particular importance to the people of NSW: Dunmore Bridge, Hinton Bridge, Point Stephens Lighthouse Group, Seaham Quarry, Tanilba House, Mosaic Temple of the Stork at Tanilba Bay, Tomago House, Tomago House Chapel, Remains of WWII fortifications at Tomaree and the Tomaree Holiday Lodge Precinct.

The Port Stephens Local Environment Plan lists 118 properties to be of local heritage significance and 2 areas as heritage conservation areas.

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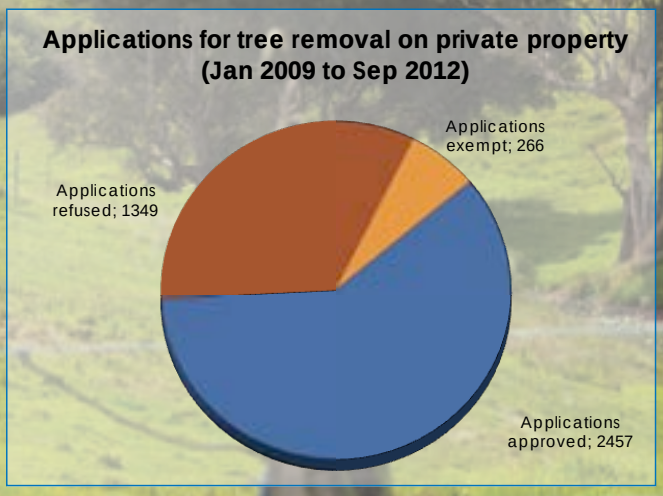

CASE STUDY

Creatures of the Night

National Biodiversity Month is held in September each year and aims to promote the importance of protecting, conserving and improving biodiversity both within Australia and across the world.

To promote and celebrate Biodiversity Month, Port Stephens Council offers free "Creatures of the Night" spotlighting walks.

The Port Stephens area contains substantial biodiversity due to the variety of ecosystems it contains, including open forest, rainforest, riparian forest, coastal swamp forest, woodland, heath and sedgeland. We are lucky to have such a wide range of animals that live in all these ecosystems, such as reptiles, birds, frogs, bats and mammals. We also have many ecological communities, plants and animals that are sadly under threat.

The Creatures of the Night spotlight walks offer the community a chance to explore their local area with experienced staff, and learn more about our rich biodiversity and valued fauna species.

Many terrestrial fauna are nocturnal, so spotlighting at night is a great way to see these creatures in their natural bushland setting. Participants are likely to see possums, gliders, owls, flying foxes, koalas and microbats.

Council has been delivering Creatures of the Night for seven years now and the walks are always booked out. Five spotlight walks are held each September at different locations across the local government area, with 15 to 20 participants ranging in age from 5 to 85.

Come along and check out your local creatures of the night!

Photo by Bob Spooner

OUR changing climate

Climate change is one of the greatest social, economic and environmental challenges of our time. Human activity is causing the climate to change. This, in turn, is having an impact on Australia's rainfall, temperatures, bushfire frequency, health, heritage and biodiversity. During the past 100 years, global average surface temperature increased by about 0.7 degrees Celcius. Since 1910 the average temperature of Australia has risen by about 1 degree Celcius. Although these increases sound small, they have a big impact on the world's climate.

Port Stephens is not immune to the changing climate.

According to work commissioned by Hunter Councils, Port Stephens has experienced a statistically significant annual increase in average minimum temperatures of ~0.9°C in the coastal zone and ~0.6°C in the central zone (The "central" climate zone is roughly west of the Pacific Highway). We have also experienced a statistically significant annual increase in average maximum temperatures of ~0.9°C in the coastal zone and ~1.2°C in the central zone. The coastal zone has also experienced a statistically significant decrease in annual rainfall of ~274mm over the period from 1948 to 2007.

The analysis also found a statistically significant increasing trend in the number of extreme heat events of approximately 3.3 days in the coastal zone and an increase of 5 days in the central zone over the period from 1970 to 2007. There was also an increasing trend in summer average wind gusts of 6.3km/hr over the period in the coastal zone and a statistically significant decreasing trend of 6.5km/hr over the period in the central zone.

The key risks from extreme weather events are public health issues arising from extreme heat events; an increase in wind gust during spring and summer increasing fire risk during these seasons; increased demand on power supplies and possible loss of power; exacerbation and more widespread flooding of property and environment due to extreme rainfall; increased coastal erosion in vulnerable areas associated with extreme storm events; increase in public injury during extreme storm events; and, potential change in marine and estuarine habitat arising from sea level rise and extreme sea level events.

The CSIRO highlights that climate change refers to any long-term trends in climate over many years, around which climate variability may be evident year on year. They say that even though the climate has always changed, alternating between long periods of warm (interglacial) and cool (glacial) conditions, cycling over tens to hundreds of thousands of years, we have now entered a new era where "the evidence that human activities are contributing to climate change is compelling".

There is now strong evidence that recent rapid climate changes are driven largely by a range of human activities such as burning fossil fuels, clearing forests and by many other industrial and agricultural activities and all of this pollution causes our climate system to heat up. A small change in the average of a climate variable such as temperature can cause a large change in the frequency of extreme temperatures such as frosts. Extreme weather and climate events can cause severe impacts on society, the economy, and the environment.

CASE STUDY

Raymond Terrace Community Care Centre

On 13 June 2012, the Federal Minister for Climate Change and Energy Efficiency, Greg Combet, and Parliamentary Secretary for Climate Change and Energy Efficiency, Mark Dreyfus, announced that Port Stephens Council was successful in its application for $166,000 from the Federal Government for an Energy Efficiency Upgrade project at the Raymond Terrace Community Care Centre.

The project replaces the existing Heating Ventilation & Air Conditioning system with new, modern energy efficient plant integrated with the Building Management System for optimal control and energy savings estimated to be 45%.

This project builds on previous energy efficiency projects at the Raymond Terrace Community Care Centre. Over the last few years, the Electric Storage Hot Water System has been replaced with Evacuated Tube Solar, T8 florescent lights have been replaced with energy efficient T5 technology and Council has installed computer systems to control the energy consumption.

The Raymond Terrace Community Care Centre houses numerous community organisations and their activities including: Hunter New England Local Health Network - Community Team & Mental Health, Port Stephens Community Care Inc., RSL Raymond Terrace Sub Branch, Multiple Sclerosis Society, Ageing Disability & Home Care, Port Stephens Home Modifications, & Disability Services.

It is anticipated that this project will also significantly reduce energy costs to Council, indirect greenhouse gas emissions, and increase comfort and safety to community service providers and clients and community members using the facility.

By focussing on energy efficiency for Council's major facilities, Council has saved more than $700,000 to date.

Did you know?

Of all the houses in the 39 local government areas across the AusGrid network (from the Hunter, Central Coast and Sydney), those in the Hunter generate the most solar power. Lake Macquarie households generate and export the most back to the grid, closely followed by Port Stephens, Singleton and Maitland. Newcastle comes in 7th after Wyong and the Upper Hunter.

Port Stephens Council is taking action.

As well as looking at ways to reduce consumption as an organisation, Council is also planning for the future. Council received Australian Government funding to undertake an assessment of the vulnerability of its operations to projected future climate change.

The purpose of the risk assessment was to explore the full range of potential risks posed by climate change focused on council's assets, operations and liabilities and to prioritise those risks. The highest risks were associated with increase in storm frequency / intensity, sea level rise, changes in rainfall, higher temperatures and an increase in number of hot days. The management of the risks for Council's assets will be in accordance with the guidelines released this year from Engineers Australia's National Committee on Coastal and Ocean Engineering.

Port Stephens Council is also working through the regional organisation of councils (Hunter Councils) to develop a consistent and regional approach to climate change risk assessment and adaptation planning. This approach focusses on priority climate change issues; uses an adaptive management approach (i.e. flexible, incremental changes); focusses on cost effective actions; achieves a balance between climate and non-climate risks; and avoids adaptation constraining decisions.

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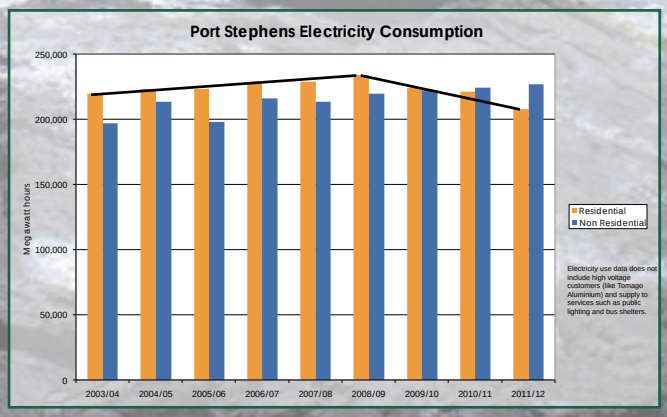

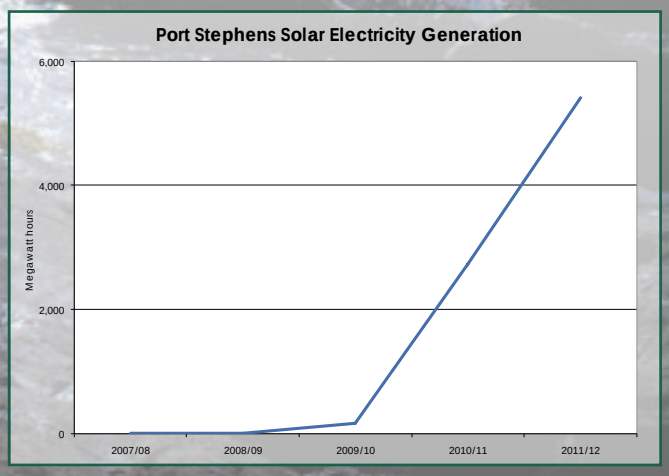

OUR water

Water management within human settlement is an ongoing challenge and an important consideration for a local government area that prompts itself as being a pristine "blue water wonderland".

Stormwater from urban areas flows largely untreated into our waterways and water from large areas of the catchment is harvested for drinking water.

More than one third of the Port Stephens LGA overlays the Tomago Tomaree Stockton Groundwater Sources, which contain good quality water that supplies 20% to 25% of the Lower Hunter's drinking water needs provides important baseflows to surface rivers and tidal creeks and supports a number of groundwater-dependent ecosystems (terrestrial vegetation, wetlands, coastal sand dune systems).

Did you know?

The Tomago Tomaree Stockton sandbeds consist of a layer of highly permeable fine grained sands underlain by impervious clay and rock. The thickness of the sand layer reaches a maximum of 50 metres, but on average is 20 metres deep.

In the middle of the LGA is the 2,800 hectare Grahamstown Dam, the Lower Hunter's major urban water supply dam, supplying on average 40% of the region's drinking water needs. Half of the inflow for the dam comes from water pumped from the Williams River through the Balickera Canal and Tunnel. To regulate activities that may affect water quality entering the groundwater sources or Grahamstown Dam, Hunter Water has a Special Area Regulation over more than one third of the Port Stephens LGA.

Our water supply capacity meets demands and generally the total water sources are more than three quarters full all year round.

While increasing levels of population growth and development in Port Stephens are expected to continue to increase pressure on drinking water supplies, water consumption data indicates that average water consumption per residential dwelling is actually decreasing. This could be a result of heightened community awareness about water conservation and in the introduction of the NSW Government BASIX (Building and Sustainability Index) in 2005/06.

BASIX is an initiative that ensures new homes and renovations valued at $100,000 or more are designed and built to use less potable water and produce fewer greenhouse gas emissions. This included reducing energy consumption by 25% and potable water consumption by 40%.

This heightened awareness and legislative improvements, combined with good storage levels and rainfall has meant that no water restrictions have been applied in Port Stephens or the Lower Hunter during recent years. Increases in the demand for drinking water do occur during holiday periods when the area experiences an influx of tourists. Outside of the reticulated water supply network in Port Stephens, households rely primarily on water tanks for their potable water supply.

Drinking water quality within Port Stephens is considered of high standard, in 2011/12 100% compliance with National Health and Medical Research Council and Australian Drinking Water Guidelines was achieved with all potable water supplied.

"Untreated urban stormwater run-off carries silt, pesticide residues, and fertilisers into estuarine seagrass meadows and damages their ability to function as critical nurseries for uncounted millions of crustaceans and baby fish."

Terry, Anna Bay

However increases in the LGA's population area are putting increasing pressure on the quality of our drinking water. As the Port Stephens LGA hosts the majority of the Lower Hunter's drinking water catchments, water quality needs to be carefully considered when planning future developments.

One of the most significant current and ongoing pressures affecting water quality in fresh, estuarine and marine waters in Port Stephens is the impact of untreated urban stormwater. Under direction of the NSW Environmental Protection Authority, local governments are required to prepare stormwater management plans for urban areas to provide for effective future management of stormwater. The plans aim is too ensure a cleaner, safer and more environmentally sympathetic drainage system that protects the quality and values of the waterways of Port Stephens.

Changes to our stormwater systems require a large degree of investigation and planning. Inappropriate designs and installation can result in flooding and adverse environmental damage. Site specific studies such as the Tanilba Bay Stormwater Management Plan 2011 are often undertaken prior to any work to determine best practice management for the catchment.

Since year 2000, a number of stormwater quality improvement devices including 7 stormwater treatment devices, over 100 litter baskets, over 160 infiltration chambers, 4 streets drainage infiltration system have been installed to reduce the pollutants and freshwater entering the waterways. However, the stormwater and drainage system in Port Stephens still largely discharges untreated stormwater directly into estuaries, rivers and wetlands.

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CASE STUDY

Stormwater Treatment in Mambo Wetlands

Mambo Wetlands is a state significant wetland and the quality of the water flowing into it is a vital importance.

Its stormwater inflow is contributed by several urban and commercial catchments. This runoff has the potential to carry litter and other pollutants as well as excess nutrients, which can have a detrimental effect on the wetland, promoting weed growth and algal blooms.

To address this pollution risk and protect water quality in the 2010/2011 financial year Council installed several end-of-line netted gross pollutant traps. This involved 11 litter baskets to collect gross pollutants and 4 pollution treatment devices at an approximate cost of $50,000.

Since installation they are on average reducing rubbish volumes into the wetland by 6 tonnes per year.

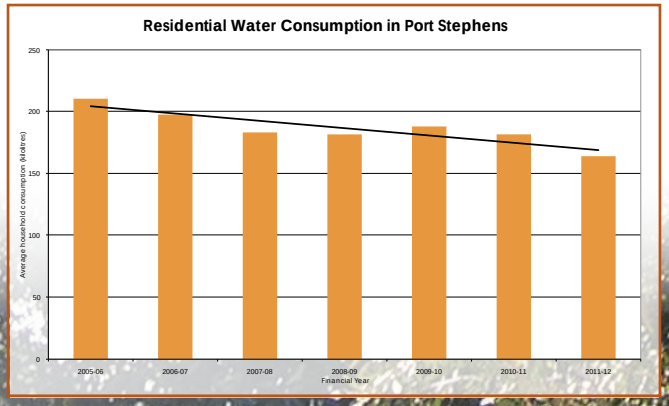
Rough modelling of the catchment has shown that a catchment retrofitted with these devices can expect approximately 97% reduction in total suspended solids and gross pollutants.

Additional gross pollutant traps and litter baskets are being installed on the remaining storm water outlets in 2012 and 2013 costing $150,000.

This should more than double the amount of rubbish that is prevented from entering the wetlands.

All the works have been funded by a combination of council and grant funding.

There are still a lot more to be done to help Mambo Wetlands, but this work is an excellent a starting point.



GETTING around

Port Stephens is characterised by distinct and isolated urban settlements. These settlements are linked to each other and the surrounding towns and cities via main arterial roads.

Due to the nature of this settlement, according to the latest census, in Port Stephens LGA, 37.6% of occupied private dwellings had one registered motor vehicle garaged or parked at their address, 36.8% had two registered motor vehicles and 17.0% had three or more registered motor vehicles.

Newcastle Regional Airport is located within the Port Stephens LGA at Williamtown. This airport provides residents and visitors to Port Stephens and the Hunter Region with direct flights to and from various towns and cities on the east coast of Australia. Air passenger numbers through Newcastle Airport are continuing to grow with 1.2 million passengers in the 2010/11 year and predicted to grow to 2 million by 2014.

Did you know?

Community Transport Port Stephens Ltd does in excess of 360,000 km annually due to gaps in the public transport system. This involves over 27,000 passenger trips.

High rates of population growth and increasing visitor numbers to Port Stephens are further increasing the number of private motor vehicles and the community's reliance on them. This trend can be observed in the increasing number of two and three car households in Port Stephens.

In addition to environmental impacts associated with increasing dependence on private motor vehicles, this trend is also placing pressure on the availability of parking spaces in some regions of the LGA. Road capacity limits are also being reached on some Port Stephens roads during peak periods.

Council is currently working on numerous strategies in an attempt to reduce this dependency and associated adverse impacts.

Over the last few years, the footpath and shared path network has been extended including the coastline cycleway route at locations such as Port Stephens Drive. Shared paths at Tallowood Drive area, Medowie and James Patterson Street, Anna Bay have completed missing links in the cycling network. On-road cycling line-marking has been installed at several locations including Salamander Way and Port Stephens Drive, Salamander Bay.

In 2011/12 an extra 43.8 km of cycling infrastructure (a combination on shared pathways and on road markings) was installed. As of Dec 2010 the overall foot path length within Port Stephens was 108.5km and shared pathway 70km.

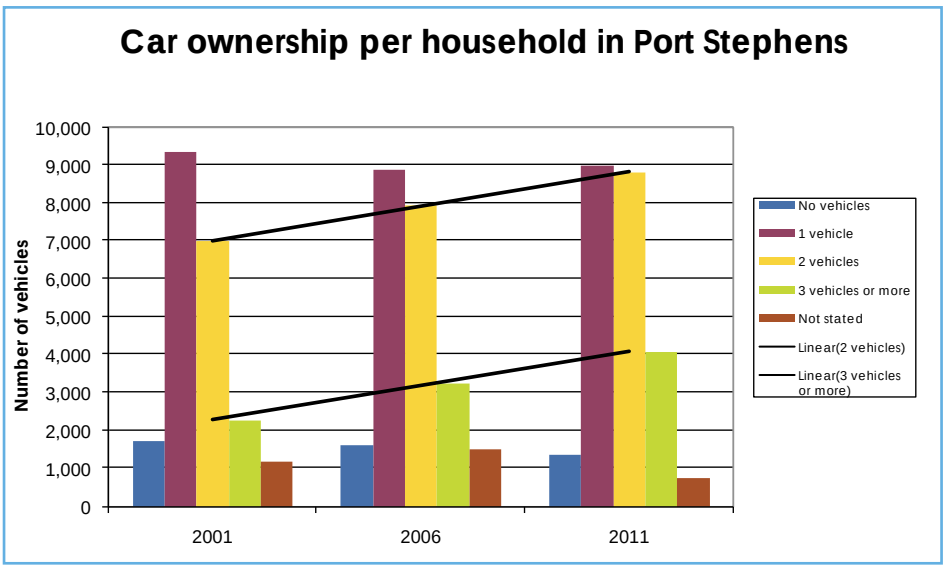
Future footpath and cycling infrastructure will be guided by the Footpath and Cycling Strategy which is currently in draft form with finalization planned for 2013. This will guide both future on-road and dedicated pathways.

Council has commenced a program to incrementally upgrade existing bus stops to make them compliant as per council's obligations under the Disability Discrimination Act 1992.

Funding has been obtained under the Country Passenger Transport Infrastructure Grant scheme for the current financial year with application made for next year as well. This funding will allow for construction of hard stand, path connections and tactile indicators at 50 locations throughout the LGA.

Council participates in Port Stephens Transport Operators Group, Lower Hunter Road Freight Group, and Lower Hunter Council's Transport Group to help address transport needs.

Council hopes to lobby the NSW Government to develop a regional transport strategy component of the NSW Long Term Transport Masterplan to focus on public transport and identify key transport interchange locations with funding sources for planning and construction. Planning issues are also guided by



"Public transport access to external areas is extremely difficult and costly. We need to get back to basics and start with proper access to bus stops ie footpaths and appropriate disabled parking spots."

Ian, Shoal Bay

Port Stephens Community Settlement and Infrastructure Strategy and Lower Hunter Transport Guide.

Nelson Bay's first traffic signals were installed at the intersection of Victoria Parade and Stockton Street. This has been a major safety improvement for pedestrians crossing from the town centre to the Marina area.

The Road Safety Operations Plan 2008-2012 was adopted in 2008 and targets new developments, existing infrastructure, traffic engineering, education, enforcement and stakeholder involvement as the key focal points to create or influence improvement in road safety.

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CASE STUDY

Tallowood Pond Cycleway Connection

Cycling is one way a household can significantly reduce its contribution to the pollution that causes climate change.

According to the Australian Bureau of Statistics and the Green Vehicle Guide, cars produce an average of 0.3 kg of CO_2 per km travelled.

So for each kilometre you ride your bike instead of driving, you are saving approximately 0.3 kilograms of CO_2. This is equivalent to the energy from running a 60 watt incandescent light globe for close to 5 hours.

Port Stephens Council is investing in infrastructure to fill the gaps in a safe, connected cycling network.

Riding between the streets in Medowie has become easier with the completion of the Tallowood Pond cycleway in 2010.

The cycleway connection represents the last piece in the puzzle for the area. The completion means residents now have a more convenient and safe way to commute from Tallowood Drive through the reserve to the bus shelters on Medowie Road.

Raymond Terrace resident Nicole Jenkins took her four-year-old daughter, Tianna, to the bike track for an exploration and said she had a great time.

"She (Tianne) loved riding up and down the hill and around the dam," Ms Jenkins said.

The council is landscaping the area surrounding the path with the help of the Medowie Tidy Towns & Cycleway Committee who have been working to beautify the area since early 2000.

OUR waste

Reducing waste to landfill through resource recovery systems is a priority for Port Stephens Council.

Port Stephens Council was the first council in NSW to adopt an advanced resource recovery process to process its domestic waste. It entered into a 20 year contract in 1998 with SITA Australia and since this time more than half of the region's domestic and commercial waste has been diverted from landfill.

Did you know?

Port Stephens residents disposed of 32,161 tonnes of waste and recycling in 2011/12 or 500kg per person. This amount of waste was more than the national average. According to the Australian Bureau of Statistics, the total volume of household waste generated in Australia was 450kg per person (2002-2003).

In 2005/06, Council started a two bin waste and recycling collection system. Innovations in this service include a single pass truck system that removed the need for two trucks collecting two waste streams. This halved the number of heavy vehicle movements on residential streets on each collection day.

The amount of waste generated by residents in Port Stephens is increasing, though trends in domestic waste, resource recovery and recycling have fluctuated over the past seven years. Changes to the regulations in regards to the way organic waste was processed in 2010 meant that less waste was compostable and instead this amount had to go to landfill. These state regulations have since been refined allowing the trend to reverse through greater resource recovery.

In 2011/12 the amount of waste sent to landfill decreased, the amount of material recovered from the residual bin increased and the amount of recyclables recovered remained steady. The resource recovery rate from total domestic waste stream was 56% and increasing.

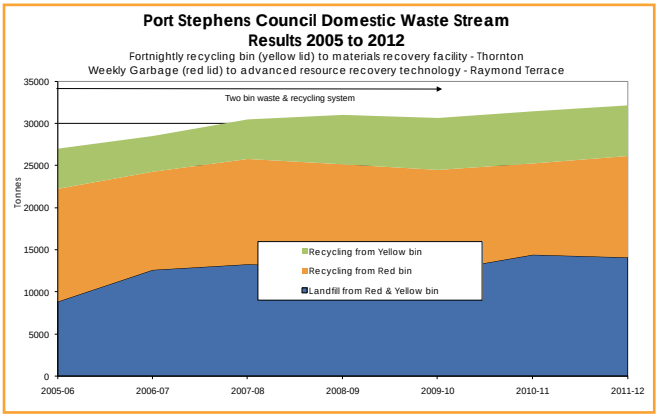
Council aims to have two thirds of the waste stream recovered by 2014. However the amount of domestic waste collected per person is also increasing.

A compositional audit of the contents of domestic garbage bins was undertaken in 2007/08 and 2010/11. The results from 2010/11 showed there was a large decrease in recyclable material from 2.5kg per household in 2008 compared to 1.8kg in 2011 in the residual bin. This information has informed new approaches to recycling awareness. There was also an overall reduction in the overall capacity of the residual bin contents from 2008.

A compositional audit of the contents of the recycling bin undertaken in 2010/2011 indicates that the contamination presented in the recycling stream is 3.7%. This figure is lower than the 2008 audit average of 5.4% for other Councils.

In 2010/11 a recycling bin inspector was introduced with the aim of reducing the contamination rate of the recycle bin, which in 2008/09 had climbed to 9.2%. This recycling bin inspector walks in front of the truck and inspects the contents of the bin and uses a three colour tag system. If the residents have recycled right they get a green sticker which congratulates them. If they have made a couple of mistakes they receive a yellow sticker that says recycling advice and will have information placed in their letter box on how to recycle right. If they have a badly contaminated bin they will be given a red sticker that says contaminated and their bin is not serviced as part of the recycling run. As a result of this the recycling contamination rate dropped to 6.8% in 2010/11 and 5.4% in 2011/12.

The capping and rehabilitation of the landfill site at Salamander Bay concluded in 2008/09. The result is the full closure of landfilling



on the Tomaree Peninsula, the sealing and control of pollution from landfill leachate and the development of a new sporting facility. The Lemon Tree Passage Landfill Site was capped and rehabilitated in 2010 and the site is now unoccupied. The decommissioned landfill on Newline Road Raymond Terrace is scheduled to be capped in 2013/14.

"We visited the ewaste recycling centre and were pleased to see all the components being dismantled for recycling but noticed on the TV this week that the Sub Continent had a major problem in that so much plastic was not being reused and still ended up in land fill."

Lesley, Raymond Terrace

The NSW government waste levy was introduced in 2000 at $2 per tonne and in 2012 is now at $93 per tonne. This has seen the cost of disposal for waste increase dramatically. Council has placed signs at its waste facility showing the breakdown of fees to the public so that they are aware of where their money goes. In an attempt by residents to avoid these extra fees illegal dumping is becoming an ever increasing problem.

Council Rangers have recently undertaken a 6 month campaign on illegal dumping enforcement. Additional to enforcement council also offers numerous services as an alternative to illegal waste disposal such as the annual chemical clean out and e-waste drop days; and collection and drop off services for household hazardous waste products (community sharps, chemicals, batteries, phones, light globes/tubes). Council also funds illegal dumping clean up and access control to restrict access to dumping hotspots.

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CASE STUDY

Sustainable Living

Over the past five years, Port Stephens Councils 'Sustainable Living' program has continued to grow in size and reputation. The program provides opportunities for the community to be actively engaged in environmental education workshops and life-long learning. It assists in the development of awareness, knowledge, skills and attitudes enabling the community to adopt more sustainable behaviours.

The Sustainable Living program offers a wide variety of free workshops and information sessions at locations throughout the LGA. Some of the topics held include: backyard chickens; chemical free cleaning; composting and worm farming; food footprints, vegetable gardening; beekeeping; native plants; energy efficiency; water conservation (e.g. waterwise gardening, rainwater tanks); bushfoods; frog ponds; waste and recycling; solar power; nest boxes; aquaponics and citrus growing.

Approximately 20 workshops are held each year, with expert and enthusiastic presenters engaged to prepare and deliver them. Council contributes $4,000 to the program, with external funding sought and usually received each year. The majority of workshops were limited to a small group size (20 people), allowing for interaction with the presenter, the setting and other participants. The program is widely promoted to the community through advertisements, media articles, flyers, radio interviews and other networks. Almost all of the workshops are booked out, with a waiting list.

Participants of the Sustainable Living program receive information, practical advice and hands-on experience. They gain a better understanding of how their behaviours impact on the environment and an improved capacity to adopt more sustainable practices. There are improved networks and linkages between individuals, local organisations and experts within their fields.

OUR air

The state of the atmosphere is of prime importance to the economic, social and environmental health of cities, towns and regional areas. Atmospheric conditions directly influence human health and also play the determining role in the health and diversity of natural ecosystems. This occurs through its direct influence on water cycles, nutrient cycles, soil health, weather patterns and plant photosynthesis.

Air quality affects human health and our enjoyment of the environment.

Air pollution is a persistent concern in Australian cities. Continued exposure to high levels of common air pollutants such as ozone, oxides of nitrogen, carbon monoxide and particulate matter can result in serious health impacts, including premature death and cardiovascular and respiratory diseases. Those particularly susceptible are the very young, the elderly and those with pre-existing health conditions.

Potential major sources that could contribute to air pollution and a subsequent decline in air quality in Port Stephens include industry, biomass burning and motor vehicle emissions.

While air quality is currently considered to be good, future increases in motor vehicle usage and industrial development in the LGA could reduce the existing standard of air quality.

Whilst anecdotally the majority of Port Stephens is thought to have good air quality, no ambient air quality monitoring stations are located in the LGA, though the Williamtown RAAF base monitors air data appropriate for the aerodrome.

The NSW Environment Protection Authority (EPA) maintains the Regional Pollution Index which is produced daily for air quality in three sites in the lower Hunter (Newcastle, Wallsend and Beresfield). At each of these sites levels for carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, lead and particles (measured as PM10, a measurement that relates to the size of the particle) are measured and compared to maximum standards set by the National Environment Protection Measure.

In 1998, Ministers from the Commonwealth, State and Territory made the National Environment Protection Measure on Ambient Air Quality. This Measure established a set of Standards and Goal for six air pollutants, and outlined the methods by which these pollutants are to be measured, assessed and reported.

The six air pollutants are carbon monoxide (maximum of 9.0 ppm (parts per million) measured over an eight hour period); nitrogen dioxide (0.12 ppm averaged over a one hour period and 0.03 ppm averaged over a one year period); ozone (0.10 ppm of ozone measured over a one hour period and 0.08 ppm of ozone measured over a four hour period); sulfur dioxide (0.20 ppm averaged over a one hour period and 0.08 ppm averaged over a 24 hour period and 0.02 ppm averaged over a one year period); lead (0.5 µg/m³ (micrograms per cubic metre) averaged over a one year period); and, particles as PM 10 (50 µg/m³ averaged over a 24-hour period).

"We need good air quality to survive and maintain good health and lifestyle. Thousands of people come here every summer, we need a clean environment or people won't come."

Natalie, Fern Bay

It is being considered whether to adopt a standard for smaller particle pollution that will be measured as PM 2.5 (25 µg/m³ over a one day period and 8 µg/m³ over a one year period). This has still not been adopted and remains as a national advisory reporting standard and goal.

These national standards are health based and are designed to protect people in the community most vulnerable to the health impacts of the various pollutants. When these goals are exceeded, they are recorded. Some activities may temporarily affect air quality, for example, hazard reduction burns may elevate air quality and air quality health alerts may be raised.

Undesirable odours are a form of air pollution that can negatively affect environmental quality through their impact on the people's quality of life. Odour issues in Port Stephens tend to include smells arising from agricultural and horticultural activities where these occur in close proximity to residential areas, and unpleasant smells being generated by the activities of neighbours.

Did you know?

There are 12 facilities in Port Stephens LGA that report to the National Pollutant Inventory. The most commonly reported pollutants from these facilities are: Total Volatile Organic Compounds, Particulate Matter, Carbon monoxide, Oxides of Nitrogen, Polycyclic aromatic hydrocarbons, Ammonia, Fluoride compounds, Zinc and compounds, Hydrochloric acid, Total Volatile Organic Compounds, Toluene, Xylenes, Ethylbenzene and n-Hexane.

CASE STUDY

More Pasha Bulka storms on the way

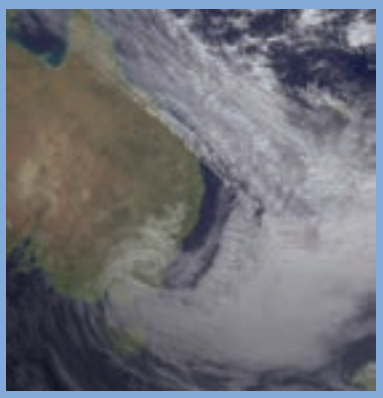
As climate changing pollution continues, the latest predictions from the CSIRO are that we are in for an increase in the number of droughts and an increase in intense rainfall events in many areas. Locally, we can expect more east coast lows, like that which produced the 2007 Pasha Bulka storm.

East coast lows are intense low-pressure systems which can occur at any time of the year, though they are more common during autumn and winter with a maximum frequency in June. East coast lows will often intensify rapidly overnight making them one of the more dangerous weather systems to affect the NSW coast and they can generate gale force winds, heavy widespread rainfall and flash flooding and very rough seas.

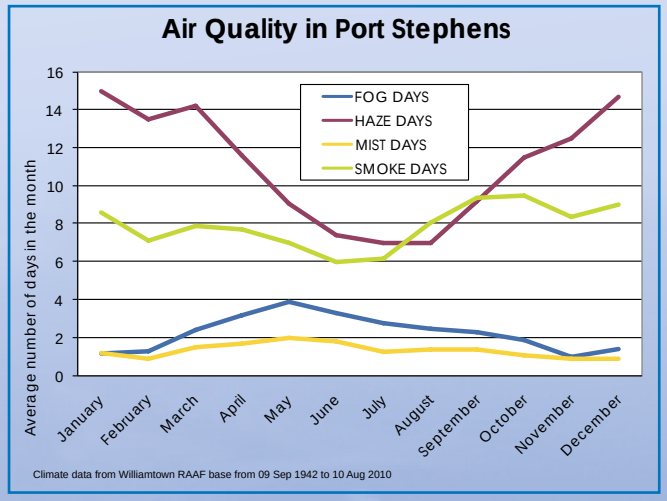
It has been estimated that the cost of severe storms in Australia between 1967 and 1999 was over $9 billion.

The Insurance Council of Australia is calling for action. The Insurance Council notes that it is local government that bears the primary risks associated with this increase in extreme weather events and calls on State and Federal Governments to support local governments with toolsets, legislative guidance, appropriate funding and nationally consistent datasets, to drive adaptation to extreme weather impacts in a coherent manner. The Council also highlights that a National approach to land-use reform is necessary in order to balance the challenge of defending, retreating or re-zoning land that becomes untenable for use.

Meanwhile, we can expect more Pasha Bulka storms.



Satellite image: 8:30am 27 June 2007 - originally processed by the Bureau of Meteorology from the geostationary meteorological satellite MTSAT-1R operated by the Japan Meteorological Agency



The major sources of odour complaints in Port Stephens include animals, sewer and smoke, as well as spray-painting, domestic garbage bins, chemical smells and odour from large industry.

In the last two years, Council has investigated 33 air pollution complaints primarily to do with dust and smoke and 48 odour complaints.

Records of emissions from EPA licensed industries can be accessed through the National Pollutant Inventory. This is a national database of emissions from industry and a comprehensive emissions data set for oxides of nitrogen, volatile organic compounds and particles. This inventory brings together emissions estimates for domestic, industrial and mobile sources in the Sydney - Newcastle - Wollongong airsheds. Information on industries specific to Port Stephens can be view on their website.

To report any type of pollution, including air pollution, call the EPA hotline on 131 555.

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OUR amenity

Noise is usually defined as unwanted sound. When this sound unreasonably intrudes into people's daily activity, it is considered to be noise pollution. High and prolonged levels of noise pollution can lead to a range of health problems including increased blood pressure, digestive tract problems, cardiac problems, stress, sleep disturbance and damage to hearing.

Port Stephens residents value a noise-free environment; 31.5% of respondents to the Port Stephens Community Profile 2006 identified peace and quiet as the most liked aspect overall about living in Port Stephens.

Common sources of neighbourhood noise in Port Stephens include traffic, barking dogs, air conditioners, roosters and birds, industrial noise, machinery and power tools, lawn mowers, trail bikes, noisy neighbours, garbage collection, TV and music noise from neighbours, noisy parties and burglar and car alarms.

Did you know?

A Defence Practice Area was first designated in Williamtown in the late 1930's with the civil airport beginning operation in 1947. The civil airport is currently owned jointly by Port Stephens and Newcastle Councils.

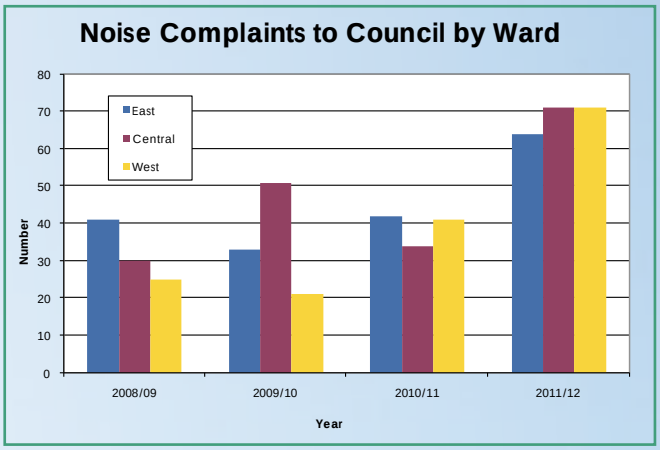
More unusual complaints have included noise from quails, chanting and overly amorous lovers.

Of the 207 noise complaints received in 2011/12, 110 (53.1%) related to noise generated on private property, 95 (46.1%) related to nuisance noise from dogs, and 2 were for aircraft noise. Aircraft noise complaints are generally not recorded as they are referred through to the Williamtown airbase. Across the three wards the most complaints came from west and central ward with 71 complaints a piece while 64 came from east ward.

All noise complaints are assessed against the Offensive Noise definition within Protection of the Environment Operations Act 1997. The Act declares a noise offensive if, by its level, nature, character, quality or time at which it is made, it could be harmful to a person or it interferes unreasonably with the comfort of a person outside a premises from which it is emitted.

Noises that are of an intermittent nature such as barking dogs or motorbikes, council recommends that the complainant keeps a diary of the times and duration of the noise. To enforce the definition of offensive noise the authorised officer will take the approach of what a 'reasonable person' would consider offensive.

In NSW the Protection of the Environment Operations (Noise Control) Regulation 2008 also sets certain limits on noise emissions from motor vehicles, vessels and domestic use of certain equipment. Noise pollution is the third-highest type of complaint call received by the EPA Pollution Line.



In the last NSW State of the Environment Report it was reported that the number of noise incident calls to the Pollution Line decreased by 20% between 2004-05 and 2007-08. Calls requesting information on noise issues also fell by 24%.

Military aircraft noise is a significant concern to residents in certain locations within the LGA. The 2006 Port Stephens Community Profile identified that Aircraft noise was mainly an issue of concern for Raymond Terrace (11.2% of respondents) followed closely by Rural East (10.9%). Management of the relationship between development and the operation of RAAF Base Williamtown is an ongoing issue.

The Port Stephens Aircraft Noise Policy 2010 was publicly notified in September 2011. The Policy provides a framework for planning decisions and other Council programs relating to aircraft noise. It sets out principles that are to guide planning proposals (rezoning), development assessment, provision of aircraft noise information and efforts to initiate aircraft noise amelioration programs.

"Excessive noise disturbs the peace and convenience. If you drive around Salt Ash and the Jets are flying you can't hear yourself think."

Garry, Medowie

The policy is based upon an Aircraft Noise Planning Area, based upon relevant Australian Noise Exposure Forecast maps. Within this area, the Policy establishes principles based on relevant State planning directions, Australian Standard and best practice aircraft noise amelioration programs. Whilst the Policy seeks consistency with these general principles, it also provides guidance for the application of discretion. This allows decisions to respond to local circumstances and the merits of each case.

Detailed aircraft noise related development controls are set out in the Port Stephens Development Control Plan. It adopts the Building Site Acceptability principles outlined in Australian Standard AS2021-2000, but provides more definitive guidance regarding discretionary matters under that Standard.

To report any type of pollution, including noise pollution, call the EPA hotline on 131 555.

CASE STUDY

No surprises

The Australian Noise Exposure Forecast (ANEF) System was developed as a land use planning tool aimed at controlling encroachment on airports by noise sensitive buildings and underpins Australian Standard AS2021 'Acoustics—Aircraft noise intrusion—Building siting and construction'.

The ANEF system was developed through a major socio-acoustic survey carried out in the vicinity of a number of Australian airports in 1980 and incorporate a weighting for the period 7pm to 7am as the study showed that this gave the best correlation between noise dose and community reaction.

These are the official forecasts of future noise exposure patterns around an airport and they constitute the contours on which land use planning authorities base their controls.

In December 2009, the Department of Defence released a new 2025 ANEF map for the Williamtown RAAF base to forecast noise exposure for the Joint Strike Fighter aircraft due in 2018. The noise footprint of the map was much greater than the existing ANEF map which reflected the use of the current Hornet aircraft.

After much community pressure, the Department optimised the proposed departure and arrival flight profiles with the aim of reducing the impact of the Joint Strike Fighter aircraft. When the new 2025 ANEF map was released in August 2011, a much reduced noise footprint was predicted.

Council uses both the 2012 ANEF and 2025 ANEF maps in considering aircraft noise. Combined, these maps are referred to as the Aircraft Noise Planning Area and reflect the ongoing operation of the Hawk and Hornet aircraft and the future operation of the Joint Strike Fighter aircraft.

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LOOKING after the land

Land is a valuable natural resource; it has important social, ecological and cultural uses and values.

The historic clearing of much of Australia's native forests, followed by their exposure to ill conceived or poorly planned land use practices is the primary cause of today's land degradation.

Key land management issues in Port Stephens include land use change, soil erosion, acid sulfate soils, contaminated land. Feral animals and loss of native vegetation are also key land degradation issues in Port Stephens.

The dominant form of land use change in Port Stephens is the conversion of land from native bushland and agricultural land into urban areas for either residential or industrial developments. This tends to be localised in high growth areas of the LGA including the Tomaree and Tilligerry Peninsulas, Medowie and Raymond Terrace.

In response to changing land use pressures experienced during the past four years Council has produced a series of planning strategies to manage growth in a sustainable manner.

Soil erosion is a natural process exacerbated by poor land management practices. Unsealed roads, disturbed building and development sites, quarries, unvegetated land, river and foreshore areas, cultivated farming land and other degraded areas are a prime source of soil erosion.

Soil erosion reduces the productivity of the land, however in Port Stephens, its key environmental impact is on water quality. The most evident forms of this include foreshore erosion and soil erosion from building and construction sites.

Many strategic plans and policies seek to address this erosion issue such as the Regional Erosion and Sediment Control Policy and Code of Practice and the Comprehensive Foreshore Management Plan. Underneath these documents exist many location specific plans such as the Shoal Bay Coastline Management Plan 2001 and Tanilba Bay Foreshore Erosion Management 2012. Council also undertakes compliance of building and construction sites with the erosion and sediment control standards as resources allow.

CASE STUDY

Reversing the trend

More than 95% of coastal saltmarsh has been destroyed in NSW, but on the boundaries of Port Stephens LGA the trend is being reversed.

Over the last few years, Fisheries NSW has been working to improve the quality of the Ramsar-listed Tomago Wetlands within the Hunter Wetlands National Park. Tomago Wetland has been identified as the second highest acid sulfate soil priority area in the Lower Hunter and has high ecological values for threatened species and endangered ecological communities.

This project built on earlier saltmarsh rehabilitation work done in 2007 and restored tidal flushing to an additional 52 hectares of the 120 hectare wetland area. This will allow the amelioration of acid sulfate soil, improve fish passage and access to wetland habitat, reinstate a more natural wetting cycle, promote the expansion of the saltmarsh communities and increase migratory bird feeding and roosting habitat.

A hydraulic study was undertaken for the site and all options. The best option was to remove the four existing one way floodgate flaps and replacing them with swing gates which allowed a limited amount of tidal flushing; positioning of one way flaps on the internal ring drain to prevent tidal water flowing through to private property and earthworks to reconnect relic channels to assist in tidal water delivery to the centre of the wetland.

Fisheries NSW and National Park managers are monitoring the success of the work but the signs are that the work will benefit our native flora and fauna.

Did you know?

The soils and sediments most prone to becoming acid sulfate soils formed within the last 10,000 years, after the last major sea level rise. When the sea level rose and inundated the land, sulfate in the seawater mixed with land sediments containing iron oxides and organic matter. In 1737 Linnaeus named acid sulfate soils as *Argilla vitriolacea* meaning clay with sulphuric acid.

Across most of the Port Stephens LGA there are large areas where it is highly likely that Acid Sulfate Soils occur.

This soil layer has been considerably disturbed in the past through the construction of drainage networks and flood mitigation schemes. Research has concluded that acidification from oxidation of soil sulfides in the past has been significant. Despite this, it appears that much of the acid produced has been either exported to the estuaries, bays or streams and/or neutralised by natural processes.

However potentially significant volumes of acid still exist in the soil profile of certain parts of LGA, and have been shown to be discharging to drainage systems.

These areas are concentrated around Tilligerry Creek, as well as the area from Williamtown to Bobs Farm. The major risk for acid runoff production includes prolonged drought conditions in the catchment and uncontrolled excavation or water table lowering.

In June 2006 an acid sulfate soil runoff event occurred in the Tilligerry Creek catchment. During this event pH levels were recorded as low as 3.2, triggering a response from appropriate local and state authorities including Port Stephens Council.

Extensive hydraulic modelling, water quality monitoring and soil testing work funded by the Department of Primary Industries and Council was undertaken within this catchment. This was to determine the best way to modify the drainage network at key hotspots to prevent further oxidation and acid runoff. A variety of solutions were developed however work did not proceed due to lack of landholder agreement with all solutions proposed.

Contaminated land is land that contains substances which are above that naturally occurring levels and could be damaging to human health or the environment. They are usually the result of poor industrial practices in which the storage, handling and disposal of chemicals.

In the Port Stephens LGA, 1363 properties have been identified on Council's Potentially Contaminated Land Database as either having potentially contaminating activity undertaken on site. Council is currently undertaking a business auditing program focusing on land and water contamination from automotive businesses. 18 inspections have been undertaken in the last 12months of which 50 issues where identified.

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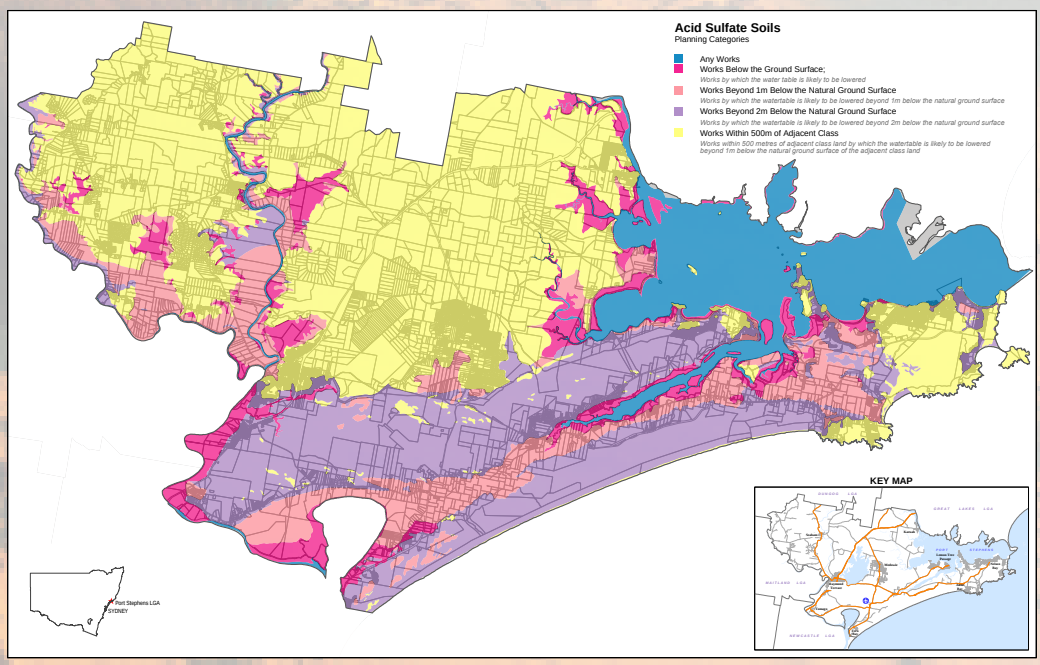
"Basically proper landuse keeps the land in pristine condition, improper use just buggers up the dirt."
Garth, Fullerton Cove



OUR rivers

The Port Stephens LGA contains part of three major river systems: the Karuah River which flows into the Port Stephens Estuary and the Williams and Paterson Rivers both which flow into the Hunter River Estuary. The majority of the rivers are tidal with the exception of the Williams above Seaham.

The Hunter Estuary has been described as the largest and most complex estuary in NSW.

The issues faced by our river systems are complex and include: habitat loss, bank erosion and sedimentation, limited riparian vegetation, weed invasion, development pressures, hydraulics, flood mitigation, water quality, fishing, water extraction, boating, climate change and agricultural, industrial and urban inputs.

Riverbank erosion is not a new phenomena but an area of high and increasing community concern on our river systems. Riverbanks erosion is the result of many contributing factors such as vegetation coverage, cattle access, soil type, location, flooding and boat traffic. In the recent years boat traffic and its management has caused the most concern within the community. The increase in popularity of slow tow boating ie wake boarding and the large waves or wake it generates; has been linked to an increase in the fragility of our river banks.

Did you know?

The Hunter River catchment is the largest coastal catchment in NSW covering almost 22,000 square kilometres. While the Paterson and Williams River catchments make up only about 10% of the total catchment area, they supply 40% of the total runoff for the Hunter River.

An investigation into the perceived increase in erosion rates on our river systems was initiated by Port Stephens Council in 2004/05 with the preparation of the Williams River Erosion Study. The study concluded that slow tow activities were a major contributing factor to erosion rates. However land management practices such as the removal of riparian vegetation and cattle access also had an effect.

In response NSW Maritime implemented one of the report's recommendations to establish a "No Slow Tow" zone within a high conservation section of the lower Williams River in 2007.

A review of this restriction was conducted in 2010 indicting that there was substantial evidence to suggest erosion rates within that area had reduced since the exclusion of slow tow activities. Restrictions on slow towing have also been enforced in valuable sections of the Williams River above Seaham and the Hunter River below Morpeth.

Port Stephens Council and the Catchment Management Authority have been working with landholders to improve land management practices through riparian fencing and planting. The current grant program will run until 2013.

"The river has been pretty good since the restrictions went in. It would be a pity if it went back to what it was before. The river in my section has seen a vast improvement over the last 3 years. The reeds and fish are starting to come back."

Peter, Nelson Plains

Bank erosion rates have been monitored in lower Williams River since 2004 and the Hunter River was included from 2009. The monitoring program concluded in June 2011 and re-enforced the conclusions of previous investigations that erosion rates within the no slow tow zone of the Williams River have reduced and the banks are showing signs of recovery.

Flooding in both systems has resulted in an increase in erosion along the banks. The degree of erosion experienced during the flood events is generally exacerbated by the existing undercutting along the banks that was caused prior to the flood by boat wake and to a lesser extent wind waves. Undercutting is generally more obvious in areas of mature remnant vegetation which has lead to the perception that tree primarily casuarinas can increase the rate of erosion. The true situation is that the roots of the vegetation hold the top of the high banks together and wave action erodes the bottom which does not have the same root density. Once the trees are undermined to a critical point they topple into the river creating very visual examples of erosion. Those banks without established vegetation erode more uniformly

CASE STUDY

Rock Fillet

In 2010 rock fillets were constructed within the Williams River to trial more environmentally-friendly form of bank protection then the traditional rock revetment.

A rock fillet brings together a "hard engineering" solution for bank protection whilst enabling natural vegetative regrowth which will provide fish habitat and uptake nutrients.

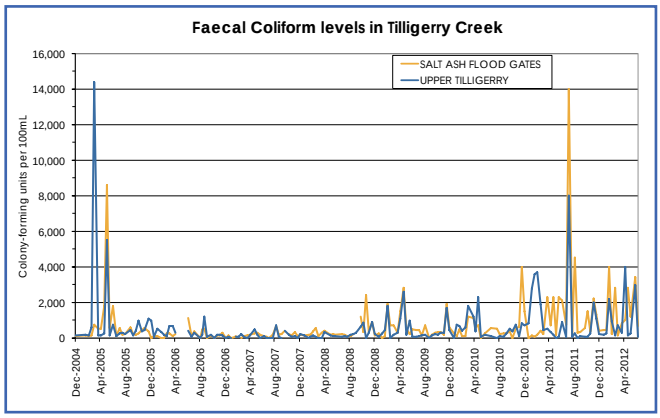
Traditional rock revetment does not allow in-stream vegetation removing valuable habitat. A rock fillet is a L-shaped rock wall that is placed in the intertidal bench about 2 metres out from the eroding bank. The rock barrier provides a quiet backwater against the bank which traps plant seeds, promotes vegetation regeneration and provides habitat for fish, crabs and birds.

On the Williams River, construction took three weeks to complete and approximately 1,271 tonnes of rock was installed.

The site was fenced from cattle and the top of the bank planted with 800 natives. The project cost about $100,000 to protect a 300 metre stretch of river. Half of these costs were borne by the landholder and the remaining half shared through a grant provided by the Environmental Trust, with contributions from the Hunter Central Rivers Catchment Management Authority and Port Stephens Council.

The site has been monitored since 2010 and significant native regrowth has been observed behind the fillets and fish have been observed to be using the site. The project has been a great success.

Previous studies have proven that boat wake increases the fragility and consequently the erosion rate of river banks. For boating to continue in these fragile areas hard engineering is the only long term option to prevent ongoing bank loss.



as there is no root structure to hold a proportion of the bank together or to act as a marker to judge ongoing erosion.

Hunter Water commissioned a report to provide a detailed riverbank vulnerability assessment of the stretch of the Williams River above Seaham known as the Seaham Weir Pool. A Decision Support System was used to assess the current physical condition of the riverbanks and evaluate the potential influence of wind and boat wake wave. Under this system the primary management action for the majority of the river was determined as 'monitor'. Thus the situation should be reassessed every two year for areas where boating is already permissible and if boats are currently restricted ever six months.

The development of a Karuah River Catchment Plan is in the pipeline waiting on the outcome of a grant funding application from Great Lakes Council.

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OUR groundwater

Port Stephens contains substantial groundwater reserves that include the Tomago, Tomaree and Stockton aquifers. These cover an area of approximately 275 square kilometres, extending from the Hunter Estuary in the south, to the Port Stephens Estuary in the north and Raymond Terrace to the west. These provide high quality water for household consumption, industrial and commercial use and agricultural and horticultural irrigation.

Hunter Water has a Special Area Regulation over more than one third of the Port Stephens LGA. The Regulation makes provision for the regulation of activities within special areas (particularly agricultural activities and sewage management) and prescribes penalties and fines for non-compliance.

These Tomago, Tomaree and Stockton aquifers also support substantial groundwater dependent ecosystems that dominate much of the Port Stephens landscape. These ecosystems include terrestrial vegetation, wetlands and coastal dune systems.

Did you know

Groundwater dependent ecosystems can include paperbark swamp forests distributed across coastal dunes and floodplains, swamp heaths and swamp sclerophyll forests and swamp heaths that occur on coastal dunes and swampy areas. It is highly likely that almost two thirds of the ecosystems above the Tomago and Tomaree part of the Tomago/Tomaree/Stockton aquifer are groundwater dependent, whereas just under half of the vegetation on the Stockton dunes is groundwater dependent.

The quality of freshwater aquifers in Port Stephens has the potential for irreversible damage arising from industrial activities and over extraction. It is essential that over extraction of the aquifers does not occur as this could cause saline water to be drawn into the aquifers from the ocean and nearby estuaries. This would degrade the quality of groundwater and significantly affect the groundwater dependent ecosystems they currently support. Similarly, due to the highly permeable nature of these aquifers, they could become contaminated by sewage, industry and poor land use practices. These forms of water quality degradation are potentially irreversible.

The majority of businesses and households in Port Stephens are connected to the reticulated sewage system provided by Hunter Water Corporation.

There are almost 5,000 households and businesses that are approved to dispose of their sewage through the use of on site sewage management systems. The majority of the systems are septic tanks with either absorption trenchs or evapotranspiration areas or Aerated Watewater Treatment Systems. Other system types include pump to sewer, pump-outs and Wisconsin mounds. The majority of these systems are located in Anna Bay, Bobs Farm, Duns Creek, East Seaham, Glen Oak, Heatherbrae, Hinton, Salt Ash, Seaham, Tomago, Wallalong, Woodville and Williamtown.

Council has an ongoing sewage management system inspection program has seen a general improvement in the quality of the systems over the last 4 years. Since 2008, Council has undertaken 4,511 inspections.

"Potable groundwater is the difference between a first world nation and a 3rd world country."
Matthew, Salamander Bay

All systems are categorised according to their risk (high, medium or low) which is determined against specific criteria including location of property, size of property, proximity to waterways, soil type, system type and the like.

The frequency of inspection is determined according to the risk classification of the sewage system.

The fees charged for these inspections is used in part to undertake research and chemical and biological monitoring of surface waters and drains.

Council regularly undertakes research projects with external organisations such as the University of Newcastle. Research is considered an important component of Council's program as it provides vital information on how different systems operate, how systems impact on the environment and how best to manage the systems.

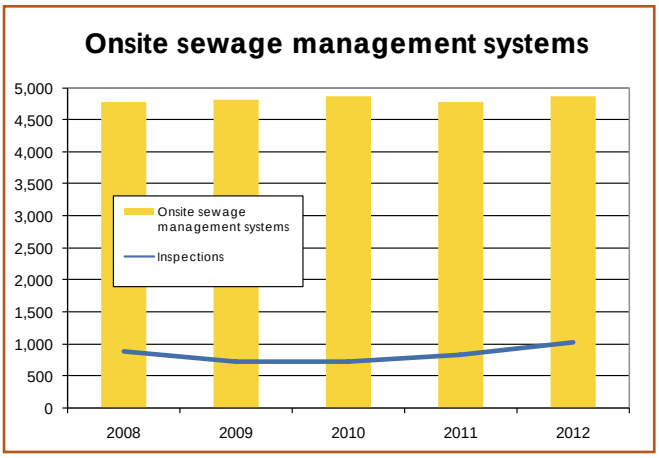
Regular water testing indicates that water quality is generally good across the LGA.

Of the 11 swimming locations monitored across Port Stephens under the Beachwatch program, all were graded as either good or very good.

Zenith, Box, Fingal, One Mile and Birubi all received a grading of very good indicating excellent water quality that is considered swimmable almost all of the time with only a few potential sources of faecal pollution.

Little Beach, Dutchmans Beach, Bagnalls Beach, Lemon Tree Passage Tidal Pool and Karuah Tidal Pool were graded as good indicating mostly good water quality but with more significant potential sources of microbial contamination, such as stormwater or river discharge. In these areas it is recommended swimming be avoided for 3 days after heavy rain.

Routine and event based monitoring of surface waters, rivers, creeks and drains is regularly undertaken through the Clean Waterways Program. Monitoring of these locations for chemical, biological and microbiological parameters helps Council understand the "health" of a water body and also to identify potential sources or activities of pollution.



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CASE STUDY

Water Quality Auditing

Many of council's planning documents refer to improving water quality and "minimising the impacts of developments on receiving waters to pre-development conditions". This is not only important for the natural environment but safeguards our community health and protects economic interests such as tourism and aquaculture.

In 2011 Council initiated a program of auditing the water pollution impact of businesses identified as having a high risk potential by the Tilligerry Creek Management Plan.

The high water table within the Tilligerry Creek Catchment and the network of drains and wetlands that characterise the area mean that there is high potential of poor practices to quickly equate to water quality issues. So far 19 issues have been identified and 9 have been quickly resolved and work is ongoing on the remaining 10.

Inspections have also been undertaken within certain areas with the Mambo Wetlands catchment as part of a pollution investigation incident. 14 issues were identified all of which have been rectified.

Port Stephens Council aims to expand this program to businesses across the LGA to implement best practice stormwater management and safeguard our water quality.

OUR land ecosystems

Port Stephens has a diverse variety of ecosystems across the LGA. These include open forest, rainforest, riparian forest, coastal swamp forests, woodland, heath and sedge land. A number of vegetation communities in Port Stephens are classified as nationally, state or regionally significant.

Port Stephens LGA is home to a range of species that are facing the threat of extinction and are recognised nationally under the Commonwealth Government's Environment Protection and Biodiversity Conservation Act 1999.

These include the Regent Honeyeater (Anthochaera Phrygia), Australasian Bittern (Botaurus poiciloptilus), Swift Parrot (Lathamus discolour), Spotted-tailed Quoll (Dasyurus maculates), Large-eared Pied Bat (Chalinolobus dwyeri), Green and Golden Bell Frog (Litoria aurea) Grey-headed Flying-fox (Pteropus poliocephalus), New Holland Mouse (Pseudomys novaehollandiae) and the Koala (Phascolarctos cinereus), to name a few.

Some of the habitat for the diverse species living in Port Stephens is protected under the National Parks and Wildlife Act (18,890 hectares), some is reserved as State Forests (3,468 ha), some habitat is in the Port Stephens waterways (12,686 ha) and some exists in the public community land (909 ha) and Crown land (420 ha). A large amount of habitat exists in the backyards of the residents of Port Stephens.

Pressures on terrestrial biodiversity in Port Stephens include land clearing for agriculture, mining, and urban development, habitat and corridor fragmentation, invasion by introduced plant and animal species, and altered fire regimes.

Did you know?

Port Stephens is home to the endangered spotted-tail quoll, the largest native carnivore left on mainland Australia. Quolls can roam over 200 hectares and utilise up to 20 dens. They love to eat birds, reptiles and mammals such as rabbits and their scats often contain animal fur, feathers, and broken bone fragments. Quolls mostly roam at night.

In response to these pressures, Council has been organising the weeding and regenerating of a number of bushland areas and protected ecosystems.

In 2011-12, through Councils Bush Regeneration Program, more than 2,340 hours were spent weeding and revegetating more than 200 hectares of bushland reserves and more than 16,000 native seedlings were planted.

These activities were undertaken in a variety of environments including Endangered Ecological Communities, wetlands, creek banks and foreshore reserves. This program is assisted and often driven by local community volunteer groups. Last year they contributed over 3,000 volunteer hours to bush regeneration activities across the LGA.

Education is also a key component to protecting the environment as it raises awareness and appreciation.

Council delivers numerous free environmental education activities throughout the year including Sustainable Living Workshops, Project AWARE on the Coast – a short course on coastal ecosystems and biodiversity, Marine Discovery Series – regular public presentations on a variety of marine topics, and Spotlighting Tours –excursions for people of all ages to see what the Port's wildlife get up to at night. These events are always well attended and enjoyed by the community.

"Port Stephens' biodiversity is one of its main tourist attractions. People come from all over to look at koalas in their natural environment. And where there are koalas in the bush you know there are other native animals living there too like echidnas, gliders, possums, reptiles and birds. The local community love the Port's natural environment and biodiversity and choose to live here because of it – they enjoy living with nature."

Fran, Tanilba Bay

Council also uses statutory instruments to protect biodiversity, for example the Local Environmental Plan and the local Tree Preservation Order.

Development applications are assessed for their environmental impacts in accordance with State (and sometime Commonwealth) legislation.

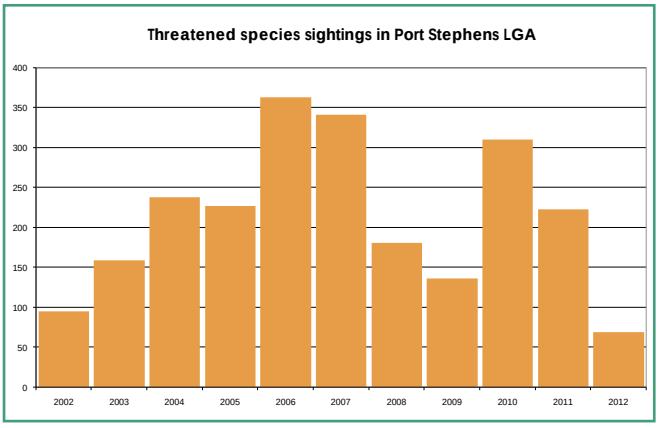
Officers rely on their scientific knowledge and available data and maps to identify important areas of habitat, the presence of threatened species and endangered ecological communities. This process aims to allow development to progress in a way that minimises impacts on the environment.

The better the mapping and data Council has to inform decisions, the better the environment can be protected. Such information also provides more clarity and certainty for developers. It was for this reason that Council developed the Conservation Assessment Tool in 2008.

The Conservation Assessment Tool generates a conservation value rating for all remnant native vegetation in the Port Stephens LGA using all available existing vegetation mapping datasets including the Hunter Council's vegetation mapping, koala habitat data from the Comprehensive Koala Plan of Management Mapping and Council's Wetlands database to determine the conservation significance of remnant vegetation. The database is kept up-to-date with the latest information.

Council recently completed a Wildlife Corridor Mapping project and this will be added to the Conservation Assessment Tool.

The Wildlife Corridor Mapping project uses the best-available science around seven "focal" species: Koala, Squirrel Glider, Brush-tailed Phascogale, Eastern Horseshoe Bat, Southern Myotis, Black Bittern and Wallum Froglet. These species were selected



because of the nature of their preferred habitat and movement patterns and because they can be considered to represent the biodiversity of Port Stephens.

Biodiversity corridors were mapped across the LGA and will assist Council Officers to assess development applications and make strategic planning decisions.

By have a comprehensive approach to biodiversity management through strategic planning, bush regeneration and community engagement, Council aims to protect the Port Stephens native flora and fauna for future generations.

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CASE STUDY

Bush Regeneration Volunteers

Port Stephens volunteers have been hard at work on bush regeneration projects this past year, working in over 30 reserves covering over 200 hectares.

These reserves include a number of wetlands including Mambo, Wanda, and Karuah Wetlands; waterways including Tilligerry Creek and Windeyers Creek; numerous foreshore reserves throughout the Tilligerry and Tomaree Peninsula; Endangered Ecological Communities, including Swamp Sclerophyll Forest at Stoney Ridge and Tilligerry Peninsula, and Swamp Oak Floodplain Forest at Corelette Headland, Karuah and Seaham.

The groups have been battling weeds of national significance, such as lantana, bitou bush, asparagus fern and many other garden variety "escapees".

To assist natural regeneration, some groups have also been planting local native species. For example, 100 trees were planted around Bridal Walk and Bagnalls Beach Reserve at Nelson Bay, over 10,000 on Birubi Beach sand dunes, 150 at Barry Park and Fingal Beach, 100 at Karuah Wetlands, 150 Koala feed trees at Mallabula, 100 trees at Mambo Wetlands and over 200 trees at various locations around Soldiers Point and Salamander Bay.

Many of the bush regeneration groups have been successful in grant applications with approximately $600,000 of grants being awarded for the area in 2011/2012.

Tillligerry Peninsula and Soldiers Point have each received $250,000 to spend over 6 years on bush regeneration. Other grants included funding for bush regeneration activities at Karuah Wetlands, Birubi Beach Beat the Bitou Project, Tilligerry Old Tip Rehabilitation Project, Lemon Tree Passage Nyrang (foreshore) Reserve, Mambo-Wanda Wetlands War on Weeds Project, and Wanda Wetlands Koala Corridor Project.

It is thanks to the hard work, passion and enthusiasm of these community members that the Port Stephens bush is well maintained.

CARING FOR the koala

The Port Stephens area is home to several koala populations.

Our koalas are often spotted in trees in tourist locations around the Port making them a popular tourist attraction.

Unfortunately koala populations are declining due to habitat destruction, habitat fragmentation, road accidents, attacks for by stray dogs, diseases, weed invasion and bush fires.

Based on data from the Hunter Koala Preservation Society from 1994 to 2012, 18% of koala deaths for the period were caused by disease, 17% caused by attacks from stray dogs and 38% caused by motor vehicles.

Did you know?

There are approximately 734 Eucalyptus species but koalas only eat from about 120 of these. In Port Stephens there are three Eucalyptus species that are preferred koala food. These are Swamp Mahogany (Eucalyptus robusta), Parramatta Red Gum (Eucalyptus parramattensis) and the Forest Red Gum (Eucalyptus tereticornis)

Scientific research by Lunney et al (2007) suggests that Port Stephen's koala population in 1998 was about around 800. Data collected from Hunter Koala Preservation Society suggests the population has been in steady decline since this time, as evidenced by the number of recorded encounters decreasing, and there may be only a few hundred left.

Lunney et al (2007) has also modelled the impact of fire and dogs on the local population. The results show that the population will continue to decline sharply, especially coupled with pressure from habitat clearing and fragmentation.

Efforts are being made by Council, wildlife carers and bush regeneration groups across the LGA to protect our koalas.

Volunteers put a substantial amount of time and resources into koala habitat restoration, and koala rescue and rehabilitation.

Many of the bush regeneration groups work in koala habitat areas removing weeds and planting koala feed trees.

The Hunter Koala Preservation Society works throughout Port Stephens providing care for sick and injured koalas. They have a small number of carers who last year committed over 4000 hours to caring for sick and injured koalas. This group also provides community education programs through media releases, signage and a dedicated community education officer. Over the last year their education officer visited every kindergarten and grade one class in the Tomaree and Tilligerry Peninsulas.

There has already been evidence that this program has worked to disseminate valuable information and that these young children are passing their knowledge onto their parents. Such an example occurred recently when a parent spotted a sick koala by identifying its chlamydia symptoms (inflamed eyes or dark bottom stains) and reported it to the Hunter Koala Preservation Society. Because this koala was identified early and placed into care, its chlamydia was successfully treated with antibiotics. Many koalas after being hit by a car can also be rehabilitated back to health. This is especially thanks to a local veterinarian who also donates their time and expertise to treating them.

The Hunter Koala Preservation Society plays a key role in micro-chipping released koalas and recording their rescue and release locations. They provide this information to the NSW National Parks and Wildlife Service who utilise it to monitor the locations and movements of koala populations.

Due to the decline of koala populations in Australia, in May 2012 the Commonwealth Government listed the koala populations in Queensland, NSW and the ACT as vulnerable and gave them protection under the Environment Protection and Biodiversity Conservation Act 1999.

The Commonwealth Threatened Species Scientific Committee estimated that koala populations across Australia from 1990 to 2010 declined by nearly 30%. In NSW they estimated that the population dropped by approximately 33% from 31,400 to 21,000. The listing under the Environment Protection and Biodiversity Conservation Act aims to provide greater protection for the species.

Locally, Port Stephens Council aims to protect local koala populations by the following and implementing the Port Stephens Comprehensive Koala Plan of Management. This plan gives guidance on koala habitat assessment and strategic direction for future planning decisions. Technical advice is also provided to Council through the Port Stephens Comprehensive Koala Plan of Management Steering Committee.

"Koalas hit by cars are often left stunned and if rescued can be rehabilitated and released back to the bush. So if you see a Kola hit by a car or a sick or injured koala please stop and call Rescue Number: 0418 NATIVE. By putting this number in your mobile you'll always carry it with you and you just might save a Koala's life."

Sue, Tomaree Peninsula

Council runs education programs on responsible dog ownership and how to keep a koala-friendly backyard. The implementation of these educational messages will go a considerable way to protecting koalas as they are known to roam through residential areas where they rest and feed in backyard trees. Koala friendly yards include fences that allow koala movement (if no dogs are present), planting of koala feed trees, and avoiding pesticides and herbicides (as koalas sometimes eat soil).

Another way Council helps to protect koala populations is through appropriate bushfire management and source funding for bush restoration activities.

Together Council and the community aim to continue to implement actions for the protection of our koalas.

CASE STUDY

Port Stephens CKPoM

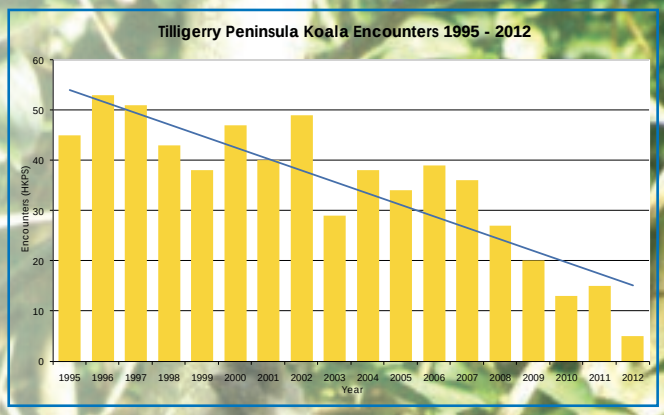
The Port Stephens Comprehensive Koala Plan of Management has continued to guide proactive koala management including habitat restoration, traffic management, dog and feral animal management, bushfire, education, tourism, koala welfare, funding, research and monitoring.

The CKPoM Steering Committee meets every second month to work together towards more effective local koala conservation. Recent activities have included:

- Hosting a presentation on Chlamydia vaccine and research and development
- Habitat restoration projects including weed management and planting of thousands of koala feed trees
- Incorporation of location data within the koala databases and provision to the Wildlife Atlas,
- Information sharing about Myrtle Rust
- Signage and education
- Media releases
- On-ground works like removing barriers to koala movement
- Writing submissions

The CKPoM Steering Committee are also involved with improving Koala Habitat Mapping. One such project that arose from a court order following some illegal koala habitat clearing, will enable updated Koala Habitat Maps to form part of the CKPoM.

Better Habitat Mapping means more certainty for developers. It provides clarity on locations where development proposals or rezoning proposals will need to address and meet the CKPoM Performance Criteria.



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OUR water ecosystems

Freshwater ecosystems in Port Stephens include freshwater wetlands, freshwater streams, the upper reaches of some river systems and substantial groundwater dependent ecosystems. Several of these ecosystems are important for supplying potable water to the region, including the Williams River, Grahamstown Dam and Tomago Sand Beds.

Freshwater wetlands in Port Stephens include coastal freshwater swamps, marshes, hanging swamps, and intermittently inundated floodplains along the Hunter and Williams Rivers.

Did you know?

Cigarette butts can take up to 12 months to break down in fresh water and up to 5 years in seawater. Birds and aquatic animals can mistake butts as food and swallow them, resulting in serious digestive problems that may lead to death. Bin you butts!

Many of our area's freshwater wetlands are covered under the State Environmental Planning Policy 14 Coastal Wetlands (SEPP14), including those located near Raymond Terrace, Medowie, Karuah, the Tomaree Peninsula, and along the Hunter and Williams Rivers.

This State policy identifies and aims to protect coastal wetlands.

Freshwater wetlands in Port Stephens are rich and diverse in plants and wildlife. Waterbirds flock to the wetlands to breed, nest and forage for food. Many terrestrial animals rely on them as a source of drinking water. They also provide multiple other functions in the landscape including protection from floods, filtration of nutrients and sediment, and nurseries for fish.

The health of freshwater ecosystems in Port Stephens are threatened by pressures that include declining water quality, reclamation and drainage, clearing, cropping and grazing, altered hydrology and introduced species.

Declines in water quality can be caused by a number of factors, but often occur after high rainfall events when run-off loaded with nutrients, organic matter, bacteria and/or chemicals from urban, industrial and agricultural catchments, flows into waterways and marine environments.

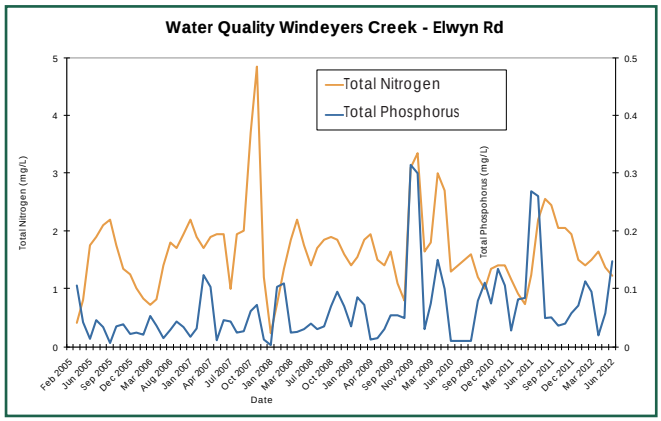
In Port Stephens sources such as leaking septic systems, livestock and farms where fertilisers have been heavily applied just prior to rain events, have been linked to instances of poor water quality in some catchments.

Council has a number of programs which aim to improve run-off water quality including: inspecting septic systems to ensure they are well maintained and not leaking; auditing local industries (licensed by Council) for environmental compliance; educating rural landholders on sustainable land management practices; assisting landholders along the Williams River and Tilligerry Creek with fencing and revegetation projects; and delivering sustainable living workshops to Port Stephens residents.

High nutrient levels can also contribute to excessive aquatic plant growth and weed infestations. Weeds are a particular threat to freshwater aquatic ecosystems in Port Stephens. Their prolific growth can shade out native aquatic plants, remove oxygen from the water causing fish kills, and reduce the hydraulic capacity of waterways.

Port Stephens Council runs a Weed Management Program which targets several aquatic weed species including Alligator Weed *(Alternanthera philoxerioides)*, Ludwigia *(Ludwigia longifolia*), Salvinia *(Salvinia molesta)* and Water Hyacinth *(Eichhornia crassipes)*.

Urban environments can also generate an enormous amount of litter which flows directly into freshwater and marine



environments. Litter can become caught in aquatic plants and build-up in waterway causing blockages to creeks and drains.

Aquatic animals can be greatly impacted by litter as they often accidently swallow small pieces of plastic eventually clogging their digestive system, or they can become caught-up in string, nests and fishing lines that restrict their movement and in some cases cause strangulation.

To reduce the amount of litter released into the Port Stephens environment Council provides bins in public reserves, litter traps on several stormwater drains, and runs community education programs.

"The wetlands within Seaham Park are valued for their biodiversity and educational values."

Pre, Seaham

Acid sulfate soils can also impact on freshwater ecosystems. While these soils remain waterlogged under the ground they are benign, however, when they become exposed to the air, either through excavation or lowering of the water table, the sulfides in the soil react with the oxygen to form sulfuric acid. These acidic conditions can in turn mobilise iron, aluminium, arsenic and other heavy metals into groundwater or water bodies. This can result in a variety of adverse impacts including the death of fish and other aquatic organisms and plants, and the contamination of drinking and stock watering sources. The acid can also cause the deterioration concrete and metal infrastructure.

Port Stephens Council responds to the risk of acid sulfate soils by the implementation of the Port Stephens Acid Sulfate Soil Local Environmental Plan and Policy; Tilligerry Creek Aquatic Habitat Initiative which involves work with landholders in the Tilligerry Creek and Anna Bay sub catchments as well as educational workshops on best practice farming techniques best applied in acid sulfate soil areas.

In summary, Council protects Port Stephens' diverse freshwater ecosystems through a number of on-ground, educational and regulatory programs.

CASE STUDY

Wanda Wetlands

Wanda Wetlands is a small remnant wetland of about 13 hectares in size, tucked away between an industrial area and surburbia. It is the only remaining ecosystem of its type on the Tomaree Peninsula.

Wanda provides a habitat, and a critical linking corridor for many species such including several threatened species such as the koala, squirrel glider, little bent-wing bat, greater broad-nosed bat and the wallum froglet.

Over 130 bird species have been observed in Wanda. The open wetland area provides a rokery where a diverse population of water birds roost and breed.

The vegetation is dense and diverse, ranging from ground cover and under-storey to giant trees. There are over 180 plant species known to occur within the 13 hectares.

Wanda Wetlands has a strong Aboriginal history and connection for the local Maaingal people, a clan of the Worimi Nation.

Since 1999 the Mambo Wanda Wetlands Group has been promoting the restoration, protection and conservation of the natural environments of Mambo and Wanda Wetlands.

Recently the group, in partnership with council secured significant funding under the governments Caring For Country-Coast Grants to employ a team of bush regenerators to assist the group in there war on weeds.

Due to the cultural significance of the site to the Maaiangal people the 'all girl ' crew were inducted by traditional owners as to locality of significant sites, habitat of there totem bird the white throated tree creeper and plants utilised in rituals and ceremonies.

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OUR COAST and port

We all love the Port Stephens coast and estuary.

The Port Stephens LGA coast stretches from Fern Bay in the south to Yaccaba Headland in the north, including Shoal Bay Beach. A significant proportion of this zone includes Stockton Bight, as well as rocky headlands and ocean beaches that are located on the Tomaree Peninsula. The coastal zone opens into two major estuarine systems that include the Port Stephens and Hunter estuaries. The Port Stephens Estuary covers an area of approximately 140 square kilometres and the Hunter Estuary around 26 square kilometres. In addition to their environmental values, both estuaries are extremely valuable to the economy and lifestyle of Port Stephens.

The Port Stephens estuary supports a wide variety of estuarine habitats including the largest area of mangrove in NSW, approximately 18% of the remaining saltmarsh in NSW and extensive areas of seagrass. The estuary and adjacent wetlands provide important habitat for migratory waders and commercially important species of fish. It supports several endangered species including birds, reptiles and mammals. The estuary's ecological values were recognised through its designation as a NSW Marine Park in 2005.

Whilst generally considered in good health, the estuary of Port Stephens also faces a range of environmental pressures. These include changed hydrological regimes, clearing of native vegetation, polluted stormwater and agricultural runoff, and declining water quality. The cumulative impact of these has the potential to degrade the quality and level of estuarine biodiversity in Port Stephens including the loss of seagrass beds.

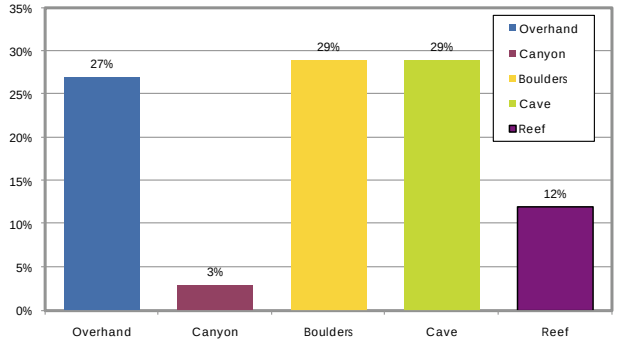
With the aim of managing and reducing these pressures Port Stephens Council and Great Lakes Council joined together to develop the Port Stephens / Myall Lakes Estuary Management Plan in 2000.

Did you know?

The Port Stephens Estuary is home to a pair of Beach Stone Curlews, which are so critically endangered there are only 16 individuals believed to be in NSW. These rare shorebirds were recently spotted in Port Stephens on sunset beach, and are suspected to have recently had a new chick. Port Stephens is thought to be the most southern breeding limit for this critically endangered species.

The Estuary Management Plan provides a strategic policy framework for ecological sustainable development and environmental protection. A priority identified by the community was the management of the environmental pressures facing our foreshore areas. A specific, targeted Foreshore Management Plan was developed in 2002 that recommended actions to the physical environment, ecological habitat and biodiversity, waterway access and facilities, foreshore stability and erosion,

Habitat Usage By the Black Cod within Port Stephens-Great Lakes Marine Park



illegal structures, reserve management, Aboriginal and European heritage, and visual amenity.

In early 2012 the Tanilba Foreshore Erosion Management Plan was completed, and has recently been granted funding under the NSW Coastal Management Program for the implementation of Stage 1 works.

State Government funding is also currently being sought to develop an erosion management plan for Conroy Park at Corlette. As foreshore areas are dynamic, constantly changing environments, their management is ongoing and requires regular review and prioritisation.

The other major estuary in the LGA is the Hunter Estuary which traverses several local government areas and includes the tidal section of the Hunter River and its tributaries such as the Williams and Paterson Rivers. Its inland tidal limit is at Oakhampton, about 64km from the ocean.

A large part of the Hunter River Estuary have been highly modified through land clearing, flood mitigation, dredging, reclamation, filling and draining of floodplains and wetlands, mining and agricultural practices.

Modern pressures include potential industrial development, river bank loss and erosion, loss of aquatic habitat, long term sedimentation and erosion processes, poor water quality, introduced plant and animal species, changed hydrological regimes, obstacles to fish passage, and changes in weather patterns and sea levels associated with climate change.

Despite this, the Hunter River Estuary continues to support a diverse ecosystem, is used as a source of water for agriculture, and is a popular recreational waterway for fisherman and watercraft. The Hunter River Estuary provides habitat for 45 species listed under international migratory conservation agreements with China, Japan and South Korea which is part of the reason the Hunter Estuary Wetlands is an internationally-recognised Ramsar site.

Council is undertaking a number of programs to improve bank stability along degraded parts of the Hunter Estuary and the

Williams River. The initiatives include the recently completed Williams and Hunter Rivers Bank Erosion Monitoring Study 2009-2011 (2012); and assisting Williams River landholders with bank stabilistation projects involving rock fillets, stock exclusion fencing, and bank revegetation. These projects aim to improve water quality by reducing bank erosion and by filtering out nutrients from agricultural run-off.

"With an increasing number of the people living on the coast was should all do our bit to protect a very dynamic environment. The coast should be treated with respect"

Peter, Anna Bay

To manage the Hunter Estuary sustainably, the Newcastle City Council, Port Stephens Council, Maitland City Council and NSW Department of Environment and Climate Change, prepared the Hunter Estuary Management Plan in 2009. The Plan outlines a series of management strategies aimed at maintaining the environmental values of the estuary and improving the condition of the estuary into the future.

There are many environmental pressures on our coast and estuaries, and by working together we will manage these areas sustainably.

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CASE STUDY

Erosion at Tanilba Bay

The foreshore erosion at Tanilba Bay has been an ongoing issue, increasing in urgency as the foreshore park disappears and threatens infrastructure.

A review of photogrammetric data suggests a foreshore recession rate of almost half a metre each year between 1993 and 2008. In some areas the foreshore is now within 8 metres from the road.

In 2011, Council obtained funding from the Waste and Sustainability Improvement Program, Estuary Management Program and councils environmental budget to engage specialist consultants to develop the Tanilba Bay Foreshore Erosion Management Plan.

This plan investigated the coastal processes occurring across Tanilba Bay; identifying that the erosion is largely the result of the wind wave climate and human factors (landfill, dredging, and existing ad hoc defences such as tyres, concrete, steel, and bricks). Four different management options were developed and assessed for their economic, environmental and social impacts.

The recommended management option concentrates resources on the priority area between President Poincare Parade and President Wilson Walk. This is the best option, allowing for a realistic projection of funding, preserving environmental values and enhancing the recreational function of the area.

Implementation will be staged as funding becomes available. Stage 1 incorporates a vegetated berm to expand valuable saltmarsh habitat, hard structural controls to protect infrastructure and numerous access ways.

When implemented it will represent a first for Ports Stephens and an example of best practice foreshore erosion control.

THREATS TO OUR treasured environment

The biodiversity of Port Stephens is under threat from three main sources: land clearing, invasive species and fire.

Land clearing is the largest threat to biodiversity throughout Australia. Clearing has led to habitat reduction and fragmentation resulting in declines in native flora and fauna.

Did you know?

Aquatic weeds grow at an alarming rate. There are two aquatic weeds that exist in Port Stephens that have an amazing growth rate. Alligator weed *(Alternanthera philoxeroides)* can double its biomass in 41 days during the growing season, while Salvinia *(Salvinia molesta)* can double its dry weight every two and a half days.

According to the Australian Native Vegetation Assessment (2001), approximately 982,000 square kilometres, or 13% of Australia's native vegetation, has been cleared or substantially modified since European settlement.

The National State of Environment Report (2011) states clearing of native vegetation continues across the country at a rate of nearly 1 million hectares annually. Land clearing in Port Stephens is regulated through the Local Environmental Plan, the local Tree Preservation Order, and State and Federal legislation. Land clearing, whether it is the removal of individual trees through to broad scale clearing, requires prior approval from Council and, in some instances, approval from State and Federal Government.

Invasive species are also one of the greatest threats to biodiversity in Australia. Council has several programs to tackle invasive species in Port Stephens. The primary program involves spraying and removal of weeds declared noxious under the NSW Noxious Weeds Act (1993).

All landholders have an obligation under the NSW Noxious Weeds Act 1993 to control noxious weeds on their own land.

Council complies with their obligations through an investigation and spraying program for Council controlled land.

When a weed is declared noxious under the Act it has the potential to cause harm to the community, agriculture, human health and/or the environment, and the costs of its impact outweighs the cost of its control. These weeds generally have the potential to become more widespread, so early detection and eradication is essential to reducing spread and infestation.

In addition to its obligations under the Act, Council runs programs to educate landholders on their obligations and control methods. Council does this through inspections of private properties and delivery of educational materials.

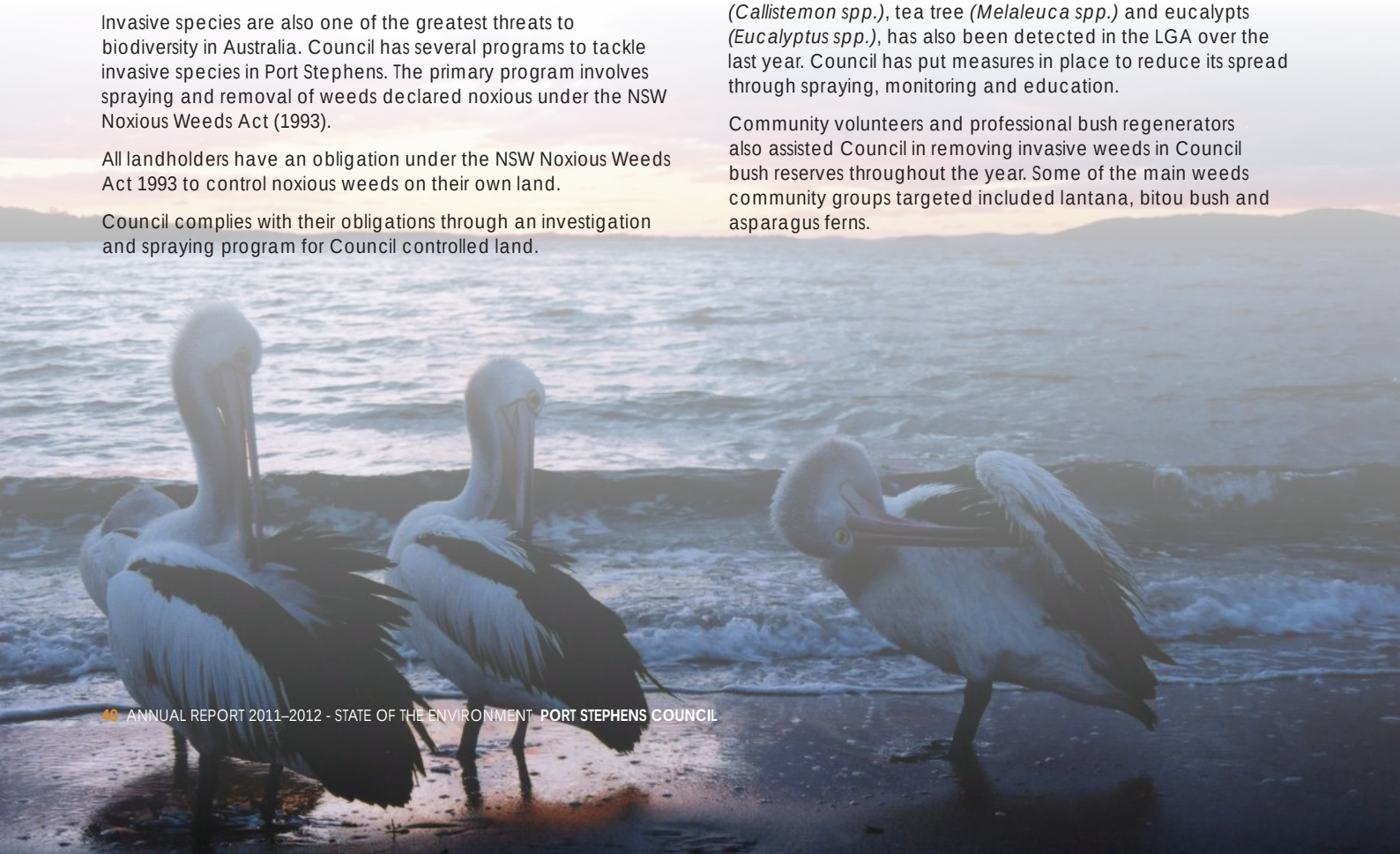
"Weed control for land and water species is important so that future generations can enjoy the natural bushland as we know it. Without the food supply of our native species we will not have any of our unique wildlife. Invasive species of flora are devastating our wonderful bushland. It should be everyone's aim to keep these weeds at bay."

Hope, Karuah

This year Council's weed control program involved spending over 7,000 hours spraying and controlling weeds, undertaking 431 inspections of Council Land and 196 inspection of private property. Class 1 weed – Chinese Violet was eradicated from 40 of the 407 sites, and Kidney-leaf Mudplantain has been eradicated from the LGA.

Myrtle rust *(Puccinia psidii s.l.)*, a newly described fungus and a serious pathogens which affect plants belonging to the family Myrtaceae including Australian natives like bottle brush *(Callistemon spp.)*, tea tree *(Melaleuca spp.)* and eucalypts *(Eucalyptus spp.)*, has also been detected in the LGA over the last year. Council has put measures in place to reduce its spread through spraying, monitoring and education.

Community volunteers and professional bush regenerators also assisted Council in removing invasive weeds in Council bush reserves throughout the year. Some of the main weeds community groups targeted included lantana, bitou bush and asparagus ferns.



CASE STUDY

First in Port Stephens...

Port Stephens Council's weed team continues to target priority weeds contained in the regional weeds strategy across the LGA focusing on reduction, containment, and asset protection including Pampas grass *(Cortaderia species)*, Bitou bush *(Chrysanthemoides monilifera* subspecies *rotundata*), Lantana *(Lantana camara)*, East Indian hygrophila *(Hygrophila polysperma)*, Long-leaf willow primrose *(Ludwigia longifolia)* and Mother-of-millions *(Bryophyllum species)*.

A particularly nasty non-native plant that threatens biodiversity and is listed on the Alert List for Environmental Weeds is Chinese Violet *(Asystasia gangetica* subspecies *micrantha)*.

Chinese Violet is a Class 1 noxious weed throughout NSW under the NSW Noxious Weeds Act 1993 and was first recorded in Australia at Boat Harbour in 1999.

Port Stephens is currently the only place in Australia where this weed has flourished.

Chinese Violet is a creeper which forms a mat and can smother native plants; prevention and early intervention are the most cost-effective forms of control for Chinese Violet. Chinese Violet can spread very easily from both seeds and stems so needs to be controlled by professionals.

Over the last six years, the Port Stephens Council's weed team has been leading the charge in a regional Chinese Violet Eradication project. To date, more than 40 infestations areas have been eradicated.

Due to its potential devastation to agriculture and biodiversity throughout tropical and sub tropical Australia, Chinese Violet is in the top 10 priorities for weed eradication nationally.

All eyes are on Port Stephens.

Feral animals also cause problems in the LGA. They can heavily impact native animal populations through predation and competition, and remove native vegetation by grazing and trampling.

Rabbits are a particular pest in Port Stephens which Council responds to through a baiting program using the Calici Virus which is harmless to other animals. During 2011/2012 Council baited 9 suburbs where rabbit activity was known to be a problem. Anecdotal evidence suggests this program was successful with fewer reports of rabbit activity.

Domestic dogs and cats can maim or kill native wildlife. In Port Stephens, dogs pose a particular threat to koalas, especially koalas moving through private property. Council runs education programs to promote responsible dog ownership.

Fire plays an important role in the Australian environment and can be an important component in the lifecycle of those plant species that they rely on fire for seed germination. However, if it is not managed effectively, terrestrial animals can become trapped and some vegetation types may not recover.

Council manages bush fire risk to fauna and flora, and private and Council property through the implementation of the Lower Hunter Bush Fire Risk Management Plan (2009). Council also consults with the local Rural Fire Service and engages their expertise to assist with bush fire protection programs. Bush fire management methods include maintaining Asset Protection Zones between houses and bushland, and cool burning outer zones of bushland, otherwise known as a Hazard Reduction Burn.

Although threats to biodiversity cannot be entirely eliminated, Council has regulations and programs in place to manage them and reduce their impact on the environment.

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Port Stephens
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