



KYOGLE SHIRE COUNCIL SUPPLEMENT

This is a summary of the Regional State of the Environment 2012 (SOE) for the Kyogle local government area (LGA). The Kyogle LGA covers 3,583 square kilometres in the northern section of the reporting region. Kyogle Shire enjoys a diverse natural landscape of subtropical rainforest, beautiful waterfalls and spectacular scenery, supporting a high diversity of flora and fauna.

People & the Environment

Climate characteristics

The 2011-2012 reporting year was characterised by a wetter than average year with the cooler summer temperatures due to the continuing influence of the La Niña cycle. Kyogle recorded higher than average rainfall during August and October 2011, and January, February and June 2012 (Figure 1). In January 2012, the Richmond River experienced moderate to major flooding, with minor flooding in June 2012.

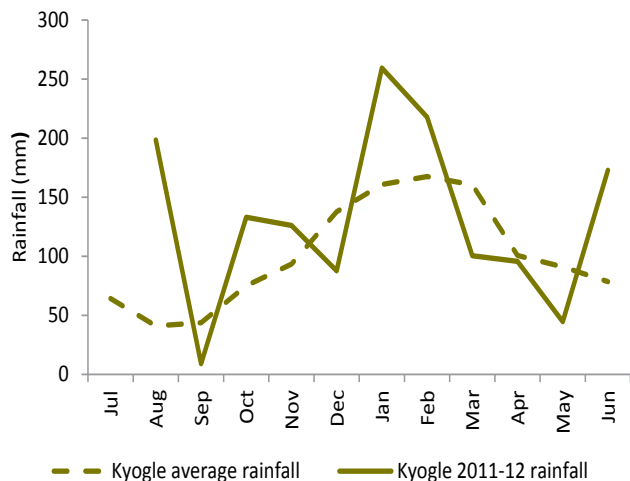
Population and densities

The 2011 census estimated the Kyogle Shire population at 9,537, down by 1.4% from the 2006 population of 9,672. This was below the NSW state average of 5.6% increase since 2006. Population density for the Kyogle Shire was 2.7 people per square kilometre.

Greenhouse gases

Atmospheric carbon dioxide in 2012 was 388.8 parts per million, with national greenhouse gas emissions at 546.8 megatonnes carbon dioxide equivalent (CO₂-e). Locally, in 2011-12 Kyogle Shire residents consumed a total of 98 gigawatt hours

Figure 1: Rainfall for 2011-12 and average rainfall for Kyogle



of electricity, or 10,266 kilowatt hours per person, emitting 9.2 tonnes CO₂-e per person for the year, above the regional average of 7.6 tonnes CO₂-e per person (source: Essential Energy). Council use of electricity and streetlighting over 2 years was not available for this report, however fuel use showed a large increase of 49% from 2010 to 2012.

Kyogle Shire contributes 1.2 gigawatt hours of renewable energy to the grid, equalling 129.4 kilowatt hours per person and abating 0.12 tonnes CO₂-e per person.

Table 1: Electricity, streetlighting and fuel consumption for 2010-2012, including per capita emissions

Item	2010-11	2011-12	2 year trend	Tonnes CO ₂ -e	Per capita emissions (tonnes CO ₂ -e)
Electricity (gigajoules)			not available for this report		
Streetlighting (gigajoules)	-	1,562.0		391	0.04
Fuel (kilolitres)	217.1	425.7	large increase (49%)	1,129	0.12

Surface water extraction

Water usage overall was steady from 2010-11 to 2011-12 with 192 kilolitres per connection in 2010-11 and 190 kilolitres per connection in 2011-12, the lowest water consumption in the reporting region, and well below the reporting region average of 248 kilolitres per connection.

Waste

Overall waste generation has increased by 9% since 2010, with waste to landfill increasing by 3% (domestic waste), and waste recycled or diverted from landfill increasing by 42% (again mainly from domestic recycling). Green waste reuse diverted 219 tonnes waste from landfill (Figure 2). In 2012, each person sent 654 kilograms of waste to landfill (just above the regional average of 624.4 kg per person), and recycled 164 kg, well below the regional average of 521 kg per person.

Biodiversity and Vegetation

Resilient landscapes

An analysis of habitat showed that overall, Kyogle Shire has 55% of native vegetation remaining intact, and a fair effective habitat area of 5,114 hectares, which is below the average for the reporting region. Current vegetation change in the LGA is less than 1% of total vegetation, with 3,156 hectares of vegetation removed or lost between 1988 and 2010, including 997 hectares removed in 2010 for forestry, and 215 hectares removed for agriculture (figure 3).

Kyogle Shire has 20.4% of its area covered by national park, with an additional 11,000 hectares (3.2%) under environmental zoning in the Council's new local environmental plan (LEP).

Over 3 hectares of land was restored and over 300 trees planted in restoration work during 2011-12, with approximately 4,300 hours of volunteer assistance.

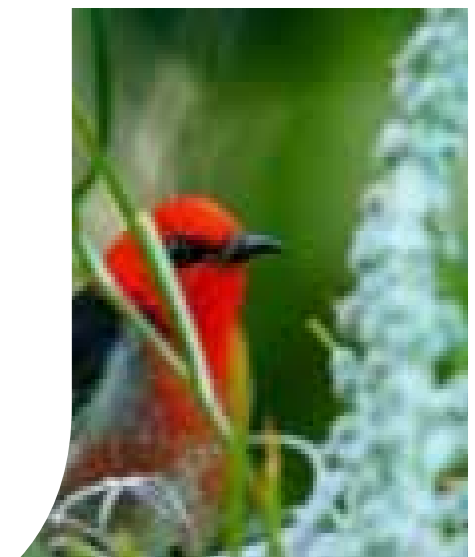
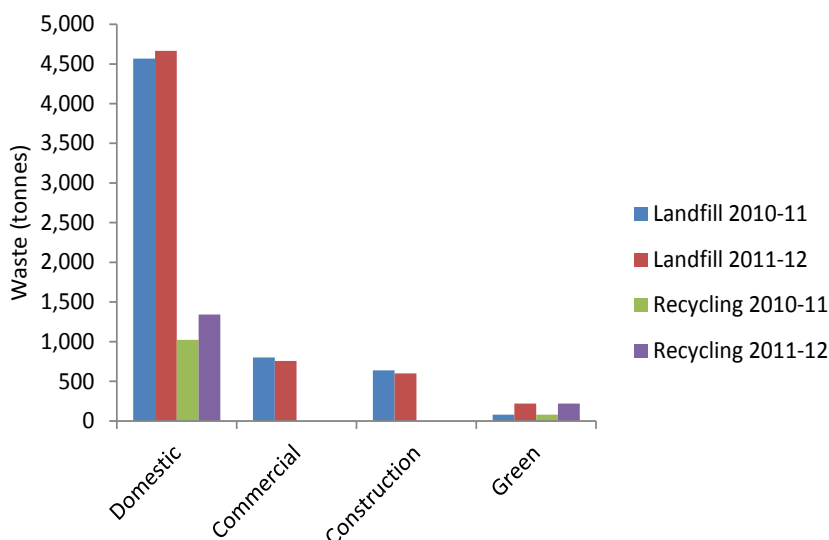
Native flora and fauna

There are currently 154 species of flora and 132 fauna species listed as vulnerable or endangered in the LGA, with 13 endangered ecological communities and 1 endangered fauna population (emu). Key threatening processes (KTP) impacting remaining flora and fauna species and communities include habitat loss, invasive species (flora and fauna), introduced disease, debris, and climate change. Thirty two of the 36 NSW KTPs are listed for the LGA, and 5 of the 7 aquatic KTPs, including degradation of riparian vegetation, and instream structures that alter natural flow regimes of rivers and streams.

Invasive species

Weed control is conducted by Far North Coast Weeds (see their report card for details). Vertebrate pests recorded in the Kyogle Shire include foxes, pigs, wild dogs, feral cats, and the more recent Indian myna. Council loans traps to residents for Indian myna control.

Figure 2: Waste for Kyogle LGA for 2010-11 and 2011-12



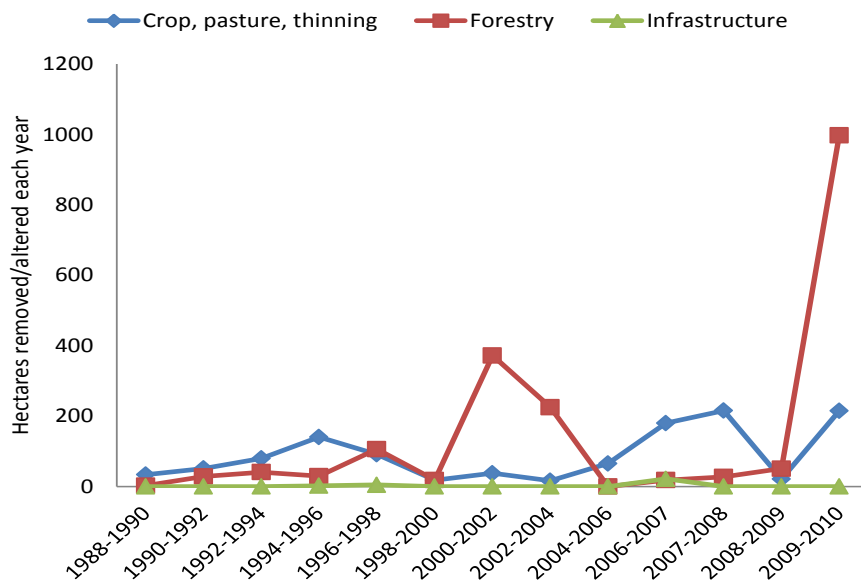


Figure 3: Woody vegetation change for Kyogle LGA from 1988 - 2010

Land use and soils

Three key soil types occur in the Kyogle LGA. Soil condition and management techniques are detailed in table 2.

No acid sulfate soils occur in Kyogle Shire, however they are a particular issue along the NSW coast as when disturbed, these naturally-occurring soils release acidic compounds into waterways impacting aquatic life and water quality.

Water

Freshwater and estuarine rivers

There is no dedicated water quality data available for freshwater river reaches within the Kyogle Shire. However, Kyogle Shire Council is participating in a comprehensive river health assessment program, including Ecohealth, so detailed water quality information will be available from 2013.

Macroinvertebrates (water bugs) are an indicator of river health as certain types of water bugs are pollution tolerant and others very sensitive, so the type of water bugs in a stream reflects its water quality. NSW monitoring for Kyogle Shire shows 7.5% of samples scored 'X', indicating excellent condition with more species found than expected, 61.2% of samples scored an 'A' for good condition, and the remaining 31.3% scored a 'B' for significant impairment, indicating some loss of water quality at those locations.

Fish condition was assessed as part of NSW-wide monitoring, and showed the majority of Kyogle Shire has 'poor' to 'very poor' condition, meaning that there were fewer species found than expected, and there were very few young, with the highland regions the poorest performing. No pest species were found during the sampling.

Table 2: Soil types and management for Kyogle LGA

Soil management unit	Condition and comments
Alstonville Plateau	Good to very good condition for all indicators except sheet erosion (soil loss from rain), which is poor. Maintaining vegetation cover reduces soil loss from rainfall.
Casino Alluvials	Fair condition generally with specific issues for sheet erosion (soil loss from rain), which rates as 'poor', and wind erosion, organic carbon and soil structure, which rate as 'fair'. Maintaining vegetation cover, retaining stubble, practising minimum tillage, maintaining deep-rooted vegetation, and preventing ground compaction from vehicles and stock will assist with preventing further decline.
Clarence Sodic Soils	Fair condition generally with specific issues for gully erosion (poor), and organic carbon, sheet erosion and acidity (fair). Maximising ground cover, retaining stubble, practising minimum tillage, and managing acidity through reducing cropping intensity, reducing nitrogen fertiliser use and increasing lime will assist with reducing further decline.

Riparian vegetation extent is another measure of river and estuary health due to its function to prevent nutrients and pollutants entering waterways. There is little information available on riparian vegetation condition in the Kyogle Shire.

Waste water treatment plant (WWTP) operation, on-site sewage management systems (OSMS) such as septic, and stormwater management are key pressures impacting river and estuarine health. Kyogle Shire Council operates three WWTPs which reused 131 megalitres (25.6%) of treated wastewater, releasing the remaining 382 megalitres (74.4%) to waterways.

OSMS performance is an issue for all LGAs in the reporting region. In Kyogle LGA, of 2,805 registered systems, 283 were inspected in 2011-12, approximately 15% of these failed, and there is an unknown number of unregistered or unapproved OSMS in the LGA. OSMS can impact water quality through being located too close to streams and creeks, allowing effluent to enter the watercourses when not functioning adequately, and may also

impact groundwater if bores are placed too close to OSMS absorption trenches. Stormwater management in the LGA is governed by a development control plan.

Wetlands

There is very little information on wetland condition within the Kyogle Shire or in the CMA Region.

Groundwater

Groundwater in the LGA is managed by the NSW Office of Water. There are four groundwater sources which overlap the Kyogle LGA, with all groundwater sources within the calculated annual extraction limit and at low risk of over allocation. There are no water sharing plans in place for three of the groundwater sources. Richmond River Alluvium groundwater source is included in a general water sharing plan for the Richmond River Area, but does not have an individual groundwater sharing plan.

There is one identified groundwater dependent ecosystem (GDE) within the LGA, located in Border Ranges National Park.

Table 3: Groundwater sources, allocations and status for the Kyogle LGA

Water source	Rainfall recharge (ML)	Annual extraction limit (ML/yr)	Total requirements ML/yr	Risk Category [^]	% allocated	Groundwater sharing plan status
Clarence Moreton Basin — Richmond River	147,418	111,486	1,743	1	1.6	Proposed
New England Fold Belt Coast — Richmond River	2,477	1,241	30	1	2.4	Proposed
North Coast Fractured Rock	72,922	43,753	533	1	1.2	Proposed
Richmond River Alluvium	182,414	109,448	4,530	1	4.1	Commenced*

* no individual groundwater sharing plan, but included in the water sharing plan for the Richmond River Area

[^] Risk categories: 1= low, 2= moderate, 3= high

This supplement is part of the
Regional State of the Environment
2012

For full details, data sources and
references please see

[http://www.northern.cma.nsw.gov.au/
projects/regional-soe.html](http://www.northern.cma.nsw.gov.au/projects/regional-soe.html)



Catchment Management
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