



Riverina & Murray Regional Organisation of Councils

Local Government Areas of Albury, Balranald, Berrigan, Carrathool, Conargo, Corowa, Deniliquin, Greater Hume, Hay, Jerilderie, Leeton, Murray, Murrumbidgee, Narrandera, Wakool & Wentworth



2010/11 Supplementary State of the Environment Report

OCTOBER 2011



Riverina & Murray Regional Organisation of Councils

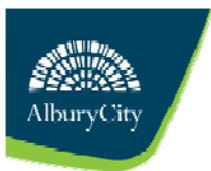


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Albury City



Balranald Shire



Berrigan Shire



Carrathool shire



Conargo Shire



Corowa Shire



Deniliquin



Greater Hume Shire



Hay Shire



Jerilderie Shire



Leeton Shire



Murray Shire



Murrumbidgee Shire



Narrandera Shire



Wakool Shire



Wentworth Shire

Terms & Abbreviations

TERMS

"the report"	the RAMROC State of the Environment Supplementary Report 2010/11
"the area" or "region"	the area addressed by the SoE Report

ACRONYMS & ABBREVIATIONS

ABS	Australian Bureau of Statistics
ANRA	Australian Natural Resource Atlas
BOM	Australian Bureau of Meteorology
CMA	Catchment Management Authority
DECC	former Department of Environment & Climate Change (now DECCW)
DECCW	former Department of Environment, Climate Change & Water
DLG	NSW Department of Local Government
DPI	Department of Planning and Infrastructure
DWE	former Department of Water & Energy (now NSW State Water)
EPA	Environmental Protection Authority
EPBC Act	Commonwealth <i>Environment Protection & Biodiversity Conservation Act 1999</i>
ERP	Estimated Resident Population
LEP	Local Environmental Plan
LGA	Local Government Area
LHPA	Livestock Health and Pest Authority (formerly RLBP)
MIL	Murray Irrigation Limited
NOW	NSW Office of Water, DECCW
NSW	New South Wales
OEH	NSW Office of Environment and Heritage
RAMROC	Riverina and Murray Regional Organisation of Councils
RLPB	former Rural Lands Protection Board (now LHPA)
SLA	Statistical Local Area
SoE	State of the Environment
TSC Act	NSW <i>Threatened Species Conservation Act 1995</i>



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Introduction

1.1 What is the purpose of a State of Environment (SoE) report?¹

The purpose of SoE reporting are to provide accurate, up-to-date and accessible information about environmental and heritage conditions, trends and pressures for the Australian continent, surrounding seas and Australia's external territories. SoE reporting is used to:

- report on major causal factors that are influencing Australia's environment and heritage;
- report on the effectiveness of responses designed to address change;
- identify the issues most relevant to the sustainability of Australia's environment and heritage;
- contribute to public understanding of the state of Australia's environment and heritage;
- identify relevant gaps in information;
- further develop and improve the SoE reporting process; and
- facilitate policy development at all levels of government.

1.2 Why undertake an SoE report?

Councils must produce a principal and comprehensive SoE report every four years (follows local government elections), and at least a supplementary report every other year. There is also scope to use regional reporting to improve the quality of reporting and save on costs and resources for Councils.

1.3 Why a regional SoE report?

Sixteen councils within the Riverina and Murray Regions of NSW have opted for a regional approach to SoE reporting under the umbrella of Riverina and Murray Regional Organisation of Councils (RAMROC). SoE reporting at the regional level is encouraged by the Department of Local Government and is supported by the Local Government and Shires Association and the Environmental Protection Authority because:

- many environmental issues are regional in nature (e.g. air and water pollution, wildlife corridors, threatened species recovery), requiring regional action;
- regional cooperation can reduce the time and resources involved in preparing an SoE report; and
- environmental information is often collected and held by government authorities and other bodies on a regional rather than on a local government basis.

Many councils already co-operate for SoE reporting under Regional Organisations of Councils (ROCs) or Total Catchment Management (TCM) programs. Councils increasingly have access to data on the basis of catchments, and in some cases, airsheds.

All of the councils participating with this year's SoE report are a members of RAMROC. The council's involved in the SoE report in the last reporting period were Albury, Balranald, Berrigan, Carrathool, Conargo, Corowa, Deniliquin, Greater Hume, Hay, Jerilderie, Leeton, Murray, Narrandera, Wakool and Wentworth. This reporting period includes these Councils as well as Murrumbidgee. The councils of Griffith and Urana are the only RAMROC member councils not participating in this SOE report.

¹ Department of Local Government, 1999, *Environmental Guidelines—State of the Environment Reporting by Local Government*



1.4 This SOE report

This is a supplementary SoE Report prepared for some member councils of the Riverina and Murray Regional Organisation of Councils (RAMROC). It is the second supplementary report to be prepared since the 2008/09 principal report.

1.5 SOE report content

The content of this report has been grouped into six main categories, namely Land, Atmosphere, Biodiversity, Water, Human Settlement and Cultural Heritage. Data has been sourced from each local council, as well as publicly available data from government agencies such as the Department of Lands and the Australian Bureau of Statistics.

1.6 Limitations on reporting

The following limitations to the data and information presented in the SoE report need to be acknowledged.

- Despite an exhaustive search of databases and information sources across government, non-government and community organisations, there remains a lack of both qualitative and quantitative environmental data for inland areas of NSW. Data for the purposes of identifying trends (time series) is particularly difficult to source.
- A lot of data takes time to be made publicly available and as such even information released during 2010/11 can already be up to four years old. Consequently some of the data presented in the SoE may be 'new' but not necessarily for the 2010/11 reporting period.
- Although Council's are provided with the same questionnaire for the purposes of collecting local data, there are gaps and inconsistencies in the way the data is presented in this report as Council's unintentionally respond in different ways. Consequently caution should be exercised in making direct comparisons between Council for these data sets.

All other information contained in this section is sourced from the Department of Local Government

The Region

2.1 RAMROC

The Riverina and Murray Regional Organisation of Councils brought together the former Murray ROC and RIVROC on the 1st of July 2007. RAMROC represents the interests of 18 member councils, 16 of which have been included in this SoE. The region features a mix of regional centres, through to rural areas sparsely populated.

Overall the RAMROC region has an area of 126,595 square kilometres and encompasses parts of the Murray, Murrumbidgee, Lower Murray-Darling and Lachlan River catchments.

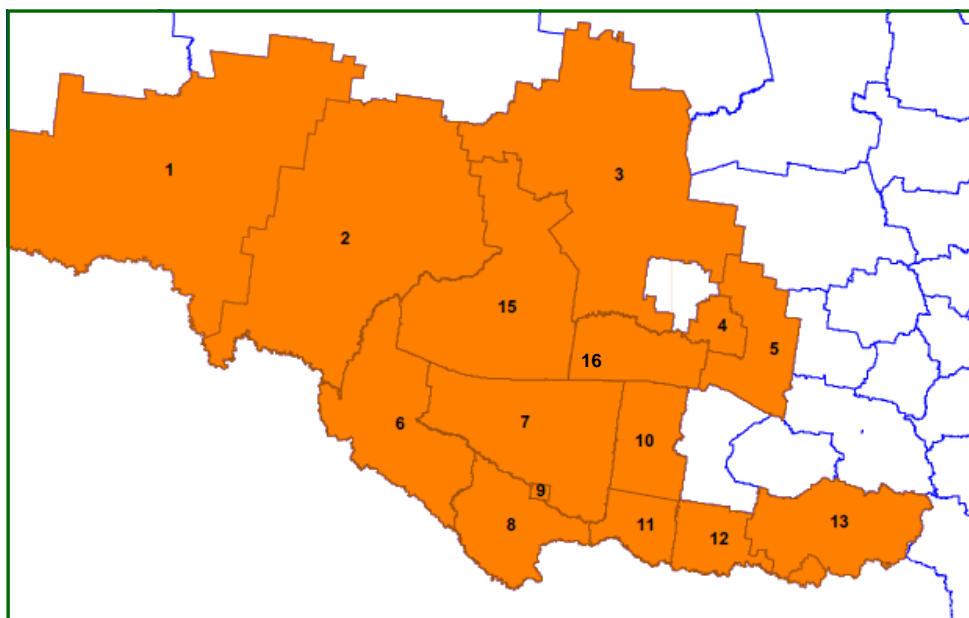
RAMROC's mission is to work collaboratively to enhance the economic, social, economic and environmental capabilities of our communities so as to ensure the long term sustainability of the region.

2.2 Area in report

The area covered by this SoE report is approximately 91,775 square kilometres (more than 9 million hectares) and comprises the following LGAs (mapped in figure 1).

1. Wentworth	5. Narrandera	9. Deniliquin	13. Greater Hume
2. Balranald	6. Wakool	10. Jerilderie	14. Albury
3. Carrathool	7. Conargo	11. Berrigan	15. Hay
4. Leeton	8. Murray	12. Corowa	16. Murrumbidgee

Figure 1 - Participating Councils





2.3 LGA size¹

Size of the participating Local Government Areas (LGAs) varies greatly between those in the south-east and those in the north and west. The smallest in the region include Deniliquin (130km²), Albury (306km²) and Leeton (1,167km²). These LGAs (in particular Albury and Deniliquin) are generally urban based while the larger Carrathool (18,939km²), Balranald (21,699km²) and Wentworth (26,268km²) are large in area but small in population.

The medium sized LGAs are also dominated by agricultural land uses though can have multiple regional centres much closer together than the largest of the LGAs. The smaller LGAs are based more to the south-east of the region than the larger LGAs.

There has been no changes to LGA sizes during the reporting period.

2.4 Population²

The size of populations are also more favourable to the south-eastern LGAs (see Table 1). Again this is a reflection of the multiple smaller townships based loosely around major regional centres. Albury (51,112) has the largest population with Leeton (11,929) and Corowa (12,957) the next highest. Jerilderie (1,674), Conargo (1,689), Murrumbidgee (2,557) and Balranald (2,476) represent the smallest populations. The population of the region is generally concentrated in urban centres along the Murray, Edward and Murrumbidgee Rivers.

Almost half of the participating LGA's have experienced a net population loss since the principal SoE report.

¹NSW Division of Local Government: Department of Premier & Cabinet, 2011, *Local Government Directory*

²ibid

LGA	2008	2009	2010	Difference 2008-2010	Difference % 2008-2010
Albury	49,998	50,471	51,112	+1,114	+ 2.2
Balranald	2,499	2,476	2,476	-23	- 0.1
Berrigan	8,531	8,582	8,644	+113	+ 1.3
Carrathool	2,929	2,961	2,954	+25	+ 0.8
Conargo	1,718	1,698	1,689	-29	- 1.6
Corowa	12,891	12,932	12,957	+66	+ 0.5
Deniliquin	7,669	7,685	7,633	-36	- 0.5
Greater Hume	10,318	10,389	10,447	+129	- 1.2
Hay	3,404	3,367	3,349	-55	- 1.6
Jerilderie	1,664	1,674	1,674	+10	+ 0.6
Leeton	11,779	11,894	11,929	+ 150	+ 1.3
Murray	7,107	7,229	7,319	+212	+ 3.0
Murrumbidgee	2,558	2,553	2,557	-1	- 0.03
Narrandera	6,208	6,256	6,280	+72	+ 1.6
Wakool	4,433	4,422	4,389	-44	- 1.0
Wentworth	7,190	7,120	7,120	-50	- 0.7

¹Information sourced from ABS



2.5 Council environmental projects¹

During the course of the year there have been many environmental projects undertaken by councils across the region. These are summarised in the following table.

¹Sourced from relevant councils, 2010

New projects

- Biodiversity certification was conferred on the Albury LEP 2010. The biodiversity certified LEP offers certainty for future generations through the preservation and enhancement of key environmental habitat (Albury).
- Program encourage the onsite pre-treatment of liquid trade waste resulting in improved water quality of the outflows from council's waste water treatment works into the RAMSAR listed wetland at Fivebough Swap (Leeton).
- Fully automated watering system for the Blighty Recreation Reserve to improve water efficiency and reduce water consumption (Conargo).
- Significant Environment Areas to complement the Native Vegetation Management Plan for Roadsides, Waterways and Council Controlled Land, a Standard Operating Procedure has been developed for all Council works within a 'Significant Environment Area' (Albury).
- Detailed design work for water reuse project from the Sewer Treatment Plant (Deniliquin).
- Established a Sustainably Advisory Committee to develop a Sustainability Strategy for Albury (Albury).
- Comprehensive Strategy Documents for new LEP (Narrandera).
- Greening/planting of Rail Trail wetlands (Corowa).
- Wagirra Trail—construction of more than 70km of Murray River Trail linking Lake Hume with Wonga Wetlands (Albury).
- Landscape Masterplan for Conargo Village (Conargo).

Continuing projects

- Completion of Ball Park Lagoon (Corowa).
- Continued program for wastewater reuse at Wonga Wetlands, plantations and farmlands (Albury).
- Koondrook Pericoota Flood Enhancement project with DECCW, Department of Commerce and Murray CMA & Central Murray Regional Waste Management Group (Wakool).
- Planet Ark; National Tree Day and School Tree Day (Albury).
- Capturing of stormwater (Murray).
- Ongoing program at Fivebough RAMSAR wetland (Leeton).
- Subsidised tree planting—ongoing support to Landcare groups (Conargo).
- AlburyCity and Parklands Albury Wodonga works on the Padman Park Management Plan to improve the vegetation in this area and also carry out vegetation management tasks at various sites according to the service agreement (Albury).
- Public Lands Biodiversity Grants from Murray CMA for the Kelly Street Reserve in Tocumwal and Ratcliffs Reserve in Berrigan to enhance biodiversity values by undertaking pest and weed control, direct seeding and vehicular traffic restriction (Berrigan).
- Albury airport upgrade: waste segregation, waterless urinals installed, and energy efficient lighting (Albury).
- Continued planning for effluent reuse scheme (Deniliquin).

¹Information sourced from relevant Councils



2.6 Council's environmental issues¹

In response to the question "what does council considers to be the most important environmental issue now and in the future?" the following results were revealed.

A number (1) indicates the frequency at which a particular environmental issue was raised by a council.

Current issues

- Water supply 5 ↑ 1
- Waste management 4 ↑ 4
- Murray Darling Basin Plan 4 ↑ 4
- Flooding 4 ↑ 4
- Climate change 2
- Sustainability 1
- Pest animals/Locusts 1 ↓ 2
- Lack of irrigation allocations 1 ↓ 2
- Government buyback of water for environmental flow 1
- Financial security of local business and family farms, and the affect on land management 1
- Noxious weeds 1
- Closure of forest and red gum industry in LGA 1 ↑ 1
- Summer storm events caused significant erosion 1 ↑ 1
- Riparian zone management 1 ↑ 1
- Plaque 1 ↑ 1
- Carbon Tax 1 ↑ 1
- Illegal dumping/ fire wood collection 1 ↑ 1
- Drought 0 ↓ 9

Future issues

- Water supply/allocations 6 ↓ 2
- Murray Darling Basin Plan 3 ↑ 3
- Severity of extraordinary and unseasonal weather events 2 ↑ 2
- Flooding 2 ↑ 2
- Weather patterns/rainfall 2 ↑ 1
- Climate change 2 ↓ 2
- Biodiversity/native vegetation management 1 ↓ 1
- Pest animals/Locusts 1 ↓ 1
- Long term sustainability of water supply 1 ↓ 1
- Management of the Murray River and its environs 1 ↑ 1
- Waste management 1 ↑ 1
- Carbon pricing mechanism 1 ↑ 1

¹Sourced from relevant councils, 2011

WATER SUPPLY

Is the top current and future issue concern
For councils

DROUGHT

As expected, ceases to be a current issue
for councils

MURRAY DARLING BASIN PLAN

This plan has become one of the most common issues for councils both now
and for the future



CASE STUDY - The Murray Darling Basin Plan (MDBP) ¹

The MDBP is planned to commence in 2012.

PURPOSE

The purpose of the MDBP is to provide an agreed basin-wide framework to manage the water resources of the Murray-Darling Basin. Working within the States, communities, and industry will be able to work towards a common goal, but in ways that suit their particular situations best, and where flexibility, innovation and local solutions can operate.

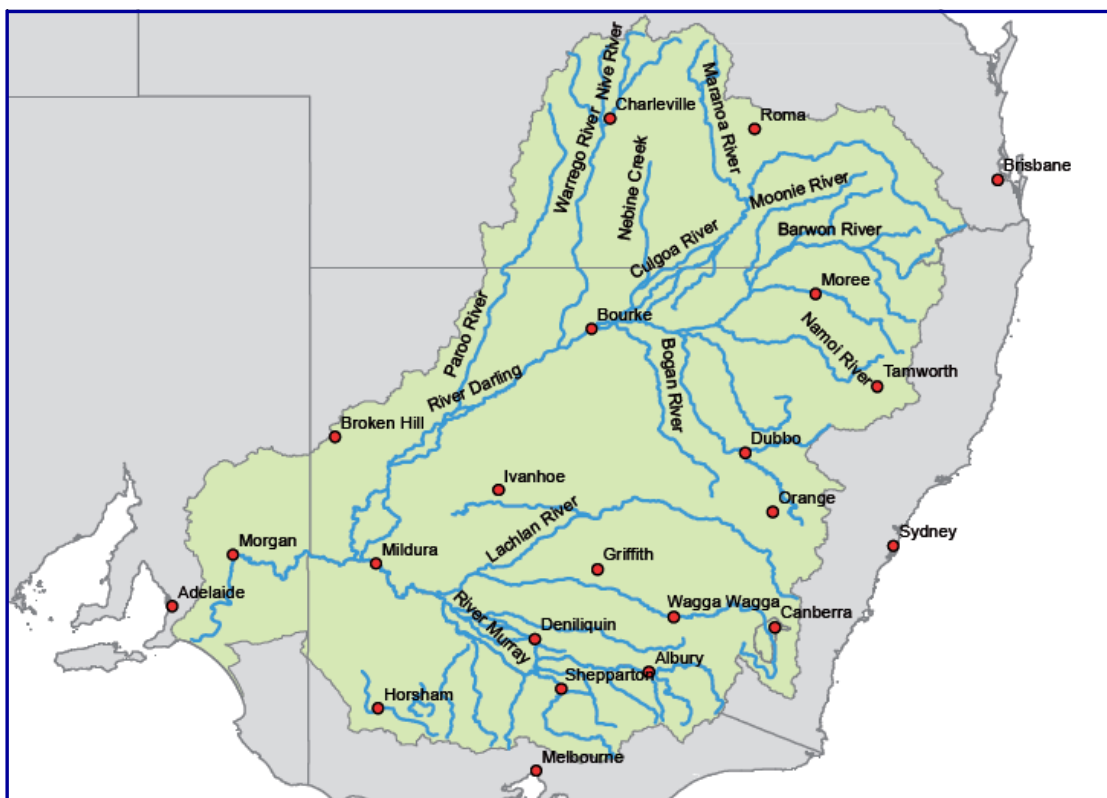
WHAT WILL BE IN THE MDBP

The *Water Act 2007* specifies some content that must be in the MDBP, including:

- limits on the amount of water (both surface water and groundwater) that can be taken from Basin water resources on sustainable basis;
- identification of risks to Basin water resources, such as climate change, and strategies to manage those risks;
- the requirements that state water resources plans must comply with for them to be accredited or adopted under the Act;
- an environmental watering plan to optimise environmental outcomes for the Basin;
- a water quality and salinity management plan; and
- rules about trading of water right in relation to Basin water resources.

¹ Murray Darling Basin Authority, 2011, Murray Darling Basin Plan

Figure 2 - Rivers within the Murray-Darling Basin¹



¹ Murray Darling Basin Authority, 2011, Murray Darling Basin Plan



Land

3.1 Salinity¹

Salinity is a dynamic process with the potential for movement and accumulation of salts over time and as a result of land use and management practices. Salt is a natural part of some landscapes, however human activities such as vegetation clearing and cropping can change the hydrology of the landscape and accelerate the process.

State

The state of soil salinity in the region is summarised in Table 2.

Pressure

Rising groundwater levels rise with them dissolved salts which are stored in the ground. Salinity can affect plant growth and impact on crop yields and cause serious impact on infrastructure, buildings and houses. Salinity also affects water quality which causes the health of rivers to decline.

Response

The NSW government works with the Australian Government, local government and the community to manage salinity. There are several strategies in place including Catchment Action Plans, NSW Salinity Strategy, Basin Salinity Management Strategy and Caring for our Country.

3.2 Acid Sulfate Soils²

Potential acid sulfate soils occur naturally occur in soil but become actual acid sulfate soil when they are dried. They usually become dry from human activities.

State

Land affected by acid sulfate soils in the region is summarised in Table 2.

Pressure

Acid sulfate soils occur naturally in both coastal (tidal) and inland or upland (freshwater) settings. Left undisturbed, these soils are harmless, but when excavated or drained, the sulfides within the soil react with the oxygen in the air, forming sulfuric acid. Impacts of acid sulfate soil can be habitat degradation, fish kills and weed invasion. Other potential impacts include animal ill health by polluted water, decreased productivity of agricultural land and infrastructure damage.

Response

The Murray Darling Freshwater Research Centre in conjunction with the Department of Environment, Climate Change and Water and local Catchment Management Authorities are working to identify affected or potential acid sulfate soils sites and to educate councils and residents on effects, prevention and possible rehabilitation.

¹ NSW Office of Environment and Heritage, 2011, Environmental Issues

² NSW Office of Environment and Heritage, 2011, Environmental Issues



Table 2 - Salinity, Acid Sulphate Soils and Land Management in LGAs¹

LGA	Land affected by salinity ¹	Salinity Management Plan ¹	Soil & Water Management Plan ¹	Land affected by ASS ^{*1}	Acid Sulfate Soils Management Plan ¹	Change from previous year?
Albury	No	No (monitors 23 sites)	Yes	No	No	None
Balranald	No	No	No	Not known	No	None
Berrigan	Yes, unknown ha	No (MIL & CMA monitor)	No	No	No	Yes
Carrathool	No	No	No	No	No	Yes
Conargo	Yes, unknown ha	No	No	None	No	None
Corowa	Yes, unknown ha	No	No	Yes, unknown ha	No	None
Deniliquin	Yes .2km ²	No	No	None	No	No
Greater Hume	Yes, unknown ha	No	No	Unknown	No	None
Hay	None	No	No	None	No	None
Jerilderie	Yes, 5ha	No	No	None	No	Yes
Leeton	Yes, unknown ha	Yes	No	None	No	None
Murray	Yes, unknown ha	No	Yes	No	No	Yes
Murrumbidgee	Yes	No	No	Unknown	No	N/A
Narrandera	Yes, 10ha	Yes	Yes	None	No	None
Wakool	Yes, unknown ha	No	No	None	No	None
Wentworth	Yes, unknown ha	No	No	Yes	No	Yes

¹Information sourced from relevant Councils



3.3 Land contamination¹

Land is contaminated generally when the level of a hazardous substance is greater than that which would naturally occur at the same site such as heavy industries or chemically intensive agriculture. Hazardous substances potentially pose an immediate or long-term risk to the health of humans or the environment.

State

Details of Councils records of land contamination during the 2010/11 period can be found in Table 3.

Pressure

Although contaminated sites may occur anywhere, they are typically clustered in areas which have been used for heavy industry or chemically intensive agriculture. They may also include residential properties, for example, from flaking of lead-based paints or excessive pesticide use.

Response

Local councils deal with contamination under the planning and development framework, including *State Environmental Planning Policy No. 55 – Remediation of Land* and the *Managing Land Contamination – Planning Guidelines*. The NSW Office of Environment and Heritage deals with significant contamination.

¹ NSW Office of Environment and Heritage, 2011, Environmental Issues

Table 3 - Contaminated Lands ¹					
LGA	Contaminated Land Register ¹	Number of Articles ¹	Change from last year?	EPA Notice Current	EPA Notice Former
Albury	Yes	74	↑ 6	4	2
Balranald	Yes	0	↓ 3	0	0
Berrigan	No	NA	None	0	0
Carrathool	Yes	2	↑ 2	0	0
Conargo	No	NA	None	0	0
Corowa	Yes	0	None	0	0
Deniliquin	Yes	Under review	N/A	0	0
Greater Hume	Yes	67	None	0	0
Hay	Yes	55	↓ 5	0	0
Jerilderie	Yes—draft	1	None	0	0
Leeton	Yes	6	None	0	0
Murray	No	N/A	None	0	0
Murrumbidgee	No	N/A	N/A	0	0
Narrandera	Yes	7	None	0	0
Wakool	Yes	N/A	N/A	0	0
Wentworth	Yes	4	None	0	0

¹Information supplied by relevant council



3.4 Drought¹

Drought classification of an area takes into account :

- a review of historic rainfall records for the area;
- pasture availability;
- climatic events such as frosts; and
- seasonal factors such as pasture growing seasons.

A updated drought map is released each month and the drought assistance eligibility status of the Livestock Health and Pest Authority districts in NSW is also updated monthly.

State

Status of areas affected by drought during the reporting year can be seen in Table 4. This reporting year saw all the LGA's move from either the drought or marginal category to satisfactory. This a significant improvement from the pervious year. Figure 3 shows the history of the drought overall of NSW since 2000. It shows the RAMROC area going into a drought in 2002 and out eight years later in 2010.

Pressure

While droughts are considered part of the natural processes in Australia, it has been considered that greenhouse gases and global warming have contributed to worsening drought conditions.

Response

Local councils enforce water restrictions and provide information and support to those effected by drought.

¹NSW Industry and Investment, 2011, *Drought Maps*

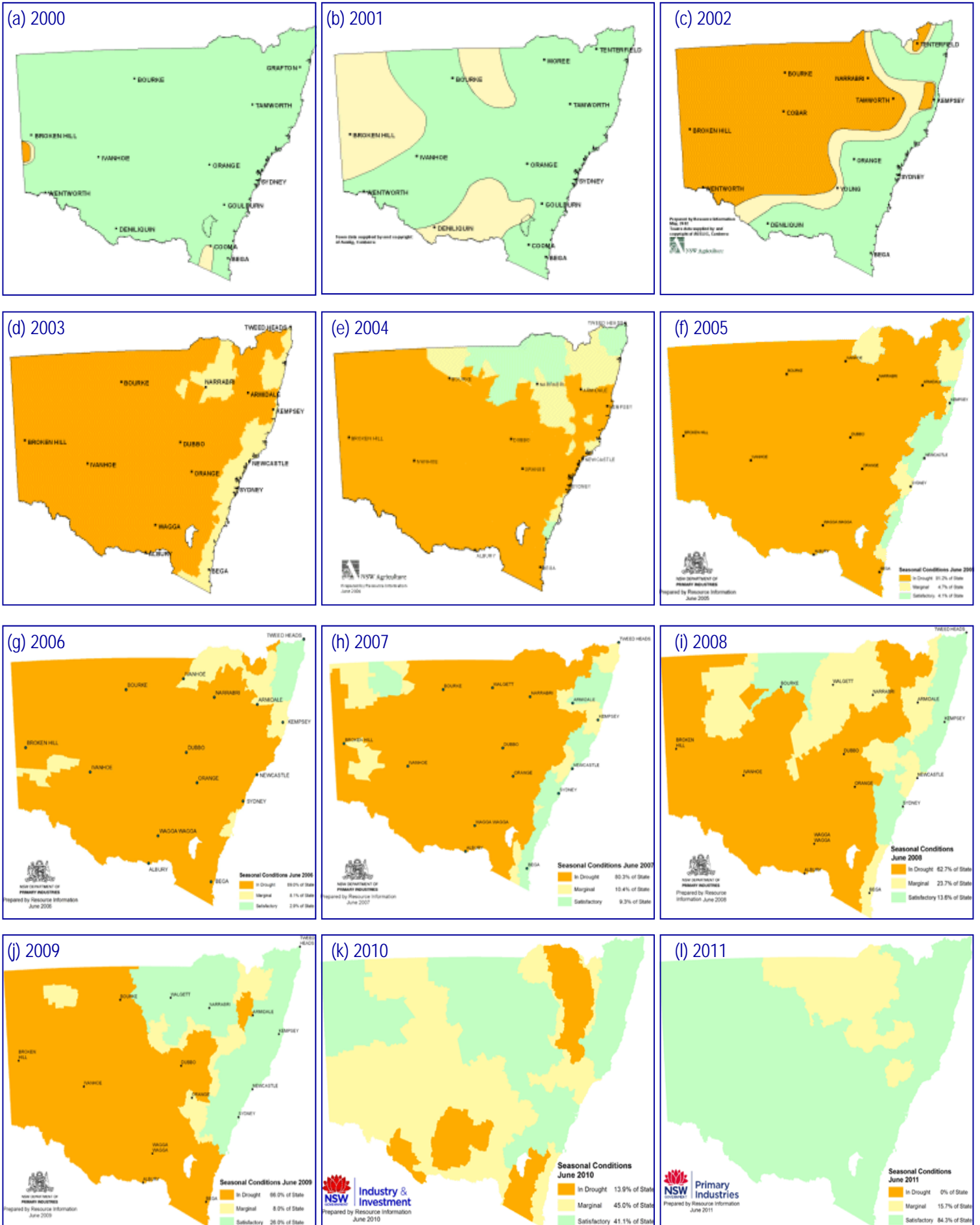
Table 4 - Areas in drought throughout 2010/11¹

	Jul 10	Aug 10	Sep 10	Oct 10	Nov 10	Dec 10	Jan 11	Feb 11	Mar 11	Apr 11	May 11	Jun 11
Albury	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Balranald	Yellow	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Berrigan	Yellow	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Carrathool	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Conargo	Red	Yellow	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green
Corowa	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Deniliquin	Red	Yellow	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green
Greater Hume	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Hay	Red	Yellow	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green
Jerilderie	Yellow	Green	Yellow	Red	Yellow	Green	Green	Green	Green	Green	Green	Green
Leeton	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Murray	Red	Yellow	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green
Murrumbidgee	Red	Yellow	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green
Narrandera	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Wakool	Red	Yellow	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green
Wentworth	Yellow	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green

■ In drought
 ■ Marginal
 ■ Satisfactory

¹NSW Industry and Investment, 2011, *Drought Maps*

Figure 3(a) - (l) - Seasonal Conditions at June 30th 1



¹NSW Industry and Investment, 2011, *Drought Maps*

Atmosphere

4.1 Rainfall¹

The RAMROC region covers an extensive area (almost 700 kilometres east to west and almost 400 kilometres north to south).

Climate varies across the region as can be seen by the climate graphs at Figures 4. The charts display information for the reporting year (June 2010—July 2011) and the previous reporting period (June 09—July 10). The data provides an overview of the weather in the region, only displaying the results for single stations across large LGAs of varying topography. Results may vary across LGAs and between stations, even those located in the same townships. All rainfall is measured in millimetres.

Rainfall

The reporting period from June 2010 to July 2011 received high rainfall results reflecting the La Niña pattern. Areas such as Narrandera experienced a three-fold increase in annual rainfall over the previous reporting period.

November 2010 to March 2011 saw a dramatic increase in rainfall across the region, with Albury receiving 267mm in February and Corowa and Culcain experiencing similar totals resulting in flooding in Greater Hume Shire.

Wakool did not experience the same increase in rainfall as other areas in the region, receiving only 71mm more than the previous reporting period. This appears to be at odds with the other areas receiving an average of 337mm more rainfall than the previous year.

There was no available rainfall data for the Carrathool area.

April to June saw a drop in rainfall across the region compared to the large falls from November to March. Although November to March received extremely higher rainfalls than the previous years, in some parts of the region including, Berrigan and Conargo September and October also experience higher rainfalls than the previous years.

In Australian La Niña developed during the autumn of 2010. During an La Niña event sea surface temperatures in the western Pacific, north of Australia are often warmer than normal and sea surface temperatures across the central and eastern tropics Pacific ocean are cooler than normal. La Niña is associated with wetter than normal conditions across Australia.

By July typical La Niña conditions were established and most of Australia including the RAMROC region experienced significantly higher than average rainfall over the next eight months. The high rainfall peaked between late 2010 and early 2011, this included significant flooding throughout Australia. The La Niña event in 2010/2011 was one of the strongest recorded.

By mid 2011 the Bureau of Meteorology (BOM) announced that the La Niña event that dominated the Australian climate in late 2010 and early 2011 starting to slow down and show signs of weakening. Following the weakening of La Niña BOM predicted that the rainfall and temperature conditions are likely to return to the long-term averages of the region.

¹Australian Government: Bureau of Meteorology, 2011, *Climate*,

1065.2mm

was the highest annual rainfall recorded in the in region in 2010-11 (Culcain)
Compared to 607mm highest annual rainfall recorded in the region in 2009-10 (Albury)

538.8mm

was the largest increase in rainfall when compared with the previous reporting period
was experienced in Narrandera

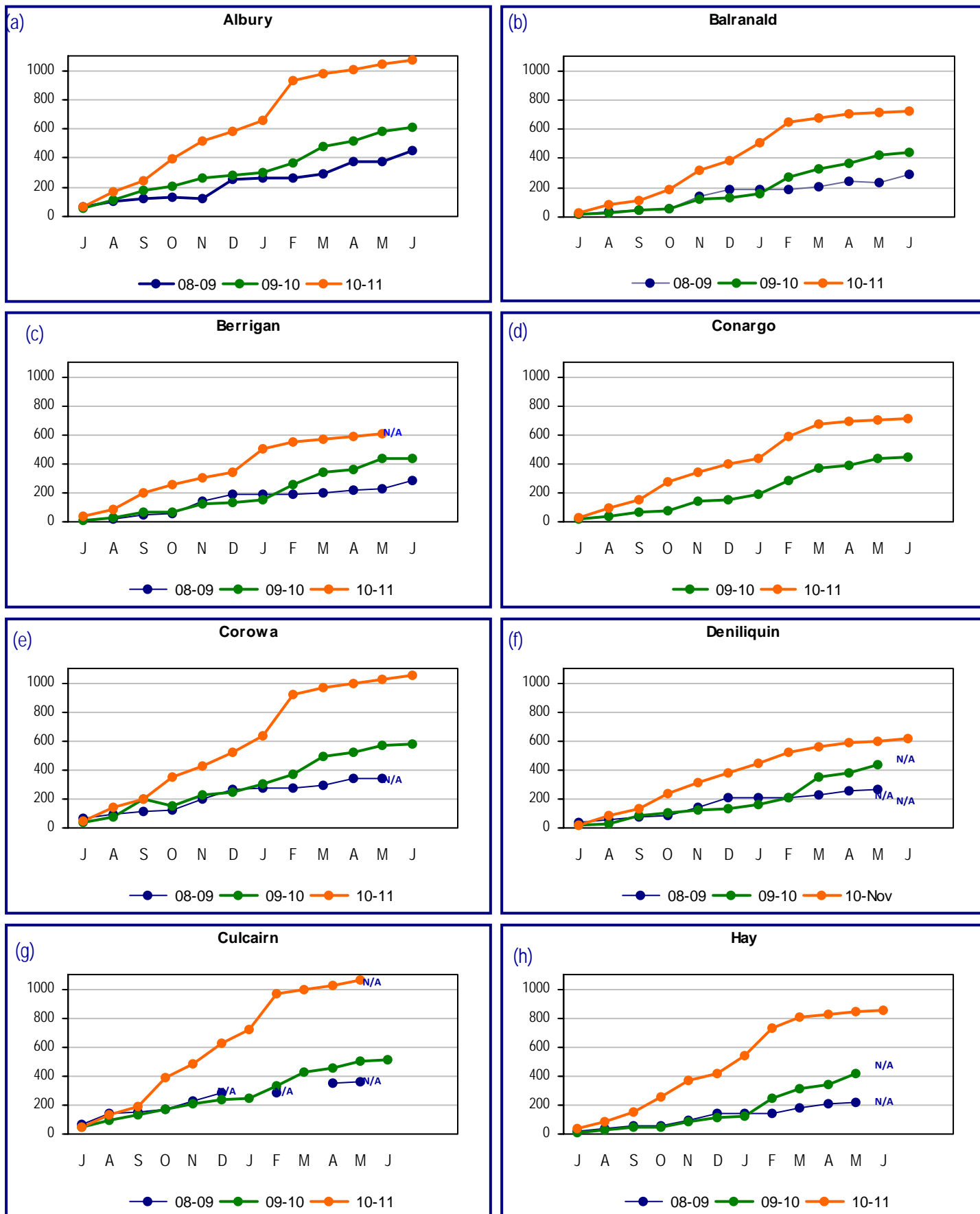
Balranald recorded the highest daily rainfall on record (132 years) for January (14th) and February (5th) in 2011 with 71.8 and 81.3mm respectively.

113mm

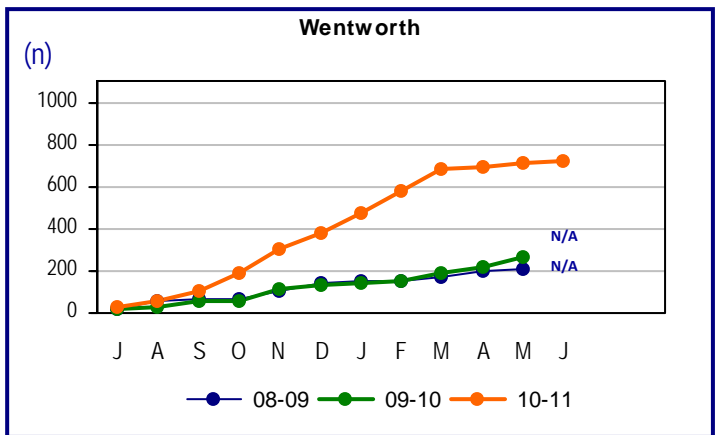
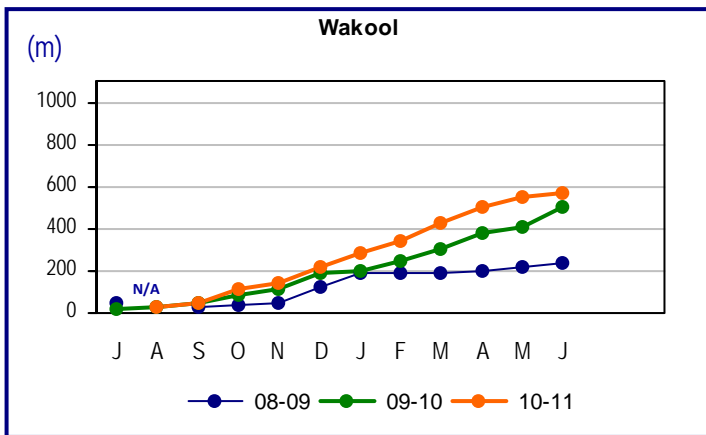
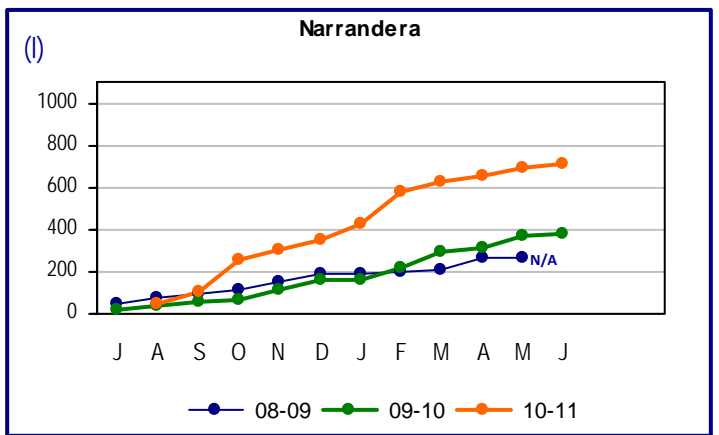
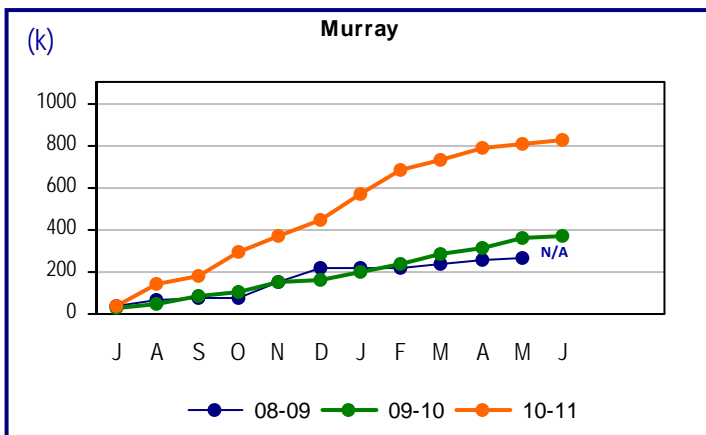
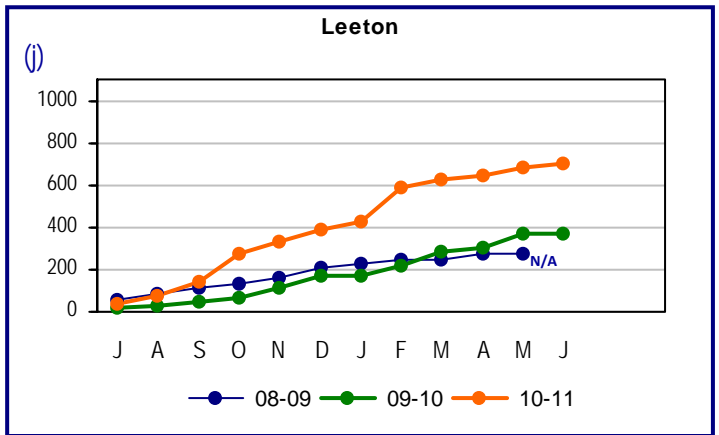
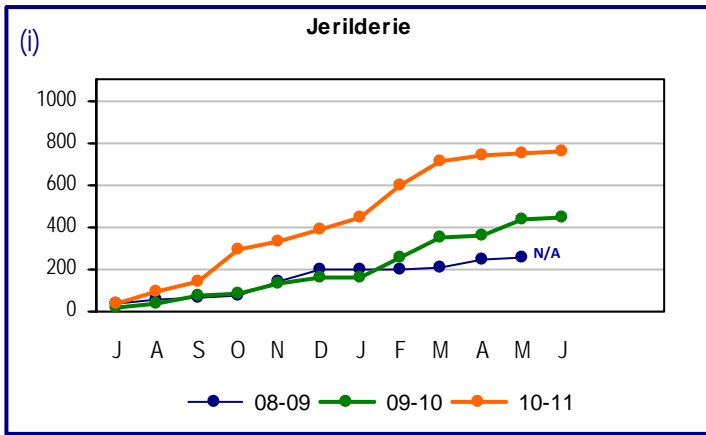
was the amount of rainfall in Corowa on the 5 February 2011



Figure 4 (a to o) - Cumulative monthly rainfall¹



¹Australian Government: Bureau of Meteorology, 2011, *Climate Data Online*, multiple regions, period July 2010 to June 2011



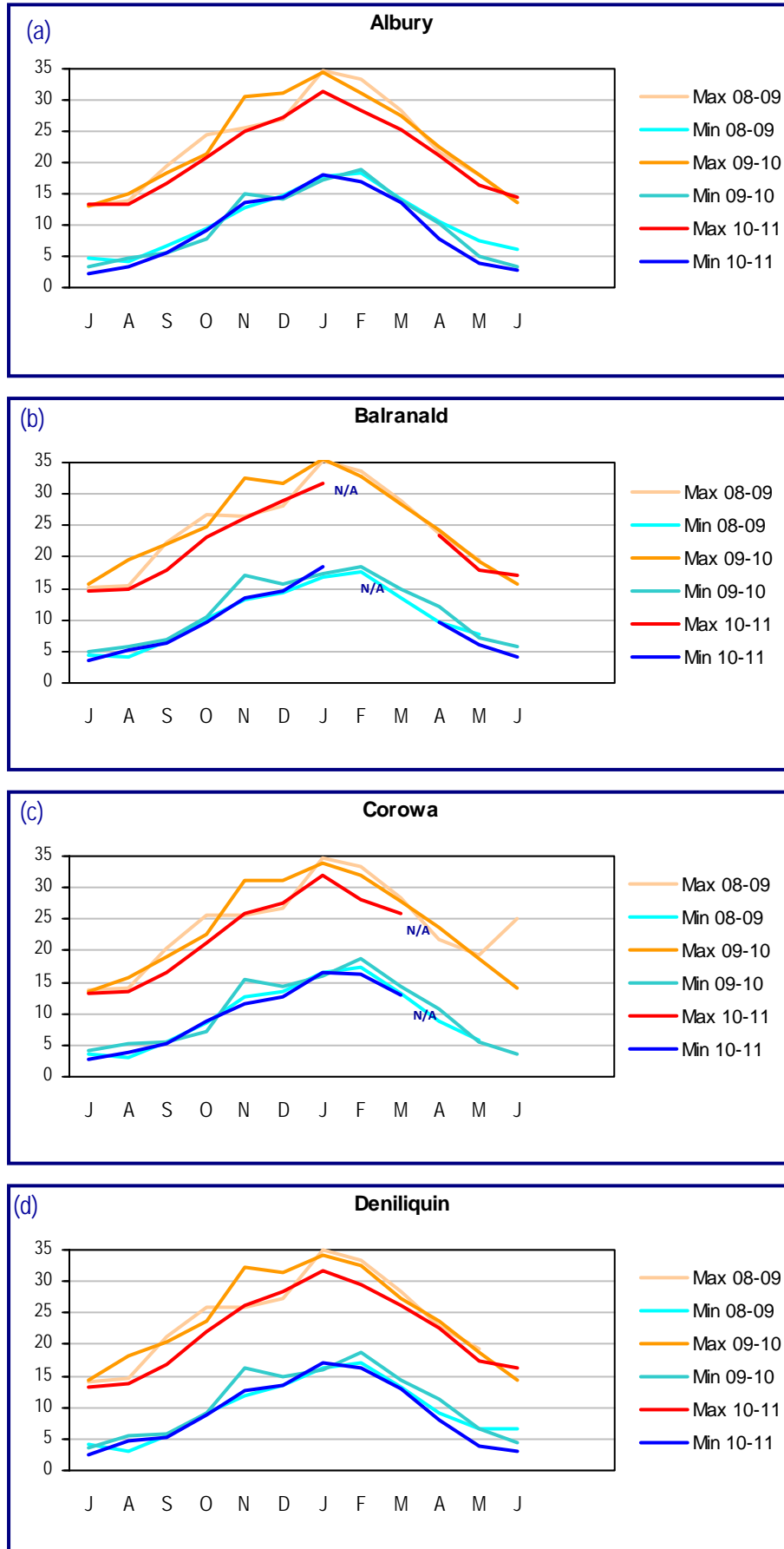
71mm

was the smallest increase in rainfall when compared with the previous reporting period was experienced in Wakool in 2010-11

433.6mm

was the lowest annual rainfall for 2010-11 recorded in the region at Deniliquin.

Figure 5 (a to h) - Minimum & maximum temperatures for selected RAMROC councils in 2010/11, 2009/10 and 2008/09¹



4.2 Temperature¹

Information for the reporting periods 08-09, 09-10 and 10-11 is displayed in Figure 5 (a to h). Only the regional centres with a Bureau of Meteorology weather station have been included. While this data is limited to such locations, it still provides an overview of climate in the region.

Temperature

As can be seen in Figure 5 the average maximum temperature for the year 2010-11 was generally less than the previous two years. This is partly due to increased cloud cover across the region associated with the La Niña weather pattern².

In February when Albury experienced above average rainfall, the average highest temperature was 2.2 degrees lower than in 2008-2009. This trend also occurred in Deniliquin, Corowa, Leeton, Murray and Narrandera.

The graphs also indicated that from April to June the region has experienced lower average minimum temperatures than the previous reporting periods. This correlates with the lower maximum temperatures across the region.

In April, Hay experience a decrease in its average minimum temperature by 3.5 degrees. Deniliquin, Leeton and Narrandera also experienced similar decreases in the average minimum temperatures.

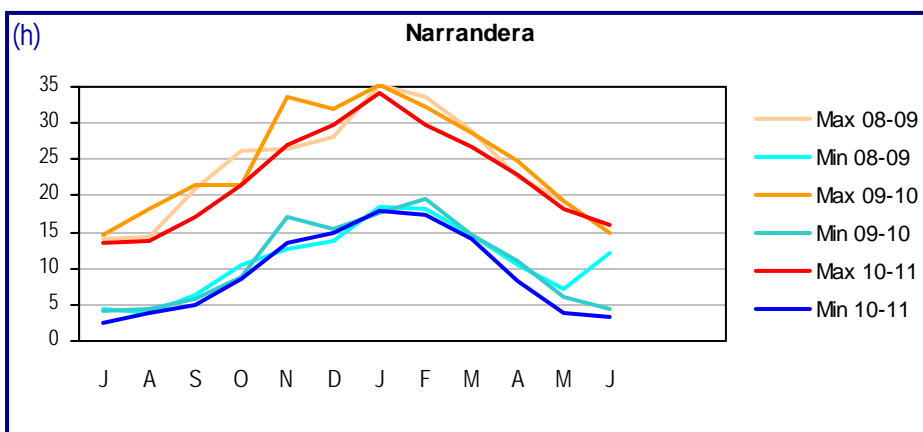
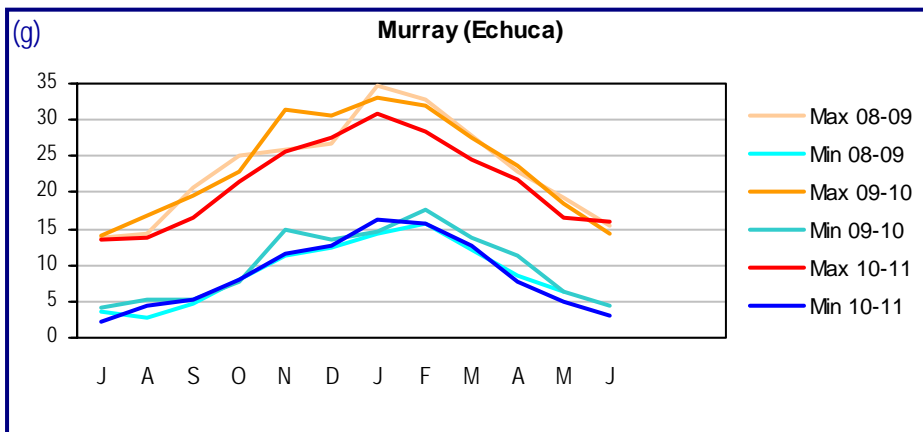
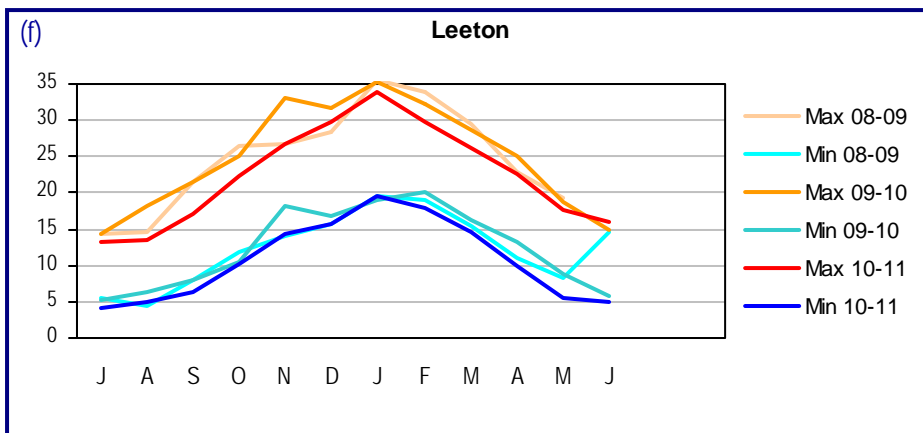
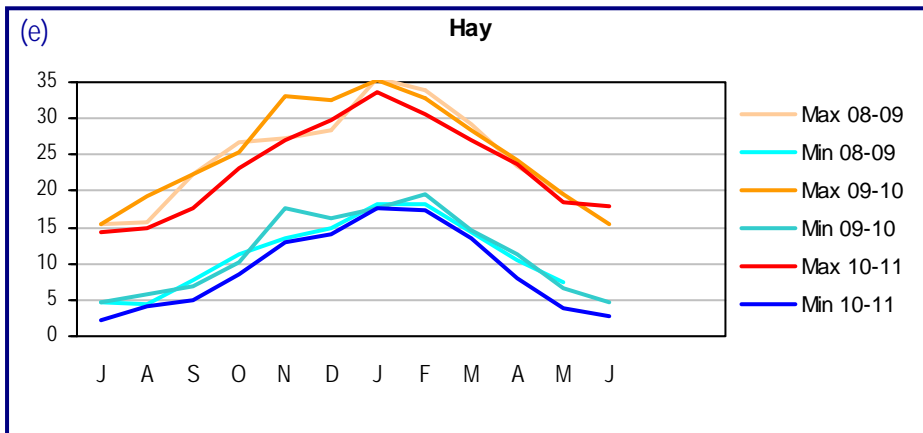
¹Australian Government: Bureau of Meteorology, 2011, *Climate*

2.3°C

Was the lowest mean temperature achieved in 2010-11 reporting period

2.8°C

Was the lowest mean temperature achieved in 2008-09 reporting period



34.8C
 Was the highest mean temperature achieved between in the 2010-11 reporting period which occurred in Narrandera in January 2011.

41.8
 Was the highest temperature achieved between in the 2010-11 reporting period which occurred in Corowa in February 2011.

4.3 Council monitored emissions¹

Councils monitor several sources of emissions within their LGA.

State

Tables 5 and 6 and the graphs on the following pages record smoke pollution, pollution complaints and usage of alternative fuels.

Pressure

Some technologies and actions have a greater impact on the environment than others. As technology progresses, there are more and more sources and solutions when it comes to emissions.

In a country as large as Australia, and especially for rural or remote areas, vehicle use is quite high as the distance needed to travel is greater and public transport is not as “viable” or as available in urban centres.

Response

Careful monitoring and implementation of energy saving techniques including using more efficient and environmentally friendly vehicles.

¹ Sourced from relevant councils

Table 5 - Smoke pollution in 2010/11¹

LGA	Stubble permits issued ¹	Difference	Solid fuel heater approvals ¹	Difference	Controlled burns by council (ha) ¹	Difference
Albury	Nil by council	=	10	↑2	Nil by council	-
Balranald	0	=	0	=	None	-
Berrigan	10	=	5	↑5	None	-
Carrathool	Nil by council	-	0	-	Nil by council	-
Conargo	82	↑64	0	=	None	-
Corowa	23	↑23	4	↑4	None	-
Deniliquin	Unknown	-	2	=	2	-
Greater Hume	Unknown	-	15	↑6	Yes, Jindera WTS	-
Hay	115	↑115	0	-	None	-
Jerilderie	Unknown	-	0	-	Unknown	-
Leeton	0	=	0	-	Yes, unknown ha	-
Murray	0	-	3	↑1	Yes, Unknown	-
Murrumbidgee	0	-	0	-	0	-
Narrandera	Unknown	-	N/A	-	N/A	-
Wakool	9	↑1	12	↓3	0	-
Wentworth	3	↓59	1	↓2	2, 320ha	↑320

¹ Sourced from relevant councils

Table 6 - Pollution complaints & alternative fuel¹

LGA	Pollution complaints ¹	Change	Alternative fuel vehicles?	Change in vehicles?
Albury	6	↓2	Yes, Prius & Camry	No
Balranald	0	-	No	↓2
Berrigan	0	↓2	Yes gas & smaller vehicles	-
Carrathool	0	-	None	None
Conargo	0	-	None	None
Corowa	2	↓1	None	None
Deniliquin	0	-	None	None
Greater Hume	2	↓6	None	None
Hay	3	↑3	None	None
Jerilderie	6	↑6	None	None
Leeton	0	-	None	↑1
Murray	-	↓5	Yes	Yes
Murrumbidgee	N/A	-	No	-
Narrandera	No register		None	None
Wakool	0	-	None	None
Wentworth	2	↑2	1	↓1

¹ Sourced from relevant councils

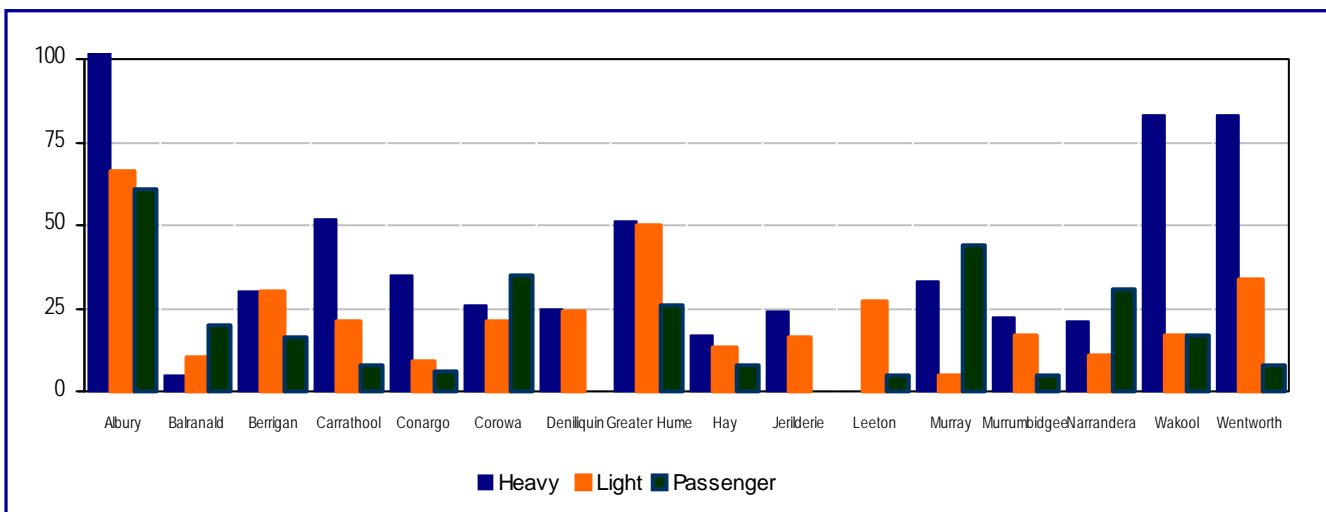


Albury continues to maintain the largest vehicle fleet of RAMROC councils and consequently consumes the most fuel. Wakool and Wentworth have a disproportionate number of heavy vehicles.

Limited data was available for kilometres travelled by council vehicles.

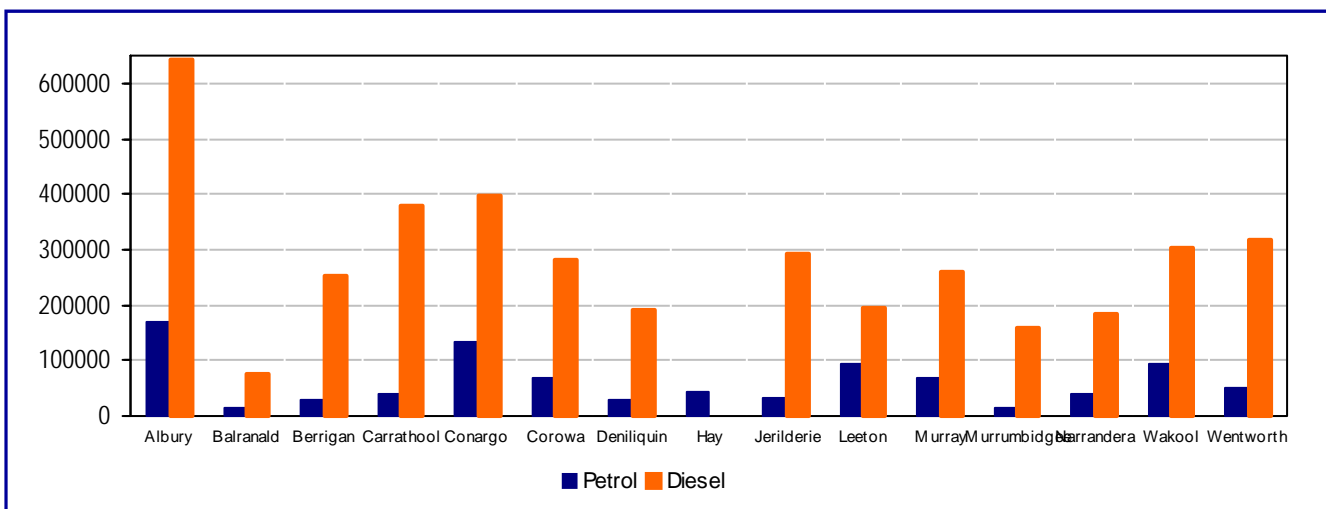
¹ Sourced from relevant councils

Figure 6 - Vehicle fleets¹



¹ Sourced from relevant councils

Figure 7 - Fuel consumed (litres)¹



^{1:1} Sourced from relevant councils

Biodiversity

5.1 Threatened species¹

State

The number of threatened species recorded in each LGA in the region is detailed in Table 7. It should be noted that a higher or lower number of threatened species may be misleading as to whether it is a negative or positive number. For example, having a high number of threatened species could mean a LGA has valuable habitat for the species or could mean that a lot of species have been affected.

A low number of threatened species could indicate less species affected, it could indicate that threatened species have been affected to the point in which they longer exist within a given area. It must also be noted that larger and more remote LGAs with lower populations and items that have not attracted as much tourist or scientific interest may have many species that have been as yet unidentified or unnoticed within the area.

Pressure

Key threatening processes are the things that threaten, or could threaten, the survival or evolutionary development of species, populations or ecological communities. They are listed in the *Threatened Species Conservation Act*, and include:

- Pest animals. Introduced animal species can compete with, and prey upon, native animals. They can also damage native plants and degrade natural habitats.
- Weeds. Weeds compete with native plants for resources such as light and nutrients. They can aggressively invade areas, displacing native plants and animals.
- Diseases. Exotic fungal infections, viruses and other pathogens can weaken and kill native species.
- Habitat loss/change. From large-scale land clearing to the gathering of bushrock for suburban gardens, humans have degraded many native environments across the state.

Response

Councils contribute to protection of species through tree planting and protection, land management, pest and weed control, working with community groups/landholders and co-operation with regional and State authorities (such as CMAs and DPI).

¹Office of Environment & Heritage, 2011, *Key threatening processes*

Table 7 - Threatened species identified in LGAs¹

LGA	Amphibians	Birds	Fish	Mammals	Reptiles	Plants
Albury	2	23↑1	1	3	1	6↑1
Balranald	1	27↓1	2	10	4	9
Berrigan	1	16	3	4	0	1
Carrathool	2	42	3	8	3	9
Conargo	0	26	1	2	0	9
Corowa	2	23	2	4	1	3
Deniliquin	0	24	2	4	0	3
Greater Hume	3	28	3	8	1	11
Hay	1	20	0	3	0	6
Jerilderie	1↑1	18	1	1	0	7
Leeton	0↓1	29	3	2	0	2
Murray	0	29↑1	3	5	0	7
Murrumbidgee	2	20	0	2	0	0
Narrandera	2	25	5	3	0	8
Wakool	1	30	2	5	0	9
Wentworth	2	41	1	23	7	21

¹NSW Office of Environment & Heritage, 2011, *Atlas of NSW Wildlife*

Note: More or less species can be the result of recovery or further research discovering more individuals and removal from threatened species lists or extinction. No new data was available for fish.



Case study— DRAFT NSW Biodiversity Strategy¹

Prepared by the Department of Environment, Climate Change and Water NSW and Industry and Investment NSW for the NSW Government

A draft NSW Biodiversity Strategy 2010-2015 has been prepared by the Department of Environment, Climate Change and Water (DECCW) and Industry and Investment NSW (I&I NSW). This draft Strategy outlines actions, targets, key objectives to direct investment in diversity conservation.

The draft Strategy includes:

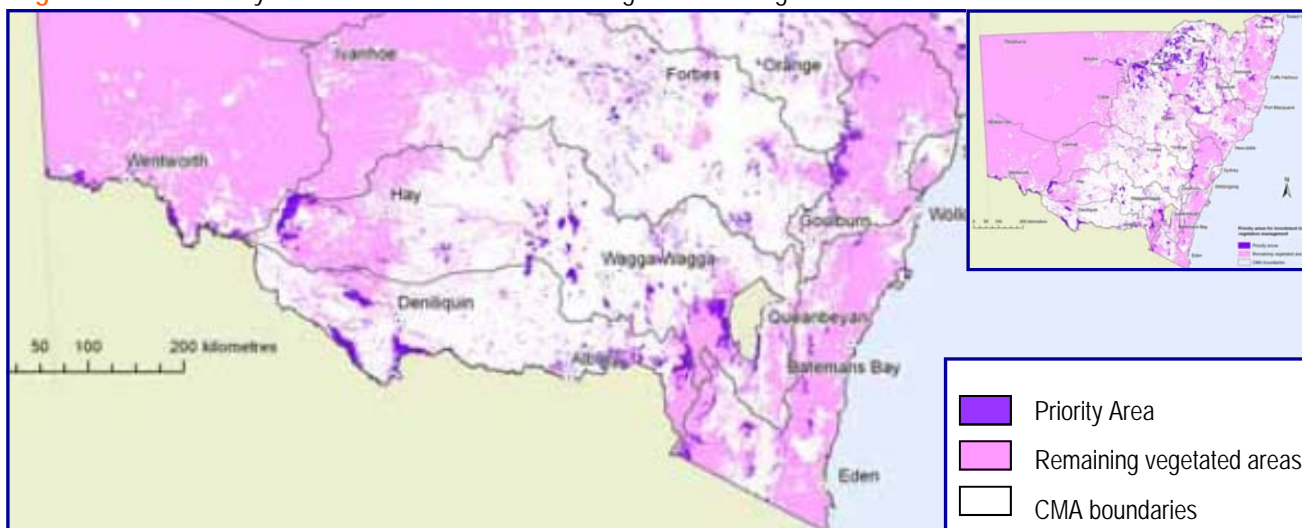
- *'prioritisation of state-scale investment form terrestrial ecosystems across 6% of New South Wales to coordinate and target investment and effort in biodiversity.*
- *an action to deliver transparent prioritisation of threatened species recovery programs between species and location to maximise return for effort.*
- *Greater focus on biodiversity in urban settlement planning processes to minimise impacts on biodiversity and to offset unavoidable impacts using secure, well-targeted offsetting mechanisms*
- *Support for existing efforts to build connections between Aboriginal people and Country, and for cultural biodiversity-related business, employment and training opportunities for Aboriginal people.*
- *Support for non-government, government and catchment management authorises (CMA) conservation partnerships like the Great Eastern Ranges Initiative*
- *Continued focus on existing programs such as reserve expansion and management, invasive pest and weed control and a range of programs underway to ensure the health and sustainability of our rivers and wetlands.*
- *Ongoing support for the range of sustainability programs currently implemented by rural landholders including sustainable grazing, rehabilitation and riparian management and soil erosion strategies.'*

The draft Strategy is divided into two parts:

PART A: Framework for action—includes the overarching objectives, targets and actions

PART B: State of ecosystem profiles and priorities—state-scale profiles and priorities for investment by ecosystem and threatened species profile.

Figure 8 -NSW Priority Areas for investment in native vegetation management ²



¹ NSW Government, Draft NSW Biodiversity Strategy 2010-2015

² ibid



5.2 Weeds¹

Some weeds are required by law to be controlled by landholders. These are known as noxious weeds and the law that controls these in NSW is the *Noxious Weeds Act 1993*.

Weeds that are declared noxious are those weeds that have potential to cause harm to the community and individuals, can be controlled by reasonable means and most importantly, have the potential to spread within an area and to other areas.

A weed is declared noxious because its control will provide a benefit to the community over and above the cost of implementing control programs.

State

The number of declared noxious weeds and their class in each LGA can be viewed in Figure 9. Declared noxious weeds can be broken into five groups, depending on their presence and impact on agriculture, the environment and people. Classes can be viewed on the DPI website.

Pressure

Noxious weeds have the potential to become more widespread and will cause impact on agriculture, human health or the environment. They can be spread by vehicles, animals, people, wind and water among other means.

Response

Most councils implement a weed management plan, and may be involved in catchment wide programs and involve the community and landholders as part of the management plan.

¹ NSW Department of Primary Industries, 2011, *Pests and Weed Management*²

Case study— Regional Weed Strategy: Murray Catchment¹

The Strategy provides strategic direction for the management of weeds as recognised in the Murray Catchment Action Plan. The Strategy was prepared following consultation with a wide range of stakeholders across the Murray Catchment.

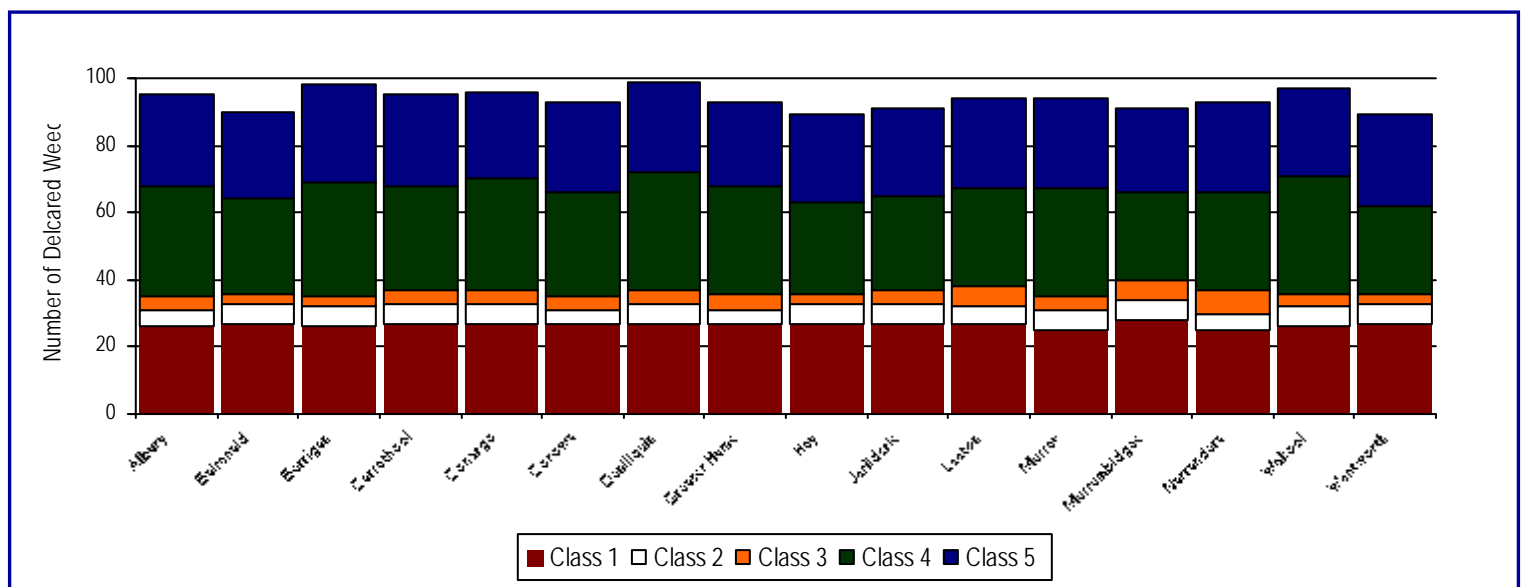
The Vision - Minimise the economic, environmental and social impacts of existing and new and emerging weeds in the Murray Catchment through coordination, cooperation and commitment from weed managers and the community.

Key Aims

1. **Preventative Weed Management**—to protect biodiversity, agricultural production and amenity (community values) by preventing new weed infestations.
2. **Manage Existing Weeds** - to reduce the impact of existing weeds
3. **Awareness, Education and Training** - to have a well informed, well resourced, wide network of people involved in weed management in the Murray Catchment.
4. **Coordination of Weed Management** - to manage catchment weed issues in a cooperative and coordinated manner.
5. **Legislation and Enforcement** - to use the *Noxious Weeds Act 1993* and other relevant legislation consistently and effectively.
6. **Monitoring and Evaluation** - to ensure the Strategy is implemented and remains a relevant working document.

The Strategy provides implementation strategies to achieve that above aims. The implementation strategies include actions to be undertaken and the bodies/agencies responsible for implementing

Figure 9 - Declared Noxious Weeds by Class¹



¹ NSW Department of Primary Industries, 2011, *Pests and Weed Management*²



5.3 Environmental reserves¹

Across the region a network of protected areas exist. The protected areas are the foundation for biodiversity conservation. The Riverina has 123,154 ha of managed reserves.

State

A number of councils retain land for biodiversity or environmental purposes. Some LGAs contain State Forest, National Parks and/or Nature Reserves, though these are not usually maintained by Council.

Pressure

The NPWS identifies weeds, pest animals and inappropriate fire regimes to be major contributing factors to the degradation of parks and reserves. Climate change and drought are also significant factors.

Response

Some council's reserve land for biodiversity or environmental purposes (refer to Table 8). Council's responses to weeds and pests can be seen in this section of the report.

¹ NSW Office of Environment & Heritage, *Protected Areas*

LGA	Council retain land for biodiversity/environment? ²	How many hectares (approx.)? ²	Protected from damage? ²
Albury	Yes	7481	Yes
Balranald	Yes	5	Yes
Berrigan	Yes	427 ↑ 427	Yes
Carrathool	No	/	N/A
Conargo	Yes	-	Yes
Corowa	Yes	40	Yes
Deniliquin	Yes	Unknown	Yes
Greater Hume	Yes	Unknown	Yes
Hay	Yes	62 ↑ 62	Yes
Jerilderie	No	N/A	N/A
Leeton	Yes	8	Yes
Murray	Yes	-	-
Murrumbidgee	No	N/A	N/A
Narrandera	Yes	500 +	Yes
Wakool	Yes	Unknown	Yes
Wentworth	No	876 ↑ 876	N/A

²Sourced from relevant Councils



5.4 Threatened Ecological Communities

The RAMROC area stretches across four major catchment areas; the Lachlan, Murray, Lower Murray/Darling and the Murrumbidgee. Within this area there are twelve identified Endangered Ecological Communities.

Pressure¹

- Clearing for cropping, pasture improvement or other developments.
- Increased livestock grazing, trampling, stubble burning, weed invasion, inappropriate fire regimes, soil disturbance and increased nutrient loads.
- Degradation of the landscape in which remnants occur including soil acidification, salinisation, extensive erosion scalding and loss of connectivity.
- Grazing by introduced European Rabbits and fauna predation by feral cats.
- Poor representation in isolated conservation reserves.
- Harvesting of firewood (either living or standing dead, including material on the ground)
- Lack of knowledge of the ecology of the community.
- Soil disturbance caused by feral pigs, goats, deer, horses and domestic livestock
- Damage to vegetation and soils by off-road vehicles
- Peat mining
- Pollution and eutrophication from urban areas, cropping and improved pastures in the catchment
- Changes to water tables and surface flows caused by drainage works or altered flows in the catchment
- Erosion and sedimentation
- Climate change
- Herbivory by the processionary caterpillar *Ochrogaster lunifer* (Bag-shelter moth)

Response²

Priority Actions from DECCW provide ways to preserve and improve threatened ecological communities. The actions include community awareness, fencing of remnant areas, tree planting and control of introduced species. Many councils within the RAMROC region are currently preparing new Local Environmental Plans. This has presented an opportunity for greater protection of natural resources such as Endangered Ecological Communities.

¹ Office of Environment & Heritage, 2011, *Key threatening processes*

² Department of Environment and Conservation, 2011, *Priority and threat abatement—priority actions*, Threatened Species homepage

Case study— Murray River/Corowa Wetlands Revitalisation Project

Murray River/Corowa Wetlands National Green Job Corps Program in Corowa

Corowa Shire Council

The Personnel Group with the support of the Corowa Shire Council and Wodonga TAFE have launched the 'Murray River/Corowa Wetlands Revitalisation' project. The project is funded by DEEWR and contracted by the National Green Jobs Corps program.

The purpose of this project is the restoration and maintenance of riverside restoration at Ball Park in Corowa. The project also involves several secondary sites including the Wahgunyah cemetery and football oval as well as five local wetlands in areas surrounding Corowa.



5.5 New threatened species¹

The Threatened Species Conservation Act 1995 (TSC Act) protects threatened and endangered species throughout NSW. The Scientific Committee determines inclusions, exclusions and alterations to the Act given applications and advice submitted for consideration. The schedules of the Act contain the species, communities and populations protected by the Act, and these are constantly changing depending upon the Committee's decisions.

State

There has been final determinations made by the Scientific Committee in the reporting period and two Preliminary Determinations which may effect the RAMROC region (see below).

Pressure

Land management practices, climate change, natural resource requirements and invasion of exotic species (plant, animal and viral) are some of the many factors contributing to the decline of certain native species in Australia, and in particular the RAMROC reporting area.

Response

Listing of species under the Act provides legal protection for organisms and their habitats. Listing can have lead-on benefits, such as public and scientific publicity, which can lead to funding support for research, protection and restoration.

Final Determination¹

- List the Australasian Bittern *Boturus poiciloptilus* as a ENDANGERED SPECIES in Part 1 of Schedule 1A of the Act and as consequence, to omit reference to Australasian Bittern *Boturus poiciloptilus* from Part 1 of Schedule 1 (Vulnerable Species) of the Act. .
- List the Grey Falcon *Falco hypoleucos* as a ENDANGERED SPECIES in Part 1 of Schedule 1A of the Act and as consequence, to omit reference to Grey Falcon *Falco hypoleucos* from Part 1 of Schedule 1 (Vulnerable species) of the Act.
- List the shrub *Lasiopetalum behril* as a CRITICALLY ENDANGERED SPECIES in Part 1 of Schedule 1A of the Act and as consequence, to omit reference to shrub *Lasiopetalum behril* from Part 1 of Schedule 1 (Endangered Species) of the Act. .

Preliminary Determination²

- To list the Curlew Sandpiper *Calidris ferrunginea* (Shaw, 1794) as a ENDANGERED SPECIES in Part 1 of Schedule 1A of the Act,
- To list 'Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants' as a KEY THREATENING PROCESS in Schedule 3 of the Act.

¹Office of Environment & Heritage, 2011, *Final determinations by date*

²Office of Environment & Heritage, 2011, *Preliminary determinations by date*,

Case study— Mouse plague

Riverina mouse plague

ABC Rural, April 2011

Farmers across New South Wales fought off locusts now they're fighting off mice. Heavy rain over the summer has caused mice numbers to increase dramatically, causing thousands of dollars in damage to crops. Emily Boyle spoke with one farmer in the Riverina who says it's the worst mouse plague he's seen in 20 years.

Nick Maynard, from Hay in the Riverina says he's lost over \$100,000 in expected revenue this year because of a mouse infestation. He says he's been aerial spraying and baiting his sunflower and maize crops since February but still can't get mice numbers down. "We don't seem to be getting them under control no matter how much baiting we do. Every second day we could be baiting but there's more on their way. They're into anything, I've got probes in the paddock and they're eating all the cables off the probes, they're in the walls of the house, so yeah, they're everywhere."

The building mouse plague is also keeping rural suppliers in business. While some say the bait is flying off the shelves, other businesses have ordered baits in bulk to meet farmers growing demands



5.6 Pests & feral animals¹

Invasive species affect our environment, economy and social well-being. They can reduce the productivity of our land and waterways and reduce biodiversity in natural areas. Invasive species can out-compete, or prey on other species and spread disease. They can also damage buildings, roads and other structures¹.

State

Some of region's LGAs were affected by pests during the reporting period (refer to Table 9). Common pests throughout the region include rabbits, foxes, locusts, mice and feral dogs and cats. The area experienced significant mice and locusts outbreaks in the reporting period. The locusts outbreak was regarded as one of the worst in the past decade.

Pressure

The economic downturn and poor productivity on due to the significant mice and locusts outbreak in the reporting period.

Response

Councils work with local landholders, community groups and state agencies (such as the NSW Department of Primary Industries) to control pests on properties. Feral cat and dog populations can be reduced through registration, micro-chipping and desexing of domestic pets. Local councils have pest control plans and policies, and regulate domestic animals through the Companion Animals Act, which requires registration of all domestic dogs (other than specified, such as working dogs). The Council's and State Government have brochures, workshops and extensive advertisement to educate residents on methods to reduce the spread and impact of pests such as locusts and mice.

Table 9 - Pest and domestic animal control¹

LGA	Pest problem in 2010/11	Common pests	Dogs impounded	Cats impounded	Other animals impounded	Animals euthanized
Albury	Yes, locusts & mice	Rabbits, rats, mice & locusts	816 ▲84	430 ▼16	8 calves, 3 sheep, 14 goats ▲19	439 ▲17
Balranald	Yes locusts & mice	Mice/rabbits/foxes	92 ▲61	0	0	5 ▼2
Berrigan	Yes, rabbits, foxes, mice & locusts	Rabbits, foxes, mice & locusts	85 ▲22	15 ▼23	0	77 ▼5
Carrathool	Yes, locusts & mice	Rabbits/foxes/locusts	13 ▲8	0	0	3 ▼18
Conargo	Yes, mice & locusts	Cats, foxes & locusts	6 ▲1	0	0 ▼9	0
Corowa	Yes, mice	Rabbits/foxes	77 ▲8	26 ▼5	4 ▼2	32 ▼1
Deniliquin	Yes, mice	Hares & rabbits	116 ▼4	-	6 ▼6	40 ▼14
Greater Hume	Yes, mice	Rabbits, cats, foxes & crickets	85 ▼32	17 ▼40	0	28 ▼33
Hay	Yes, locusts, mice & crickets	Locusts, mice & crickets	183 ▼22	21 ▲17	2 ▲2	137 ▲5
Jerilderie	Yes, locusts, crickets & mice	Mice	10 ▲5	0	0	4
Leeton	Locusts & fruit flies	Locusts	377 ▼65	196 ▲41	8 ▼7	207 ▼224
Murray	Yes, locusts & mice	Mice, locusts & rabbits	98 ▼2	30	17 ▼30	22 ▼25
Murrumbidgee	Yes, mice & locusts	Mice & locusts	23	6	0	0
Narrandera	Yes, mice & crickets	Locusts/rabbits/white cedar grubs	127 ▼11	21 ▼26	0 ▼1	61 ▼4
Wakool	No	Rabbits/foxes/cats	15 ▼6	0	8 ▲5	7 ▲3
Wentworth	Yes, locusts	Rabbits	178 ▲25	64 ▲2	0	85 ▼27

¹Sourced from relevant councils



5.7 Bushfires¹

Bushfires are an intrinsic part of the Australian environment. Natural ecosystems have evolved with fire, and the landscape along with its biological diversity, has been shaped by both historic and recent fires. Many of Australia's native plants are fire prone and very combustible while numerous species depend on fire to regenerate¹. Fire is both feared and harnessed. Indigenous Australians have long used fire as a land management tool and it continues to be used to clear land for agricultural purposes and to protect properties from intense, uncontrolled fires.

State

The number of bushfire occurrences and the number of hectares burnt through the region are summarised in Table 10. The significant rainfall may have impacted the number of bushfires which occurred in the reporting period with four Councils reporting a decline in bushfire events.

Pressure

Climate change is a popular reason for an increased number and intensity of recent bushfires, as is drought and El Niño. Changes in land management practices have also contributed, changes in Aboriginal fire management, the removal of stock grazing from environmentally significant areas and agricultural land management practices (such as retaining stubble for protection against erosion) have increased fuel loads and can contribute to the intensity of a bushfire event. The La Niña weather pattern that provided significant rainfall and lower average temperatures has impacted on the number of bushfires in the region.

Response

Councils enforce bushfire safety standards for new dwellings, buildings and subdivisions, to ensure they meet standards of the *Planning for Bushfire Protection* guidelines. Some councils also manage clean up programs (such as free collection/disposal of green waste nearing fire season) and other conduct burn-offs and maintain fire vehicles for volunteer and rural brigades.

¹ Geoscience Australia, 2011, *Hazards*

Table 10 - Bushfire data¹

LGA	Bushfire events ²	Hectares burnt ²	Fire trucks maintained by council ²	Rural Fire Brigades in LGA
Albury	Unknown	Unknown	14 ↑ 11	4
Balranald	0 ↓ 2	0 ↓ 20	2 ↓ 3	2 ↑ 1
Berrigan	21 ↓ 7	55.74 ↑ 42.24	21	5
Carrathool	Unknown	Unknown	50	26
Conargo	17 ↑ 17	150	26 ↓ 3	13
Corowa	19	10.5	28 ↑ 2	12
Deniliquin	Unknown	Unknown	Unknown	1
Greater Hume	0	Unknown	75	35
Hay	8	8	17	32
Jerilderie	Unknown	Unknown	17	10
Leeton	Unknown	Unknown	11 trucks 3 utes	4
Murray	Unknown	Unknown	Unknown	10
Murrumbidgee	0	Unknown	Unknown	Unknown
Narrandera	25 ↓ 2	75	29	15 ↑ 1
Wakool	Unknown	Unknown	14	13
Wentworth	26 ↓ 54	160	26 ↑ 2	16

²Sourced from relevant councils



5.8 Native vegetation

Native vegetation extent and condition is an indicator of ecosystem health and the overall and health of ecosystem diversity.

State

The condition of native vegetation across the region ranges from pristine to total replacement as the degree of modification varies from area to area. Modification can occur in varying degrees by land management practices and unplanned threats and disturbances such as weed invasion and fire.

Pressure

The modification of native vegetation can change the structure, function and species composition of vegetation.

Response

Some councils require permit to remove native vegetation which can include conditions such as planting vegetation to offset the vegetation removed.

LGA	Permit required?	Applications	Offset required?	Approvals for firewood collection? ¹
Albury	Yes	220 ↓18	Yes	Not allowed
Balranald	Yes	0	Yes	0
Berrigan	Not req'd in vil- lage/res zone	-	No	Allowed—Nil
Carrathool	Yes	0 ↓3	Yes	Not allowed
Conargo	In sandhill area	-	Yes	Not allowed
Corowa	In urban areas	Unknown	Yes	Permit required 25 ↑25
Deniliquin	No	N/A	No	Not allowed
Greater Hume	No	NA	No	250 ↑30
Hay	No	NA	No	Allowed 250 ↑250
Jerilderie	No	N/A	No	Allowed—Nil
Leeton	No	NA	No	Allowed—Nil
Murray	No	NA	No	Permits available
Murrumbidgee	Yes	1	Yes	Yes, no permit required
Narrandera	No	NA	No	Not allowed
Wakool	No	NA	No	Not allowed
Wentworth	No	NA	No	Not allowed

¹Sourced from relevant councils

Water

6.1 Water quality

Water is a limited and precious resource and must be managed for immediate needs and for long-term economic and environmental sustainability. With the effects of climate change now a reality, and increasing demands for water, sound policies are required to ensure a sustainable supply of water for the recent drought and for future generations. This recording period experienced a different pressure on water quality with all Council's experience flooding in their LGA.

State

Most councils undertake potable water quality monitoring. Five councils have identified groundwater issues. All Councils experienced flooding, the flooding resulted in significant cost to repair infrastructure and damage to crops. Flooding increases the flow for most river systems which saw a decrease in Blue-green Algae outbreak.

Pressure

Water quality and availability can be affected by drought and floods. The Greater Hume and Jerilderie Council's issued alerts to boil water due to the potential contamination of supplies from flooding.

Response

Councils monitor potable water and some councils also monitor ground water. Councils also encourage sustainable land practices and manage urban stormwater flows.

Table 12 - Water monitoring¹

LGA	Council monitors water quality	Alerts issued for potable water	Blue-green algae outbreaks	Ground water issues in LGA
Albury	Yes	No	Yes	No
Balranald	Yes	No	No	No
Berrigan	Yes	No	Yes	Salinity
Carrathool	Yes	No	No	No
Conargo	No	No	Yes	No
Corowa	Yes	Yes (algae)	Yes	No
Deniliquin	Yes	No	Yes	No
Greater Hume	Yes	Yes	Yes	No
Hay	Yes	No	No	Yes
Jerilderie	Yes	Yes	Yes	No
Leeton	Yes	No	No	Salinity
Murray	Yes	No	Yes	No
Murrumbidgee	Yes	No	No	High water table in certain areas
Narrandera	Yes	No	No	Salinity, high water table
Wakool	Yes	No	Yes	Yes
Wentworth	Yes	Yes	No	No

¹Sourced from relevant councils and Murray RACC New Alerts



6.2 Flooding

State

All LGAs within the RAMROC region experienced flooding in the reporting period. This occurred following years of drought and created a new set of environmental issues for Councils to manage.

Pressure

The region experienced flood events ranging from 1 in 5 year to 1 in 50 years. A majority of the Councils recorded substantial damage to crops and infrastructure in particular road. Wakool reported \$3 million damage from flooding and Carrathool reported \$6.5 million on local roads alone. Although Berrigan and Deniliquin experienced flooding they did not report any damage to infrastructure.

Response

Planning to ensure infrastructure is protected from potential flooding.

Table 13 - Impact of flooding ¹		
LGA	Flooding in 2010/11	Damage
Albury	Yes, 1 in 50 to 1 in 10yr	\$275,000
Balranald	Yes, 1 in 20yr	\$4.6 mil
Berrigan	Yes, 1 in 20yr	\$289,000
Carrathool	Yes, 1 in 50yr	Regional roads \$738,850, Local roads \$6,571,475
Conargo	Yes	\$872,000
Corowa	Yes, 1 in 100yr	Crop loss, damage to farming infrastructure & \$5mil of damage to roads
Deniliquin	Yes, less than 1 in 5yr	Nil
Greater Hume	Yes	Significant
Hay	Yes, 1 in 20yr	\$192,000
Jerilderie	Yes, 1 in 20yr	\$2.5 mil
Leeton	Yes	Unknown
Murray	Yes, 1 in 20yr	Unknown
Murrumbidgee	Yes, 1 in 10yr	Roads
Narrandera	Yes, 1 in 20yr	\$1.6 mil road damage
Wakool	Yes, 1 in 20yr	\$3 mil
Wentworth	Yes, 1 in 10yr	\$67,000

¹Sourced from relevant councils

Case study - Strengthening Basin Communities

Councils take action to combat a future with less water

Corowa Shire Council

AlburyCity, Corowa, Greater Hume and Urana Councils have released a report outlining key infrastructure and education initiatives designed to assist the community overcome a future with less water. With and \$800,000 grant attracted to date as part of the Federal Governments 'Strengthening Basin Communities Program'. The next stage of the project will position each of the four Councils to seek further funding for infrastructure investment and program delivery from the \$200 million available¹.

The councils have developed priority projects and initiatives which will assist a range of groups of sporting clubs and major industry. Councils will also develop or review their economic development strategies to ensure appropriate strategies are incorporated to enable sustainable growth in a future with less water. A Community Report and Synthesis Report provide an overall summary of the study and recommendations².

Water for the Future is preparing Australian for a future with less water. The 10 year initiative is addressing four key properties:

- > Taking action on climate change
- > Using water wisely
- > Securing water supplies
- > Supporting healthy rivers

6.3 Water consumption

Water in Australia is a valuable resource, required for almost every industry, particularly agriculture, as well as drinking water and household use.

State

Water consumption for each LGA is recorded in the table below.

Pressure

Large amounts of water are used in households by washing machines, dishwashers, hot water systems and showers. Garden irrigators potable, washing of cars and private swimming pools also contribute to domestic potable water use. Some businesses require large amounts of water for processing (such as food processing). Agriculture requires water for stock and irrigation of crops. Councils can use excessive amounts of water for irrigation of sporting facilities and parks as well as for cleaning of plant and other equipment.

Response

Incentives for water tanks and water saving appliances in homes are available for reducing domestic water use. Some businesses (such as car washes) utilise recycled water. Councils can enforce water restrictions to limit inessential uses (such as watering lawns or pools) and often utilise recycled water for the maintenance of council owned parks and sporting facilities, and sometimes government owned school ovals.

Table 14 - Water consumption and use in the RAMROC region¹

LGA	Water supply ¹	Daily average household water consumption ¹	Charges for excessive water consumption ¹	Land irrigated by reused water (ha) ¹	Megalitres of reused water utilised ¹
Albury	River + reservoirs	182.97kL/residence	None, scale based	195.5 5.5	4920 579
Balranald	Tower from river	-	Excess charge after 600k	5,000 5,000	Nil
Berrigan	River & channel	0.77kL	None, consumption based	69.3	110
Carrathool	Bore	N/A	Excess charge after 350kL \$0.85 per Kw	No	N/A
Conargo	Bore and creek	73Lts	Yes, \$330 per 100kL	No	N/A
Corowa	River	570L	No, \$0.90 per kL	60	110
Deniliquin	River	0746kL	0-800kL \$0.40, 801>\$0.80	4	10
Greater Hume	Groundwater & river	660L	Per kL over 200kL	14	63.9
Hay	River, treated and then to tower	478L per day	Yes Culcairn Water Supply >200KL \$1.10, Village Water Supply >200KL \$1.80	14	Nil
Jerilderie	Billabong Creek	0.313kL	Raw \$.59per kL & filtered 0-250kL \$1.25 >250kL \$1.5	5	20
Leeton	River, via channel & treated	1.1kL	Charges for excessive water consumption - 3 step pricing system	None	N/A
Murray	River	289kL/year	None	24 86	86 42
Murrumbidgee	Groundwater	N/A	1-125kL 29c/kL, 126-200kL 34c/kL, >200kL 40c/kL	No	N/A
Narrandera	Bore	N/A	Yes	None	N/A
Wakool	River (potable and raw)	-	\$1.35 per kL	None	N/A
Wentworth	River	0.79 kL 221.2kL	Raw \$1per kg over 700kL & filtered \$2.7 per kL over 250kL	None	N/A

¹Sourced from relevant councils



6.4 Water storages¹

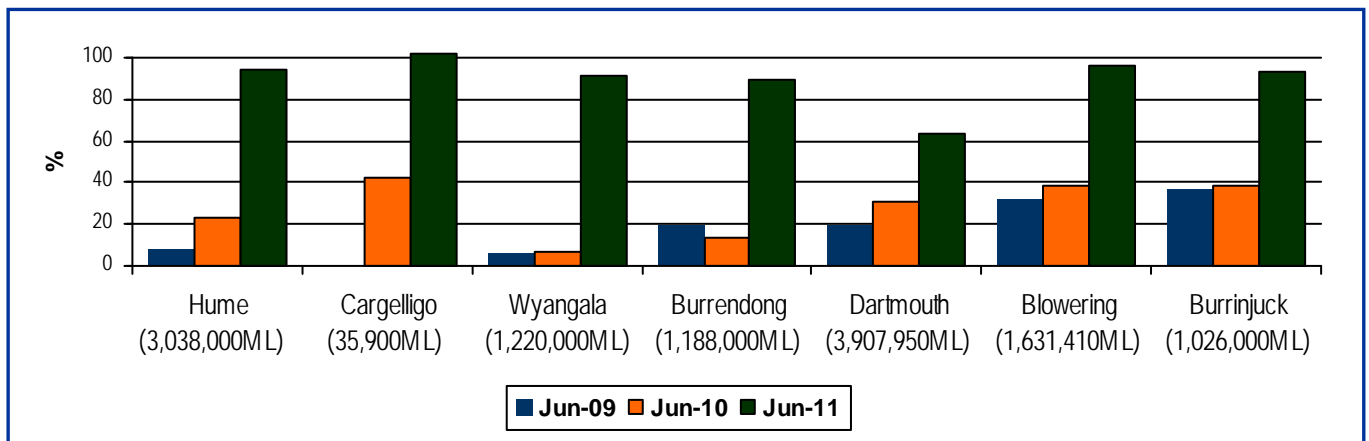
Compared to the previous reporting period water storages servicing the region have recorded significant increases in storage volumes as a result of heavy rain events in late 2010 and early 2011. The total storage capacity started the year at 26 per cent capacity (6,500,193LM) and reached 80 percent (20,390,963ML) at the start of 2011. 2010 effectively ended that 'long dry' that commenced across the region, in terms of surface water, soil moisture and annual total rainfalls².

Lake Cargelligo went from empty to full between June 2009 to June 2011. All water storages in the RAMROC region and those up and down stream of the region which affect the area experience a significant increase from June 2010 to June 2011.

¹ NSW Water Information, 2010, *Water storage levels*

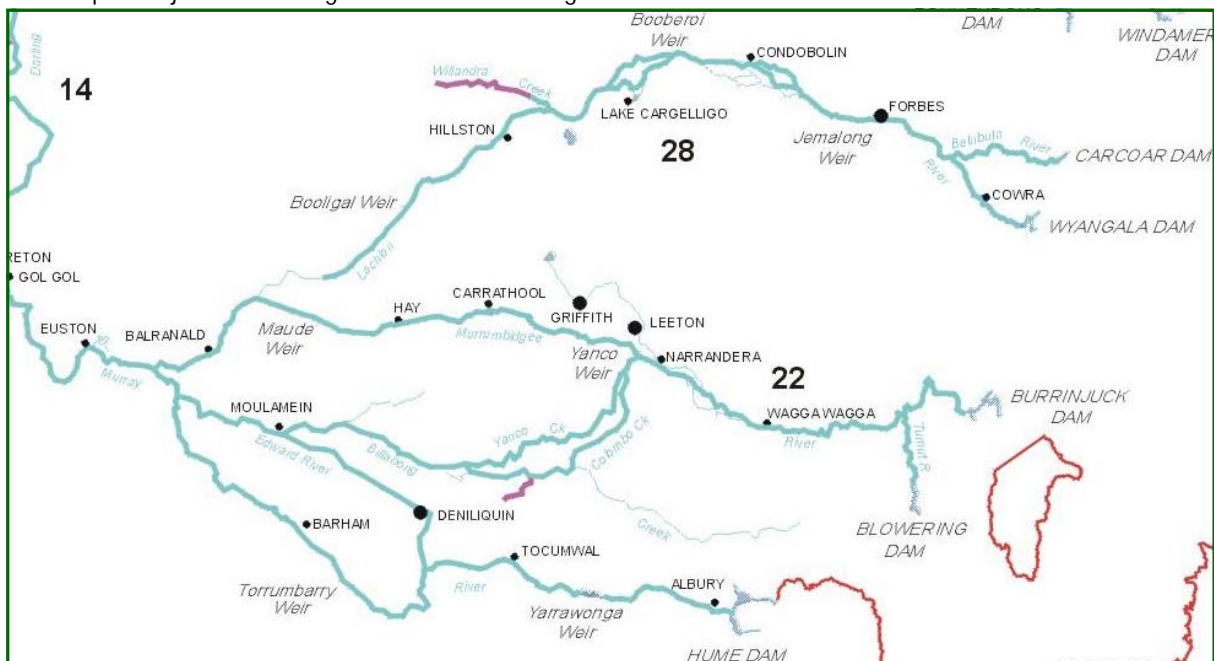
³ Australian Government: Bureau of Meteorology, 2011, *Climate Data Online*,

Figure 9 -Levels of major water storages servicing RAMROC area ¹



¹ NSW Water Information, 2010, *Water storage levels*

Figure 10 -Map of major water storages and rivers servicing RAMROC area ¹





Human Settlement

7.1 Human settlement

Urban settlements are where most Australians live and work. Their design, planning, construction and operation are fundamental to the productivity and competitiveness of the economy, the quality of life for residents and the ecological sustainability of the environment.

Human settlement in Australia dates back at least 60,000 years to an Indigenous population engaged in hunting and gathering. With the arrival of Europeans just over 200 years ago, the first of a series of major societal, economic, technological and settlement transitions occurred¹.

The RAMROC region contains many settlements of varying sizes, from small villages to large regional centres. Settlements in the most south-eastern parts of the region are relatively close together, while settlements to the north-west are more displaced. These characteristics are reflected in population numbers and service provision.

¹ Australian Commonwealth Scientific and Industrial Research Organisation, 2001, *Australia State of the Environment Report 2001—Theme report—Human Settlements*

Case study—Albury City New Local Environmental Plan

Albury LEP Approved

13 August 2010

[NSW Government Media Release](#)

The NSW Government has approved a new Albury local environmental plan (LEP) which supports 10,000 new dwellings to support the city's future growth.

Minister for Planning, Tony Kelly, said the plan provides a unified LEP for the entire council area, replacing the separate Albury and Hume LEPs used before council boundary changes in 2004.

The plan includes new policy and planning initiatives that provide:

- potential for 10,000 new dwelling to provide sufficient supplies of residential land for between 25-40 years;
- a series of environmental and habitat corridors through new release areas;
- additional mixed zones, including apartment development, on other parts of Albury CBD; and
- protection of significant visual landscape around Albury by limiting development in higher country above 220 metres to protect Nail Can Hill, Black Range and Lake Hume to the east.

Mr Kelly said it's understood the council will be applying to have the plan given "biodiversity certification" by the Department of Environment, Climate Change and Water.

"If this certification is granted, it will allow individual application for new subdivisions to be streamlined because environmental areas to be protected have already been identified upfront", the Minister said.

2

Standard Instrument Local Environmental Plans
have been gazetted (Balranald & Albury).



7.2 Town planning

Local Environmental Plans (LEPs) guide planning decisions for local government areas. Through zoning and development controls, they allow Councils and other consent authorities to manage the ways in which land is used. LEPs are the primary planning tool to shape the future of communities.

On 31 March 2006, the NSW Government gazetted a standard instrument for preparing new LEPs, also known the LEP template. Local plans across NSW will now use the same planning language, making it easier for communities to understand what is proposed for their local area. Councils are able to include localised planning objectives and provisions specific to their area, as well as determine zoning, additional land uses, heritage items, and development standards such as height and minimum lot sizes.

State

Table 14 below indicates at which stage Council are at with their new LEPs.

Pressure

Lack of resources can prevent councils from conducting their reviews. The development of the new LEP requires background strategic documents including Strategic Land Uses Studies. Following these studies LEP can be drafted followed by DCPs. This process is time and resource consuming.

Response

In 2011 the Department of Planning invited Councils to apply for funding under the LEP Acceleration Fund to assist in the delivery of new LEPs. The funding package exceed \$10million and aimed to help councils deliver their new LEPs in specified timeframes. The funding will assist council in undertaking outstanding strategic and technical studies, legal and specialist planning advice and GIS resources.

¹Department of Planning & Infrastructure, *Local Planning*

Table 15 - Planning documents in the RAMROC region ¹

LGA	Current LEP / IDO Year	Current SLUP ¹ ?	Preparing new LEP?	Status of new standard instrument at 30/6/11
Albury	2010	Yes	No	Gazetted LEP on 13 August 2010.
Balranald	2010	Yes	No	Gazetted LEP on 9 July 2010.
Berrigan	1992	No	Yes	Draft Strategic Plan / Draft LEP and Land Use Matrix almost completed.
Carrathool	1976	Yes	Yes	Preparing for section 65 certificate.
Conargo	1987, 1999	No	Yes	Rural Land Use Strategy completed. Consultation/exhibition set to commence.
Corowa	1989	Yes	Yes	Section 68 report.
Deniliquin	1997	No	Yes	Section 64 report to go to Council.
Greater Hume	1976, 1998 & 2001	Yes	Yes	Soon to be on public exhibition
Hay	1998	Yes	Yes	Section 65 Exhibition
Jerilderie	1993	No	Yes	Draft instrument prepared
Leeton	1983	Yes	Yes	Pre section 62
Murray	1998	Yes	Yes	Submitted S68 report
Murrumbidgee	1994	N/A	Yes	Should go on public exhibition in November 2011
Narrandera	1991	Yes	Yes	Comprehensive strategy document and Planning proposal prepared with request for a Gateway Determination.
Wakool	1992	Yes	Yes	Between Land Use Strategy and pre-exhibition draft
Wentworth	1993	Yes	Yes	Currently with Parliamentary Counsel for determination.

¹Sourced from relevant councils



7.3 Development¹

State

The LGA with the greatest number of dwellings approved in 2010/11 was Albury, followed by Corowa and then Leeton. The LGAs with the least number of dwellings approved were Conargo and Jerilderie, Carrathool and Narrandera.

The LGA with the greatest number of subdivisions approved in 2010/11 was Albury, followed by Greater Hume, and then Wakool. The LGA with the least number of subdivisions approved was Jerilderie, Carrathool, Conargo and then Hay.

Albury reported a significant decrease in new dwelling approved but minimal changes to the number of subdivisions approved. Wentworth and Leeton reported a significant increase in the number of new dwellings approved in their LGAs.

Pressure

Additional dwellings increases the load on infrastructure and the environment.

The ongoing global economic crisis and uncertainty have been identified as major contributors to a reduction in development in the reporting period. Flooding also impacted construction in the region.

Response

Councils require development applications assessing the environmental impact of developments to be submitted prior to works undertaken. Developments will not be allowed if they fail address the environmental issues.

¹ Sourced from relevant councils

Table 16 - Development in 2010/11¹

LGA	New dwellings approved ¹	Subdivisions approved ¹	Designated dev/major projects ¹	Retirement villages/aged care dev ¹	Other public dev (schools, hospitals) ¹	Significant events affecting development ¹
Albury	207↓127	76↑1	0 1	1↑1	2↑2	None
Balranald	23↓4	14↑3	1↑1	1↑1	4↑3	Closure of timber harvesting industry has slowed development further.
Berrigan	41↓1	7	0	0	2↓6	None.
Carrathool	3	2↓2	0	0	1↓2	Reduction in drought conditions.
Conargo	1↓1	3↑1	0	0	0	None
Corowa	58↑4	16↑6	0	0	2	None.
Deniliquin	19↑6	13↑5	0	0	2↓1	None.
Greater Hume	45↓2	28↑11	0	0	13↓7	Flooding
Hay	3↓3	2↓1	0	0	0↓2	Seasonal conditions reducing disposable incomes
Jerilderie	1↓1	1	0	0	1	Flooding
Leeton	42↑12	13↓3	0	0↓1	1	None
Murray	46	11↓10	0↓1	1↑1	2↑2	None
Murrumbidgee	3	1	0	0	0	Drought & flood
Narrandera	3↓2	7↓2	0	0	0	Economic down turn.
Wakool	6↑1	6↓5	1	0	0	None
Wentworth	42↑26	22↑15	1	1↑1	3↑3	None

¹Sourced from relevant councils



Case study - Albury City Council and RAMROC

Halve Waste: reduce - reuse - recycle

News Weekly 2011 & Halve Waste



The region is facing serious waste management challenges. The Halve Waste is an initiative of Albury City Council and Riverina Murray Regional Organisation (RAMROC) in partnership with the City of Wodonga and the Shires of Towong, Greater Hume, Corowa and Indigo.

Domestic recycling rates are well below the State average and the Albury Waste Management Centre is filling up to fast, at the current levels of disposal it will be full in less than 20 years.

'Halve Waste—reduce, reuse, recycle' is a public awareness and education programs with the aim to engaged the community and reduce waste and increase recycling.

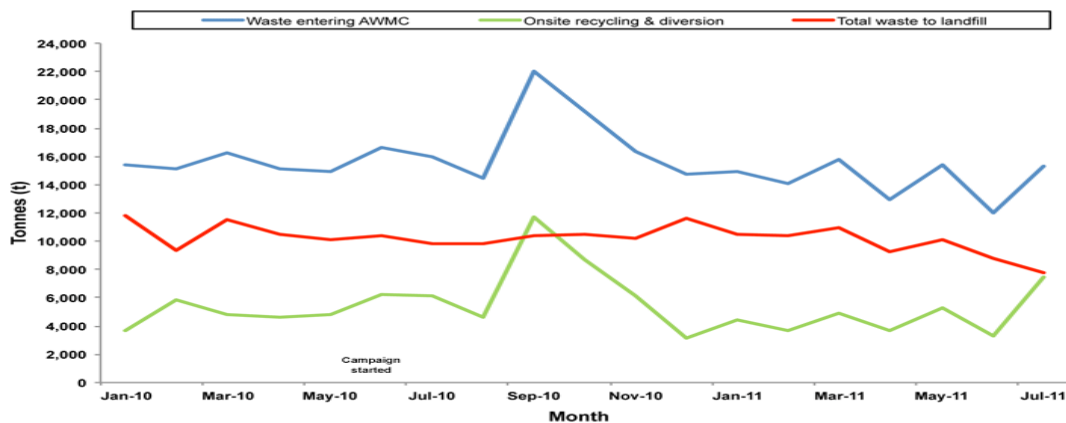
The objectives of the Halve Waste campaign are to:

- Reduce the regions waste by active recycling;
- Engage and inform the community about waste management; and
- Halve the amount of waste going into the Albury Waste Management Centre by 2014.

From June 2010 Halve Waste estimated that more than 16,000 tonnes have been avoided. The initiative includes educational information on home composting, effective waste management of residents and businesses and school programs.

In November 2010 Halve Waste offered 1,000 local households a complete home composting package for only \$10. Home composting is a key component of the Halve Waste camping as on average over 65% of the waste generated by households is food or green waste, all of which is compostable.

Waste to landfill at Albury Waste Management Centre in 2010/11



Proudly supported by:



7.4 Waste¹

State

Councils of varying sizes and resources run differing programs when it comes to disposal of waste (see Table 17). Some smaller councils choose to participate in regional programs, joining up with neighbouring LGAs to provide a service, while others are too remote to justify joint programs. Many councils in the RAMROC region cooperated in the 'Halve Waste' program to reduce the amount of waste produced by residents and Councils.

Pressure

The continually growing population of the region requires more provision for waste management.

Response

Councils are continually keeping track of waste and effluent and encourage the community to reduce, reuse and recycle.

Table 17 - Domestic waste management¹

LGA	Council managed tip/WTS ¹	Tonnes to landfill ¹	Change	Domestic waste annual charge ¹	Change	Illegal dumping complaints ¹	Change
Albury	Yes	133,643	↑2,803	\$155	↑\$27	74	↑14
Balranald	Yes	800	↓200	\$261	↑\$15	0	-
Berrigan	Yes	3,344	↑125	\$233	↑\$11.15	8	-
Carrathool	Yes	301.76	↓55.74	\$99	-	0	-
Conargo	Yes	1,886.45	↑562.08	\$0	-	2	-
Corowa	Yes	5,872	↑2,842	\$235	↑\$35	2	-
Deniliquin	Yes	6,700	↑1,216	\$270	↑\$7	1	↑1
Greater Hume	Yes	5,000	-	\$185	-	25	↓25
Hay	Yes	2,700	↓300	\$185	↓\$111.5	2	↑2
Jerilderie	Yes (2)	100	↓900	\$160	↑\$5	0	↓1
Leeton	Yes	5,430	↑830	\$215.80	↑\$5.2	3	↓2
Murray	Yes	13,287	↑737	n/a	-	5	↑1
Murrumbidgee	Yes	87	-	\$88pa	-	0	-
Narrandera	Yes	3,312	↑285	\$218.4	n/a	n/a	-
Wakool	Yes	1195	↑91	\$207—240L \$116—120L	↑\$6 ↑\$3	0	↓3
Wentworth	No	23,000	n/a	\$185	↑\$3	6	↑2

¹Sourced from relevant councils

Case study—Power Saving Kits

Power Saving Kits available from the libraries

9 July 2011

Berrigan Council

Berrigan Council offered local residents to borrow power saving kits from the libraries. The power saving kits educated residents on the energy consumption as it measured and recorded energy use thought-out the home. The kit encourages residents to reduce their energy consumption to save money and help the environment.



7.5 Energy consumption

State

Table 18 below indicates the energy consumption for Council offices and the cost to supply electricity. Solar energy and solar hot water systems are becoming increasingly popular as a way to save on the cost of electricity and to help the environment.

Pressure

The increasing cost of electricity and the impacts of climate change require Councils and residents to reduce energy consumption and use more environmentally friendly sources of electricity.

Response

The NSW government offers funding to support and encourage business and residents to change to solar and alternative energy methods.

Table 18 - Energy consumption 2010/11¹

LGA	Council electricity consumption	Comparison to last year	Installed solar energy systems	Installed solar-hot water systems	Steps undertaken to reduce energy consumptions
Albury	15,433,927k Wh, \$3,701,219	Consumption was 7.7% lower	Exempt development	Exempt	Power Factor correction equipment, variable speed drives and other energy saving equipment were installed at a number of locations. Behavioural change (i.e. turning off lights in areas not in use or with adequate sunlight) has also been promoted and focused on at some sites.
Balranald	286,566 (kWh), \$146,200	Slight increase	1	4	None
Berrigan	\$319,109.30	\$75,000 increase	3	0	Act on Plant Footprint appraisal
Carrathool	Unknown	-	n/a	n/a	Council has undertaken an energy audit through Plant footprint as a first step.
Conargo	\$33,000	Cost the same, supply cost increased therefore Council reduced consumption.	Unknown	Unknown	-
Corowa	-	-	Unknown - exempt development	Unknown - exempt development	-
Deniliquin	\$477,455.40	\$16,760 increase	Unknown	Unknown	-
Greater Hume	Unknown	Unknown	Unknown	Unknown	Installed solar panels
Hay	-	-	1 via DA, several via exempt development	Unknown	Maintain as far as practicable a modern fleet of plant/vehicles
Jerilderie	Unknown	Unknown	Unknown	Unknown	Loss control policy adopted, Power saving kits now available from most libraries in the region.
Leeton	-	-	-	-	-
Murray	-	-	Unknown	Unknown	None
Murrumbidgee	Unknown	-	Unknown	Unknown	Nil
Narrandera	\$27,681.07	-	1 under complying development	Unknown	Unknown
Wakool	n/a	-	Unknown	Unknown	None
Wentworth	\$453,953.66	\$28,000 increase	n/a	n/a	None

¹Sourced from relevant councils

7.6 Effluent¹

State

Councils of varying sizes and resources run differing programs when it comes to disposal of effluent (see Table 18). Seven of the 15 Council recorded an increase in the number of houses connected to sewer in the reporting period. Wentworth reported an increase of 26 dwelling connect to sewer with a decrease of 22 not connected.

Pressure

The continually growing population of the region requires more provision for waste management.

Response

Councils are continually keeping track of waste and effluent and encourage the community to reduce, reuse and recycle.

¹ Sourced from relevant councils

Table 19 - Effluent management ¹

LGA	Council sewerage ¹	Dwellings connected ¹	Change	Dwellings not connected ¹	Approvals for on-site ¹	Change	Standard for on-site disposal?
Albury	Yes	1740	↑1,740	2425	25	↓4	S62 Local Gov Reg 2005 + Aust. Standard
Balranald	Yes	800	-	300	7	↑1	NSW Health Standards
Berrigan	Yes	3090	↑40	761	3	-	No
Carrathool	Yes	1085	-	Unknown	4	-	No
Conargo	No	NA	-	NA	0	↓1	Yes, Conargo Shire Onsite Sewerage Management Plan
Corowa	Yes	4666	↑58	263	4	↓1	Onsite Sewerage Management for Single Households
Deniliquin	Yes	3150	-	90	3	↑1	No
Greater Hume	Yes	1400	-	2100	20	↑1	Yes. Local Govt Act & Australian Standards
Hay	Yes	1297	↑97	200	0	-	Onsite Sewage Management Plan
Jerilderie	Yes	340	-	174	0	-	Yes, standard Public Health Policy
Leeton	Yes	2950	↓5	0	6	↑3	Yes. Lot size under 2ha requires an aerated waste water treatment system
Murray	Yes	2260	↑52	Unknown	1	↓6	No
Murrumbidgee	Yes	722	-	Unknown	1	-	No
Narrandera	Yes	1613	-	800	2	↑2	-
Wakool	Yes	1195	↑5	Unknown	3	↑3	No
Wentworth	Yes	1611	↑26	1300	16	↓22	No

¹Sourced from relevant councils



7.7 Recycling¹

State

Councils run differing programs when it comes to recycling. Some smaller councils choose to participate in regional programs, joining up with neighbouring LGAs to provide a service (such as Berrigan and Moira in Victoria), while others are too remote to justify joint programs. Domestic recycling rates are generally below the State average in the RAMROC area. In response to a lack of recycling the 'Halve Waste' campaign was started. It is a public awareness and includes education programs with the aim to engage the community and reduce waste and increase recycling.

Pressure

The continuing growing population of the region requires more provision for waste management. The changing view of society in terms of recycling means a greater demand for recycling facilities as people respond to growing government concern over the effects of climate change, pollution and emissions.

Response

Councils are continually keeping track of recycling programs and encourage the community to reduce, reuse and recycle. Councils often support school and community programs encouraging the reduction of waste (buying items with less packaging), the reuse of items (like reusable shopping bags) and recycling (or office paper, bottle, cans etc).¹

Sourced from relevant councils

Table 20 - RAMROC Council's recycling programs ¹

LGA	Council has recycling program ¹	Tonnes sent for recycling ¹	Change	Reams of office paper used by Council ¹	Change	Council recycles office paper ¹	Changes to recycling ¹	Reuse of item for project ¹
Albury	Yes	44,093.79	25,591	4,205	445	Yes	No	Crushed concrete road base, mulch
Balranald	Yes	50	-	700	-	Yes	No	No
Berrigan	Joint program	184.28	-	700	100	Yes	No	No
Carrathool	Yes	30	-	N/A	-	No	No	No
Conargo	Yes	307	268	Unknown	-	No	No	No
Corowa	Yes	1291	99	Unknown	-	Yes	No	No
Deniliquin	No	-	102	900	18	Yes	No	No
Greater Hume	Yes	1000 & 24,500 waste oil	-	800	-	Yes	E-waste program trialled	No
Hay	Yes	120 card/paper & 166 metal	-	Unknown	-	Yes	No	No
Jerilderie	No	12 (steel)	7 (steel)	273	5	No	No	No
Leeton	Yes	780	24	750	16	Yes	No	No
Murray	Yes	3500	1264	Unknown	-	Yes	No	No
Murrumbidgee	No	Unknown	-	189	-	No	-	Greenwaste
Narrandera	No	NA	-	1000	-	Yes	No	No
Wakool	Yes	401	262	Unknown	-	Yes	No	No
Wentworth	No	N/A	-	1805	157	Yes	No	Yes, council libraries reuse recycle items for children's activities

¹Sourced from relevant councils



7.8 Registered vehicles¹ and Licences²

State

There was 120,997 registered vehicles in the RAMROC region on June 30 2011. Of these, the majority (39,628) were located within the Albury LGA, while the smallest amount (1,662) were located in Jerilderie. The ratio of vehicles to population is higher in the lesser populated and more remote LGAs, this trend is similar for licences. Balranald, Carrathool, Conargo, Greater Hume, Deniliquin, Hay and Murrumbidgee all have more registered vehicles than there are people.

Pressure

With many families requiring cars for each working member, there is usually multiple cars per household. Cars contribute to greenhouse gas emissions.

Response

Councils make their towns healthier by encouraging walking and riding, providing safe attractive alternatives to driving where possible. Some LGAs also have functioning public transport system.

¹ NSW Transport: Roads & Traffic Authority, *Registration* Based on 2006 Census Population Data

² NSW Transport: Roads & Traffic Authority, *Licensing*, Based on 2006 Census Population Data

Figure 11 - Vehicle registration in the RAMROC area ¹

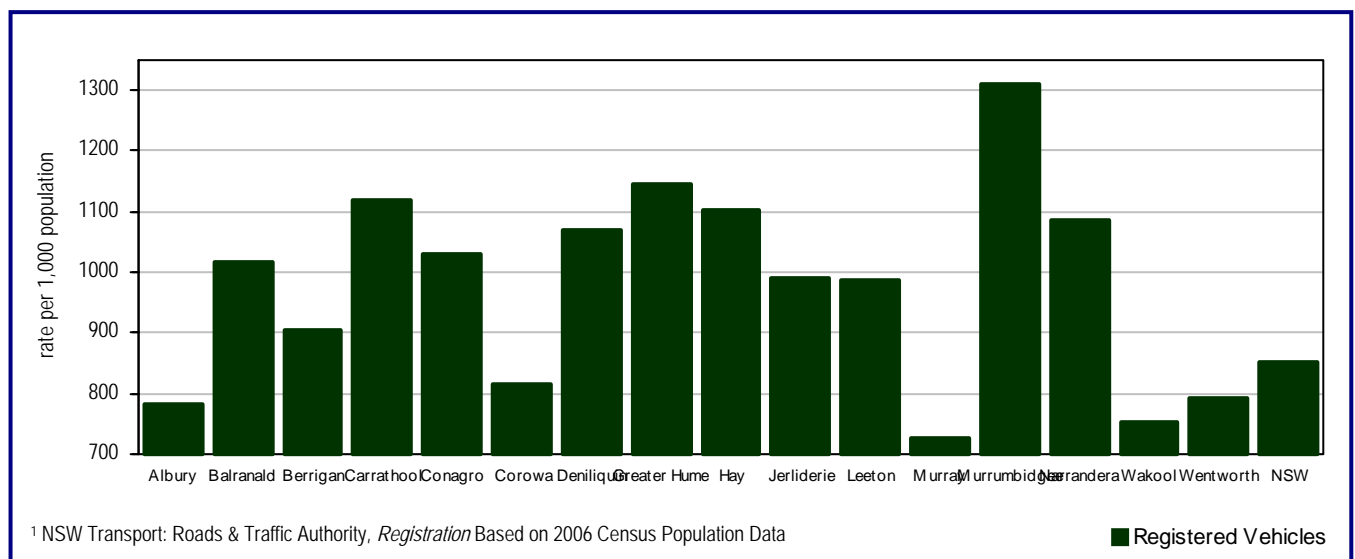
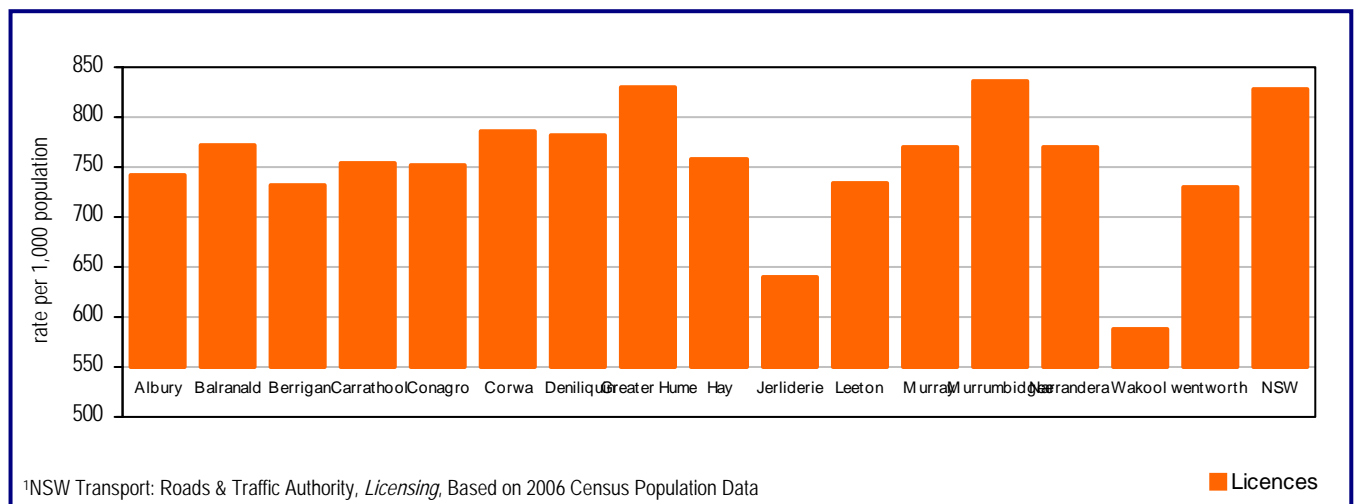


Figure 12 - Licences in the RAMROC area ¹



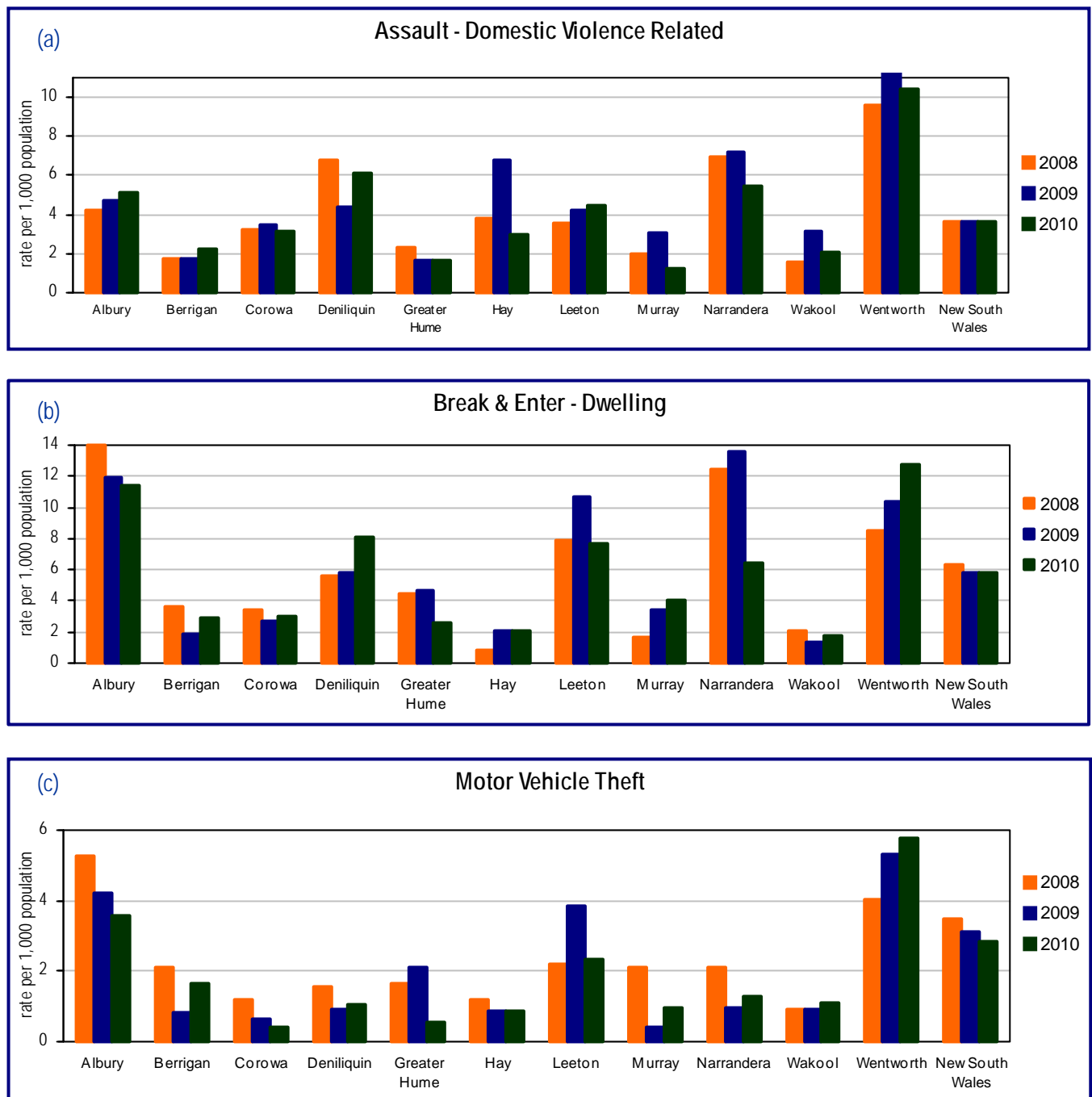


7.9 Crime¹

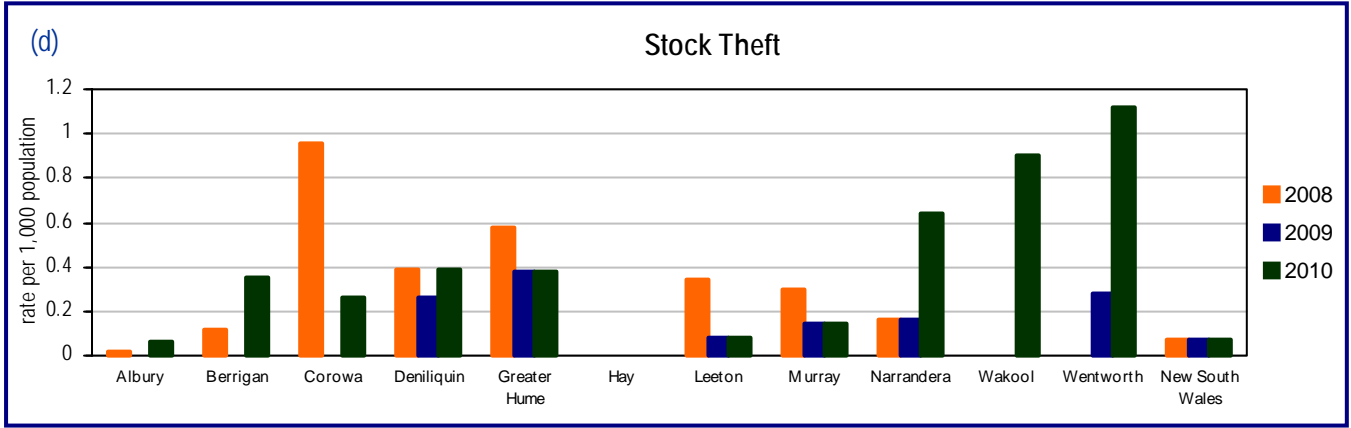
Crime occurs in most human settlements and Figure 13 indicates that generally the higher the population concentration the higher the crime rate. The data below consists of criminal incidents reported to police and recorded by the NSW Police. Recorded crime statistics for some offence categories may not accurately reflect the actual level of crime in an area. This is because some crimes are not reported, some are not easily measured and records of offences which are detected by, rather than reported to police are strongly affected by policing practices for example drug offences and drink driving offences. The NSW Bureau of Crime Statistics and Research cautions that crime rates in LGA with small population sizes (less than 3,000) are not always good indicators of offending crime rates.

¹ NSW Bureau of Crime Statistic and Research, 2011, *Crime Statistics*,

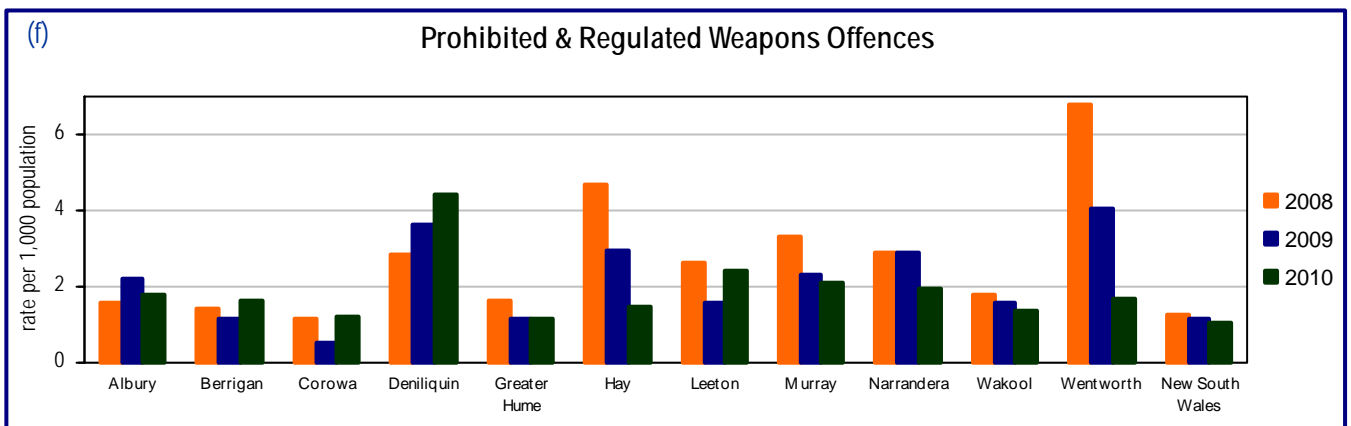
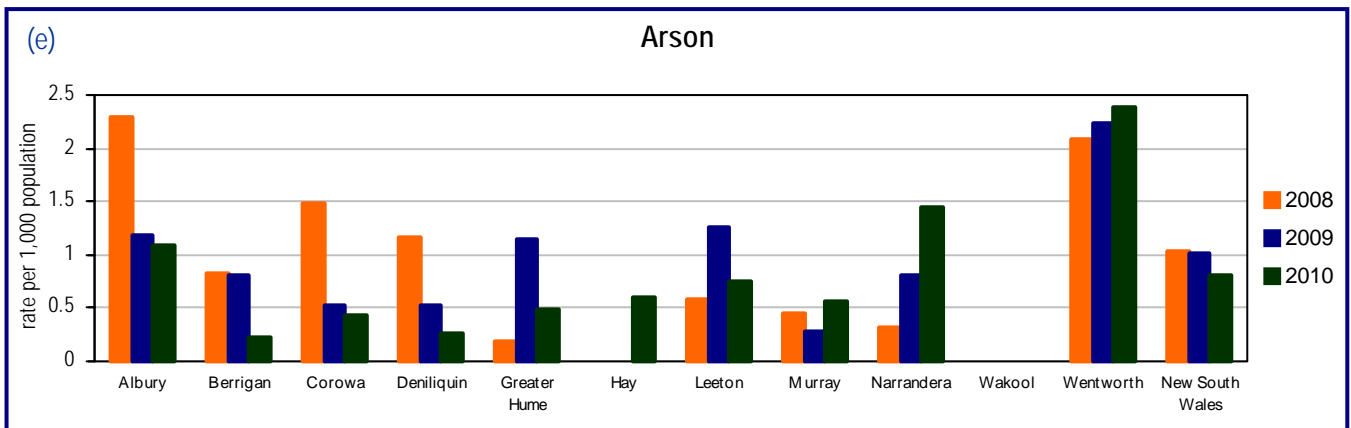
Figure 13 (a) - (f) -Crime reported in the RAMROC area ¹



¹ NSW Bureau of Crime Statistic and Research, 2011, *Crime Statistics*, Based on 2006 Census Population Data



The calculations for data in figure 13 is for the rate per 1,000 population in each LGA to allow comparison. Albury and Wentworth exceed the state average in all categories. Overall, crime rates are declining. Murray River LGAs generally have a lower crime rate, that could be linked to the presence of a higher proportion of retirees in the population.





8.1 Heritage items¹

State

The number of heritage listings for each LGA is on the following page. Note that the Heritage Branch website may not include recent listings, also some councils are in the process of constructing new LEPs that may include or remove some items. In some cases a substantial number of items have been added to heritage schedules.

Local and State heritage items are not hierarchical with one being more important than the other. Instead, they are complementary and indicate the contextual relationship of the significance of the item. It is about context not rank. The significance is relative to the community of interest associated with an item.

No damage or vandalism was reported to a heritage item in the RAMOC region in this reporting period.

Albury has reported 12 alterations made to heritage items during which included ten alterations and two partial demolitions.

A number of LGAs do not know if there has been any alterations or demolitions, or damage to any heritage items during the reporting period.

Pressure

Damage to heritage items can occur through the following ways;

- Demolition for new development
- Wear and tear
- Natural hazards (flood, fire etc.)
- Nearby unflattering development
- Alterations/unflattering improvements
- Graffiti/vandalism
- Accidental damage
- Neglect
- Pests/animal damage

Response

Identification of important items through heritage studies, protection of items through legislation and funding for heritage projects/maintenance can all attribute to the ongoing protection of items of heritage significance.

¹ NSW Office of Environment and Heritage, 2011, *NSW Heritage*



Table 21 - Heritage items in the RAMROC region¹

LGA	Local items listed in LEP	Other local items	Items of State significance	Items of National sig.	Any study in 2010/11?	New items?
Albury	257↑38	257↑38	12↓1	0	No	Yes, Local heritage items updated per Schedule 5 of LEP
Balranald	8↑8	8	1	1	No	None
Berrigan	3	60	21	0	No	None
Carrathool	0	79	2↓4	0↓9	No	None
Conargo	1↑1	30↑29	1↑1	1↑1	No	None
Corowa	72	72	3	0	No	None
Deniliquin	33	33	3	0	No	None
Greater Hume	89↑14	89	2	0	No	Yes, Draft Schedule 5 prepared of new draft LEP
Hay	30↑6	30↓1	4	0	No	None
Jerilderie	4	90	6↑4	4↑2	No	None
Leeton	42↑33	150↑108	8↓2	0	Yes, community based shire wide heritage study	Not as yet
Murray	10	64↑54	3	1	No	None
Murrumbidgee	5	0	1	0	No	No
Narrandera	8	8	8	41	Yes, LEP Schedule of Heritage—Items of Significance	None
Wakool	5	48	6	7	No	None
Wentworth	31↑2	115↑2	3↑1	1	No	None

¹Based on advice from Councils



8.2 Aboriginal items¹

Aboriginal heritage consists of those places and objects that contribute to the story of Aboriginal people in NSW. It can help identify the links that places may have with each other and their cultural significance. Aboriginal people moved around NSW and passed on stories, information and knowledge by going to these special places.

Aboriginal heritage includes places and items that are important to the local Aboriginal community or to Aboriginal people of NSW. These are places or objects that people have a connection to, both physically and spiritually. Aboriginal heritage can include natural features such as creeks or mountains, ceremonial or story places or areas of more contemporary cultural significance such as Aboriginal missions or post contact sites.

State

The details of Aboriginal heritage listings for each LGA is listed in the Table 22.

Pressure¹

Damage to heritage items can occur though the following ways:

- Demolition for new development
- Wear and tear
- Natural hazards (flood, fire etc.)
- Graffiti/vandalism
- Nearby unflattering development
- "Trophy" hunters
- Accidental damage
- Neglect
- Pests/animal damage

Response

Identification of important items through heritage studies, protection of items through legislation and funding for heritage projects/maintenance can all attribute to the ongoing protection of items of heritage significance.

¹ NSW Office of Environment and Heritage, 2011, *NSW Heritage*

Table 22- Aboriginal heritage items within RAMROC LGAs¹

LGA	Known Aboriginal items	New archaeological items in 2010/11?
Albury	Unknown	Yes, due diligence assessment for the construction of the Wagirra Trail: Horseshoe Lagoon to Waterview Rd
Balranald	108 (DECCW AHIMS database)	No
Berrigan	Unknown	No
Carrathool	4	No
Conargo	0	No
Corowa	Unknown	No
Deniliquin	Nil	No
Greater Hume	19 Culcairn (AHIMS) 14 Henty (AHIMS) 10 Jindera (AHIMS) 1 Walla Wall (AHIMS) 6 Burrumbuttock (AHIMS)	Yes. RTA Woomargama and Holbrook by-pass study
Hay	322 (AHIMS)	Yes. Riparian area study around Hay township in conjunction with Hay Town Flood Levee Project
Jerilderie	Unknown	No
Leeton	1	No
Murray	Unknown	No
Murrumbidgee	1	Darlington Inn site
Narrandera	1	No
Wakool	Unknown	Unknown
Wentworth	8	No

¹ Sourced from relevant Councils



8.3 Heritage funding

NSW Heritage Grants program assists owners and managers of state significant heritage items, Aboriginal heritage and local government heritage management in NSW¹.

State¹

Nearly \$10 million was approved for 323 projects across NSW under the NSW Heritage Grants Works Program in 2010/2011.

Numerous Councils received funding for heritage projects in the reporting period from the NSW Heritage Grant Works Program and other sources. A selection of projects in the RAMROC region funded by the NSW Heritage Grants Works Program are found in Table 23. Wentworth received funding from the NSW State Government—Community Building Partnership to Develop the 'Cultural Precinct of Wentworth' project.

Pressure

There is a limited amount of funding available for heritage projects and limited resources (staff) for projects.

Response

Councils can apply for funding through the Heritage Branch. Councils also encourage and provide information to owners of heritage items to seek funding for maintenance.

¹ NSW Office of Environment and Heritage, 2011, *NSW Heritage Grants*

Table 23 - Examples of funded projects within the RAMROC region 2011-2013¹

Project name	Project purpose	LGA	Funding
Old Wentworth Gaol Wall Restoration Project	To carry out conservation work on the perimeter wall of the former 1881 Wentworth Gaol.	Wentworth	\$65,000
Cowra Showground Grandstand (c1920) Conservation	To undertake urgent conservation work to the c1920 Corowa Showground Grandstand to enable its continued use.	Corowa	\$60,000
Ned Kelly Post Office, Jerilderie, Conservation and Adaptive Re-use as Exhibition Space	To carry out conservation work to the former Post Office in Jerilderie made famous by Ned Kelly and adaptive re-use as an exhibition space for the Historical Society.	Jerilderie	\$40,000
Former Hay Gaol (1880) Perimeter Walls and Watch Towers Stabilisation and Conservation	To undertake urgent stabilisation and conservation work to the perimeter walls and watch tower at the State Heritage Register-listed 1880 former Hay Gaol complex designed by Colonial Architect James Barnet.	Hay	\$60,000
Soden Hotel, Albury Conservation	To undertake conservation work to the portico at the State Heritage Register-listed 1934 Buckland Convalescent Home at Springwood to enhance the entrance	Albury	\$10,000

¹ NSW Office of Environment and Heritage, 2011, *NSW Heritage Grants*

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