Shire of Gunnedah
Land of Opportunity

Gunnedah Shire Rural Strategy









Gunnedah Shire Council

NSW GOVERNMENT
Department of Planning

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Gunnedah Shire Council

Gunnedah Shire Rural Strategy

Prepared for Gunnedah Shire Council and the
Department of Planning
by

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Chapter 1 Introduction

1.1 Introduction

Gunnedah Shire is located in Northern New South Wales and covers an area of 5,021 square kilometres. The main industries include sheep and cattle farming, wheat, cotton and various other crops, as well as, some manufacturing and saw milling. There are also several intensive animal industries including poultry and cattle. Gunnedah Shire is also an area for recreation and tourism.

The Shire has a resident population of 12,370 (June 2003) persons and the major urban settlement is Gunnedah with other smaller settlements of Breeza, Carroll, Curlewis, Mullaley and Tambar Springs.

The land within the Shire provides an important resource, both for the Shire and the wider region. This resource consists of a number of components:

- Productive agriculture
- Rural landscapes
- Towns and villages
- Waterways
- Coal and coal seam methane
- Native vegetation
- Industry
- Community facilities and services
- Cultural heritage

The Rural Strategy will provide a future direction rural areas of the Shire. It has been prepared to supplement the information provided in the Local Environmental Study prepared by Planning Workshop Australia in 2004.

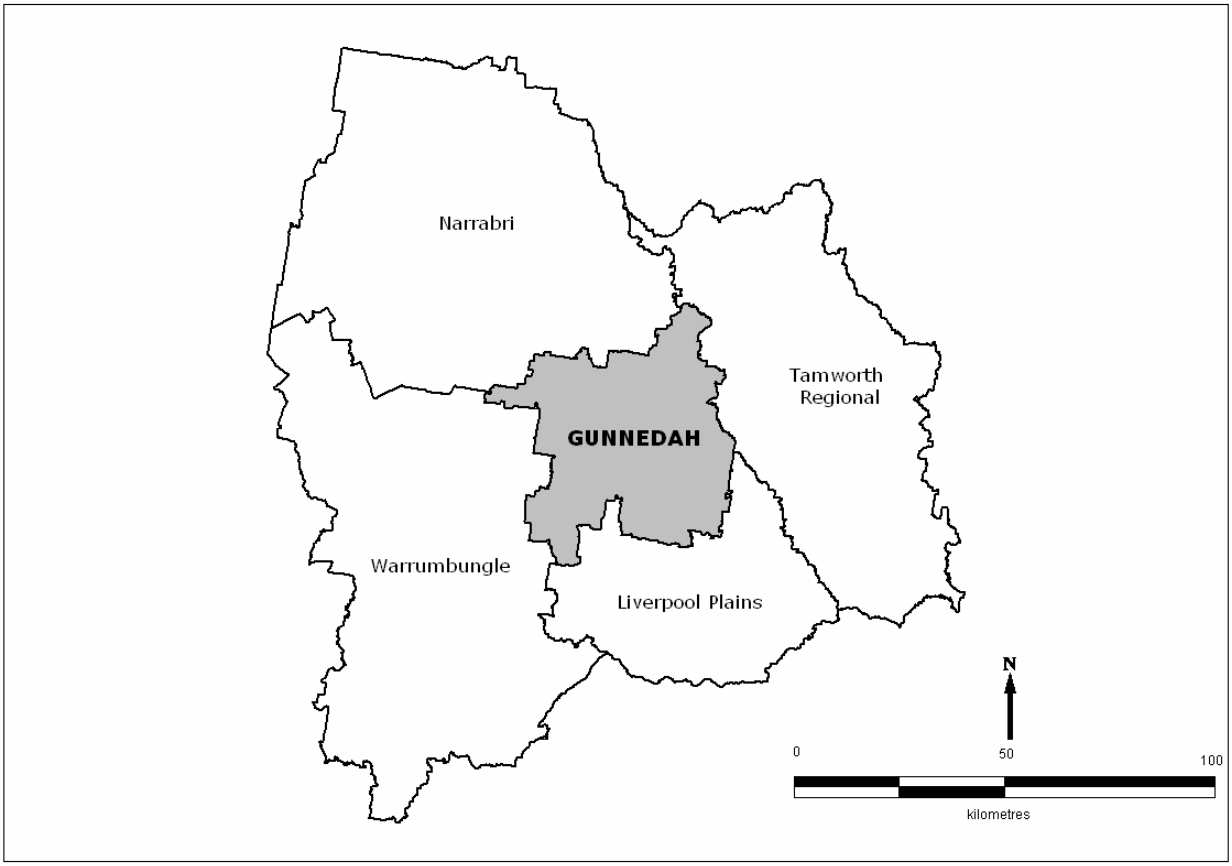
This document provides a description of the physical, social and economic environment of the Shire as well as the planning context. The development pattern of the Shire is described as well as the issues facing the future of the Shire have been discussed. Finally, analysis of these issues has been carried out to provide a set of options.

The preparation of this strategy has been funded by the Department of Planning using the Planning Reform Program.

1.2 Location and Study Area

The Gunnedah Shire is located on the North West Slopes and Plains Region of NSW. To the north is Narrabri Shire with Tamworth Regional Council east and Liverpool Plains to the south. Warrumbungle Shire Council is to the west. Map 1.1 shows the surrounding Shires.

This strategy focuses on the rural land and villages of the Shire and does not deal with the issues that apply to the urban area of Gunnedah.

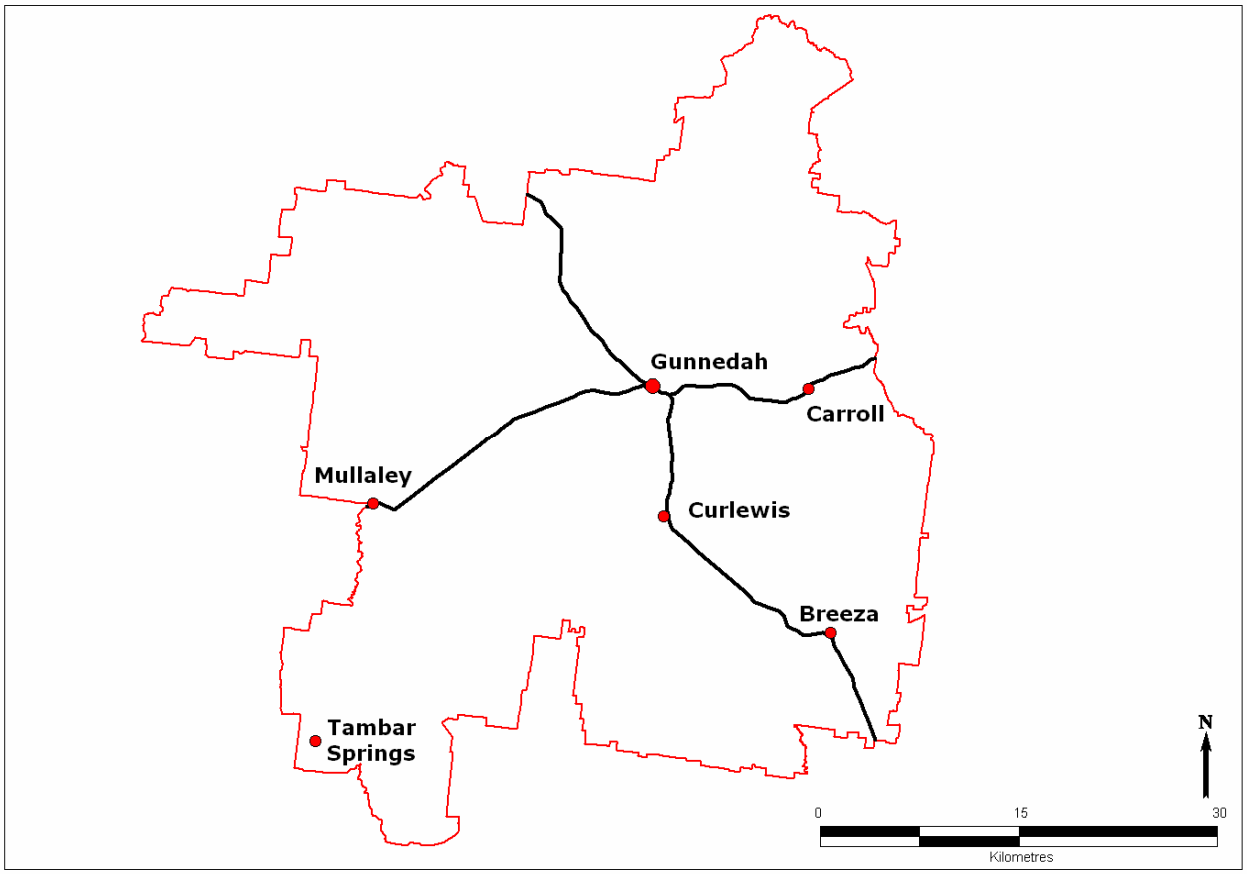


Map 1.1: Surrounding Shires.

The Shire has an area of 5,002 square kilometres. There are a number of settlements in the Shire and they include the following:

- Gunnedah
- Breeza
- Carroll
- Curlewis
- Mullaley
- Tambar Springs

Map 2.2 shows the Gunnedah Shire and the location of these settlements.



Map 1.2: Gunnedah Shire showing the location of the settlements.

1.3 Study Objectives

The brief prepared by the Council lists the following specific aims of the strategy:

- To identify suitable locations to be included in the Rural 1(a) and Rural 1(b) zone of the Draft Gunnedah Local Environmental Plan, 2004
- To identify appropriate areas within the Rural 1(a) zone which may be suitable for further subdivision and potential closer settlement.
- To provide outcomes formulating appropriate strategic planning provisions in the Rural 1(a) and Rural 1(b) zoned land.
- To consider strategic implications in the Rural 1(a) zone of relaxation of the 'Existing Holding' provisions.
- To examine the current settlement patterns in the Rural 1(a) and Rural 1(b) zone
- To examine the land management units in relation to good quality agricultural land.
- To consult stakeholders in the decision making process.
- To examine the implications of fragmentation of agricultural land.

The brief is reproduced as Appendix 1.

1.4 Why Prepare a Strategy

The preparation of a strategy is a vital component in the future sustainability of the area. It enables the Council to consider all of the aspects of the social, environmental and economic issues that interact and have to be considered for the future of an area. The strategy is an overarching document that provides the Council with guidance for the future of the area to ensure its sustainability.

The preparation of a strategy enables the Council and other organisations to address the big picture issues as well as providing a road map for the future direction of the development of an area. It is important to recognise however, that this strategy also gives a direction for further work. It provides a framework and sets the direction for future rezonings and other actions that will implement the strategy.

The measure of success of a strategy is its implementation by the Council and the acceptance of this by the community. The strategy will make a series of recommendations that will have an impact on the Council's resources. Costing of the strategies need to be considered in the context of the Council's Management Plan.

1.5 Methodology

The study has been prepared by the consultant based on discussions held with Council Officers, Government Departments and the Community. A review of all relevant literature has also been carried out.

Data was gathered based on secondary information except for a detailed landuse survey and lot and holding size analysis, which was carried out by the consultant. The land use survey entailed utilising aerial photography and satellite imagery to gain an appreciation of the landuse, which was then field checked by a survey of all roads and properties in the Shire. This information was then coded and entered into Councils property database, which enabled it to be mapped using a Geographical Information System (GIS). The holding sizes within the Shire were categorised and mapped. The Shire was inspected from the air in a light plane, which provided a valuable perspective on the issues such as catchments, vegetation and conflicting landuses. A detailed description of the methodology for the landuse survey is contained in Appendix 2.

A detailed literature review has been carried out of studies and issues relevant to local and regional planning. Discussions were held with various Council officers covering the areas of planning, environmental science, engineering and social services.

Input has been given by the Community and the State Government Departments through formal and informal discussions. In addition, a series of stakeholder workshops were held as well as one community workshop.

Chapter 2: Conservation and Development Issues

2.1 Introduction

This chapter discusses the issues that are affecting the future of the rural areas of Gunnedah Shire. It discusses the existing situation as well as the matters that have to be addressed to ensure that the future is sustainable. The following is a discussion of the physical constraints for settlement of and development in rural areas of Gunnedah Shire. It considers the range of matters that have to be looked at before any decision is made as to the future use of the land. Some also have implications to the current management of the land.

The issues, which have to be considered when in any discussion about the future of Gunnedah Shire, can be grouped into two broad headings of:

- Environmental Opportunities and Constraints
- Social and Economic Factors

There are a number of uses and issues which influence the rural land uses and settlement pattern of Gunnedah Shire. The resources necessary to use the land are finite and need to be conserved. There are a number of constraints to the use of the land and the resource.

Underlying all of the issues are the philosophies of Ecologically Sustainable Development (ESD) and Total Catchment Management (TCM). It is shown graphically in figure 7.1. The figure illustrates the interconnectedness of the issues and the fact they all must be considered in relation to each other and cannot be considered in isolation.

ESD embodies the three concepts of:

- Environmental conservation
- Social equity
- Economic prosperity

All three are interrelated and have to be considered as such. The environment in which we live has to be treated carefully so we can ensure it is left in a good state for the future generations. However, for there to be future generations, we must have settlements in which to live – be they urban areas or rural residential use or in houses scattered throughout the countryside. If we are going to live in an area, there also must be a market economy. There is a need to find the balance between these three so we can have a sustainable future and can leave an intact environment to the future generations.

One thing about all of these issues is that they are complex as well complimentary and there is a need to consider all aspects of them if we are to achieve a sustainable future.

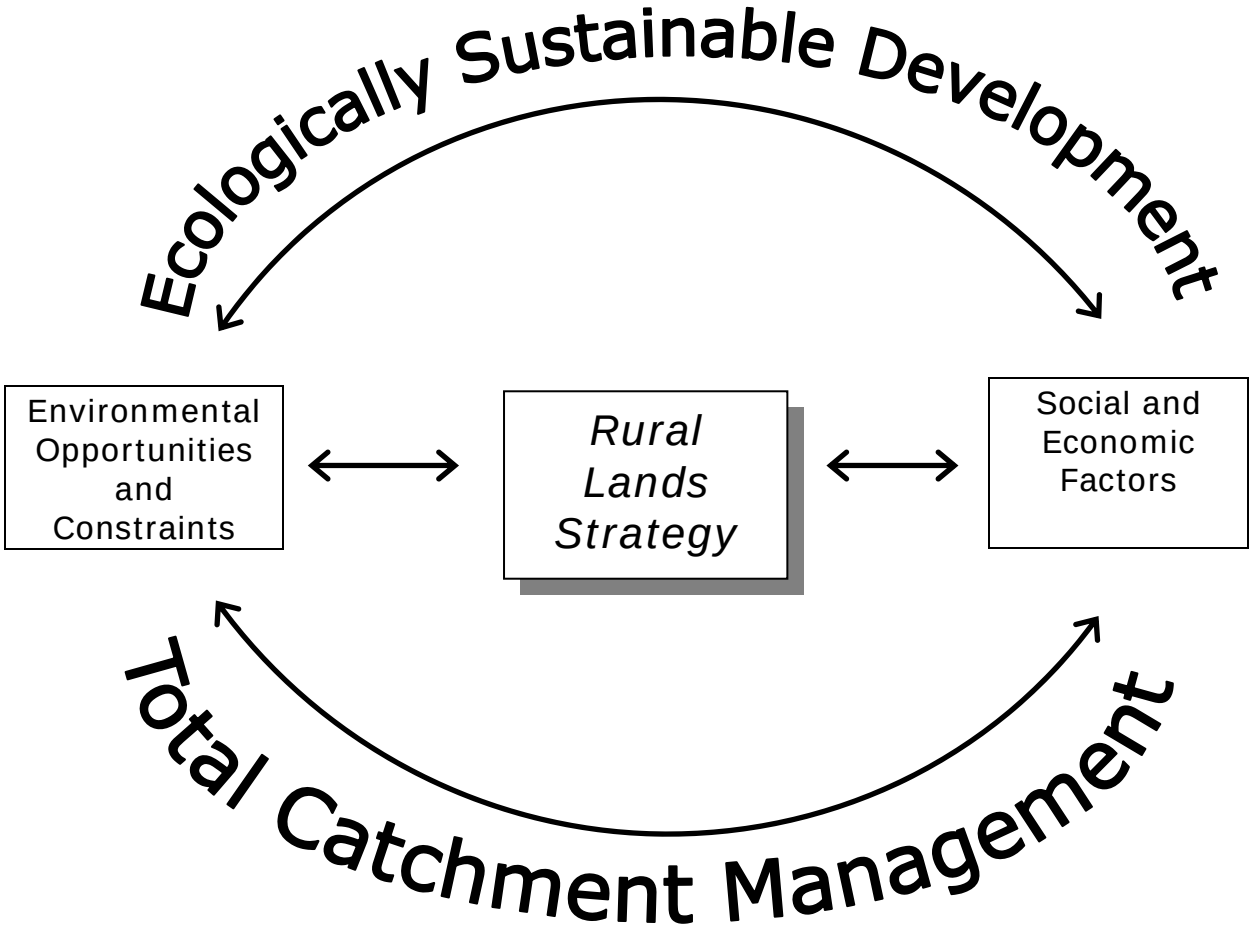


Figure 2.1: Issues and Themes for the Rural Study
Source: Sinclair 2002d

The resources to enable the land to be used have to be conserved so that future generations can also enjoy and use the area. The principles of ESD and TCM are implicit to this section. ESD is discussed in detail in chapter 4.

All land is within the various water catchments. Therefore, all development will have an impact on these catchments. Some uses have the potential to cause harm whilst others do not. Potentially harmful uses can be designed to minimise the impact of the use on the catchment.

The philosophy of Total Catchment Management (TCM) is one that should underlie all planning for rural land and settlements. As such, it is an issue which is very important to the Gunnedah Rural Strategy.

2.2 Environmental Opportunities and Constraints

2.2.1. Water Catchments

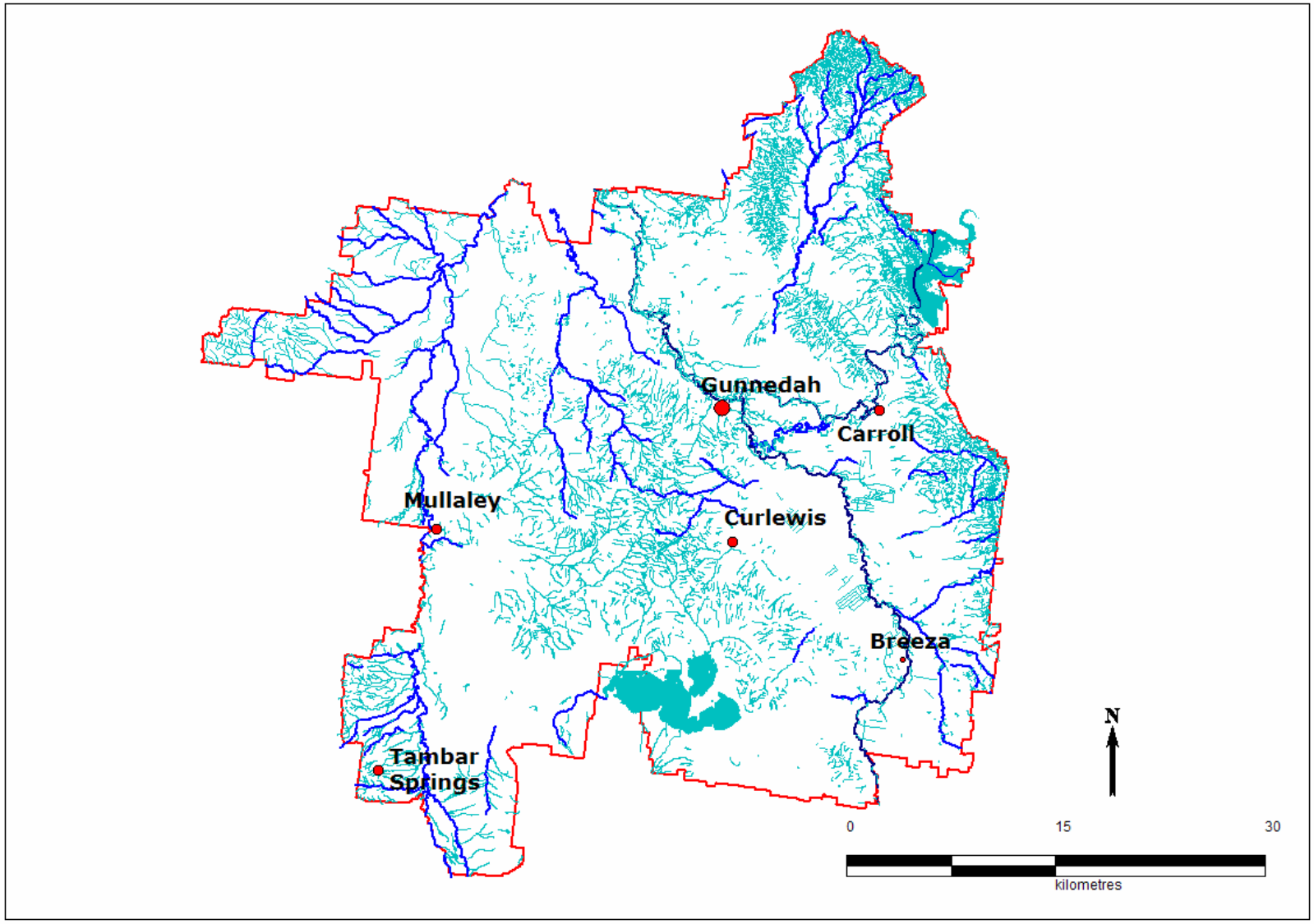
Gunnedah Shire is part of the Namoi Valley Catchment, which in turn is part of the Murray Darling Basin. There are 3 major drainage systems in the Shire which are shown on Map 2.1 and are as follows:

- Namoi River
- Mooki River
- Coxes Creek

There are also 2 lakes in the Shire. Lake Keepit is the lake behind Keepit Dam which is located in the northeast near Carroll. Goran Lake, located on the southern boundary is an intermittently full drainage basin. It is the largest natural water body in the Namoi Valley and has an area of 6,000 ha when full (DNR website). It is listed as being of National importance on the Directory of Australian Wetlands and provides habitat for a large number of water birds. At present it is mostly dry with a small area under water. Photo 2.1 shows Goran Lake, which is filling up with water after being mostly dry during the drought.

Photo 2.1: Goran Lake
Date of Photo: July 2005

The Mooki River starts in the Liverpool Ranges in the Liverpool Plains Shire to the south. It enters the Shire in the southeast and drains past Breeza then goes in a north westerly direction to enter the Namoi River some 4 kilometres to the east of Gunnedah. Photo 2.2 shows the Mooki River near Breeza.



Map 2.1: Waterways in the Shire

Photo 2.2: Mooki River
Date of Photo: July 2005

The Namoi River traverses the entire Shire in an east - west direction. It commences downstream from Keepit Dam (located on the eastern boundary of the Shire) and travels through Carroll and Gunnedah and then head in a northerly direction and crosses the northern boundary of the Shire in the vicinity of Boggabri. Photo 2.3 shows the Namoi River north of Carroll.

Photo 2.3: Namoi River
Date of Photo: July 2005

The Cox's Creek also commences in the Liverpool ranges in the adjoining Liverpool Plains Shire to the south. It grows past Tambar Springs and Mullaley and exits the Shire on its north western boundary also in the vicinity of Boggabri. Photo 2.4 shows the Cox's Creek on the southern boundary of the Shire.

Photo 2.4: Cox's Creek
Date of Photo: July 2005

There are many waterways in the Shire. Some are merely drainage depressions and only flow when it rains. Others, like the Rivers and Creeks mentioned above and their tributaries are extremely important because of their size and location. This is not to infer that the drainage depression is not as important as the larger creeks and rivers. A key objective of Total Catchment Management (TCM) is to ensure that landuses do not have a detrimental impact on the quality of the water in streams. It is also important to strive to improve the quality of water by ensuring that the surrounding land uses are sustainable and conform to the principles of ESD.

The provision and conservation of water is a major issue for the future of the Shire. There is a need to ensure that the integrity of the waterways is protected from inappropriate landuses.

There are many things that can cause the waterways to become stressed. Some are as follows:

- Nutrient from rural residential, waste disposal and intensive agriculture;
- Dams and water diversions;
- Extraction from rivers and streams – both licensed and unlicensed;
- Turbidity caused by soil erosion;
- Filling of land;
- Inappropriate development controls on existing uses.
- Loss of indigenous riparian vegetation.

The issue of preserving the natural flows of rivers is one that is impacted upon by a number of issues, including the number of rural dams which have the effect of holding back and trapping a large amount of water, especially during and after a long period of dry weather. The NSW Farm Dams Policy has been introduced to address this. It will only have an impact on new dams and not existing ones.

The protection and preservation of riparian land and its management is a major issue that has to be considered. Riparian vegetation is an important part of the catchment as it provides a filter for the waterway by trapping sediments and nutrients that may have otherwise entered the water system. It also provides for bank stability as well as a habitat for wildlife.

The groundwater resources of the area are an issue that needs to be considered in a regional context, but one that the use of land in the Shire can have an impact on. Groundwater is also part of the wider ecosystem and any changes to it will impact upon other aspects of the environment.

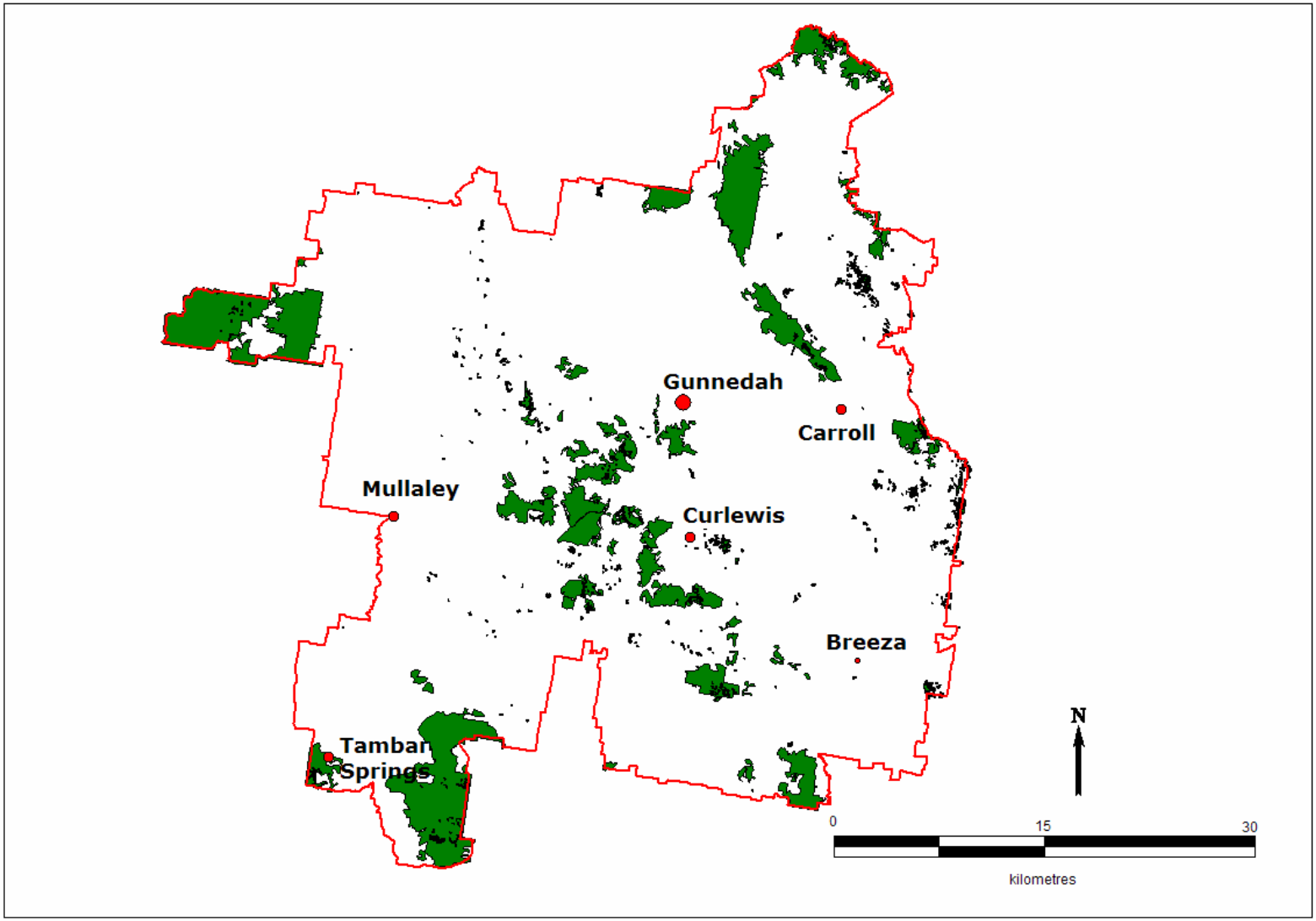
The catchments have varying degrees of settlement which includes towns and villages as well as rural subdivision. This is an indicator of the amount of stress that the catchment is being placed under.

2.2.2. Native Vegetation and Biodiversity

The native vegetation of the Shire is an important resource that is essential to ecological and land management as well as contributing to the visual landscape of the Shire. It provides habitat for native flora and fauna and is an integral part of the rural landscape of the Shire.

There has not been any vegetation mapping done specifically for the Gunnedah Shire. However, some mapping has been done which has been associated with the Brigalow Belt South Bioregion as well as the Liverpool Plains Native Vegetation Plan. Map 2.3 shows the areas of native vegetation in the shire

As a general statement, it can be said that the most native vegetation is associated with the steeper land and the State Forests. It is more prevalent therefore in the east and north east and southern parts. There have not been any studies of the native vegetation to ascertain its structure and make up and this is needed to identify the important parts that need to be conserved. Photos 2.5 and 2.6 show the extent of the vegetation.



Map 2.2: Land covered in native vegetation

Photo 2.5: Native Vegetation south of Gunnedah
Date of Photo: July 2005

Photo 2.6: Native vegetation on the steeper land in the south west
Date of Photo: July 2005

Biodiversity is the variety of all life forms - the different plants, animals and micro-organisms, the genes they contain and the ecosystems of which they form part (Commonwealth of Australia, 1996).

The biodiversity of the Shire is an important resource, which is yet to be studied in any detail. Suffice to say, however, that there is some significant areas of biodiversity within the Shire. It is in indicator of the importance of the biodiversity of the Shire and the need to study it in more detail. There is also a considerable amount of the biodiversity habitat associated with roadside vegetation and the travelling stock reserves that extend throughout the Shire.

A search of the Atlas of NSW Wildlife has revealed that there are 14 species of birds that are listed as vulnerable under the Threatened Species Conservation Act and 3 that are listed as endangered. There are 9 species of mammals listed as vulnerable and 1 endangered and 2 species of reptiles that are vulnerable. There are also 2 species of plants listed as vulnerable and 1 as endangered. These 3 species are located in the hilly areas of the Shire.

Major pressures on native vegetation in the Shire arise from clearing the land for a dwelling site, agriculture and service infrastructure. Secondary impacts of human activities such as the spread of garden weeds, domestic pet and livestock damage and pollution from on-site sewage systems all need to be considered in a strategic approach to the planning of Shire.

In the context of Gunnedah Shire, it is important to recognise that all landuse decisions will have an impact on the biodiversity of the area. It is important therefore to take into consideration the impact on biodiversity when thinking about changing the use of the land. There is also a need to monitor the impact of development. The *Biodiversity Planning Guide for NSW Local Government* notes that effective conservation of biodiversity requires integrated environmental assessment and management. It lists key issues that need to be considered in making landuse decisions and these are as follows:

- Protection of biological diversity is essential for achieving ecologically sustainable development.
- Biodiversity provides "ecosystems services" of inestimable and economic value such as flood control, erosion control, water quality control, insect control, carbon absorption and climate stabilisation.
- Natural areas, which are larger, less disturbed and more connected, are more likely to retain a higher degree of biological diversity in the long-term.
- Biodiversity is, as an expression of the unique Australian environment, an intrinsic part of the Australian culture. It supports recreation, tourism and national identity.
- Biodiversity maintains the gene pool of wild plants and animals. This is a useful resource for future generations.
- Greater biodiversity provides more resilient environments that are capable of better withstanding unpredictable events.
- All parcels of land are important for protection of biological diversity, not just those of greater significance.
- Ecosystems are characterised by local uniqueness and complexity. Landscapes are a non repeating mosaic displaying individual site specific responses.
- Ecosystems interact and change over time. They have the ability to sustain themselves and to reproduce, migrate in space and evolve in response to changing conditions.

- Maintenance of natural assets and habitat is required across the landscape, not just within national parks and other reserves. All land parcels within natural areas have a role, not just those of greatest significance or pristine qualities.

- Most species diversity is found amongst invertebrates, fungi, and micro-organisms. Such organisms are critical to the growth and productivity of whole ecosystems.

- Corridor systems can provide landscape connectivity. They require retention and maintenance of existing links, and the restoration of links.

- Current trends in species decline and extinction result from land use practices that have occurred over long periods. The full effects of recent decisions may not become manifest for many decades.

The biodiversity of Gunnedah Shire needs to be protected when carrying out any planning exercise. This means that any decisions to reduce the subdivision minimum has to consider the impact on the biodiversity of the area. This also holds true for clearing of land for extractive industries, agricultural uses as well as other rural uses. There are also implications for the conservation and expansion of existing wildlife corridors or linkages. There is significant vegetation and biodiversity habitat in road reserves and travelling stock routes which should be conserved as they can form wildlife linkages. Large areas of bushland remain on private land. In addition the Native Vegetation Act helps to conserve the vegetation.

2.2.3. Soils

The information provided in this section has been taken from the DIPNR publications titled *Soil Landscapes of the Tamworth and Curlewis 1:100,000 Sheets*. It is acknowledged that these only cover the eastern part of the Shire but they are representative of the rest of the Shire. Information on mineral resources had been provided by the Department of Primary Industries.

The geology of the Shire varies from a deep alluvial material to granite. The deep alluvial material is found on the Liverpool Plain and there are some basalt intrusions into the open plains country. The geology of the Shire has an influence on the groundwater availability and is responsible for abundance of groundwater in the Shire. There are also significant coal deposits in the Shire. This is discussed in more detail later in this chapter.

There are a number of broad soil landscape types in the Shire, as identified by the DNR. As a general statement, it can be said that the Shire has some of the most fertile soils in the country – the rich black soil of the Liverpool Plains. The soil landscapes are as follows:

- *Alluvial*. These are based on the broad level floodplains of the Liverpool Plains. They are fertile and have few limitations to plant growth and are located along the rivers and creeks of the Liverpool Plains.
- *Residual*. These are deep soils formed from weathering of the parent material. They are mainly level to undulating landforms and have some erosion hazards but are generally fertile and suited to cropping and grazing. They are located

on the Liverpool Plains as well as sporadically in the hills around Curlewis, and Gunnedah and also on the various hills throughout the Shire.

- *Colluvial.* These are mostly on hill slopes and steep land. They are not very fertile and are located on the hills surrounding Curlewis, Gunnedah and Mullaley as well as in the Kelvin and Tambar Springs areas.
- *Erosional*. These are downslope of the colluvial soils and consist of steep to undulating hill slopes.
- *Transferral*. These are deep deposits of material mostly along the drainage lines. They have good fertility and are suited to cropping and grazing. They are located on the Liverpool Plains.

The Gunnedah Shire is widely recognised as having some of the most fertile soils in the country and is well suited to regular cropping and grazing. The Department of Primary Industries have prepared Agricultural Land Suitability Mapping for the Shire. The mapping lists 5 classes with 1 being the best and 5 being land unsuitable for cropping and grazing. The mapping shows that most of the Shire is class 2 agricultural land. This means that it is able to be cultivated and cropped on a regular basis.

The maintenance of soil is a major consideration and there is a need to consider the impacts of land degradation, especially soil erosion and salinity. It is both a management issue as well as being associated with the future development of the land.

The soils of the flat land to the west, north an south of the Shire are very fertile and are considered to be some of the best soils for agriculture in the State. They are important from a state and national perspective.

Soil erosion and sedimentation is an issue which becomes worse, as the uses become more intensive and where inappropriate land management occurs. It is also an issue for the more steeply sloping land and the construction of dwellings, particularly rural residential uses which tend to be on smaller lot sizes.

Soil erosion becomes more of a problem in areas where the soil is of a poor quality and any disturbance of them often leads to more rapid land degradation.

This is an issue for the environmental as well as the human impact of development.

2.2.4. Topography

The topography of the Shire can be de

- Steep to undulating land in the northeast, east centre and southwest
- Flat to land in 2 broad valleys following the Namoi – Mooki Rivers and Cox's Creek

Map 2.2 shows these broad topographic features. The grey areas are the hilly parts and the white are the flat land.

Photos 2.7 and 2.8 show the varying topography of the Shire.

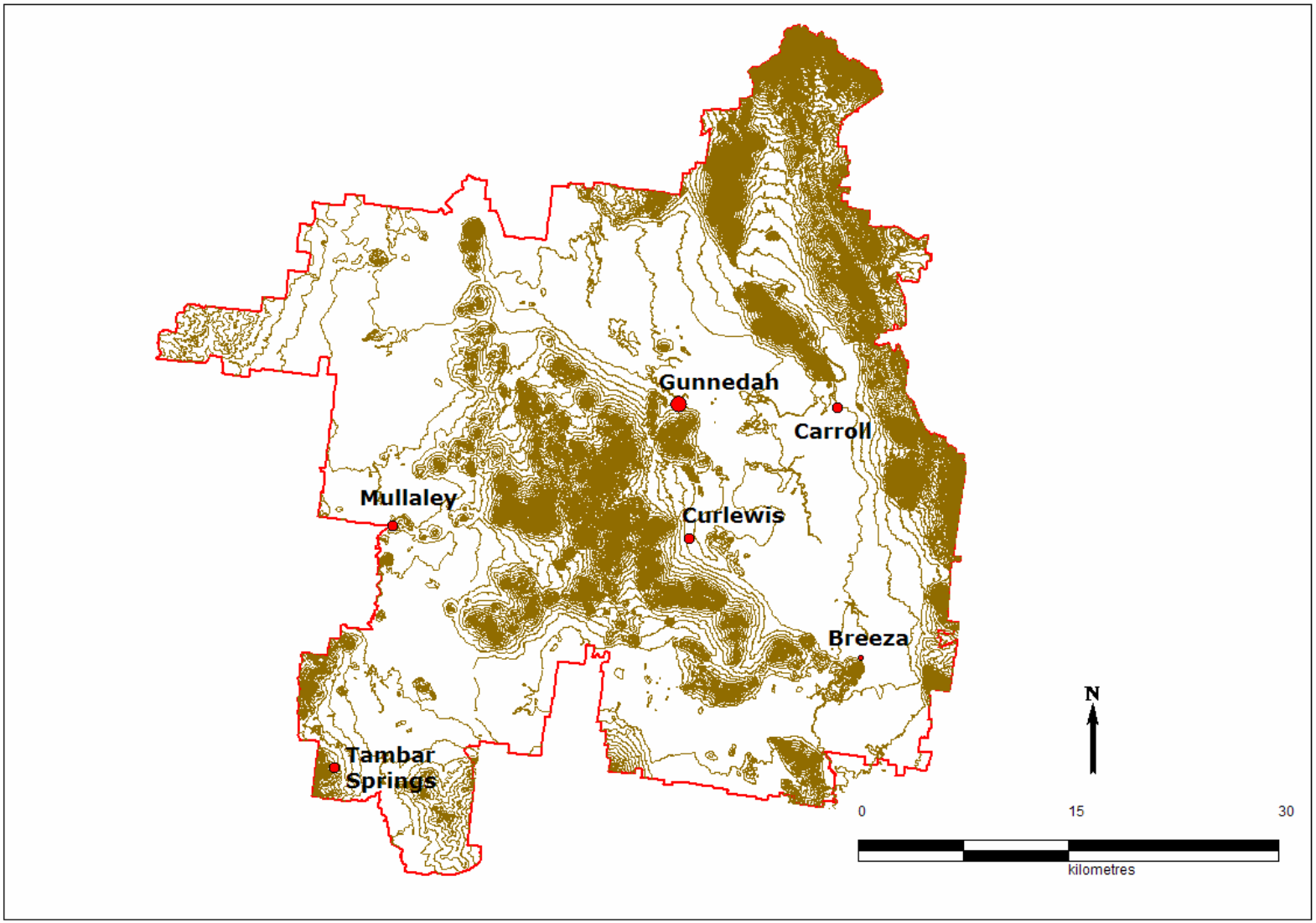
The topography of an area is important because land with a slope land can become unstable and when the soil is disturbed, can lead to erosion. A lot of sloping land is also heavily vegetated and so this has to be considered.

Effluent disposal on sloping land can cause it to become damp which can lead to erosion and slippage.

The variety of landforms within an area can contribute to the rural landscape character and provide a setting for the settlement areas.

In an area like Gunnedah, which is relatively flat, the topography can have an impact on drainage and flooding.

Photo 2.7: Typical topography in the east.
Date of Photo: July 2005



Map 2.3: Topographic Features

Photo 2.8: Typical topography in northwest
Date of Photo: July 2005

2.2.5. Landscape Character

Gunnedah Shire has 2 distinctly different landscape forms which are as follows:

- Flat open plains to the west and north with some small vegetated hills
- Steep and undulating, mostly vegetated land in the northeast, east and south

The flat open plains are characterised by a mixture of cropping and grazing whilst the hills are mostly heavily vegetated with some cleared land that is used for grazing of sheep and cattle.

The broadscale visual catchment of the Shire is limited to the east and south by the steep escarpment of the Great Dividing Range. The northeastern limit is defined by the Melville Range. The northern and western boundaries are not defined as this land is characterised by flat open plains with no defined edges.

The varying topography is the dominant visual feature of the landscape as it provides a framework for other elements such as vegetation, agriculture, viewpoints and the location of major transport and communication corridors. The topography also defines the broader visual catchment of the Shire, which is generally enclosed to the east, northeast and south by hills.

Photos 2.9 and 2.10 show the landscape features.

Photo 2.9: Flat open plains
Date of Photo: July 2005

Photo 2.10: Steep and undulating land
Date of Photo: July 2005

The predominant rural character of Gunnedah Shire is created by the numerous rural activities, large lot sizes, vegetation and expansive views. The landscape changes with the varying topography of the Shire – it is open and flat in the south and in the north has some hills which create different landscapes. The unique landscape character of the Shire is a visual resource as it generates tourism, development and environmental management. The visual resource also plays an important role in promoting environmental awareness and well being for residents and visitors. This varies from steep land associated with the ranges to simplicity of grazing lands and formal patterns of agricultural crops.

The retention of roadside vegetation is an issue which may require future negotiations with service providers.
Controls which may be considered for retaining the rural character include:

- Planting controls for screening undesirable elements and incorporating buffers to significant environmental communities,
- Building controls for siting and advertising,
- Planning controls for lot sizes, the design and siting of residential dwellings and ancillary buildings, in relation to the visual amenity of road corridors.

It is important to recognise the visual amenity of open paddocks, post and rail fencing, distant views, heritage items and rural activities.

It can be seen therefore that the preservation of the landscape character of the Shire is of importance.

2.2.6. Bushfire Risk

The abundance of native vegetation and the topography of the Shire make it prone to bushfire. This can be from grasslands in the flatter terrain to the west, southwest and north to major forest fires in the steep land in the south, east and northeast.

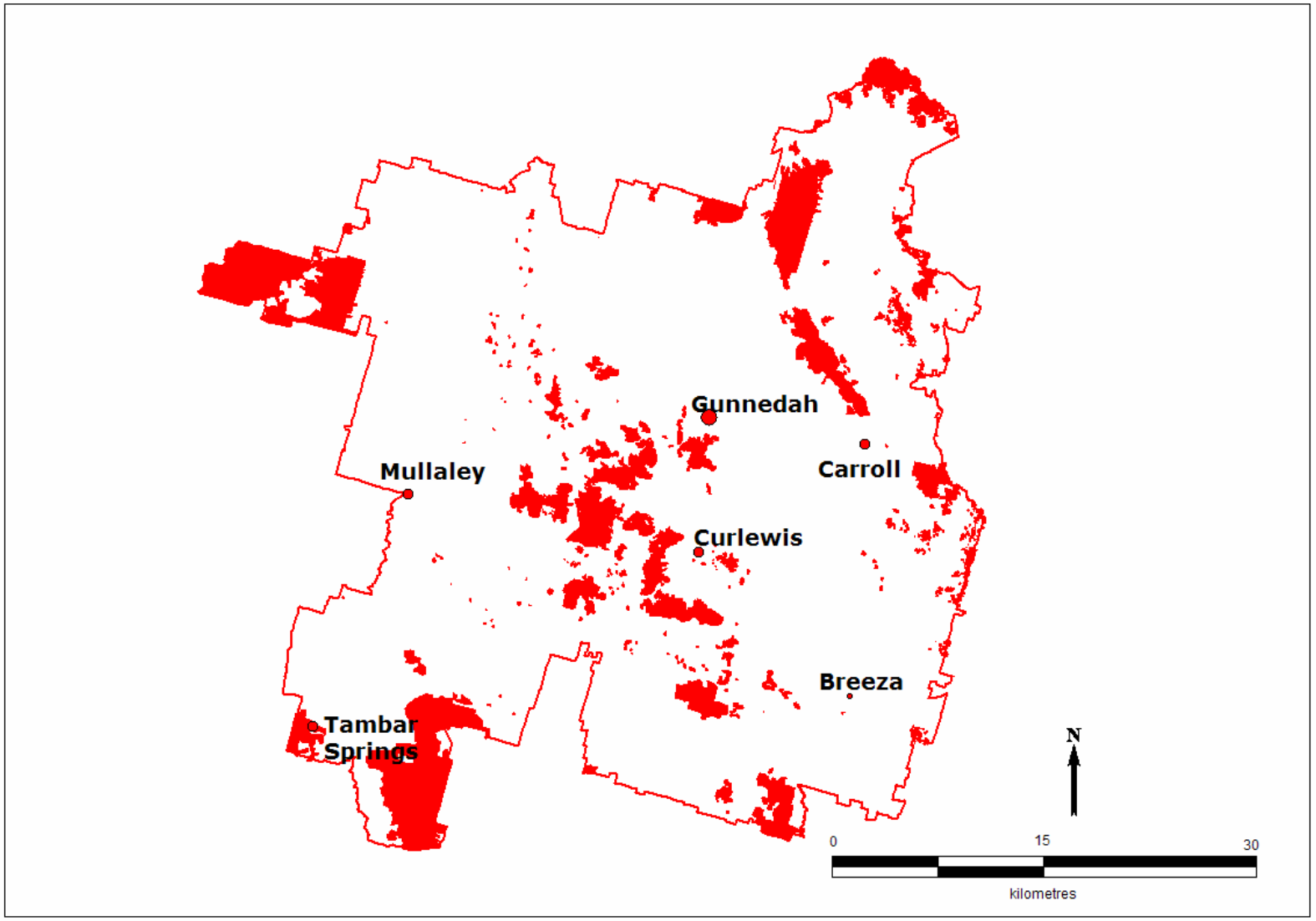
The prevailing bushfire direction from the west and northwest, especially when hot dry winds are experienced. There are also some 'escape burns' from land management and machinery at harvest time. There are some naturally occurring fires as a result of lightning strikes in the ranges. These are hard to fight because of the inaccessibility of the terrain.

The Rural Fire Service has prepared a map showing the bushfire prone land within the Shire and this is reproduced as map 2.4.

The protection of the identified community assets is a key issue as is the preservation of biodiversity within the Shire.

Managing the bushfire risk is noted as the key factor in dealing with the bushfire hazard. One of the management options is risk avoidance and therefore, land that is prone to bushfires should not be rezoned and subdivided where an adequate fire protection zone cannot be established.

Bushfire Risk Management includes the identification of the level of risk posed by bushfires to the assets and establishing strategies to protect those assets from the adverse effects of the fires. The purpose of bushfire risk management is to protect the community and its values from the adverse effects of wildfire. One key element of bushfire management is to achieve better integration of community preparedness and prevention strategies.



Map 2.4: Bushfire Prone Land

The Rural Fire Service have recently published a new set of guidelines titled *Planning for Bushfire Protection*. The guideline was produced by the NSW Rural Fire Service with Planning NSW to guide development in bushfire-prone areas. Planning for Bushfire Protection brings all the development planning protection measures into one publication. It provides councils and developers with information on bushfire protection from plan-making to development design, development control, construction certificates, and property maintenance.

Key features of *Planning for Bushfire Protection* include:

- identification of bushfire-prone areas;
- planning principles to be considered when councils are rezoning;
- latest hazard assessment method to work out appropriate setbacks;
- location of developments in areas of bushfire hazard based on latest CSIRO research on bushfire behaviour;
- appropriate level of building construction relevant to setback distances;
- special setback distances for special use developments (such as aged care facilities).

Photo 2.11 shows a house that was burnt in the 2001 - 2002 bushfires in the Sydney Region. It points out the need for an adequate asset protection zone.

Photo 2.11: The devastating impact of Bushfires in Warragamba
Date of Photo: December 2001

2.2.7. Salinity

Salinity can be a symptom of environmental change resulting from natural processes as well as human impacts. It can also exist without any interference. In NSW it is an existing process that is exacerbated by human activity, particularly European farming techniques, land clearing and urban development. It is the result of past and present land management practices, which have dramatically changed the way water is cycled through the environment. If left unchecked, it will have a major impact on the future of agriculture in the Shire.

Salinity is a threat to the health and productivity of many catchments, and to the rural and urban communities that live in them. It is affecting rural landholders, urban developments, infrastructure (roads and bridges), water users and the environment. In NSW, between 120,000 and 174,000 hectares of land are estimated to be affected by dryland salinity. If land is continued to be used the way it is now, by 2050 the area of affected land in the NSW part of the Murray-Darling Basin could increase to 2-4 million hectares. Irrigation salinity is estimated to affect 320,000 ha, or 15% of irrigated land. About 70-80% of irrigated land in NSW is threatened by rising watertables and associated salinity problems. Many NSW rural towns are also experiencing the effects of rising watertables causing salinity and waterlogging. This is resulting in corrosion damage to buildings, amenities and infrastructure such as roads, paths, pipes and bridges. (NSW Salinity Strategy).

Salt is an inherent part of the landscape, however there are a number of factors that are going to contribute to the development of salinity. Factors such as position in the landscape, soil type change, change in slope, geological constrictions will all contribute to the natural development of salinity. When there are human-induced interference through obstruction of natural drainage, exposure of saline subsoils, erosion, increased sub-surface and surface flow, then these natural processes can be increased so that salinity develops quicker. In addition where additional salts or water are added from urban and industrial activities the development of salinity can be increased.

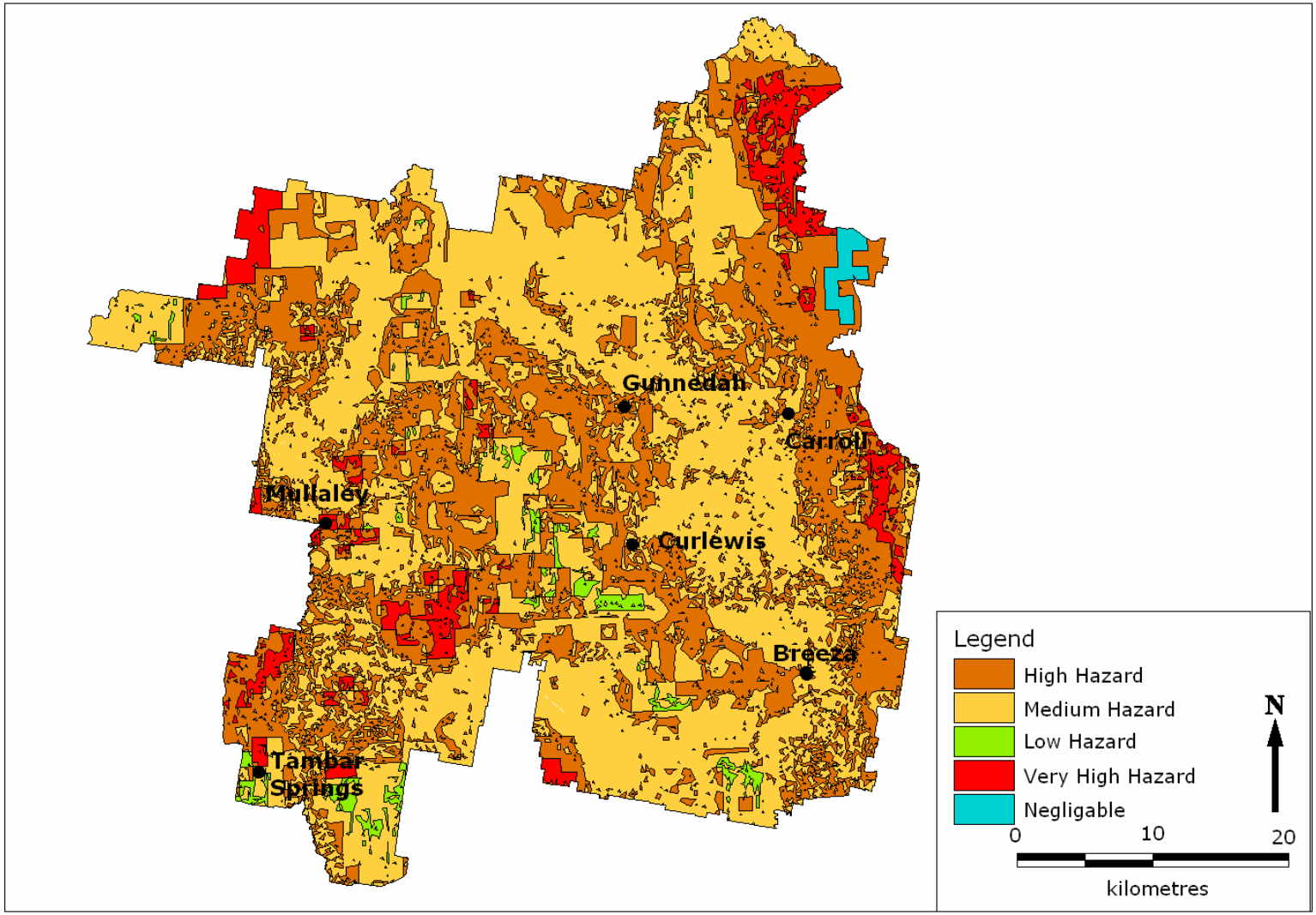
In a study by Murray-Darling Basin Commission of the Namoi, Gwydir and Border Rivers catchments, local governments were found to incur costs of at least $1.42 million per annum as a result of salinity (Wilson 2002). Within the Namoi Catchment there are a number of towns where urban and industrial salinity is already expressing itself. The Department of Infrastructure, Planning and Natural Resources (pers. comm.) indicates that parts of Tamworth, Gunnedah, Manilla, Barraba and Narrabri are expressing signs of salinity. Other towns, including Gunnedah, have been identified as potential sites for urban salinity as a result of known soil types that exist in these areas, position in the landscape and results obtained from groundwater monitoring.

DNR have provided advice on salinity in the Shire and this is reproduced below:

> *Dryland salinity in the Gunnedah Shire is largely caused by changes to the water balance in the landscape. The Gunnedah Shire has seen the gradual removal of native vegetation, and replacement by annual crops, resulting in more water often draining past the root zone, into the watertable, causing it to rise and mobilise stored salts through the landscape. As the watertable rises, salts are mobilised and accumulate at some point in the landscape. The occurrence of dryland salinity in the Gunnedah Shire tends to be localised and spatially highly variable depending on the affect of landscape characteristics on groundwater hydrology. The common type of landscape characteristics which influence the location of salinity outbreaks in the Gunnedah Shire include; change in soil type, change in slope and geological constrictions as well as human-induced interference through obstruction of natural drainage, (i.e dams, contour banks, roads and rail).*
>
> *An evaluation of the Groundwater Flow Systems in the Barwon Region was undertaken by Sinclair Knight and Mertz in 2004 to determine which systems are predisposed to salinisation. The study presented nine unique Groundwater*

Flow Systems within the Gunnedah Shire boundary. These and their characteristics are presented in Table 2.1

Changes to soil, vegetation and the water cycle can all impact and interact with each other to result in urban salinity issues at a site scale. Urban salinity occurs within Gunnedah and appears to be a localised intermittent collection of water within the soil profile as a result of localised barriers that prevent the lateral or vertical draining of the water to the groundwater system. In an urban situation, changes in soil properties can be brought about through changes to soil properties, vegetation management and changes to the water cycle.



Map 2.5: Salinity Hazard
Source: DNR

Table 2.1: Groundwater Flow Systems

Parameter	Liverpool Plains overlain by Upper Narrabri formation	Upper Narrabri formation (Liverpool Plains)	Goran Lake	Liverpool Plains	Lava fields (Ranges)	Garrawilla volcanics and Werrie basalts (Ranges)	Carbonif-erous meta-sediments	Permo-Triassic sedi-mentary rocks	Pilliga sandstone
Average Depth to Water Table (m)	5 – 10	> 10	< 2	5 – 10	> 10	5 – 10	5 – 10	7.4	> 10
Average Groundwater Salinity (dS/cm)	fresh to saline	Very saline	moderate to high	fresh to saline	0.4 – 10	very high	1 – 5	low to high	fresh
Salt Store	low to moderate	very high	very high	low to moderate	low to medium	medium to high	Moderate	high	low
Salinity Occurrence	Highly variable	Drainage lines, eroded areas	break of slope, valley floor	highly variable	geological boundary, break of slope, footslope	footslope, structurally controlled, base flow	Hillside slopes, valley floors, break of slope	break of slope, drainage lines	geological breaks, break of slope
Impacts	localised in shallow water tables	Localised and pump induced salinisation	soil and stream salinity	localised in shallow watertables	soil salinity (localised outbreaks)	soil and stream salinity	Stream salinity, infra-structure	soil and stream salinity	soil and stream salinity
Salinity Hazard Rating	low	High	very high	low	moderate to very high	moderate to high	Low but locally high	moderate to high	moderate to high
Responsiveness to Management Options	slow to moderate	Moderate to fast	slow	slow to moderate	fast	moderate to fast	Slow / moderate to fast	slow	moderate

Source: Adapted from Sinclair Knight Mertz 2004

The land management practices that are a source of salinity include, but are not limited to the following:

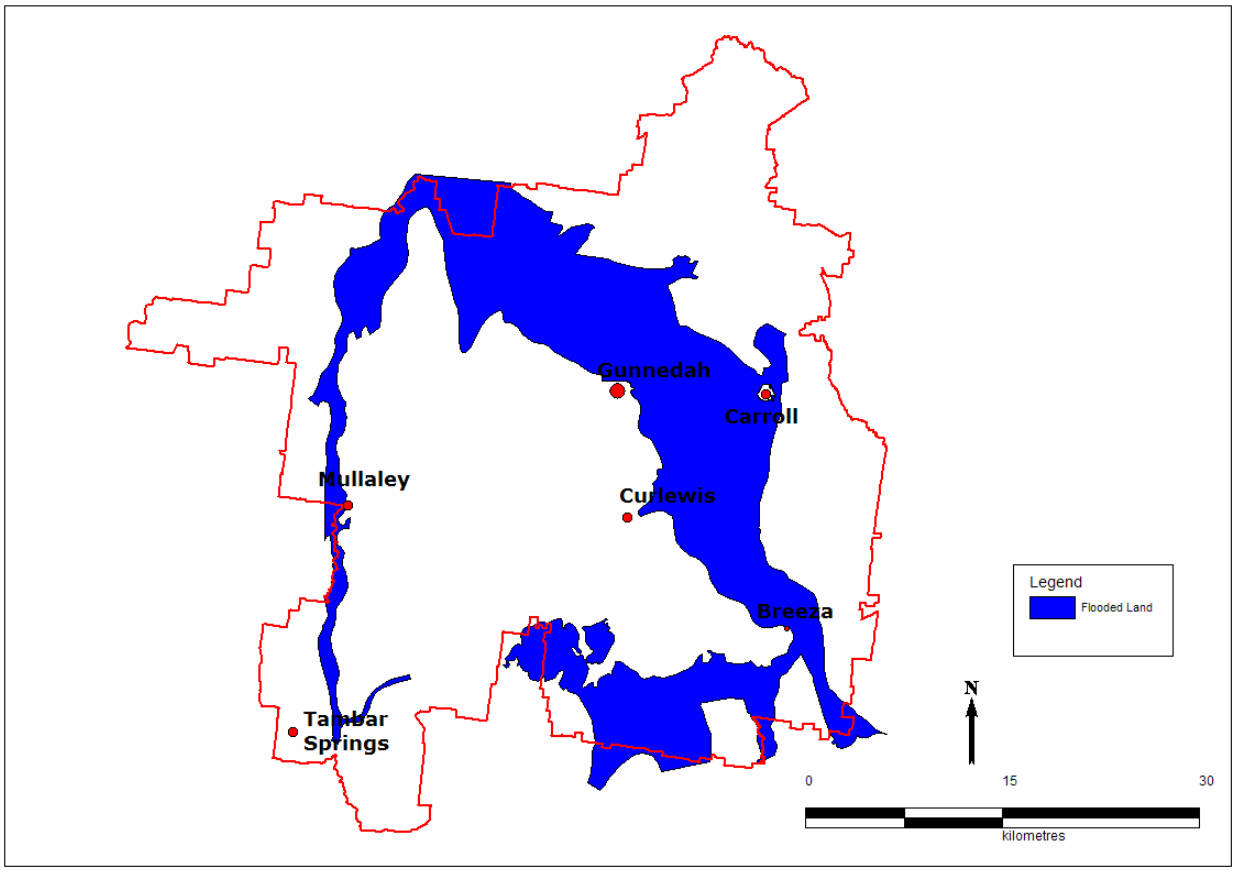
- *Rainfall and irrigation*. Rainfall contains some small quantities of soluble salts particularly near the coast and this is sometimes considered to be a cause of soil salinity. Irrigation of crops occurs in parts of the shire and poses a greater risk to salinity than rainfall. Irrigation water contains a lot more soluble salts than rainfall and may result in soil salinity in relatively short time.
- *Shallow water table*. The clearing of land for agriculture and residential developments causes of the water table to rise. The shallow roots of the crops that have been planted in the place of the deep rooted native vegetation can bring the water table to within 2 m of the surface. The capillary action in the soil combined with transportation by plants and evaporation at the surface bring the saline water to the surface and concentrate the salt. Irrigation of crops and watering of gardens as well as general urban run-off exacerbate the situation further.
- *Weathering*. The weathering of soil can release salts which accumulate in the soil over time. However it must be pointed out that this is not an immediate source of salts causing salinity.
- *Dryland salinity* is determined by number of factors in the local area such as geology, soil type, farming practices and vegetation cover.
- *Urban salinity* is a combination of dryland salinity and irrigation salinity. Urban salinity causes damage to buildings by eroding bricks, mortar and concrete, the erosion of roads, bridges and pathways as well as the failure of septic systems by corrosion of pipes. It also has an impact on the landscape value by killing the grasses and trees.
- *River salinity* is caused by saline discharges from dryland, irrigation and urban salinity into creeks and rivers.

The removal of native vegetation and its replacement with shallow rooted plants has caused a rise in the watertable. This has caused salt to accumulate in parts of the rural landscape and is called dryland salinity. Irrigation salinity can be described as soil salinity in the root zone of crops and pastures and is caused by irrigation of land with saline water. Another form of salinity in the Shire is streams which have high levels of electrical conductivity. These are located at the foot of the Liverpool range and on the western slopes of the Melville range.

Urban salinity is the impact of salt and water on infrastructure such as roads, buildings, pipes, parks and gardens located in urban and rural areas. Urban land use and management as well as infrastructure may also cause or exacerbate salinity. The construction of urban infrastructure such as roads can involve significant changes to the landscape resulting in subsequent changes to the amount of water and salt in the landscape, how they move and where they accumulate. Urban salinity can also be exacerbated by the discharge of waste water onto land or into rivers, this waste water can also contain salts that are a by-product of processing and industrial waste. At present there are no occurrences of urban salinity within the Shire, however Gunnedah has been identified as a potential site for urban salinity as a result of known soil types that exist in these areas, the position in the landscape and results obtained from groundwater monitoring.

2.2.8. Flooding

Flooding of the rural landscape is quite extensive with a large majority of the Shire being flood prone land. It occurs quite frequently however the size of the flooding varies significantly. Flooding occurs on all of the three major drainage systems within the Shire - the Namoi River, the Mooki River and Cox's Creek. Map 2.6 shows the extent of flooding within the Shire. This map was prepared by council staff based on knowledge of the flood events from 1955 to 1977.



Map 2.6: Extent of Flooding
Source: Council Records

Gunnedah and Carroll to towns within the Shire which suffer inundation during the major flood events. The major impact of flooding on the rural land is inundation of properties and blocking of roads.

Flood plain management plans are being prepared for all three of the drainage systems within the Shire and yet to be finalised. These plans consider both structural and non-structural measures to manage flooding within the Shire.

The New South Wales Government has recently published an updated floodplain management manual titled Floodplain Management Manual: the Management of Flood Liable Land. This manual outlines a procedure that Councils must follow to prepare a Floodplain Risk Management Plan and introduce appropriate controls within planning instruments. The resulting Floodplain Risk Management Plans are to address existing, future and continuing flood risk for flood prone land. It also requires an assessment of

the probable maximum flood and the decision to address it recognises that these rare events should not preclude or unnecessarily hamper development within these areas.

2.2.9. Mineral and Extractive Resources

Mineral and extractive industry resources are important to the Shire and information from the Department of Mineral Resources shows that there are the following resources and potential resources:

- Coal
- Coal seam methane
- Gravel extraction
- Clay and Shale

Coal is by far the most important resource with a major seam running below the Shire. There have been mines at Gunnedah, Curlewis and Blue Vale (Vickery Mine) in the past which have all closed. However the resource is still considered to be economical with investigations currently being carried out into a new lease and potential mine north of Caroona in the south of the Shire. This mine is to be an underground mine.

The Department of Primary Industries have recently called for invitations to mine the Caroona coal exploration area which is located between Caroona and Breeza in the South eastern part of the Shire. The Caroona deposit contains more than 500 million tonnes of potentially mineable underground coal. Subsidence issues however may preclude the mining of a significant portion of the resource because of the potential impact on the alluvial floodplains. There are also more than 500 million tonnes of shallow coal at depths ranging from near the surface to about 200 metres. These shallow resources which underlie the alluvial plains and associated water aquifers require further studies determine the potential mineability. The Department estimates that the timeframe for commencement of the mining will be at least six years.

The extraction of coal from the resources under the Liverpool Plains has implications for the agricultural uses as well as impacting on the drainage regimes of the Mooki and Namoi River floodplains. Coal seams within the Shire occur from sub crop (close to the surface) to depths of greater than 800 metres. If long wall mining was to take place, varying levels of subsidence may occur depending on local conditions. The potential to alter the surface landform is therefore quite significant bearing in mind that the land is very flat. This can have an impact on the flooding regime. The subsidence of the land can also have an impact on irrigation structures including storage dams and channels. All of these matters need to be considered when assessing the impact of coal extraction on the Liverpool Plains.

The extraction of coal seam methane requires little or no surface impact. Initial exploration requires access to land or road reserves for seismic acquisition and ultimately for drilling. Well spacing may be 500 – 600 metres if a production field is established. The same coal seams that are mined elsewhere often contain gas at depths at which mining may not be possible or beneath land not suitable to be undermined like flood prone land.

There is one clay and shale quarry operated by Namoi Valley Brickworks at off Blackjack Road and a river gravel extraction quarry at Gunnembene Lane at Carroll. There are also numerous small quarries scattered throughout the Shire.

2.2.10. Weeds

There are a number of weeds within the Shire that are becoming a problem. There is a need therefore to address this issue through a weed management plan.

Weeds are one of the most serious threats to Australia's natural environment and primary production. They can destroy the native species, contribute significantly to land degradation and reduce farm and forest productivity. The National Weeds Strategy has identified the problem and states that the cost of weeds to Australia is approximately $3.3 billion per annum. The New South Wales weeds strategy estimates the value of control and lost production at $600 million per annum. Both the National and State strategies identify funding, education and better coordination of control programs as being important.

There is a need therefore to consider the preparation of Weed Management Plans for developments that have the potential to cause the spread of weeds by clearing large tracts of land or that generate effluent in sufficient quantities that may kill native vegetation which then allows for the weeds to invade the bushland.

2.3 Social and Economic Factors

The interaction of humans with the environment is an important component of any strategy dealing with the future of Shire.

2.3.1. Settlements

There are a total of 5 settlements in the Shire . They range in size from a small collection of houses to more than 900 houses. The population and number of dwellings in each is shown in table 2.2.

Table 2.2: Settlements in the Shire

Settlement Name	Population 2001	Dwellings 2001
Gunnedah	7,514	3,297
Curlewis	575	219
Carroll	176	78
Tambar Springs	107	56
Total	8,372	3,650

Source: ABS 2001 Census Basics
Note: Mullaley, although a village, was not counted as a separate Collector District.

All of them except for Breeza have some form of shopping facility. These range from general stores (Curlewis, Carroll, Mullaley and Tambar Springs) to large shopping centres in Gunnedah. Photo 2.12 shows the Mullaley General Store.

Photo 2.12: Mullaley General Store
Date of Photo: June 2005

There are also a number of rural centres scattered around the Shire which are marked by a hall or bushfire shed. Examples of these are Willala, Ghoolendaadi, Piallaway and Kelvin. Photo 2.13 shows the Willala Hall.

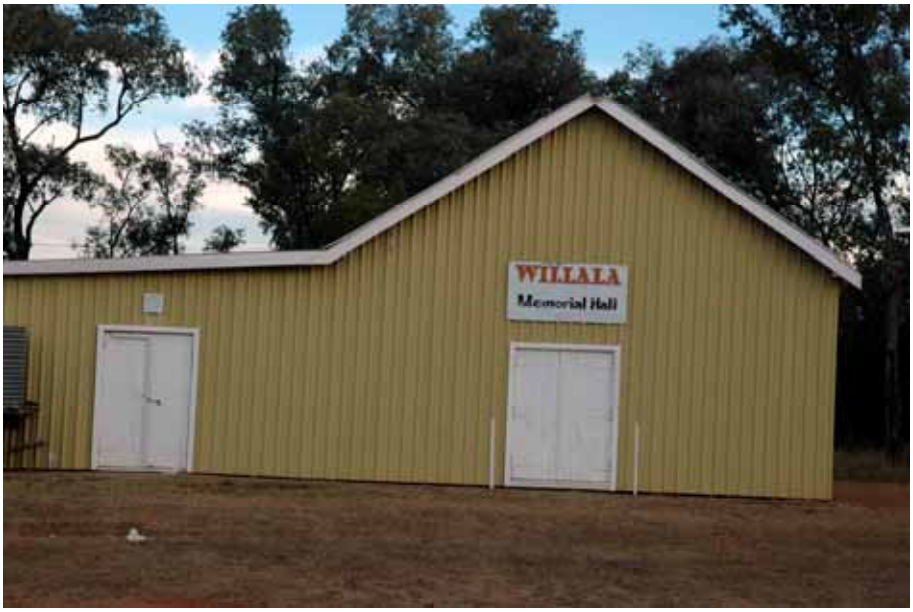


Photo 2.13: Willala Hall
Date of Photo: June 2005

In order to understand the relationship between the settlements and to provide a strategic context for them, it is appropriate to adopt a hierarchy of settlements. This should be based on the facilities provided in the settlement and the role that it plays, rather than purely population. The shopping facilities that are available are a good starting point. There are three basic shopping trips:

- *Convenience shopping* relates to the daily shopping needs of bread and milk as well as newspapers and emergency purchases not done at other times.
- *Weekly shopping* is for the basic food and household shopping needs and is usually done in a chain supermarket.
- *Comparison shopping* is the shopping trips done for larger items of household and personal items such as whitegoods, furniture and clothing.

A hierarchy of settlements can be based on this as well as other factors and for an area like Gunnedah should take the following form:

- *Regional Centre* This provides a wide range of employment, entertainment and recreational opportunities, a full range of local services and higher order services such as Major Hospital, TAFE College as well as a high school and major indoor recreation facility and often has a University campus. It also has regional offices of State Government Departments. It has a large mixed commercial area providing service, retail and office uses with a large chain supermarket and a discount department store. It caters for convenience, weekly and comparison shopping. It draws its catchment from the surrounding Local Government Areas.

- *Town.* This provides a range of employment, entertainment and recreational opportunities, a full range of local services and some higher order services such as high school and health care as well as a major indoor recreation facility. It has a large mixed commercial area providing service, retail and office uses with a large chain supermarket. It would cater for convenience, weekly and limited comparison shopping. It is the principal centre of the Shire.

- *Village*. This provides only for convenience needs and typically has only a general store / post office.

- *Rural Centre*. This is a focal point for the surrounding community and usually has a community hall or bushfire shed. There are generally no shopping facilities or other services in this area.

The establishment of a hierarchy will enable the protection of the town centre of Gunnedah.

2.3.2. Rural Land Use

There are a variety of land uses within the Shire. They include urban, agricultural, native vegetation, rural residential, extractive industries, commercial and light industrial uses. They all have an impact on each other as well as the environment. Finding the balance between these often competing desires is the key to planning for rural land uses.

There are basically two forms of land use within the rural areas of the Shire – ones based on agriculture and ones that do not have an agricultural base.

Agriculture

The uses, which are based on agriculture, include the following:

- Sheep and Cattle Grazing
- Orchards

- Poultry
- Lucerne
- Grain Crops
- Market Gardens
- Cotton
- Forestry
- Olives
- Horse Studs
- Farm Homestays
- Bed and Breakfast

In open plains country, there is a mixture of cropping and grazing. The major crops that are grown include irrigated cotton, Oats, Wheat, Barley, Canola and grain Sorghum as well as some and fodder crops. The grazing of cattle and sheep are the main forms of animal production in the Shire. There are also some goats in the Shire.

Photo 2.14 shows the land used for cropping.

Photo 2.14: Land used for Cropping
Date of Photo: June 2005

Poultry farming is an intensive form of animal keeping industry in the Shire and there is only one farm located east of Curlewis.

The open flat floodplains provide some areas which are used for irrigated agriculture particularly fodder crops using central pivot irrigators as well as some cotton. Photo 2.15 shows the irrigated cotton farming in the northwest of the Shire.

Photo 2.15: Cotton farming
Date of Photo: June 2005

To the south and east of the Shire the main form of agriculture is grazing of sheep and cattle. Photo 2.16 shows the typical sheep grazing country in the South of the Shire.

Photo 2.16: Grazing Country
Date of Photo: June 2005

Agriculture is also practiced on small rural holdings of scattered across the Shire. This type of agriculture is generally of a part-time style and scale. It includes some of the more niche forms such as, olives and some small scale grazing.

Non-Agricultural Uses

Uses that do not have an agricultural base include the following:

- Rural Residential
- Extractive Industry
- Mines
- Industrial Uses
- Tourist related uses
- Speedways

Photo 2.17 shows the Blue Vale Speedway set amongst the rural landscape.

Photo 2.17: Blue Vale Speedway
Date of Photo: July 2005

Land Use Survey

A detailed landuse survey has been carried out of the Shire. This was carried out to give an understanding of the landuse pattern within the rural areas so that appropriate decisions can be made having regard to the mixture of landuses throughout the area as well as to identify those localities that have a predominance of a particular landuse in terms of the number of lots. The survey counted the number of lots that were used, these were then amalgamated into the holdings using the rates assessment number. This survey was carried out in June 2005. A detailed description of the methodology used for the landuse survey is contained in Appendix 2. The landuses were categorised into the following landuse types which also have been defined in Appendix 2:

- Rural Residential
- Intensive Plants
- Intensive Animals
- Extensive Agriculture
- Vacant Cleared
- Native Vegetation

- Extractive Industries
- Public Use
- Urban

Within each of these categories there are a number of sub categories relating to the specific use of the land. These are also outlined in Appendix 2. It should be pointed out that the landuse survey categorised the primary use of the property and where a property had a number of uses, the dominant use was chosen.

The details of the landuse for each locality within the Shire are outlined in Chapter 4, which deals with the existing development pattern. There are a total of 10,807 lots within the Shire that were counted in the landuse survey. These have been amalgamated into 2,793 holdings. The overall landuse for the Shire is shown in Figure 2.2. Map 2.7 shows the land use in broad terms.

The landuse survey has revealed the variety of uses in the rural area. They can be categorised in to agricultural uses, non-agricultural uses and rural residential uses. Table 2.3 lists the variety of uses observed in the rural areas.

Table 2.3: Variety of Rural land uses.

Agricultural Uses	Non-agricultural uses	Rural Residential Uses
Cattle and Sheep	Service Stations	Dwellings
Cropping	Caravan Parks	Truck activities
Orchards	Farm Produce stores	Horses
Irrigated cropping	Churches and Schools	Home based businesses
Horses	Cemeteries	
Intensive Agriculture	Tourist facilities	

Table 2.4 lists the total number of uses and the percentages and figure 2.1 shows them in graphical form.

Table 2.4: Number of Primary Land Uses in the Shire

Uses	*T O T A L*	
	Count	*% of Total*
Commercial	16	0.6%
Extensive Agriculture	1,158	42.3%
Extractive Industry	19	0.7%
Intensive Animals	32	1.2%
Intensive Plants	178	6.5%
Native Vegetation	127	4.6%
Public Uses	386	14.1%
Rural Residential	584	21.3%
Vacant Cleared	238	8.7%
Total Uses	**2,738**	**100.0%**

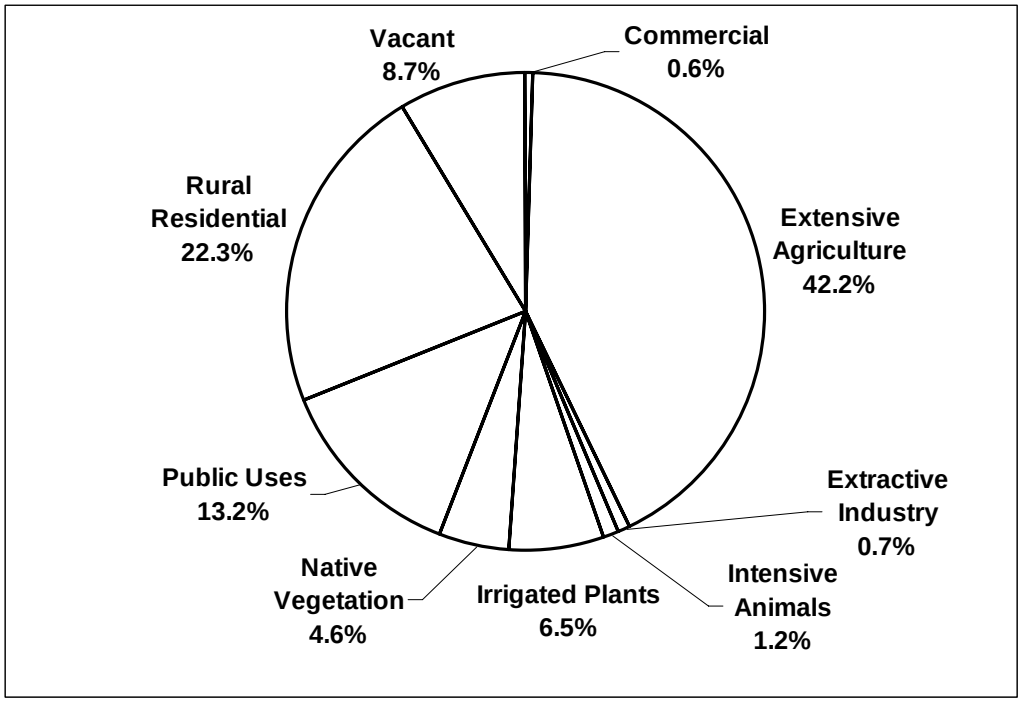
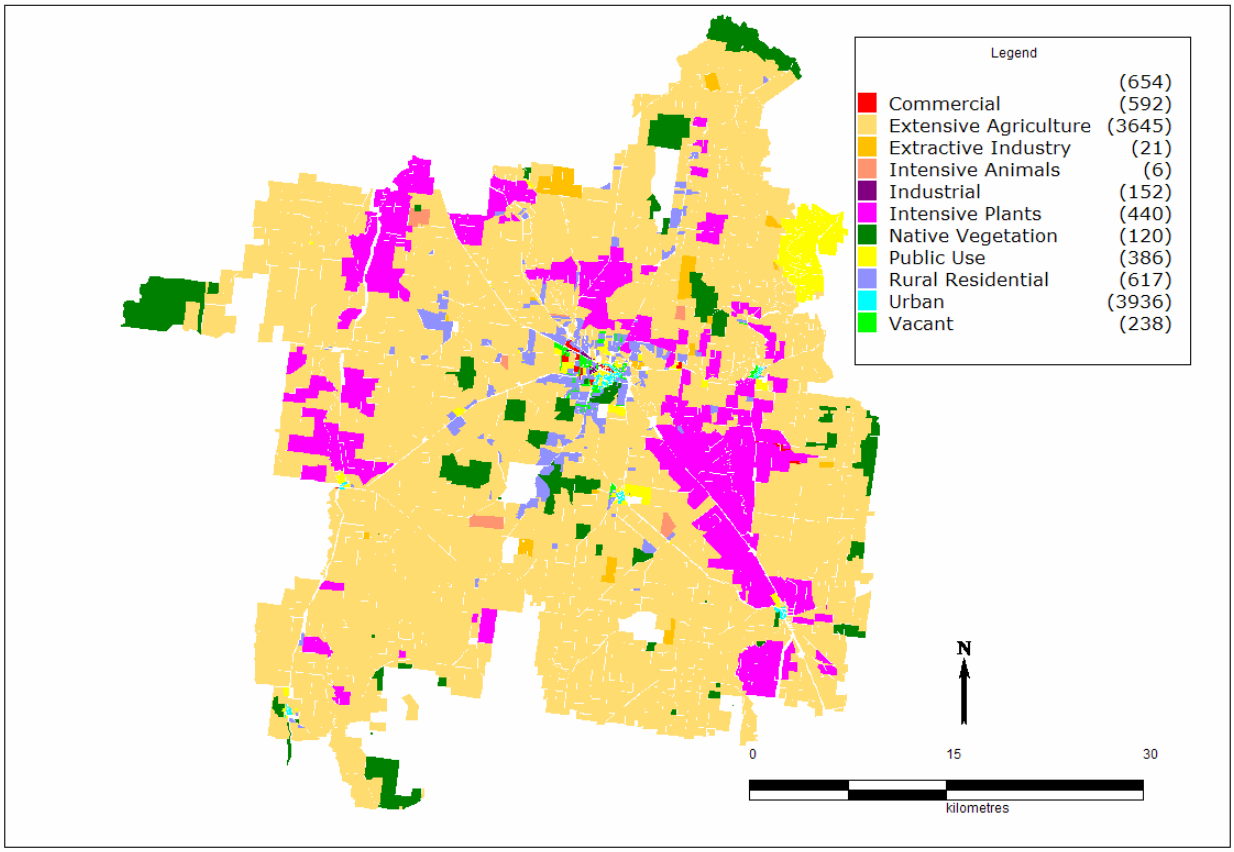


Figure 2.2: Land Use within the Rural Land
Source: Gunnedah Land Use Survey

It can be seen from the graph that extensive agriculture is the dominant use, as would be expected. Rural Residential uses are the next highest (21.3%) then Public Use although this is because of the large number of lots that make up Lake Keepit. Vacant land is in the urban areas as well as the rural residential areas and these make up 8.7% of the land uses. Intensive plants are the next most prevalent and this is mostly irrigated cropping like cotton and grains.

The details of the contribution of each of combined localities to the land use is provided in detail in chapter 4.



Map 2.7: Rural Land Use

2.3.3. Rural Holding Sizes

The size of rural holdings in an area is a reflection on the degree of fragmentation and is also an indicator of potential areas for rural land use conflict to occur. One matter to be considered is the differences between holdings and individual lots. In an area such as Gunnedah Shire, there are a number of large holdings that are made up of a number of smaller lots. These are mainly agricultural uses and not the rural residential uses which are nearly all in single ownership.

A detailed holding size analysis has been carried out and has shown that the area is quite fragmented. To carry out the analysis all urban, public use and commercial uses were deleted as these would have distorted the analysis. The holding size ranges have been selected to reflect the previous subdivision minimums as far as possible. The values used are above and below the minimums because, when subdivision occurs, the resultant lots do not exactly match the size. For example, the < 0.8 ha range is to pick up the 4,000 m^2 lots, the 0.81 – 3 ha range is to pick up the 1 – 2 ha lots, the 8.01 – 18 ha range shows any 10 ha lots, 38.01 – 42 shows 40 ha subdivisions and so on. The 198.01 – 202 ha range shows the 200 ha subdivisions. It should be pointed out that some of the holdings in the ranges are the result of subdivisions that occurred many years ago. Figure 2.3 shows the holding sizes.

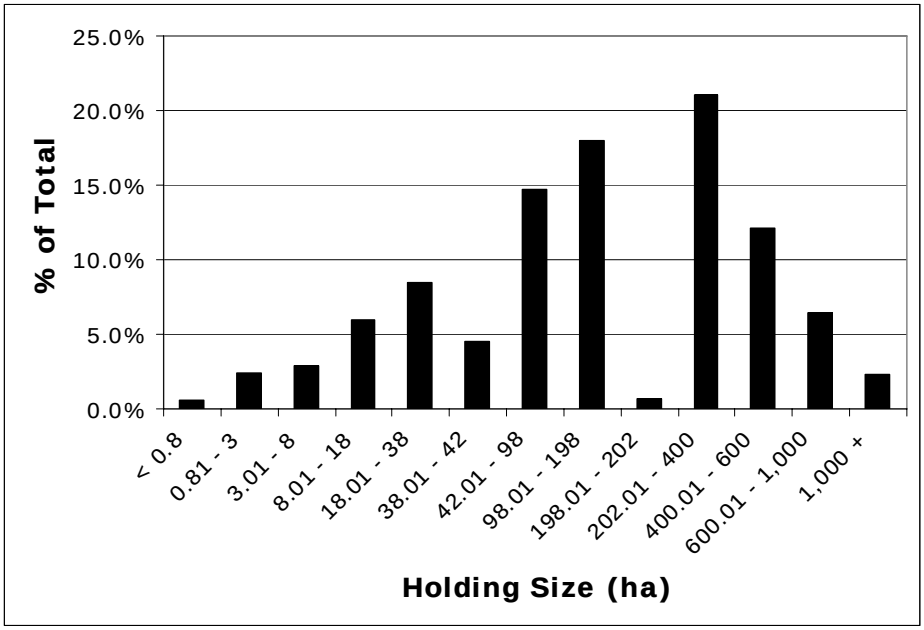


Figure 2.3: Holding Size Analysis
Source: Council GIS and Property System

It can be seen that there are is a high proportion of the holdings in the 202 to 600 ha range and a high percentage of holdings in the 102 to 198 and 42 to 98 ha ranges. There is a total of 24.7% of all holdings less than 42 ha and a further 15.6% in the range of 42 to 102 ha bringing it to 40.3% of the holdings less than 102 ha. There are 38.9% of all holdings in the range of 102 to 400 and an additional 12.1% in the range of 400 to 600 ha bringing it to a total of 51% of the holdings in the 102 to 600 ha range. There are not very many holdings greater than 600 ha (8.8%).

Chapter 4 provides the analysis of the holding size range for each locality and it can be generally said that the larger holdings are located in the flat open plains area in the western half.

2.3.4. Land Use by Holding Size

The land use data has been cross referenced with the holding sizes to show the range of holding sizes for each land use category . Figure 2.4 shows the results of this analysis. The major land use categories have been shown and the others have been grouped together (village, extractive industry, commercial, and public uses).

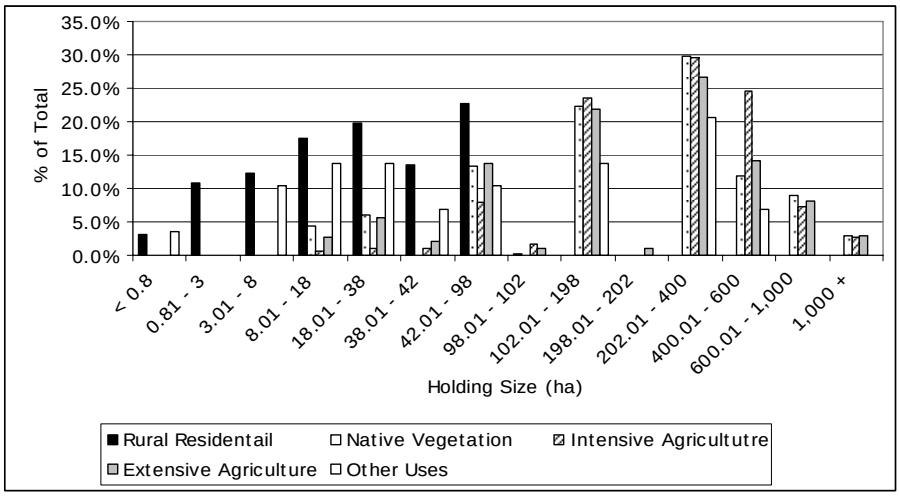


Figure 2.4: Land Use by Holding Size

It can be seen from the graph that in general the rural residential uses are on the lower end and agricultural uses on the higher end of the holding size ranges.

It is notable that there are a significant proportion of rural residential uses greater than 3 ha. Traditionally, this type of use to be in the 0.8 to 3 ha range, however, this equates to only 13.9% of the total rural residential uses. There were 49.5% of them in the 3 to 38 ha range and a further 36.6% greater than 38 ha. This signifies the trend for people to have a rural lifestyle, and also shows that the majority of uses in the 38 – 42 ha range are rural residential.

Intensive Agriculture has the majority of its uses on holdings in the 202 – 600 ha range with 54.2 % in this range. It is also significant to note that 35.8% are less than 202 ha and that only 10.1% of the holdings are greater than 600 ha.

Extensive agriculture is similar to the intensive uses with 40.8% in the 202 to 600 ha range. There is a higher proportion of uses less than 202 ha (48 %) and a similar number in the over 600 ha range (11.2%).

This data provides some useful information on the size of holdings. It can be said that the rural residential uses cover a range of holding sizes up to 102 ha and that the intensive plant uses are mostly in the higher end of the 2002 – 600 ha range but that the extensive agricultural uses are in the middle of this range. This matter is discussed in more detail in chapter 7.

2.3.5. Rural Land Use Conflict

The presence of agriculture and non-rural land use in the one location can often generate conflict due to their potential incompatibility. This is particularly evident with intensive agriculture such as poultry, cattle feedlots and irrigated farming including cotton. Agriculture can affect adjoining non-rural uses, such as mining and small rural lots used for residential purposes. Similarly, the presence of small rural lots creates an adverse influence on the continued operation of the agricultural enterprise. The issue of land use conflict can arise when there is no separation between incompatible uses, let alone the misunderstanding, which may exist about the purpose and character of a district. Land use conflicts may arise in such situations through noise, odour, farm

chemicals, access, land degradation due to mining, light, visual amenity, dogs, and stock damage and weed infestation, to name just a few.

Land use conflict can also occur between forms of rural land use and is not only confined to the rural residential / agricultural uses. It can also occur on the borders of state forests where people who live there can object to the logging and management of it as a forest.

An example in the local context is the potential conflict between cotton farming and nearby residential uses. Photo 2.18 shows an example of this where the dwelling house in the middle of the photo is not owned by the cotton farm.

Photo 2.18: Rural Land Use Conflict
Date of Photo: July 2005

One issue that has to be addressed is the basic planning principle of the new use blending in with the current one. This has not happened in the past with dwelling houses being permitted to locate next to boundaries with no consideration of the impact it may have on the agricultural use on the next door property. This leads to rural land use conflict and experience in other areas has led to the agricultural use having to move or mining use cease. Whilst there may not be many instances of this in Gunnedah at present, it is likely to become an issue with more people moving in to the area seeking a rural lifestyle.

2.3.6. Rural Residential

Rural residential development is the use of rural land for primarily residential purposes. The main source of income is not from a pursuit carried out on the land. Most rural residential dwellers move there for lifestyle rather than for the land's productive potential. As a result of this and the lack of an agricultural pursuit, the household does not have any affinity with the productive potential of the land and therefore does not usually understand the issues associated with agriculture. This lack of understanding often leads to rural land use conflict with the adjoining or near agricultural uses. (Sinclair, 2001)

The main thing that separates urban housing from rural residential housing is the size of the lots and distances between the dwellings, which create a sense of openness. Rural residential development, broadly speaking has two types:

> *"Rural (Urban) Fringe development is that style of development, which is within the servicing catchments and in close proximity to an urban centre. It may have reticulated water and in fact may have reticulated sewerage although most effluent disposal will be on site. It will also have a garbage service. The lot size is generally in the range of 4000 square metres to 2 hectares and it is in "estate" style of development. At the smaller lot size, it is more akin to residential than rural residential and therefore, lots of less than 1 ha are considered to be large lot urban.*
>
> *Rural Living development is a residential use of the land within a rural environment. It is not necessarily near an existing urban centre and does not have reticulated water or any other form of service, which would generally be provided in a rural urban fringe zone or urban centre. The lot sizes are generally 2 hectares and larger".* (Sinclair 2001)

In the case of Gunnedah Shire, the rural fringe development is the land that has been zoned as Rural 1(c) and is mostly found to the south of the town on the Wondabah and Booloocooroo Roads as well as some small areas to the west and east of Gunnedah. Photo 2.19 shows this.

Photo 2.19: Rural Fringe Housing
Date of Photo: July 2005

Rural Living or lifestyle housing is found mostly within the hilly land to the south, southwest and west of Gunnedah with a small area in Emerald Hill – Marys Mount areas. This is the land zones as Rural 1(b) and which has a subdivision minimum of 40 ha. Photo 2.20 shows this form of housing in the Wondabah Road area.

Photo 2.20: Rural Living Housing
Date of Photo: July 2005

These lots are "… inhabited by an essentially urban population … in these pleasant homesteads dotting the landscape … the new country residents are commuters and weekenders rather than farmers." (Auster and Epps, 1993, pp 77-78)

Rural residential development has both positive and negative impacts. It has to be said that the negative impacts outweigh the positive ones. However, it provides a choice of housing and therefore should be provided but in appropriate areas which do not take away good quality and productive farmland as well as areas of high biodiversity value.

On the positive side it provides for a lifestyle choice for a number of people. It also provides for a place of business for residents who run home offices and for tradespeople who need land to store plant and equipment as well as supplies. It can also contribute to the local economy. Anecdotal evidence is also that the newer purchasers of rural residential lots have a higher income and more time to devote to the local schools and community groups.

The negative impacts can be broken into financial, community and environmental. These impacts become more problematical as the lots get smaller.

There have not been any recent studies into the costs of providing rural residential development in Australia. However, a study in the United Kingdom compared clustered and dispersed growth. This found that overall, the annual costs would be one third higher for the dispersed settlement pattern than a concentrated one. The study also found that, in terms of public costs, a scattered settlement pattern is 395% more expensive for capital and 236% for ongoing costs than a concentrated one.

There are community costs associated with rural residential development. They include the provision of services and facilities to the areas that are normally located some distance from towns and villages.

The environmental costs associated with rural residential development are related to the initial development and ongoing use of the land. During construction of a rural residential area, especially rural urban fringe development, there can be soil erosion and land degradation.

The provision of water for rural residential development in Gunnedah Shire is for it to be supplied with a reticulated water supply which is usually sourced from groundwater or a minimum size tank for potable purposes. The Department of Infrastructure, Planning and Natural Resources has put an embargo on the extraction of water from groundwater from alluvium, which is associated with the Mooki river catchment in the south of the Shire.

The ongoing impacts of rural residential development stem from the onsite effluent disposal, soil and water management and domestic pets. Most rural residential development has onsite effluent disposal and this can be a concern if there is not a large enough area of land available for disposal. There is also a concern about the cumulative impact of having a large number of onsite systems in one area as can occur with rural urban fringe. There can be impacts on adjoining bushland from the nutrients coming off the site as well as from weeds and groundwater pollution. Native wildlife can be eaten by domestic pets.

The building of houses in the rural area can have an impact on the landscape, especially when the land is hilly. The introduction of a number of new buildings can detract from the landscape quality of an area.

Rural residential development can also cause rural land use conflict if it is located in close proximity to intensive agricultural, mines and quarry uses. Siting the house too close to the agricultural uses can cause this.

In a majority of cases, the people who buy a lot used for rural residential are not aware of the issues associated with it as outlined above. Issues such as the need to service the on site effluent disposal system and the impact of pets on wildlife and weed eradication are common ones where the people don't fully understand.

It can be seen therefore, that rural residential development creates a demand on the services provided by the Council and other Government agencies. To ensure that it occurs in an efficient manner, it should only be permitted if it is close to an urban area where the services and facilities are located. It must be looked at in a holistic manner and not merely one or two issues. The main one is the lack of services and this has to be considered as a constraint, even if the other issues can be addressed.

2.3.7. Agricultural Water Supply

The provision of water is an important aspect of the agricultural industry. Irrigation water is used for the cotton, lucerne and other irrigated cropping. However, it is a finite supply with the amount to be extracted from groundwater and the rivers being restricted by the Department of Infrastructure, Planning and Natural Resources under the new water sharing plans and the farm dams policy. This will have a major bearing on the future of these water dependant commodities.

Water sharing plans are a specific type of management plan that can be prepared under the Water Management Act 2000. They are designed to establish:

- environmental water rules,
- requirements for basic landholder rights,
- requirements for water extraction under access licences, and
- bulk access regime for extraction licences.

The bulk access regime is the water sharing rules that will determine how much water will be available for extraction by licensed water users. Trading in water licences and water entitlements is governed by access and licensing principles

Plans are currently being produced to guide the long-term management of natural resources in NSW. A plan has been prepared for the Mooki and Namoi Rivers. It is not proposed to list the details of the water sharing plan. It will have an impact on the availability of water for irrigation particularly.

2.3.8. Sustainable Agriculture

Some of the agriculture in the Shire is becoming more intensive as the value of land increases and hence the need to use it for higher yielding commodities. These are mainly related to the intensive animal uses like poultry and cattle feedlots and some dairies.

For agriculture to remain in the Shire, it must become sustainable. Sustainability in this context embraces the concept of Ecologically Sustainable Development or ESD, which is discussed in detail in Chapter 3.

Sustainable agriculture, from a land use planning point of view, must embrace environment, economics and social concepts (ESD). A definition of sustainable agriculture therefore is as follows:

> *"use of land … which can be maintained and managed so that the land remains*
> - *environmentally sustainable (that is, environmental pollution and land degradation arising from the use is minimised);*
> - *socially sustainable (that is, land use conflict and loss of amenity of the surrounding area arising from the use is minimised); and*
> - *economically sustainable (that is, there is a capability of making a net farm profit from the use"* (Sinclair, 1999)

A use may be economically sustainable, that is it makes a living for the farmer, but it may be on a lot that is not large enough to allow it to manage the nutrients or odour and may have an impact on the amenity of the neighbourhood. It is therefore unlikely to be sustainable. Unsustainable practices include market gardening on small lots, hydroponics on small lots, overgrazing of land by cattle and the loss of topsoil through erosion.

It is important to note therefore, that for an agricultural activity to be sustainable it has to meet all 3 of the criteria outlined in the definition.

The sustainability of agriculture will vary with the different agricultural landscapes within the Shire and the responses will also be different. There are a number of factors that affect the sustainability of agriculture which include the following:

- size of holding – generally, for extensive agriculture there is a need to have large holdings,
- proximity to settlement areas and rural residential development will cause rural land use conflict which can affect the sustainability of agriculture
- farming practices such as minimal tillage and not overstocking the land
- maintaining riparian vegetation and biodiversity.

2.3.9. Water and Sewerage Infrastructure

Reticulated water is provided in Gunnedah, Curlewis, Tambar Springs and Mullaley. Carroll and Breeza rely on tank water.

Reticulated sewerage is provided to the towns of Gunnedah and Curlewis. All of the other villages rely on on-site disposal of domestic effluent.

The management of domestic effluent is an important impact of human settlement on the water quality of the surrounding streams and the general environment.

Most of the rural residential areas are not served by reticulated sewerage nor are they planned to be. As outlined above only Gunnedah has reticulated sewerage and all of the other settlements rely on onsite disposal.

The NSW Government has released Environment and Health Protection Guidelines for On-site Sewage Management for Single Households, which have to be complied with for all new on-site effluent disposal systems.

The Council has prepared an On-site Sewage Management Strategy which is to provide a framework to allow Council to regulate and manage the installation, operation and maintenance of all on-site sewage management systems.

This will be an important issue to be looked at when considering urban and rural residential development.

2.3.10. Economic Development

The economic base of rural Shires like Gunnedah is a very important component of its future viability and sustainability. Economic Development in the Shire is based mostly on agriculture (irrigated agriculture and extensive agriculture) as well as the Gunnedah town centre and its retail and commercial uses. Tourism is becoming a significant contributor to the economy. Information for this section has been sourced from discussions with council officers as well as a publication prepared by the Centre for Agriculture and Resource Economics (CARE)for the federal Department of Transport and Regional Services titled *Namoi Valley Socio Economic Profile* and published in 2003

The economy of the Gunnedah Shire has traditionally had an agricultural base with livestock and cropping being the main forms. However there has been a shift from the livestock base to irrigated and dryland cropping. “In the current season, the irrigated

cotton crop has been the main source of farm income that has been critical to the overall level of business activity in Gunnedah." (CARE, 2003, p 89)

The Namoi Valley Socio Economic Profile provides information on the value of agriculture for the Shire and surrounding Shires from the 2000 – 2001 Agricultural Census. This is shown in figure 2.5. It can be seen that the Shire, whilst being a significant agricultural Shire, has the third highest production behind Narrabri and Walgett.

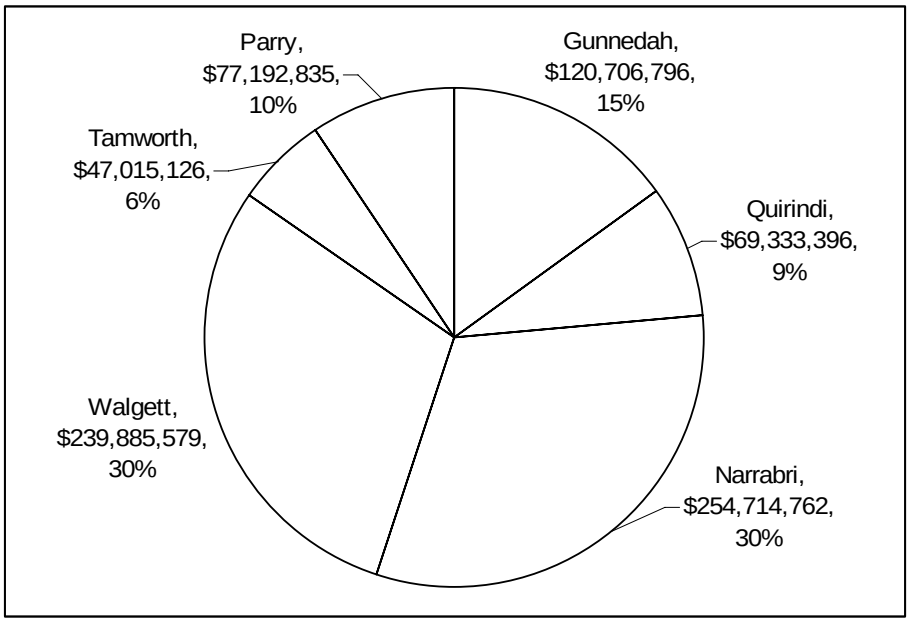


Figure 2.5: Value of Agriculture Gunnedah and Surrounding Shires
Source: Namoi Valley Socio Economic Profile
Note: Quirindi Shire has now been amalgamated with part of the former Murrurundi and Parry Shires to form the Liverpool Plains Shire and the former Tamworth City, Parry, Manilla, Nundle and Barraba Shires have been amalgamated to form the Tamworth Regional Council.

Table 2.5 shows the breakdown of the value of agricultural production from the 2000 – 2001 Agricultural Census for the Shire. It can be seen that cropping is the largest component of the agricultural sector and that cereals and cotton are the 2 most significant. Wool is not a significant contributor to the agricultural economy nor are sheep and lambs for slaughter. Cattle are the most significant livestock commodity.

Item	Value ($)
Pastures and Grasses	777,343
Crops cut for Hay	172,416
Cereals for Grain	49,129,832
Oilseeds	4,589,860
Cotton	32,383,533
Legumes for Grain	2,032,829
Other Crops	1,143,687
Cut Flowers	425,817
Vegetables	638,555
Fruit and Grapes	82,678
Total Crops	**91,376,550**

Item	Value ($)
Wool	1,663,105
Milk	215,080
Honey and Beeswax	290,206
Total Livestock Products	**2,168,391**
Sheep and Lambs Slaughtered	903,789
Cattle and Calves Slaughtered	18,863,436
Pigs Slaughtered	7,358,041
Poultry Slaughtered	24,364
Other Livestock Slaughtered	12,225
Total Livestock Slaughtered	**27,161,855**
Total Value of Agriculture	**$120,706,796**

Sawmilling also occurs in the Shire using logs sourced from the State Forests located in the Shire and surrounding localities.

Mining of coal has occurred in the Gunnedah district for many years and this declined in the 1990s with the closure of the Gunnedah coalmine. However the coalmining industry is starting to increase its presence in the region with new mines opening in Werris Creek and Boggabri in the adjoining local government areas. There is also exploration currently taking place for an underground coal mine to be established in the Caroona Breeza area which will straddle both the Gunnedah and Liverpool Plains Shires. Exploration of Coal Seam Methane resources is currently being conducted in the Georges Island area and at Longlea. This means that natural gas may become available in the future.

There is a small manufacturing sector which value adds to the rural production in the Shire. Notable amongst these is a tannery which produces leather products. There is also a significant amount of light industry supporting the agricultural uses and this includes metal fabrication. There is also a brickworks which is the only one in northern NSW and it employs approximately 30 people.

Tourism is a growing sector of the local economy. There are 3 tourism icons being promoted within the Shire which as follows:

- Koalas
- Dorothea Mackellar and Superman
- Aboriginal tourism

Tourism brings approximately 12,000 people to the tourist information Centre, however this is considered to be a conservative estimate as the tourist information Centre is not located central to the main highways within the Shire.

Festivals and events are also a major component of the local economy. The largest being Agquip which is an agricultural exposition which attracts more than 100,000 people over three days to Gunnedah. It is estimated that this could bring as much as $5-$10 million to local economy over the week that he occurs. Other festivals include the 2 Rivers Arts Festival and the Week of Speed.

The sectors of employment for the local people is an indicator of the relative strengths of the economy. The Namoi Valley Socio Economic Profile has provided information on

this sourced from the 2001 Census of Population and Housing. This is reproduced as figure 2.6. This shows a diverse range of employment in the Shire. Agriculture is high as would be expected but so is retail and health, education and community services.

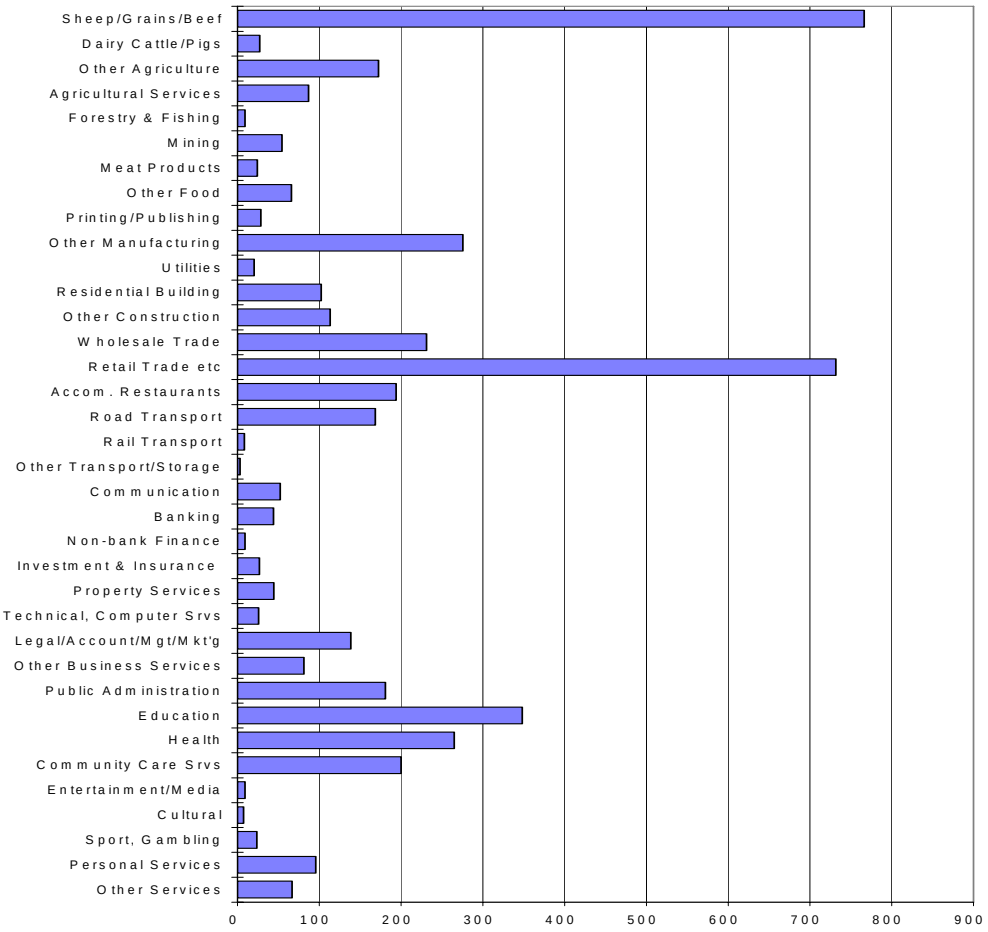


Figure 2.6: Employment by Industry Sector, 2001.
Source: Namoi Valley Socio Economic Profile

The Namoi Valley Socio Economic Profile makes the following assessment of the Shire's economic future:

- *"The fundamental reliance on primary resources remains a characteristic of Gunnedah, which should be reviewed in a strategy sense.*
- *The potential for Gunnedah to develop further in intensive animal production (pigs and poultry) along with the manufacture and provision of animal and poultry feedstuffs. The growth of those industries has been evident in recent years.*
- *The potential for further growth in agricultural handling and marketing of grains, oilseeds, legumes and pulses. Many of these industries offer the possibility of local development of the supply chain, supply chain accreditation, value adding and sales to national and export customers. Supply stability under irrigation would be an important element in those developments.*
- *The development of a grain-based ethanol processing operation is possible, given the recently announced extension of the excise tax exemption (until 2012). This will likely result in the diversion of grains from other markets, and on-farm adjustment to varieties suited to ethanol and by-products that would be*

components of the production of animal feedstuffs. There may be other requirements including supply contracts and the ensuring of supply through irrigation production.

- *There have been initiatives in a number of new products including citrus, olives and other boutique agricultural industries. While these are to be encouraged, they need to be integrated into related developments such as the way the wine industry is with tourism. These products also need assured markets, product assurance structures, and arrangements to secure the supply chain for the local area. Many of these products are not suitable for much of the developed irrigated land in Gunnedah.*
- *The supply of natural gas to Gunnedah, which is linked to the development of the ethanol industry, would remove an important disadvantage for manufacturing industries operating in Gunnedah. Lower energy costs will not provide Gunnedah with a competitive advantage but it will level the field relative to the major cities and regional centres such as Dubbo that already have access to natural gas.*
- *There are few industries that are producing products or services not linked to primary industries or natural resources. The development of these industries that also sell into non-local markets should be considered a priority in any development strategy. In the first instance, this could be built on an assessment of existing small businesses. In that way, Gunnedah would diversify into a different array of products, services and markets.*
- *As a community, Gunnedah obtains a high level of loyalty. A number of miners and meat workers continue to live in Gunnedah although they work outside Gunnedah. Likewise for a number of school children. The retention of households is an important part of business development strategy.*
- *The Gateway Gunnedah training initiative was innovative in a centre not notable for its strength in education, training and research. Business growth will require a range of specific training initiatives that need to be met. It is suggested that the Gunnedah Gateway initiative be kept on hold ready to be activated as required.*
- *The growth in the economy appears to be changing traditional strengths of broadacre farming, mining and retail into intensive agriculture, other manufacturing, construction as well as some areas of business services. However, the size of recent shocks are likely to slow new developments while the changes in the water sharing plan will provide further obstacles to recovery and growth.*
- *Gunnedah has made considerable investment in planning economic development under the Rural Plan and other initiatives. That work has been sound and gives direction to the development effort. To date, progress has been slow. Relative to some other centres, there appears to be some dynamics that are missing that limit the potential to use 'knowledge-based' services to build business and industry performance. These may relate to the low number of professional and technical capacities (both people and institutions) that underpin the modern economy and the development of new industries. There may also be limits to the entrepreneurial spirit that rural centres need but find hard to nurture. A comparison with Narrabri provides the basis for the above thoughts." (*CARE, 2003 pp 90 1)

Economic development is an important component of any strategy. There is a need for the area to have a vibrant and diverse economy for it to survive. The Gunnedah Shire economy is heavily based on the agriculture sector as well as tourism to an

extent. There is a need to protect the existing businesses as well as attracting new ones.

Chapter 3: Planning and Policy Framework

3.1 Introduction

The management and control of land uses within Gunnedah Shire are guided by a number of policy and legal processes. These are Acts of Parliament and Regulations as well as Plans and Policies prepared under the provisions of those Acts and Regulations.

The State Government has overall authority for the statutory processes applicable to the management of land within the Shire. The Council has the day to day decision making powers which are carried out under the auspices of the various acts of Parliament which will be outlined below. The Federal Government plays a role in the conservation of biodiversity under the auspices of the Environmental Protection and Biodiversity Conservation Act 1999.

The main Act dealing with landuse within Gunnedah Shire is the Environmental Planning and Assessment Act 1979 (EP&A Act). The Local Government Act 1993 also controls the manner in which Local Government is carried out in New South Wales and also requires that Councils adhere to the policies of Ecologically Sustainable Development (ESD) with all decisions that are made. It is not the purpose of this document to outline fully the provisions of the EP&A and Local Government Acts, suffice to say that they have a major bearing on the planning of land within Gunnedah Shire. The EP& A Act makes provision for three levels of planning policies which are:

- State Environmental Planning Policies (SEPPs)
- Regional Environmental Plans (REPs)
- Local Environmental Plans (LEPs)

3.2 State and Regional Plans and Policies

The State Environmental Planning Policies that are relevant to the Shire are as follows:

- SEPP No. 1 – Development Standards
- SEPP No. 4 – Development without Consent and Miscellaneous Complying Development
- SEPP No. 5 - Housing for Older People or People with Disability
- SEPP No. 6 – Number of Stores in a Building
- SEPP No. 8 – Surplus Government Land
- SEPP No. 9 – Group Homes
- SEPP No. 11 – Traffic Generating Developments
- SEPP No. 15 - Rural Land-Sharing Communities
- SEPP No. 21 – Caravan Parks
- SEPP No. 22 – Shops and Commercial Premises
- SEPP No. 30 – Intensive Agriculture
- SEPP No. 32 – Urban Consolidation
- SEPP No. 33 – Hazardous and Offensive Development
- SEPP No. 34 – Major Employment Generating Development
- SEPP No. 36 – Manufactured Home Estates

- SEPP No. 37 – Continued Mines and Extractive Industries
- SEPP No. 44 – Koala Habitat
- SEPP No. 45 – Permissibility of Mining
- SEPP No 48 – Major Putrescible Landfill Sites
- SEPP No. 55 – Remediation of Land
- SEPP No. 62 – Sustainable Aquaculture
- SEPP No. 64 - Advertising and Signage
- SEPP No. 65 – Design Quality of Residential Flat Development
- SEPP Seniors Living 2004
- SEPP ARTC Rail Infrastructure 2004
- SEPP Building Sustainability Index BASIX 2004
- SEPP Repeal of Concurrence and Referral Provisions 2004
- SEPP State Significant Development 2005
- SEPP Major Projects 2005

There are no Regional Environmental Plans that apply to the Shire. However, the Shire has been declared to be part of the Dark Sky region for Siding Springs Observatory and it is understood that this will be included in a Regional Environmental Plan in the future.

3.3 Catchment Management Authorities

The Shire is part of the Namoi Catchment Management Authority (CMA). This has recently been established and is in the process of developing a Catchment Action Plan which will cover the issues covered by the existing Catchment Blueprints and Vegetations Management Plans. Catchment blueprints are advisory "whole-of-government plans for integrated catchment management that will guide the long term management of natural resources in NSW for the next 10 years. The blueprints set overarching priorities for investment in natural resource management, consistent with NSW and Commonwealth Government policy.

The Namoi CMA will be undertaking the following actions:

- Preparation of a catchment action plan and a rolling investment strategy;
- Delivery of incentive programs funded from the National Action Plan for Salinity and Water Quality and the Natural Heritage Trust;
- Certification of Property Vegetation Plans;
- Provision of education, advisory and extension services on natural resource management.

The CMA has also prepared an Investment Strategy for the period 2004 to 2007. It is to be an interim document which will be revised after the preparation of the Catchment Action Plan this year. The strategy addresses the proposed investment and plans for Biodiversity, Riverine Ecosystem, River Salinity, Salinity and Soil Health and Sustainable Landscapes.

3.4 Acts of Parliament

There are also a number of other acts that affect the management of land within Gunnedah, which are listed below:

- Commons Management Act, 1989

- Contaminated Lands Management Act 1997
- Crown Lands Act 1989
- Crown Lands (Continued Tenures) Act, 1989
- Environmental Protection Biodiversity Conservation Act, 1999 (Commonwealth)
- Protection of the Environment Operations Act 1998
- Fisheries Management Act 1994
- Fisheries Management Amendment Act 1997
- Heritage Act 1977
- Mining Act, 1992
- Native Vegetation Act, 2003
- Native Vegetation Conservation Act, 1997
- Noxious Weeds Act, 1993
- Threatened Species Conservation Act 1995
- National Parks and Wildlife Act 1974
- Rivers and Foreshores Improvement Act 1948
- Rural Fires Act 1997
- Rural Lands Protection Board Act,
- Water Act, 1912
- Water Management Act 2000

3.5 State Government Policies

The State Government has 3 policies that are relevant to the future planning of the Shire. They are as follows:

- Rural Land Use Policy
- Policy on Sustainable Agriculture
- NSW Policy for Protection of Agricultural Land, 2004

The *Rural Land Use Policy* covers the following matters:

- The need to preserve the rural land as a resource including the following matters:
    - to minimise the loss or fragmentation of agricultural land or holdings
    - to maintain and promote agricultural activities and uses and to provide opportunities for a greater variety of agricultural uses in the future
    - to protect the productive capacity of agricultural land
    - to minimise landuse conflicts and environmental impacts
    - to protect and maintain the scenic and landscape values of rural lands
    - to protect and restore the natural resource base on which agriculture and other land uses depend

- Planning for settlements are to include the following:
    - to ensure supply of new housing relates to demand
    - to plan for rural residential development in the context of a rural release or settlement strategy

- to maximise use of existing infrastructure in the provision of urban and rural residential lots
- to conserve or use land in a way that will not prejudice future urban purposes
- to minimise impact on the existing and potential productivity of agricultural land
- to minimise landuse conflicts and environmental impacts
- to protect and maintain scenic landscape values
- to provide for a variety of urban and rural living opportunities
- to ensure settlement relates to the physical, social and service catchments
- to ensure coordination on a regional level and between adjoining local government areas

The purpose of the *Policy for Sustainable Agriculture* in NSW is to facilitate a coordinated approach to achieving an ecologically and economically sustainable agricultural sector in New South Wales. The Policy provides an agreed goal for sustainable agriculture in New South Wales, common objectives, and strategies that should guide a wide range of stakeholders towards this goal. It also provides a framework within which individual agencies and interest groups can develop specific position statements and action plans. The policy develops objectives and strategies for the following areas:

- Agricultural production
- Land management
- Water use and quality
- Nature conservation on farms
- Rural communities
- Integrated management

It is a whole of Government Policy which is to be implemented by all government departments.

The former Departments of Agriculture and Urban Affairs and Planning (now part of the Department of Primary Industries and DIPNR respectively) in 2001 developed the following policy on the development of LEPs for rural areas:

- Minimum lot sizes for subdivisions that may be eligible for a dwelling consent should be determined based on the area required to sustain a farming enterprise typical for that locality. This approach recognises the role of off farm income and that smaller parcels of agricultural land can be traded, however no dwelling rights are attached to these smaller lots.
- Concessional allotments are an inappropriate form of subdivision and should be progressively removed from plans across the State.
- Rural lifestyle opportunities should be provided for in a planned way, based on rural residential strategies and zones.
- Intensive forms of agriculture need to be catered for in the planning process. Determining allotment sizes for sustainable intensive agricultural developments will need to carefully consider potential environmental impacts as well as return on capital invested

This policy has been formalised in the 2001 report to the Premier of NSW by the NSW Sustainable Agriculture Review Group.

The *Policy for Protection of Agricultural Land* was adopted in May 2004. It provides detail on the provision of advice concerning the preparation of Environmental Planning Instruments – State Environmental Planning Policies (SEPP), Regional Environmental Plans (REPs) and Local Environmental Plans (LEPs). It references the policy on Sustainable Agriculture. The document promotes a strategic approach to the preparation of planning instruments which is openly consultative with the local communities as well as being transparent.

There are 3 major policy focuses to protect agricultural land, according to the policy. They are as follows:

- Environmental planning instruments
- Conversion of land
- Minimum size of holdings for a dwelling entitlement

The Policy states that *Environmental Planning Instruments* should be structured to:

- promote the continued use of agricultural land, particularly prime crop and pasture land, for commercial agricultural purposes, where that form of land use is sustainable in the long term;
- avoid land use conflicts;
- protect natural resources used by agriculture;
- protect other values associated with agricultural land that are of importance to local communities, such as heritage and visual amenity;
- provide diversity of agriculture opportunities, including specialised agricultural developments, at appropriate locations to provide scope for development in rural areas; and
- allow for value adding and integration of agricultural industries into regional economies.

The *conversion of land* used by agricultural enterprises to other uses should only take place where fully justified and after consideration of alternative sites and options. Any decisions to convert agricultural land to non agricultural uses should consider the optimal agricultural use of the land and alternative ways to structure the agricultural business. This is to ensure that competing land uses are located so as to maximise the benefit to the community. It requires the determination of the economic, environmental and social contributions from agricultural land uses, preferably through a local or regional rural land study.

Criteria in environmental planning instruments to determine the *minimum size of holdings necessary for a dwelling entitlement* should be developed to suit local needs and conditions. The objective is to reduce opportunities for conflict with commercial agricultural enterprises by minimising residential uses that are not directly associated with commercial farms. The policy goes on to state that setting a large minimum is a disincentive to life style purchasers but the size also needs to allow for entry by young farmers and the criteria should also allow for more intensive forms of agriculture where appropriate. The policy also notes that specifying a minimum area for a dwelling entitlement has been an effective strategy that is easily understood and is efficiently implemented, Councils should also consider other approaches to achieving

the goal of minimising conflict in agricultural production zones so that farms can operate without unnecessary restrictions.

The Policy states that the minimum area for a dwelling entitlement and other provisions in Environmental Planning Instruments to regulate subdivisions should take account of the following factors:

- the agricultural productivity and suitability of the land in question;
- the nature and requirements of agricultural industries in the area being considered;
- the risk of creating land use conflict;
- the current distribution of property sizes; and
- cumulative impacts.

A 2001 report of the Sustainable Agriculture Review Group on the implementation of the NSW Policy for Sustainable Agriculture reported that the following matters were required to be considered for major LEP reviews:

1. Minimum lot sizes for subdivisions that may be eligible for a dwelling consent should be determined based on the area required to sustain a farming enterprise typical for that locality. This approach recognises the role of off farm income and that smaller parcels of agricultural land can be traded, however no dwelling rights are attached to these smaller lots.
2. Concessional allotments are an inappropriate form of subdivision and should be progressively removed from plans across the State.
3. Rural lifestyle opportunities should be provided for in a planned way, based on rural residential strategies and zones.
4. Intensive forms of agriculture need to be catered for in the planning process. Determining allotment sizes for sustainable intensive agricultural developments will need to carefully consider potential environmental impacts as well as return on capital invested.

3.6 Local Environmental Plans

Gunnedah LEP 1998 applies to the Shire. A draft LEP has been prepared but not yet exhibited.

The objectives of the Gunnedah LEP 1998 are as follows:

(a) to encourage the proper management, development and conservation of all prime agricultural land, and
(b) to ensure that all development on rural land is sustainable in the long term, and
(c) to ensure natural resources are conserved and to encourage proper management and development of natural and man-made resources.
(2)
(a) to encourage the development of Gunnedah as the main retail, commercial and professional service centre within the Liverpool Plains area, and
(b) to provide greater flexibility in residential living styles and increased residential amenity.
(3) to encourage and facilitate a diverse range of industrial land use types.

(4) to protect and enhance the social welfare/well-being of residents and ratepayers in the Gunnedah local government area.
(5) to sustain and enhance land of environmental and scenic sensitivity.
(6) to protect and conserve the heritage of the Gunnedah local government area.
(7)
(a) to reduce the incidence of damage and level of hazard to areas subject to flooding by managing development in the floodplain and in floodways, and
(b) to allow more detailed controls on development in the floodplain and in floodways to be provided in the Council's Interim Flood Prone Lands Policy.

The LEP makes provision for the following zones:

- 1(a) Rural (Agricultural Protection)
- 1(b)Rural (General)
- 1(c) Rural Residential
- 1(d) Future Urban
- 1(f) Forests
- 2(a) Residential
- 2(b) Residential (Higher Density)
- 2(v) Village
- 3(a) General Business
- 3(b) General Business
- 4(a) General Industry
- 4(b) Offensive Industry
- 5(a) Special Uses
- 5(b) Special Uses (Railway)
- 6(a) Recreation
- 7(d) Environment Protection Scenic
- 8(a) National Parks and Nature Reserves
- 9(a) Proposed Road
- 9(b) Proposed Open Space

However, as this strategy only applies to the rural parts of the Shire, and not the town of Gunnedah, the relevant zones are as follows:

- 1(a) Rural (Agricultural Protection)
- 1(b)Rural (General)
- 1(c) Rural Residential
- 1(d) Future Urban
- 1(f) Forests
- 2(v) Village
- 5(a) Special Uses
- 5(b) Special Uses (Railway)
- 7(d) Environment Protection Scenic
- 8(a) National Parks and Nature Reserves

The relevant zone objectives are as listed below.

Rural 1(a) Agricultural Protection Zone

(a) to protect the use and efficiency of prime agricultural land while permitting appropriate development subject to suitable subdivision controls,
(b) to permit other forms of development which are ancillary to rural land uses or that, as a result of their nature, require siting outside the urban area,
(c) to avoid further fragmentation and alienation of useable rural land,
(d) to retain the low density nature of settlement within the rural areas and ensure that any future development does not create unreasonable demands on the existing infrastructure or available services,
(e) to provide for the requirements of the rural community,
(f) to maintain safety and convenience along main roads by discouraging uses that are likely to generate traffic volumes which disrupt traffic flow,
(g) to ensure that the existing level of scenic amenity is maintained by requiring development to have regard for significant ridgelines and hilltops.

Rural 1(b) Zone

(a) to protect, enhance, conserve and maintain existing agricultural and pasture land in a manner which allows general agricultural production on secondary land that is compatible with alternative land use,
(b) to permit other forms of development which are ancillary to rural land use or that, as a result of their nature, require siting outside the urban area,
(c) to retain the low density nature of settlement within the rural areas and ensure that any future development does not create unreasonable demands on the existing infrastructure or available services,
(d) to ensure that the existing level of scenic amenity is maintained by requiring development to have regard for significant ridgelines and hilltops.

Rural 1(c) Zone

(a) to make provision for small holdings in appropriate locations and in response to genuine demand, having regard to accessibility, proximity to the existing settlement of Gunnedah, availability of services, future expansion of the town and impact on agricultural activities,
(b) to minimise the cost of development to the general community by requiring persons benefiting from rural-residential development to provide, at their own cost, their own on-site utility services, where appropriate,
(c) to preserve and enhance the amenity of rural-residential land within the area in order that it remains compatible with existing land use and reflects the capability of the land,
(d) to provide for the creation of a variety of small allotment sizes to allow an attractive rural lifestyle on land that lacks commercial agricultural potential,
(e) to enable other types of development to be carried out on land within the zone if it is in keeping with the rural character of the locality.

Rural 1(d) Future Urban Zone

(a) to identify land for future urban development,
(b) to allow a range of residential types subject to appropriate levels of servicing,
(c) to encourage a range of urban land uses that are compatible and site-responsive to land within this zone,
(d) to ensure that land within this zone is not used so as to sterilise it for future urban use.

Residential 2(v) Village

(a) to identify land for a variety of urban uses within a small urban community,
(b) to encourage a range of housing types that are site responsive,
(c) to encourage development that is ancillary to village life, the nature and scale of which is complementary to existing and future residential areas,
(d) to recognise existing villages and to enable future development appropriate to their continued existence.

Environment Protection 7(d) Scenic

(a) to protect hill lands, escarpments and river valleys of scenic significance,

(b) to ensure the character of these areas by restricting the uses which are allowed and enforcing greater control in regard to building materials, site positioning, height, scale and the provision of access roads and services, and
(c) to allow only development which maintains the rural-scenic setting of the area.

The LEP also has a number of land use controls. The main one that affects the rural land is the subdivision minimas. The subdivision minimas for the relevant zones are as follows:

- Rural 1(a): 200 ha
- Rural 1(b): 40 ha
- Rural 1(c): 1.2 ha average with 6,000 m^2 minimum.

3.7 Gunnedah Local Environmental Study 2004

The Council engaged Planning Workshop Australia to prepare a Local Environmental Study which was to provide the background information for the preparation of a new Local Environmental Plan for the Shire. This document was finalised in November 2004 and subsequently adopted by the Council.

The Local Environmental Study identified the environmental context of Gunnedah and discussed the natural, built, social and economic aspects of this. It then identified the natural environment, built environment and economic issues that needed to be considered for the future. Planning options and needs were identified covering the following areas:

- Constraints
- Agriculture
- Industry
- Commercial
- Residential
- Settlement patterns
- Infrastructure
- Conflicting land uses
- Growth scenarios

Opportunities were identified and then planning recommendations and principles were outlined. These covered the following aspects of the Shire:

- General Planning Provisions incorporating residential development, protection of agricultural land, environmental management and provision of employment opportunities
- Rural residential areas
- Residential development
- Retail and commercial areas
- Industry and employment
- Agricultural lands
- Community and social issues
- Sporting, leisure and cultural functions
- Traffic and parking
- Historical and architectural features

- Natural environment
- Hydrology
- Policy and strategy matters

It is not intended to reproduce all of this material, however the General planning provisions for agricultural lands and the more detailed recommendations for residential areas, agricultural lands and natural environment are reproduced below:

General planning provisions: Protection of agricultural land.

> Agriculture is vital to the current and future viability of Gunnedah Shire. It is the dominant land use within the area and provides the bulk of its employment and economic development, in terms of both agricultural pursuits and supporting businesses. It is crucial that the fragmentation of existing agricultural holdings is not promoted, and that these activities are not pushed out to less productive areas through continued rural residential development. Is also necessary to continue to implement measures to minimise land degradation and address salinity throughout the Shire.

General planning provisions: Environmental management

> The Shire currently features a substantial network of vegetation linkages and biodiversity corridors. These green corridors and environmental protection areas should be maintained and expanded within the context of suggested areas (contained within this report). Impacts on prominent environmental areas such as Lake Goran and the Namoi and Mooki river systems should be monitored and regulated in light of potential impacts, particularly from nearby agricultural industries.

Rural residential areas recommendations

- No further rural residential land should be released on the fringe of settlements.
- Land use conflicts arising from rural residential development in predominantly agricultural areas should be minimised.

Agricultural lands recommendations

- Existing productive agricultural lands should be preserved.
- Incorporate measures to reduce salinity.
- Incorporate more sustainable farming measures.
- Promote existing range of agricultural industries.
- Provide for intensification of agriculture within desirable areas.
- Pursue institution actions will land management as posited within the Liverpool Plains Catchment Investment Strategy.

Natural environment recommendations

- Preservation of scenic and rural landscape.
- Preservation and increased awareness of Lake Goran.
- Maintained and expand existing vegetation linkages.
- Promoted, habitats and movements within the Shire.
- In creased vegetation and planting within urban areas.

- Incorporate measures within planning instruments to reduce salinity.
- Implement the actions of the Liverpool Plains catchment investment strategy

These and the other recommendations were adopted by the Council and formed the basis of the draft Local Environmental Plan that has been prepared.

3.8 Gunnedah Development Control Plans

There is one Development Control Plan (DCP) that applies to the rural areas of Gunnedah Shire titled Rural Residential.

Chapter 4: Existing Development Pattern

This Chapter presents selected data and characteristics of the combined localities of the Shire as well as a map of the localities. To make the understanding of the data more manageable, the localities have been combined into areas of similar topographic features and land use. Table 4.1 shows the combined localities.

Table 4.1: Combined Localities

Combined Name	Localities Included
1. Pilliga – Willala	Pilliga, Goolhi and Willala
2. Ghoolendaadi – Milroy	Ghoolendaadi, Mullaley and Milroy
3. Boggabri – Marys Mount	Marys Mount, Emerald Hill and Boggabri
4. Tambar Springs	Tambar Springs and Premer
5. Gunnedah	Gunnedah
6. Curlewis	Curlewis
7. Spring Ridge	Spring Ridge and Caroona
8. Carroll – Breeza	Carroll, Piallaway and Breeza
9. Blue Vale – Rangari – Orange Grove	Blue Vale, Wean, Rangari, Kelvin, Keepit and Orange Grove

Map 4.0 Shows the combined localities.

Details presented includes the following:

- Number of dwellings
- Total number of rural holdings
- Number of primary uses
- Agricultural land classification
- Land use and lot size graphs
- General comments

The data is presented as the number of holdings in each category. A holding is the amalgamation of lots that are held in one ownership.

The number of rural holdings does not include the land within the villages, and includes extensive agriculture, native vegetation, intensive plants and intensive animals.

The land use details come from the land use survey carried out as part of this study and the lot size graph data is based on Council's property system. Most of the intensive plants are irrigated cropping and nearly all of the intensive agriculture is poultry.

The agricultural land classification has been taken from the NSW Agriculture's Agricultural Land Classification Map for the Gunnedah Shire. Class 1 is the best land and class 5 the least productive. Classes 1 to 3 are considered to be high class agricultural land. This map is currently being updated and therefore the classifications have been generalised.

The number of primary uses in each locality are provided.

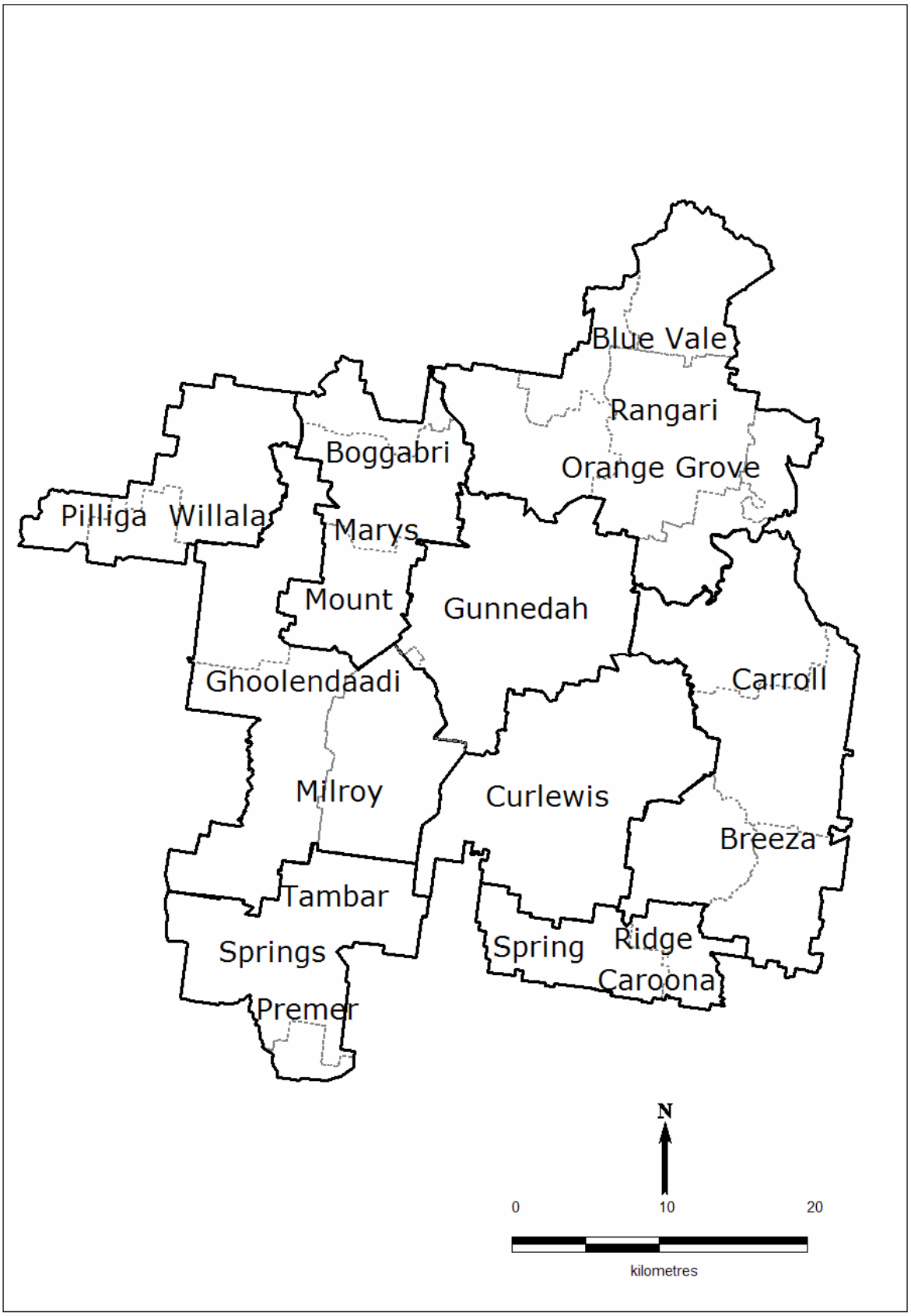
The holding analysis does not include the villages.

Vacant land refers to the land in villages and an existing rural residential subdivision

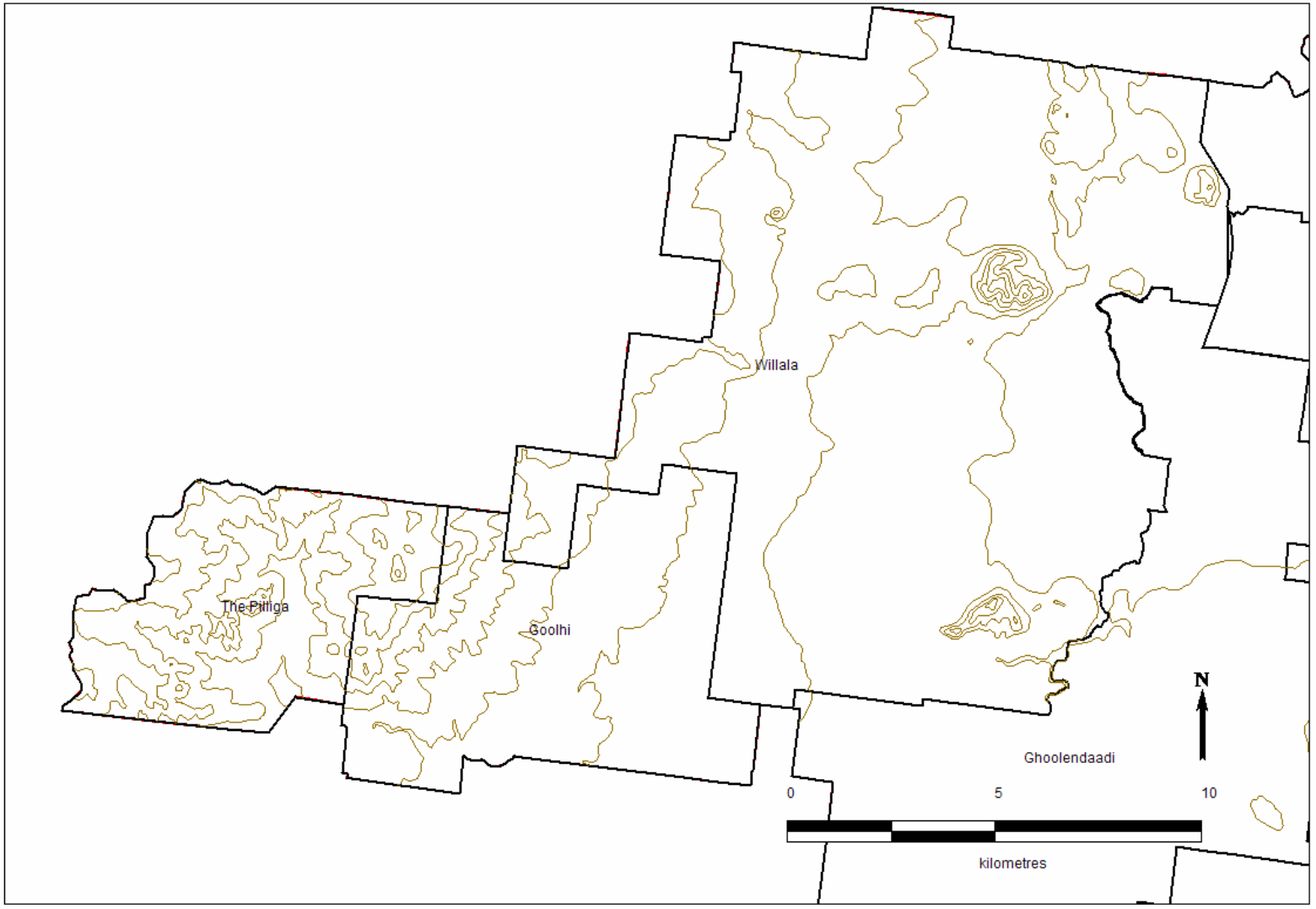
Land use and holding size graphs are provided to give an indication of the land uses in each locality as well as the lot size range.

The map shows the boundaries of the combined localities as well as the individual localities which make up the combined ones.

Due to data base incompatibility, the land use counts the number of lots and the holding size counts the holdings. For this reason, the total number of lots in the land use survey differs from the totals for the holdings.



Map 4.0: Combined Localities



Map 4.1: Pilliga – Willala

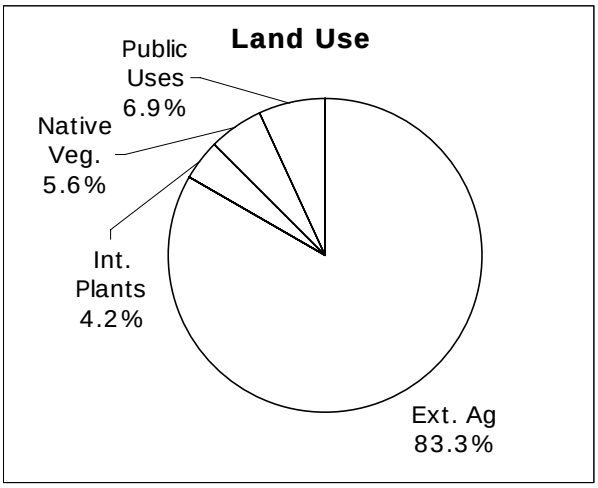
4.1 Pilliga –Willala

General Characteristics

Total Number of Rural Holdings	72
Number of Agricultural Holdings	63
Number of Rural Residential Lots	0

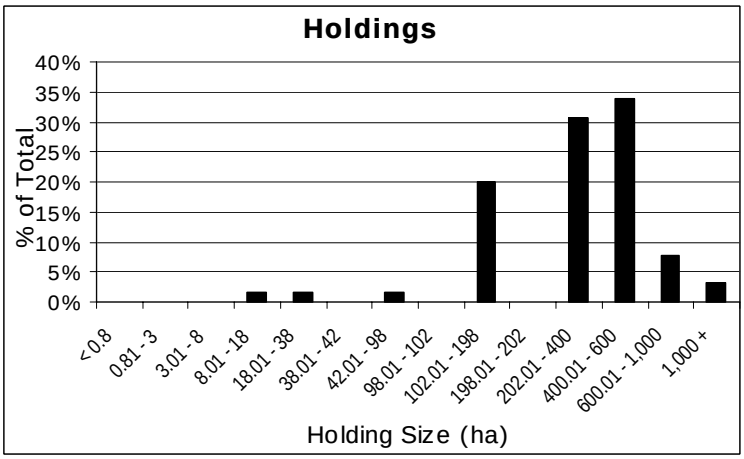
Number of Properties in Each Category

Land Use	Number
Commercial	0
Extensive Agriculture	60
Extractive Industry	0
Intensive Animals	0
Intensive Plants	3
Native Vegetation	4
Public Use	5
Rural Residential	0
Vacant	0
Village	0



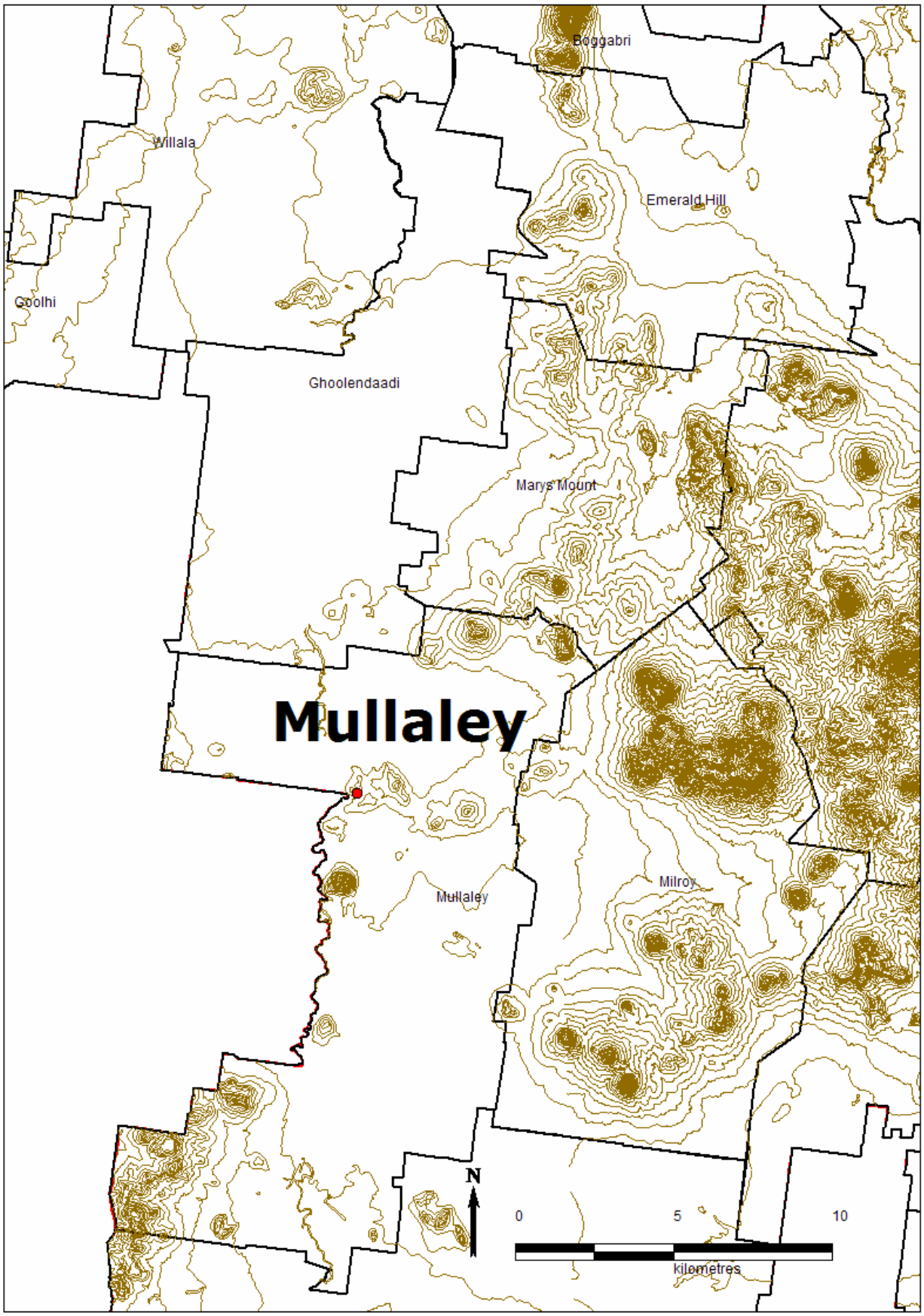
Agricultural Land Classification

Class	Location
Class 1	None
Class 2	Flat plains in eastern part of Willala
Class 3	The western part including all of Pilliga and Goolhi and western part of Willala. Hilly land
Class 4	Steeper land
Class 5	



General Comments

- Extensive agriculture mostly
- Most holdings in 200 to 600ha range
- Mostly flat land with some hilly land amongst the plains
- Relatively isolated from Gunnedah



Map 4.2: Ghoolendaadi - Milroy

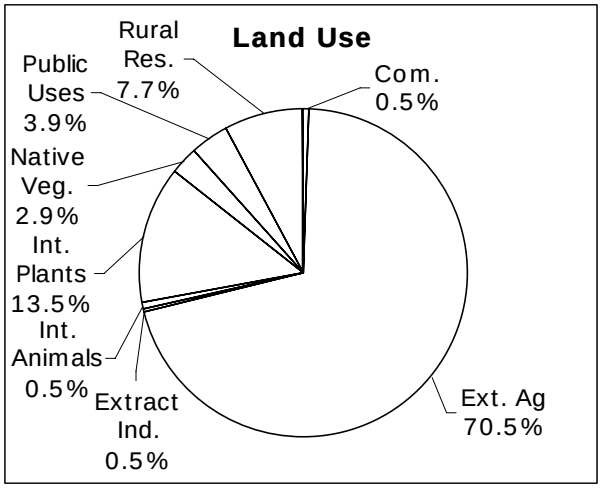
4.2 Ghoolendaadi - Milroy

General Characteristics

Total Number of Rural Holdings	207
Number of Agricultural Holdings	175
Number of Rural Residential Lots	16

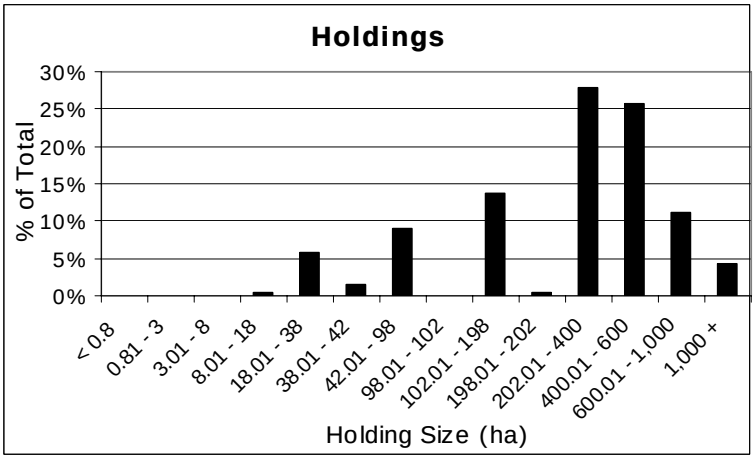
Number of Properties in Each Category

Land Use	Number
Commercial	1
Extensive Agriculture	146
Extractive Industry	1
Intensive Animals	1
Intensive Plants	44
Native Vegetation	6
Public Use	8
Rural Residential	16
Vacant	0
Village	84



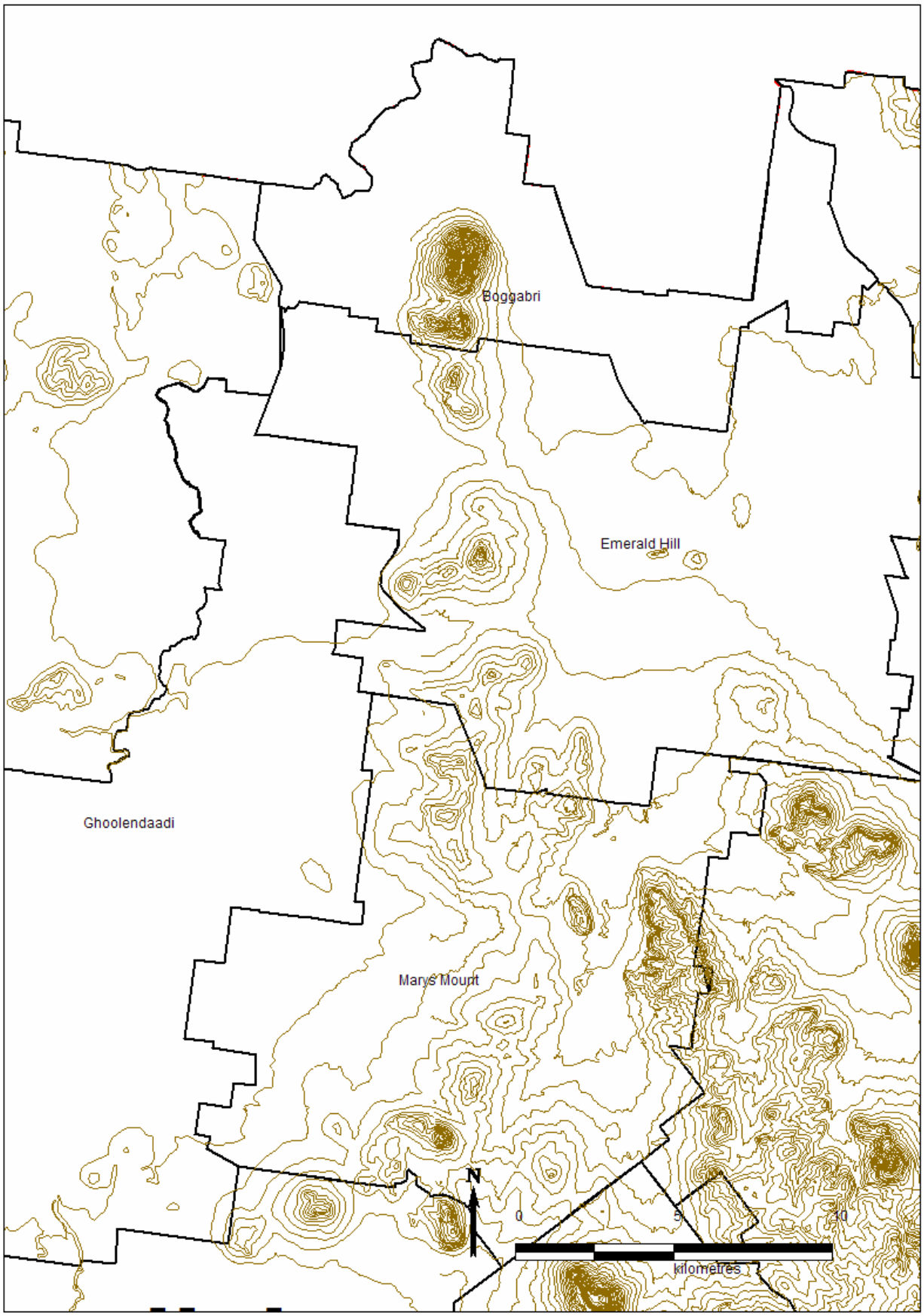
Agricultural Land Classification

Class	Location
Class 1	None
Class 2	Flat plains
Class 3	Footslopes of hilly land
Class 4	Steep land in east of Milroy
Class 5	Steep land in the east of Milroy



General Comments

- Extensive agriculture mostly with some intensive plant uses
- Holdings mostly 200 to 600 ha with some 102 to 198 ha
- Mostly flat in the north with some hilly land in the southeast
- Village of Mullaley has limited services



Map 4.3: Boggabri – Marys Mount

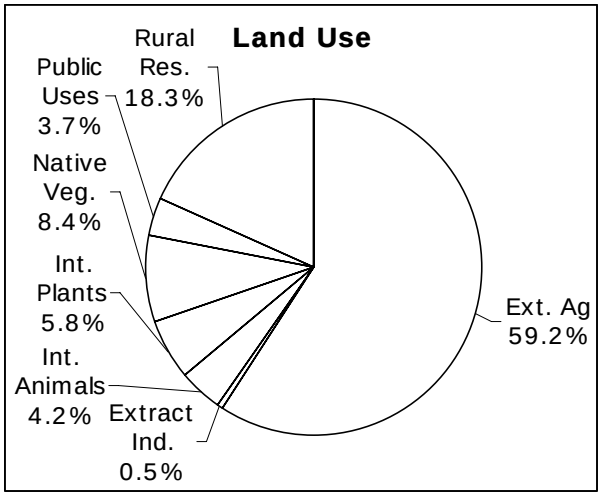
4.3 Boggabri – Marys Mount

General Characteristics

Total Number of Rural Lots	439
Number of Agricultural Lots	384
Number of Rural Residential Lots	7

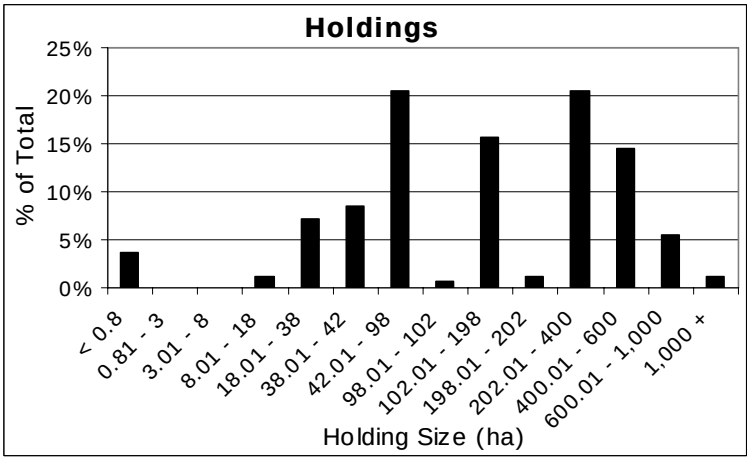
Number of Properties in Each Category

Land Use	Number
Commercial	
Extensive Agriculture	113
Extractive Industry	1
Intensive Animals	8
Intensive Plants	11
Native Vegetation	16
Public Use	7
Rural Residential	35
Vacant	
Village	



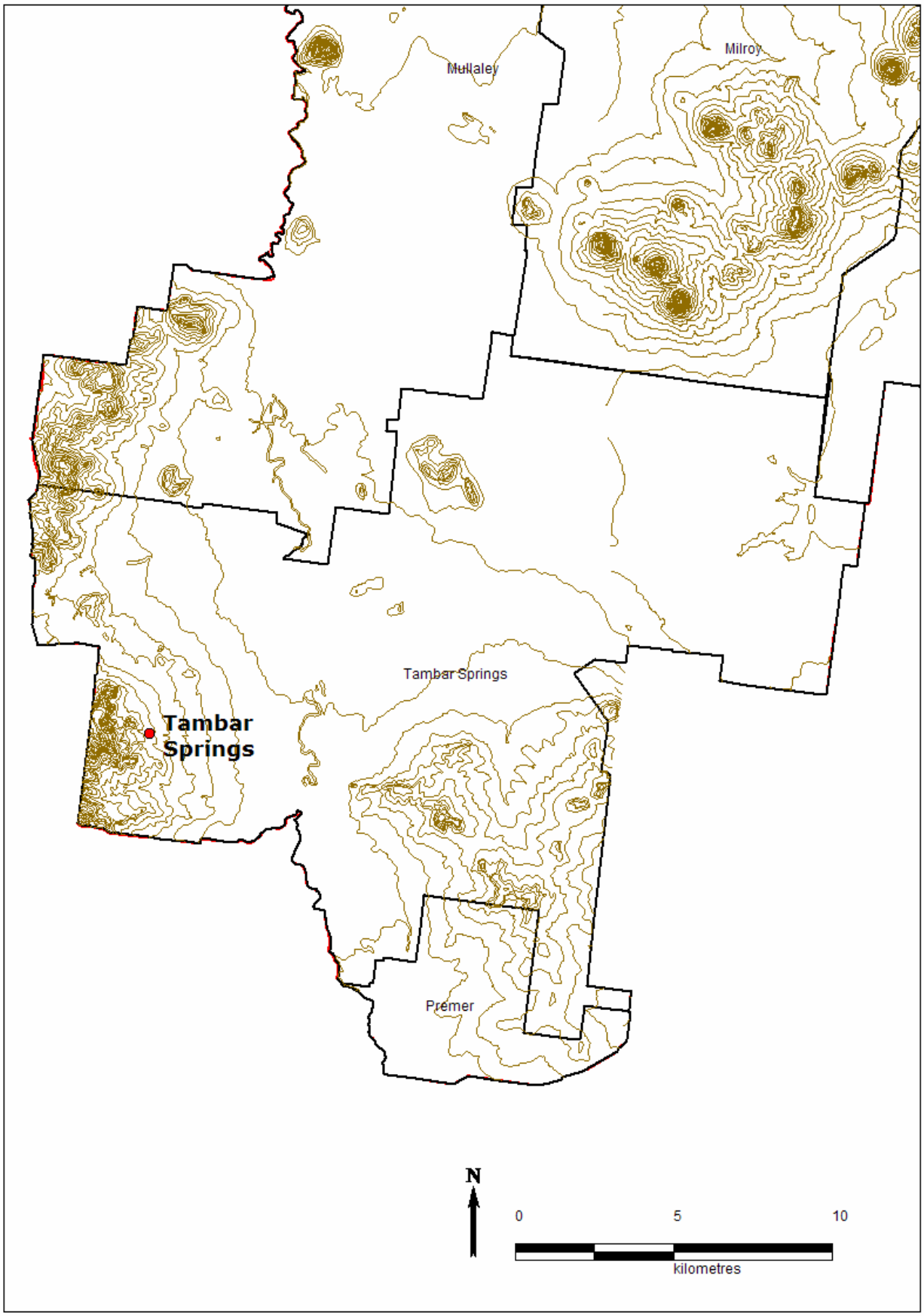
Agricultural Land Classification

Class	Location
Class 1	None
Class 2	Flat plains
Class 3	Footslopes of hilly land
Class 4	Steep land in the south
Class 5	



General Comments

- Mostly extensive agriculture with some rural residential in a cluster in Emerald Hills
- Holdings mostly 200 – 600 range with significant number less than 98 ha
- Mostly flat in the north with hilly land in the south



Map 4.4: Tambar Springs

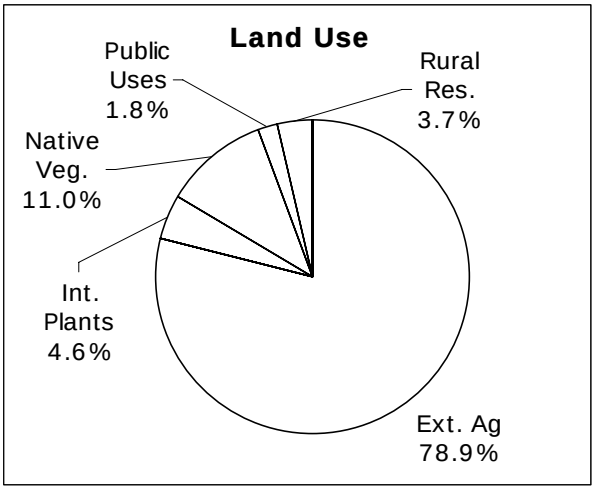
4.4 Tambar Springs

General Characteristics

Total Number of Rural Holdings	109
Number of Agricultural Holdings	91
Number of Rural Residential Lots	4

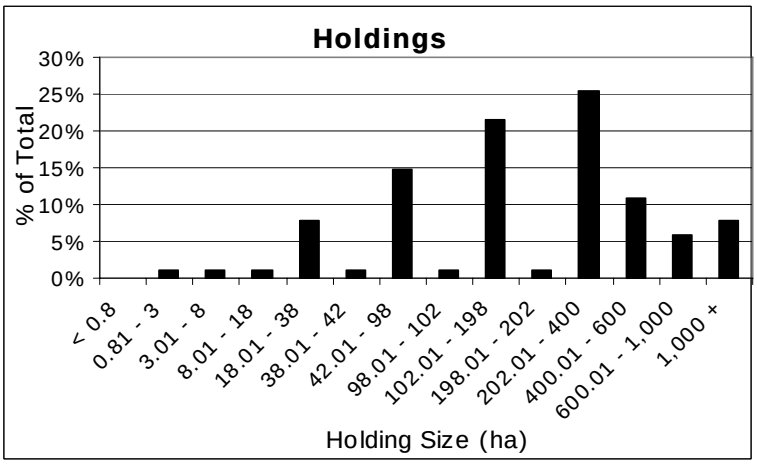
Number of Properties in Each Category

Land Use	Number
Commercial	
Extensive Agriculture	86
Extractive Industry	
Intensive Animals	
Intensive Plants	5
Native Vegetation	12
Public Use	2
Rural Residential	4
Vacant	
Village	



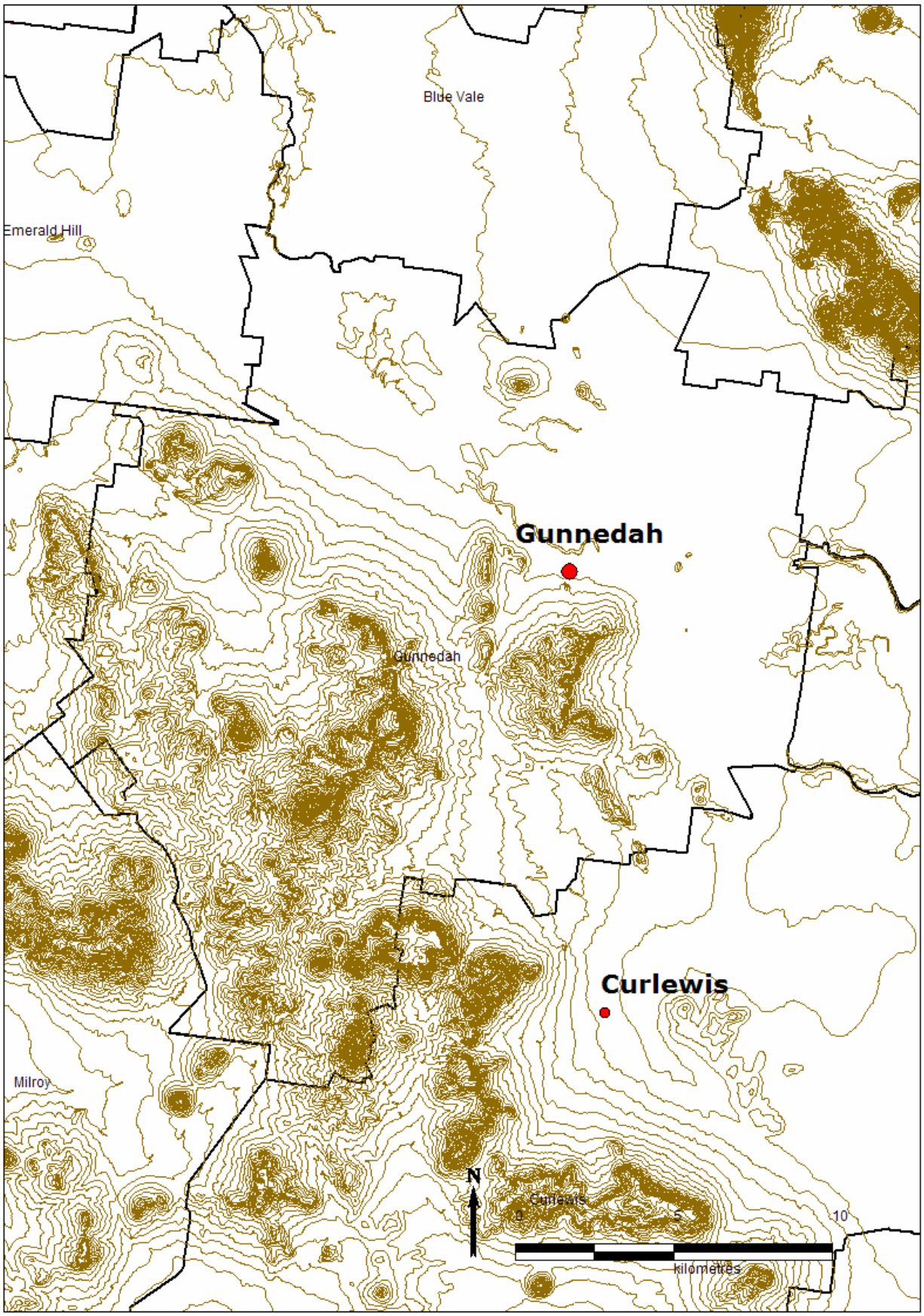
Agricultural Land Classification

Class	Location
Class 1	None
Class 2	Flat plains
Class 3	Footslopes of hilly land
Class 4	Steep and hilly land
Class 5	Steep vegetated land



General Comments

- Mostly extensive agriculture with some a significant number of native vegetation areas
- Holdings mostly 202 ha and greater with significant proportion less than 98 ha
- Mostly flat land in the north and south with hilly land around village of Tambar Springs and land in the west
- Tambar Springs has limited facilities and access to Gunnedah



Map 4.5: Gunnedah

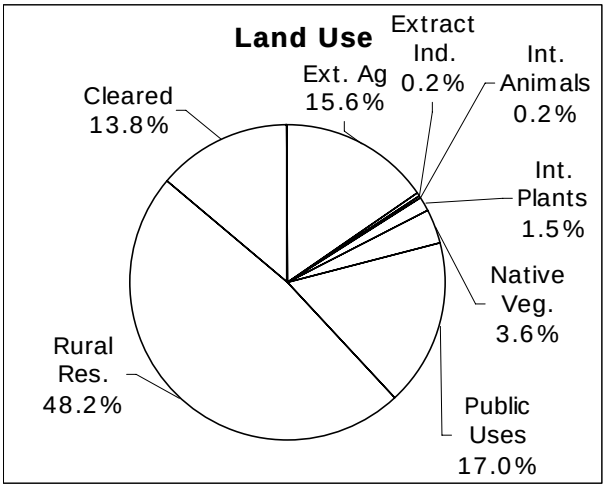
4.5 Gunnedah

General Characteristics

Total Number of Rural Holdings	1,019
Number of Agricultural Holdings	174
Number of Rural Residential Lots	485

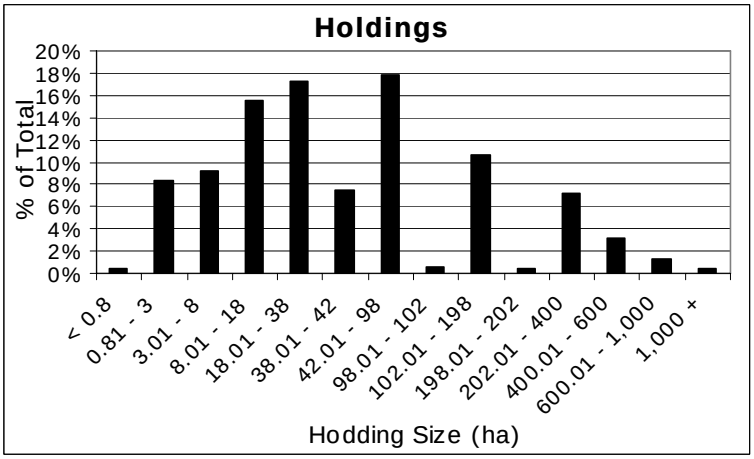
Number of Properties in Each Category

Land Use	Number
Commercial	12
Extensive Agriculture	157
Extractive Industry	2
Intensive Animals	2
Intensive Plants	15
Native Vegetation	36
Public Use	171
Rural Residential	485
Vacant	139
Village	



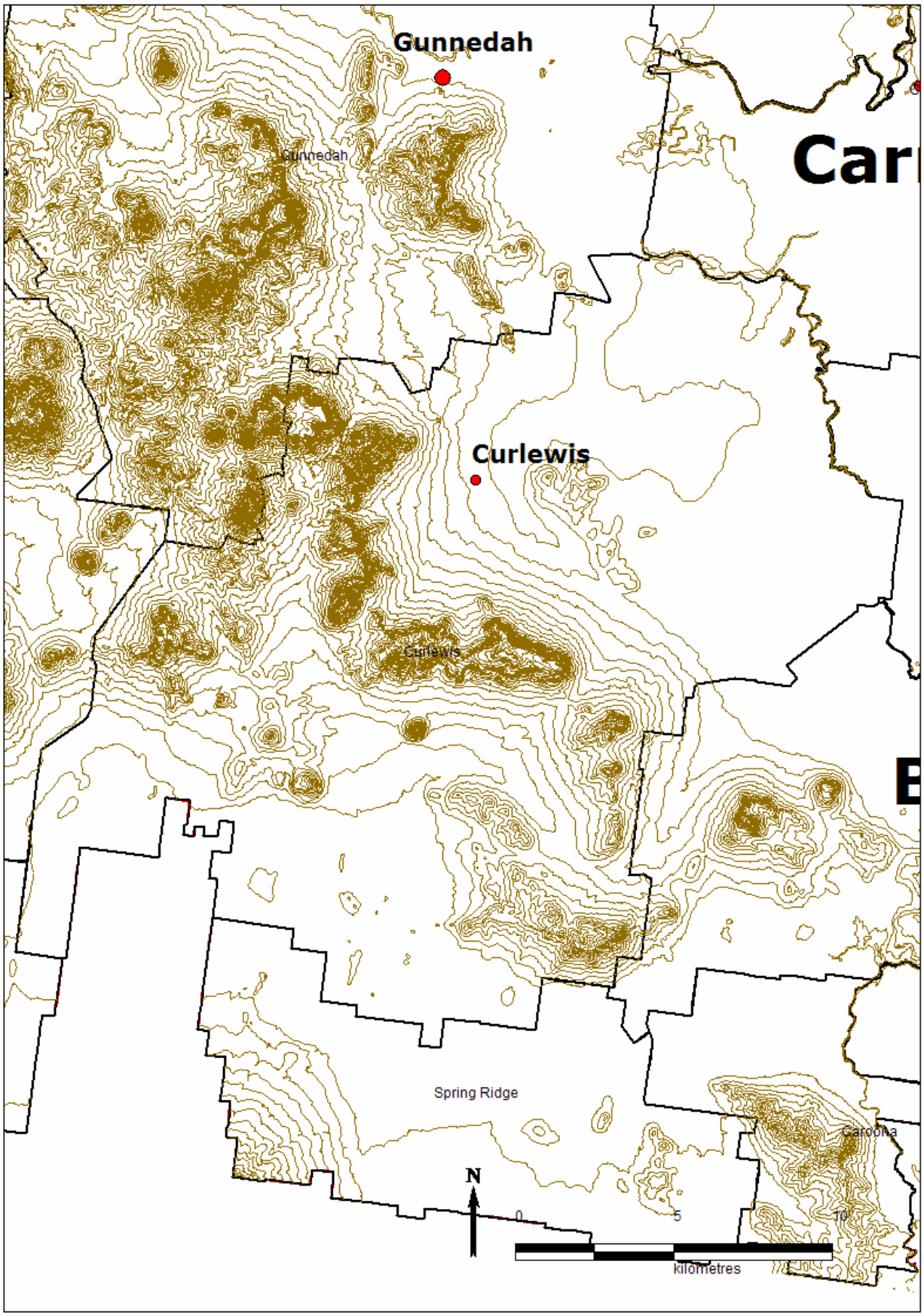
Agricultural Land Classification

Class	Location
Class 1	None
Class 2	Flat plains to the north and south of Gunnedah
Class 3	Foot slopes of hilly land
Class 4	Hilly to steep land
Class 5	Steep vegetated land



General Comments

- Most uses are rural residential and public uses with some extensive agriculture
- Holdings mostly less than 98 ha with not many greater than 102 ha
- Mostly hilly to steep land with some flat land to the north of Gunnedah with some isolated areas to the south of the town



Map 4.6: Curlewis

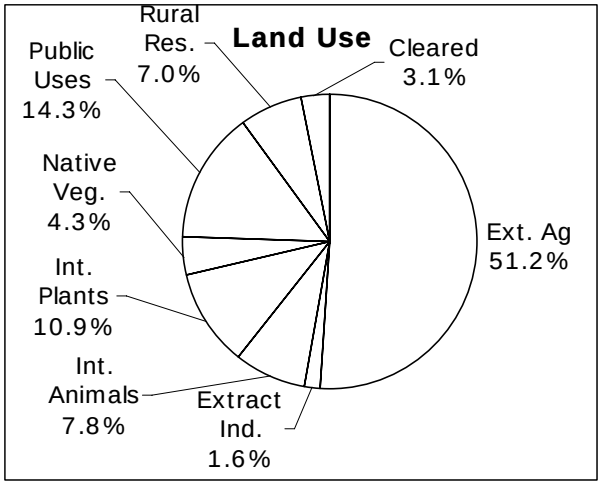
4.6 Curlewis

General Characteristics

Total Number of Rural Holdings	258
Number of Agricultural Holdings	180
Number of Rural Residential Lots	18

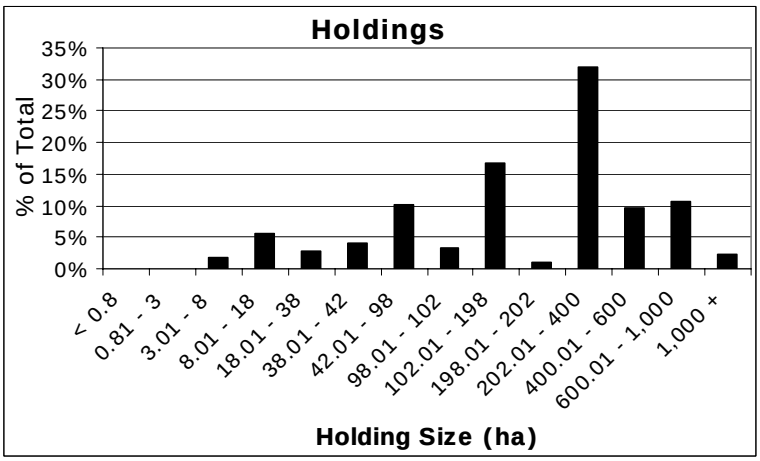
Number of Properties in Each Category

Land Use	Number
Commercial	
Extensive Agriculture	132
Extractive Industry	4
Intensive Animals	20
Intensive Plants	28
Native Vegetation	11
Public Use	37
Rural Residential	18
Vacant	8
Village	



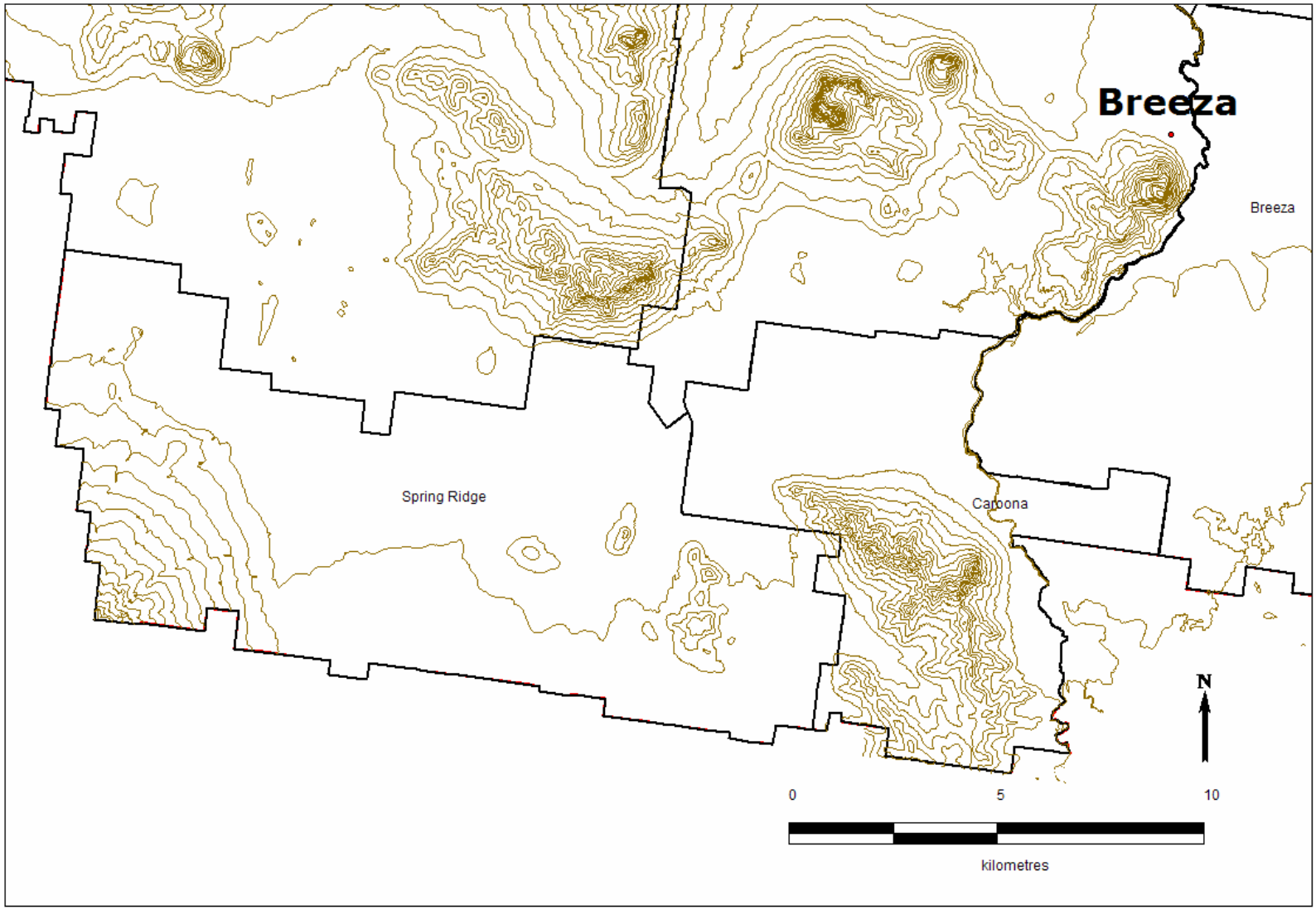
Agricultural Land Classification

Class	Location
Class 1	None
Class 2	Flat plains
Class 3	Footslopes of hilly land to the west and south of town
Class 4	Steep to hilly land to the east and west of town
Class 5	Steep vegetated land



General Comments

- Most uses are extensive agriculture with significant number of intensive plant uses
- Holding sizes mostly greater than 102 ha with some in 42 to 98 ha range
- Mostly flat in the north east and south with steep and hilly land in the centre around town of Curlewis



Map 4.7: Spring Ridge

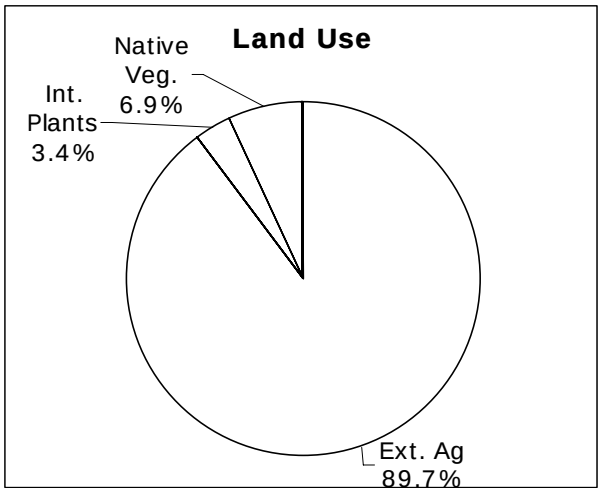
4.7 Spring Ridge

General Characteristics

Total Number of Rural Holdings	58
Number of Agricultural Holdings	54
Number of Rural Residential Lots	0

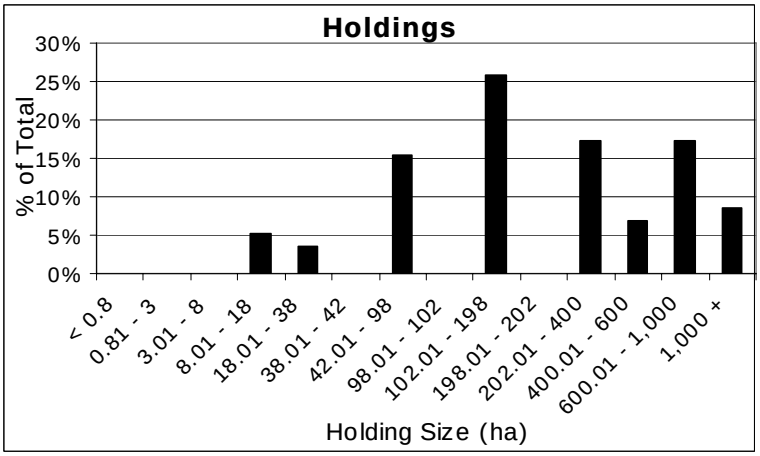
Number of Properties in Each Category

Land Use	Number
Commercial	
Extensive Agriculture	52
Extractive Industry	
Intensive Animals	
Intensive Plants	2
Native Vegetation	4
Public Use	
Rural Residential	
Vacant	
Village	



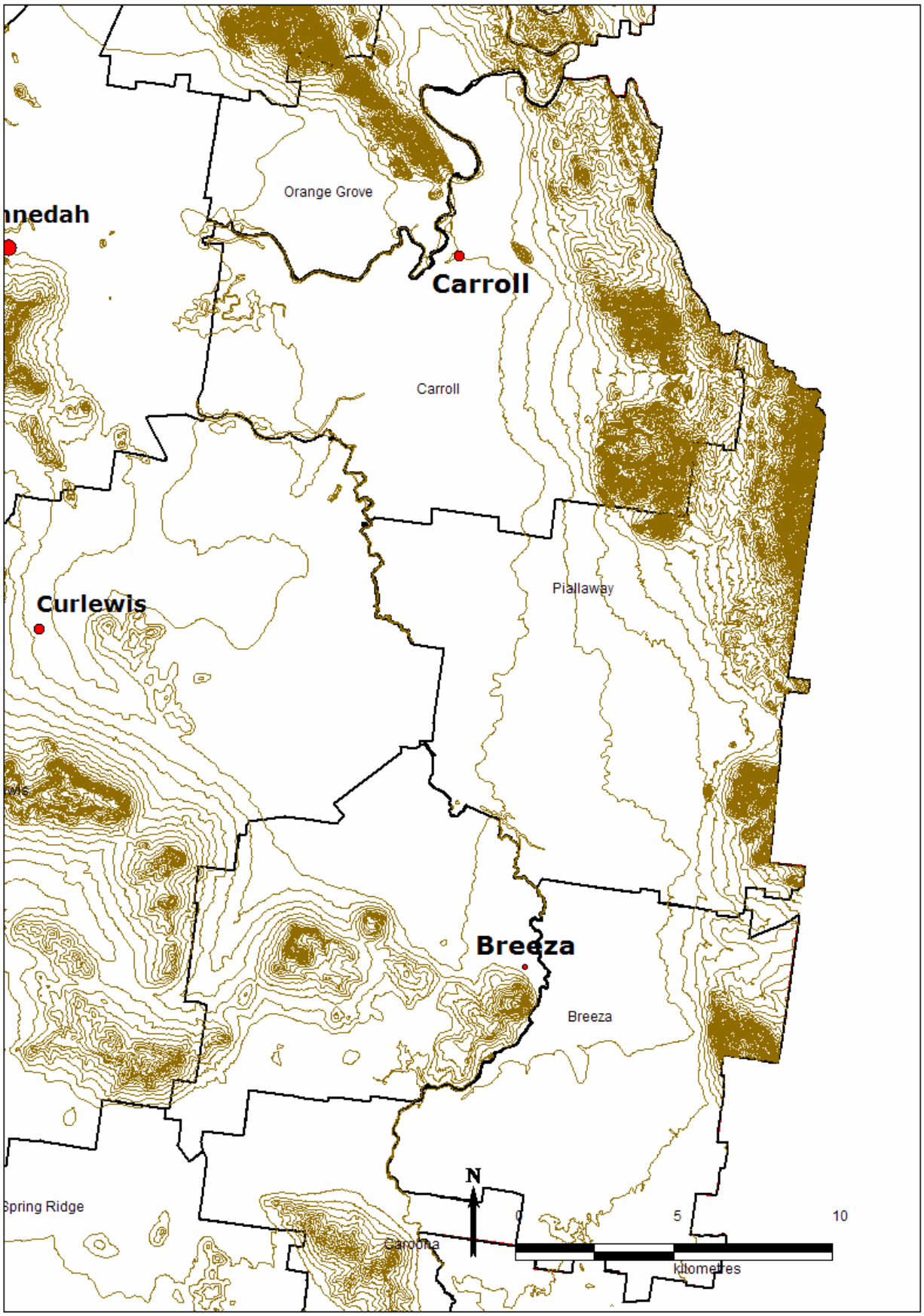
Agricultural Land Classification

Class	Location
Class 1	None
Class 2	Flat plains
Class 3	Footslopes of hilly land in southeast around Doona State Forest
Class 4	Hilly land in southeast around Doona State Forest
Class 5	None



General Comments

- Mostly extensive agriculture with some intensive plants and native vegetation
- Most holdings greater than 200 ha with significant number in 102 – 198
- Land is mostly flat with some hilly land in the southwest and more hilly land around the Doona State Forest in the southeast
- Relatively isolated from Gunnedah



Map 4.8: Carroll - Breeza

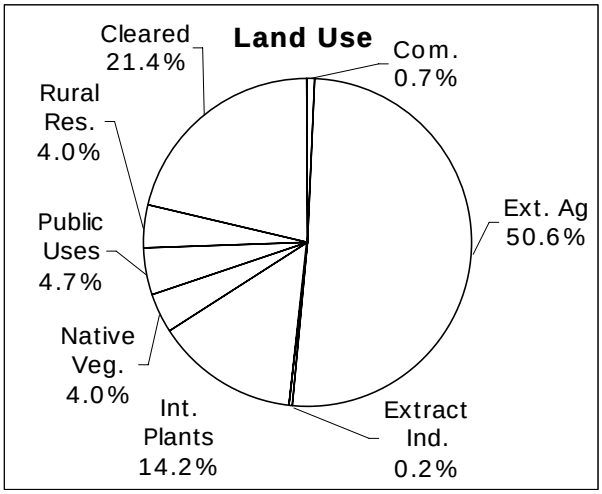
4.8 Carroll - Breeza

General Characteristics

Total Number of Rural Holdings	401
Number of Agricultural Holdings	260
Number of Rural Residential Lots	16

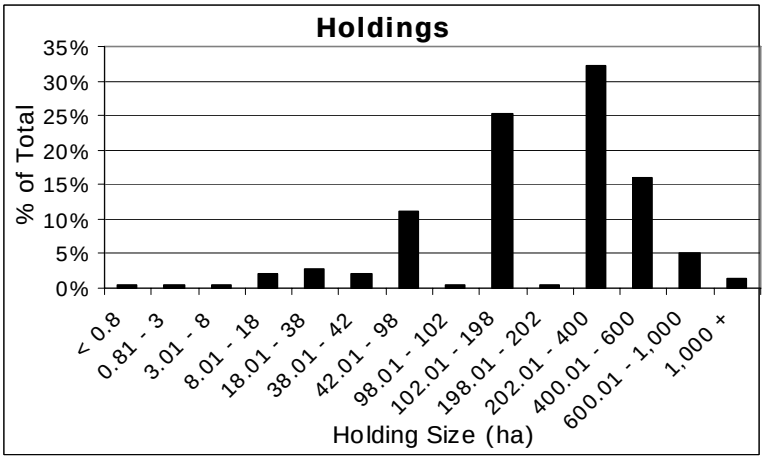
Number of Properties in Each Category

Land Use	Number
Commercial	3
Extensive Agriculture	203
Extractive Industry	1
Intensive Animals	
Intensive Plants	57
Native Vegetation	16
Public Use	19
Rural Residential	16
Vacant	86
Village	



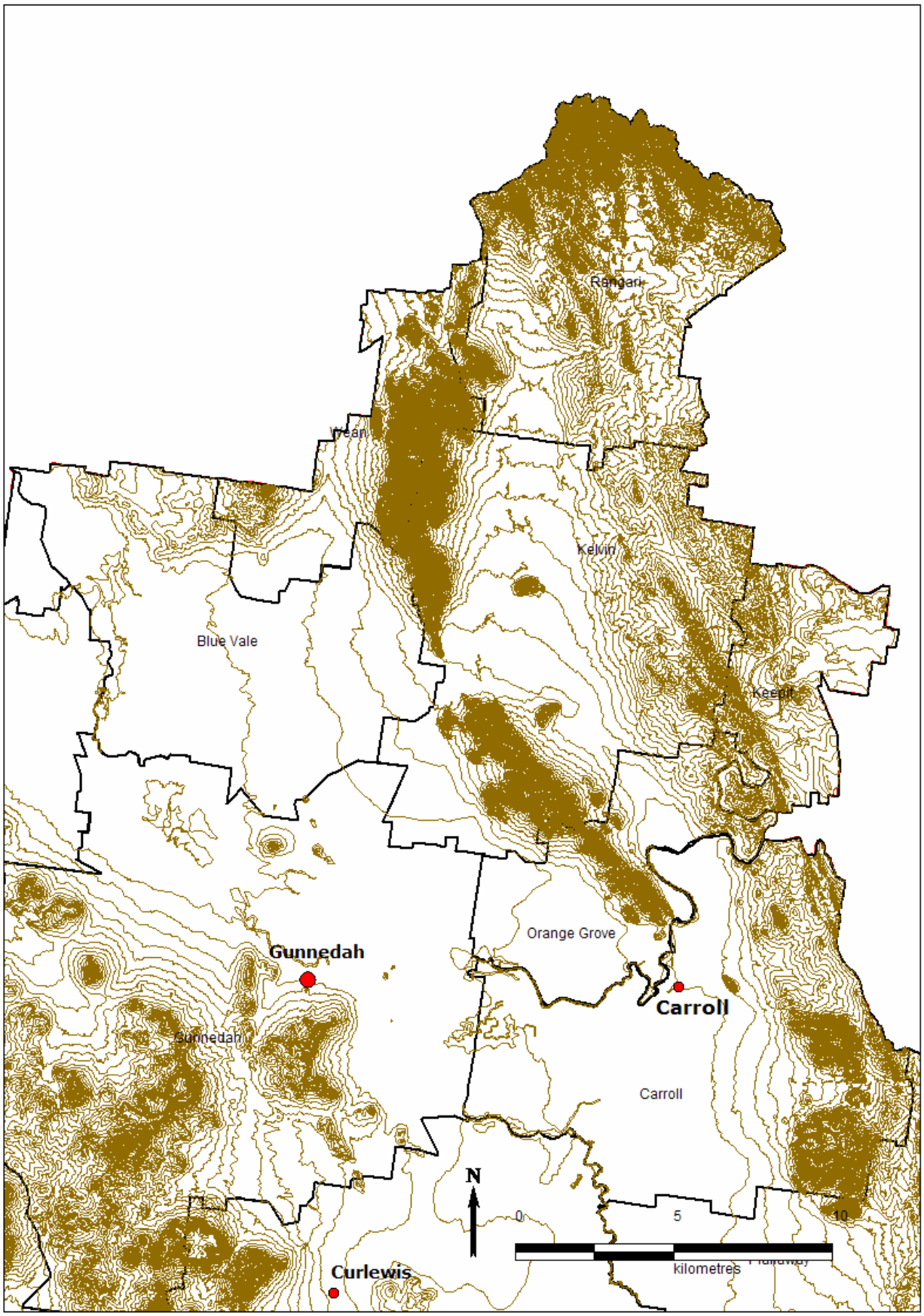
Agricultural Land Classification

Class	Location
Class 1	None
Class 2	Flat Plains
Class 3	Footslopes of steep and hilly land in the east
Class 4	Hilly and steep to land in the east
Class 5	Steep vegetated land in the east



General Comments

- Mostly extensive agriculture with some significant numbers of intensive plants
- Holdings greater than 100 ha with most in the 202 – 400 ha range
- Flat land in the south and west with undulating to steep land in the east
- Breeza and Carroll have limited services and facilities



Map 4.9: Blue Vale – Rangari – Orange Grove

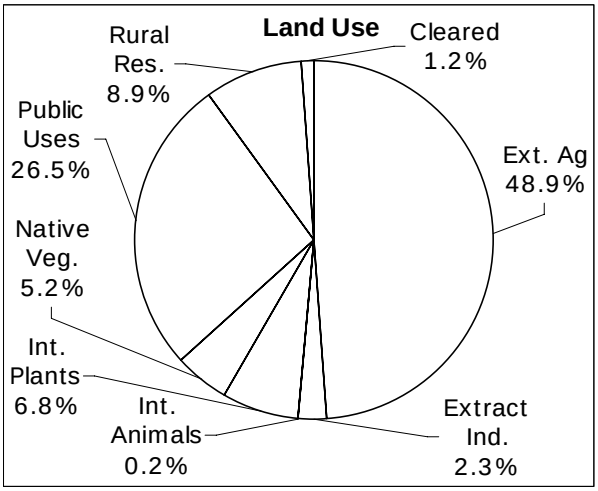
4.9 Blue Vale – Rangari – Orange Grove

General Characteristics

Total Number of Rural Holdings	427
Number of Agricultural Holdings	239
Number of Rural Residential Lots	38

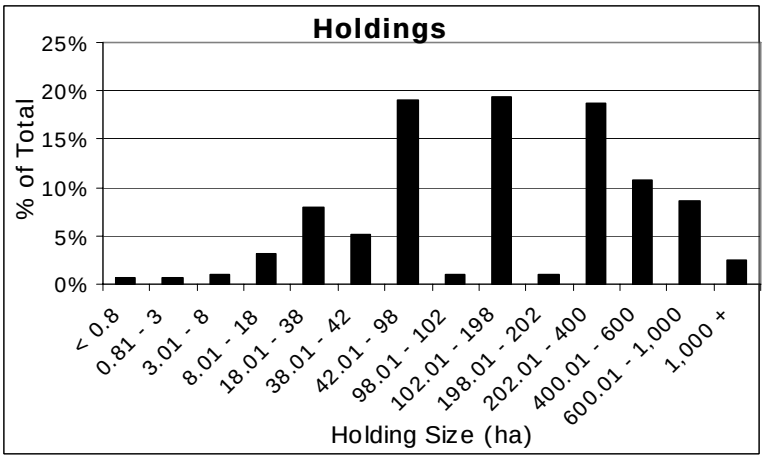
Number of Properties in Each Category

Land Use	Number
Commercial	
Extensive Agriculture	209
Extractive Industry	10
Intensive Animals	1
Intensive Plants	29
Native Vegetation	22
Public Use	113
Rural Residential	38
Vacant	5
Village	



Agricultural Land Classification

Class	Location
Class 1	None
Class 2	Flat land
Class 3	Footslopes of hilly land
Class 4	Hilly land in the east
Class 5	Steep vegetated land



General Comments

- Mostly extensive agriculture with Lake Keepit being most of the public uses and some intensive plants
- Holdings mostly less than 400 ha
- Flat land in the west, south and north. Some steep land in the north and east

Chapter 5: Ecologically Sustainable Development

5.1 Introduction

> *"Sustainability is a direction, more than a fixed destination. It is most effective when embraced voluntarily by people living together in cooperation and democracy. The term is now being used worldwide, in every language, to express this critical concept for the future of human societies on earth: that to survive, we need to better understand the consequences of current growth and development patterns on future generations and to pay attention, now, to the linkages that make the environment, economy and society interdependent. The challenge is to learn to continually work with this delicate balance through changing times. The concerns range from local needs and regional limits to global impacts, but the work is here, now, day by day. And it involves everyone."* (Sustainable Seattle 2000)

Ecologically Sustainable Development (ESD) is an important matter to consider when discussing the future of the Gunnedah Shire.

5.2 Ecologically Sustainable Development

Ecologically Sustainable Development or ESD is a set of principles that have been adopted by all levels of Government in Australia. In 1995 the Intergovernmental Agreement on the Environment was signed and this included Local Government. The discussion that follows outlines ESD and puts it into the context of why it is important for the Council to consider ESD when making decisions about the Shire.

The National Strategy on Ecologically Sustainable Development defines ESD as

> *'using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased'*. (Commonwealth of Australia, 1992 p1)

Put more simply, ESD is development which aims to meet the needs of Australians today, while conserving the ecosystems for the benefit of future generations. To do this, there is a need to develop ways of using those environmental resources that form the basis of the economy in a way which maintains and, where possible, improves their range, variety and quality. At the same time there is a need to utilise those resources to develop industry and generate employment.

The goal for ESD is :

> *Development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends.* (Commonwealth of Australia, 1992 p1)

The Strategy lists the core objectives of ESD as follows:

- *To enhance individual and community well being and welfare by following a path of economic development that safeguards the welfare of future generations.*

- *To provide for equity within and between regions.*

- *To protect biological diversity and maintain essential ecological processes and life support systems.*

The guiding principles of ESD are outlined in the Strategy as:

- *Decision-making processes should effectively integrate both long and short-term economic, environmental, social and equity considerations.*

- *Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.*

- *The global dimensions of environmental impacts of actions and policies should be recognised and considered.*

- *The need to develop a strong, growing and diversified economy which can enhance the capacity for environmental protection should be recognised.*

- *The need to maintain and enhance international competitiveness in an environmentally sound manner should be recognised.*

- *Cost-effective and flexible policy instrument should be adopted, such as improved valuation, pricing and incentive mechanisms.*

- *Decisions and actions should provide for broad community involvement on issues that affect them.*

(Commonwealth of Australia, 1992 pp 2-3)

The Council of Australian Governments has adopted these as the Intergovernmental Agreement on the Environment, which was adopted in 1995, and it endorsed a concept of ESD.

The New South Wales Local Government Act defines ESD as follows:

> *Ecologically sustainable development requires the effective integration of economic and environmental considerations in decision-making processes. Ecologically sustainable development can be achieved through the implementation of the following principles and programs:*
>
> *(a) the precautionary principle—namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:*

(i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and

(ii) an assessment of the risk-weighted consequences of various options,

(b) inter-generational equity—namely, that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations,

(c) conservation of biological diversity and ecological integrity—namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,

(d) improved valuation, pricing and incentive mechanisms—namely, that environmental factors should be included in the valuation of assets and services, such as:

(i) polluter pays—that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,

(ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,

(iii) environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

One of the aims of the Local Government Act is to require Councils, Councillors and Council employees to have regard to the principles of ecologically sustainable development in carrying out their responsibilities. The Act also lists a charter, which identifies the principles under which Councils must function. This charter has as one of its components the following, which deals with ESD:

> *" to properly manage, develop, protect, restore, enhance and conserve the environment of the area for which it is responsible, in a manner that is consistent with and promotes the principles of ecologically sustainable development."*

Gunnedah Shire Council therefore is legally obliged to consider the above policies and definitions when carrying out its functions in relation to the Shire.

5.3 Biodiversity

The purpose of this section is to explain the wider concept of biodiversity and the reason why Gunnedah Shire Council is bound to consider it for the decisions to be made for the Shire.

Definition

Biodiversity, as defined by the NSW Biodiversity Strategy, is:

> *"The variety of life forms, the different plants, animals and micro-organisms, the genes they contain, and the ecosystems they form. It is usually considered at 3 levels: genetic diversity, species diversity and ecosystem diversity.* "(NSW p4)

The 3 levels of biodiversity are as follows:

- *genetic diversity* - the variety of genetic information contained in all of the individual plants, animals and microorganisms that inhabit the earth. Genetic diversity occurs within and between the populations of organisms that comprise individual species as well as among species;
- *species diversity* - the variety of species on the earth; and
- *ecosystem diversity* - the variety of habitats, biotic communities and ecological processes.

> *"It is not static, but constantly changing; it is increased by genetic change and evolutionary processes and reduced by processes such as habitat degradation, population decline, and extinction. The concept emphasises the interrelatedness of the biological world. It covers the terrestrial, marine and other aquatic environments."* (Commonwealth Government 1996b p5)

It is this mixture of things that makes the environment that people live in and enjoy. Biodiversity is vital in supporting human life on Earth. It provides many benefits, including all our food, many medicines and industrial products and supplies clean air and water, and fertile soils. Australia is one of the biologically richest countries in the world and many industries such as tourism, agriculture, forestry and fisheries depend directly upon biodiversity. Therefore its conservation is very important – socially, economically and environmentally. Over the past 200 years, however, the Australian environment has been modified dramatically.

Reasons for Preserving Biodiversity

The four main reasons for preserving biodiversity relate to the following:

- *Ecosystem Processes*: Biodiversity is often taken for granted, however it does provide the critical processes that make life possible. A healthy and functioning ecosystem is necessary to maintain the quality of the atmosphere as well as maintaining and regulating the climate, freshwater, soil formation, cycling of nutrients and disposal of wastes. This is often referred to as the ecosystems services. Biodiversity is also essential for controlling pest plants, animals and diseases, for pollinating crops and for providing food, clothing and many raw materials that are used in the manufacturing of products used on a day-to-day basis. The conservation of biodiversity can also have a positive impact on water quality.

- *Ethics*: all species have an inherent right to exist. Biodiversity belongs to the future as well as the present and no species or generation has the right to take away this inherent right by destroying the existence of a species.

- *Aesthetics and Culture*: Biodiversity has a range of intrinsic values such as beauty, tranquillity and isolation. Many Australians place a high value on the presence of native plants and animals. This has contributed to the sense of cultural identity and is important for the spiritual enrichment of the community as well as providing for recreation.

- *Economic*: some components of biodiversity have an economic value that can be used to generate wealth. The variety of plants and animals in Australia provide an attraction for tourism, as well as providing food, medicines and other pharmaceutical products and energy and building materials.

Pressures on Biodiversity

The major pressure on biodiversity today comes directly and indirectly from the increasing demand from population growth and human settlement and the lifestyle and expectations of the residents of those settlements and the way in which the population disperses throughout the environment. This includes the needs and desires for food, water, housing, energy, transportation, recreation and many other aspects of modern living. Figure 4.1 illustrates the impacts of human populations on biodiversity. The modification of habitats, particularly the clearing of vegetation for urban development has been and still is the most significant cause of the loss of Australia's biodiversity. The high proportion of Australians living in and around the large metropolitan centres and on the coastal fringe generates a range of pressures on biodiversity throughout the continent which includes the destruction of natural habitat, harvesting of plants and animals, the spread of exotic diseases and pollution. An example of this can be seen from the bird community in Sydney. At the time of European settlement there were 283 species of birds believed to have occurred here. Of these, 11 species are now extinct, 76 have decreased in range and/or abundance and only 39 have increased in range and/or abundance. (State of the Environment Advisory Council, 1996 p 4-9). As well, 5 Australian species have invaded the area because the changes imposed on the landscape suited them and 20 exotic birds were deliberately released and have established viable populations.

The pressure on the biodiversity of Gunnedah comes mainly from land clearing associated with development and agriculture. The Council's 2000 – 2001 State of the Environment Report notes that under scrubbing of native vegetation that occurs prior to land rezoning is of particular concern.

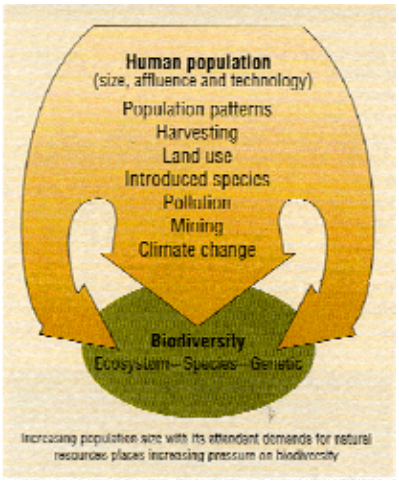


Figure 4.1: Major pressures on biodiversity
Source: SoEAC, 1996, p 4-9.

National Biodiversity Strategy

The National Biodiversity Strategy was prepared in response to these pressures. "Its aim is to bridge the gap between current activities and the effective identification, conservation and management of Australia's biological diversity." (SoEAC., 1996 p 4-39). The document recognises the need to change the way that society thinks, acts and make decisions so as to ensure that economic development is ecologically sustainable. It is recognised that human activities are having a significant impact on the fundamental ecological processes of the planet. "If we are to achieve a sustainable future in which food, shelter, health and other basic needs of the growing global population are met, we must act now to change so that we live within the Earth's carrying capacity." (Commonwealth of Australia, 1996, p4). The strategy's goal is as follows:

> *"The strategy recognises that:*
>
> - *The conservation of biological diversity provides significant cultural, economic, educational, environmental, scientific and social benefits for all Australians.*
> - *There is a need for more knowledge and better understanding of Australia's biological diversity.*
> - *There is a pressing need to strengthen current activities and provide policies, practices and attitudes to achieve conservation and sustainable use of biological diversity.*
> - *We share the Earth with many other life forms that have intrinsic value and warrant our respect, whether or not they are a benefit to us*." (Commonwealth of Australia, 1996, p5).

It acknowledges the core objectives of the National ESD Strategy and accepts the guiding principles of that strategy. The National Biodiversity Strategy contains 9 principles which are to be used for its implementation. These are as follows:

1. *Biological diversity is best conserved in-situ.*
2. *Although all levels of Government have clear responsibility, the cooperation of conservation groups, resource users, peoples and the community in general is critical to the conservation of biological diversity.*
3. *It is vital to anticipate, prevent and attack at source the causes of significant reduction or loss of biological diversity.*
4. *Processes for and decisions about the allocation and use of Australia's resources should be efficient, equitable and transparent.*
5. *Lack of full knowledge should not be an excuse for postponing action to conserve biological diversity.*
6. *The conservation of Australia's biological diversity is affected by international activities and requires actions extending beyond Australia's national jurisdiction.*
7. *Australians operating beyond our national jurisdiction should respect the principles of conservation and ecologically sustainable use of biological diversity and act in accordance with any relevant national or international laws.*
8. *Central to the conservation of Australia's biological diversity is the establishment of a comprehensive, representative and adequate system of ecologically viable protected areas integrated with sympathetic management of all other areas, including agricultural and other resource production systems.*

9. *The close, traditional association of Australia's peoples with components of biological diversity should be recognised, as should the desirability of sharing equitably benefits arising from the innovative use of traditional knowledge of biological diversity.*

(Commonwealth of Australia, 1996, p6).

NSW Biodiversity Strategy

The NSW Biodiversity Strategy details actions to conserve the biodiversity of NSW. The focus is on:

- community consultation, involvement and ownership;
- conserving and protecting biodiversity;
- addressing threats to biodiversity and their management;
- natural resource management; and
- improving our knowledge.

The National Local Government Biodiversity Strategy was adopted in 1998. It represents an agreed Local Government position at the national level on the management of Australia's biodiversity.

The strategy recognises that:

- Conservation and sustainable use of our natural resources will only be achieved through local area planning and management, along with community education and participation.

- There is a willingness of Local Government across Australia to play a lead role in dealing with our most pressing and complex conservation issue—the loss of biodiversity.

- A clear and co-operative partnership arrangement is required between the 3 spheres of Government.

The strategy addresses 5 key issues and identifies relevant actions for each key issue. The Strategy recognises that these actions will require varying degrees of support from all spheres of Government, and regional organisations. The issues are as follows:

- Awareness, Training and Education
- Local Government Resourcing
- Regional Partnerships and Planning
- Legislative Frameworks
- Information and Monitoring

As this has been adopted at the national level, it has relevance for the biodiversity policies of Gunnedah Shire Council because Gunnedah Shire Council is part of the organisation which signed the Strategy (the NSW Local Government and Shires Association).

Incentives for Biodiversity Conservation

A lot of the significant biodiversity is on land that is held in public ownership, however there is a significant amount of it on private land. It is this land that needs to be conserved in addition to the publicly owned land. The large amount of vegetation linkages within Gunnedah signifies the biodiversity value of the private land. However, to ensure that biodiversity is conserved on private land there should be some incentives in addition to regulations to allow this to occur. These incentives can take the form of economic or financial and non-financial. It must be recognised however that the conservation of biodiversity has costs associated with it. These can be as little as providing fencing, to labour associated with planting of trees, to taking land out of production and therefore losing the productive potential of the land. Whether this has a detrimental impact on the overall value of the land however, is not known.

Non-financial incentives for biodiversity conservation are likely to be in association with people's lifestyle choices and enjoyment of land.

Economic, or financial mechanisms for conserving biodiversity are being developed both in Australia and in other countries around the world. Some economic mechanisms are as follows:

- *Environmental pricing* includes charges levied and the setting of prices to fund conservation of biodiversity. These are rare in Australia and are really only used for fees for Park use, trail access and other uses within the reserves. Some Councils have implemented an environmental levy on the ratepayers. Funds raised in this way are used to fund environmental rehabilitation and other matters associated with the improvement of the natural environment.

- *Conservation easements or agreements* such as those that are provided for under the National Parks and Wildlife Service Act bind current and future landowners to a set of conditions on the use of the land. This can include limitation on clearing, fencing of important areas and restricting grazing on the property. These can be complicated and take some time to draw up and come into force.

- *Funding arrangements*. A revolving fund is one of several ways to maximise the use of funds for managing biodiversity. This concept involves purchasing land and placing a conservation agreement over it (as a caveat on the title) to ensure that it is managed for conservation purposes. The land is then sold to somebody who agrees to abide by this agreement and the money is used to purchase more land, which is then conserved and sold.

- *Taxation*. There are some income tax deductions available for control of land degradation however they are narrowly defined and do not reflect the concerns of conservation of biodiversity. Land that has a conservation agreement over it can be differentially valued so that the conserved land is valued differently from the non-conserved land. A system of rate rebates can be applied to land for biodiversity conservation purposes (for this to occur in New South Wales however there is a need to amend the rating provisions of the Local Government Act because there is no category for biodiversity conservation). In South Australia, under the Native Vegetation Act 1992 rate rebates apply and further reductions are available under a heritage agreement.

- *Transferable Development Rights* (TDR). This mechanism is designed to limit development in conservation areas without affecting the underlying value of individual asset. Transferable development rights enable people who own areas of valuable habitat to sell the clearing rights to others who own land of a lesser biological importance and need development rights in order to proceed with a proposed development. This mechanism currently is used in the City of Sydney for the preservation of heritage sites in conjunction with building height limits. In this case, developers are able to purchase a heritage building and transfer the height allowance to another site thereby creating a site with double the normal height limit.

- *Purchase of Development Rights* is a scheme whereby the rights to develop private land are purchased by a Government body or non-government land trust. A valuation of the land for its development potential is arrived at and this is subtracted from the valuation of the land for no development potential. The difference is given to the landowner in exchange for a restriction on the title of the land that it can only be used for biodiversity conservation, for example. This scheme is not in use in Australia, however it is used widely in United States of America for agricultural land as well as biodiversity conservation.

- *Financial assistance* forms part of many voluntary management schemes offered by State Governments. They usually take the form of payment to assist with the cost of purchasing materials associated with the works required such as a fencing subsidy, the provision of plants or the provision of money for the hire of plant and equipment.

Incentives, therefore are needed to encourage people to conserve the biodiversity of their areas. They are a positive tool and can be used in conjunction with statutory mechanisms such as regulations on land use.

Chapter 6: Community Consultation

6.1 Introduction

Community consultation is an integral component of the project. Consultation gives the Council an opportunity to listen to what the community desires for the future of the area as well as allowing the Council to explain to the community the development issues and wider context of policy development within the Northern region and NSW. It is also important to recognise that the community is vitally interested in the future of the area and as such should have input into the development of policies for the future. The Council sees community consultation as a major component of the Strategy.

6.2 Community Workshop

A workshop was held with the community in Gunnedah on 23 June 2005 to identify their visions for the future as well as the Action that could be taken to achieve this vision.

It is important to engage the community in a way that allows them to identify the issues that affect the Shire as well as suggesting ways in which these issues can be addressed as possible outcomes. Consultation with the community is important as well as with the surrounding Councils and the State Government.

The workshop used a technique of group consensus. The attendees were seated at tables in groups of 4 to 6 with other people from the same area. This enabled group discussion of the issues and provided a group focus for the workshop. Following the group discussion feedback from each table was written down on butcher's paper and shared with the rest of the workshop participants.

The workshop was facilitated by the consultant who acted as the facilitator who gave an overview of the workshop process.

> *"Tell me and I'll forget,*
> *Show me and I may remember,*
> *Involve me and I'll understand"*
> Anon.

The next step in the workshop was to ask the participants to think about their vision for their part of the Shire in 10 to 20 years time. Questions to be answered to help define this vision were as follows:

- Do you want to see more economic development, if so, what types?
- Do you want to preserve good quality agricultural land?
- Where do you want to see rural residential development?
- Are there any services or facilities that you need in your area?
- Are there any environmental attributes that should be conserved? What are they?
- What types of future land uses would you like to see in your area?

- Are there any uses that you don't want in your area? Which ones?

The participants were encouraged to write down their own individual answers to these questions to identify for themselves their own vision. Then people were asked to discuss their vision within the group around their table to come up with a group consensus and to write the group consensus views down on the butcher's paper provided. These were then shared with the whole workshop by a group spokesperson. Photo 6.1 shows the workshop groups.

Photo 6.1: Community Workshop
Date of Photo: June 2005

The participants were then asked to consider the Action that could be taken to achieve the vision. They were asked specifically what they as a community could do to achieve the vision and what the Council could do. These were also written down on the butcher's paper and presented to the whole workshop.

There are a number of themes that run through the workshop responses, which are listed in no particular order below:

- Economic development wanted
- Value add to existing agricultural uses
- Encourage secondary industry
- Preserve good-quality farmland
- Provide training facilities
- Rural residential development should be on less productive farmland, not on the floodplain and around villages with sufficient services and facilities
- Improve railway services
- Better roads and transport
- Improve telephone, mobile phone and Internet
- Encourage tourism
- Preserve the landscape character
- Floodplain
- Provide aged care facilities

- Community to work together
- Provide flexibility in zoning
- Improve health care facilities, policing and education.
- Preserve biodiversity
- Improve water quality-underground and surface
- Council and Government to communicate with the community

The a full description of the outcomes of the workshops and has been included as Appendix 3.

In addition to the workshop participants providing their comments on the vision and Action for the future of the Shire, a technique was used to provide the Council with feedback on particular photographic images of elements of the Shire. The photographs were mounted on pieces of paper, which were placed on the walls. Participants were asked to write what the photographs meant to them on the paper surrounding the photographs during the workshop. The photo boards and the detailed response are included in Appendix 3.

The images included:

- River
- Rural Roads
- Rural Landscapes
- Buildings
- Travelling Stock Routes
- Irrigated cropping
- Broadacre cropping
- Shops
- Native Vegetation areas
- School
- Community Hall

As a general statement it can be said that the workshop participants were concerned about water supply and the need to conserve it. They also appreciated the role that both intensive and extensive forms of agriculture has in the economic and social make up of the Shire. The also appreciated the community halls and schools as well as general stores in the villages. Tourism is seen as an important part of the future of the area and this should be encouraged. The scenic quality of the rural landscape was also appreciated. The community members at the workshop had mixed feelings about the mining of coal.

Chapter 7: Strategic Environmental Analysis

7.1 Introduction

The rural lands provide an important resource for the whole Shire and the wider region. This resource consists of a number of components:

- Rural Landscapes
- Productive Agricultural Lands
- Native Vegetation
- Habitat linkages
- Living Areas – Villages, Rural Residential as well as farm housing.
- Namoi and Mooki Rivers and the Cox's Creek as well as other water bodies

Each of these is important in its own right but it is the sum of them that provides the resource for the future.

This chapter presents a strategic environmental analysis of the issues identified in the chapter 2 and discusses options that can be pursued in the strategies. In essence, this chapter sets the framework for the Rural Strategy.

A strategic environmental assessment is an assessment of a set of strategic options. It can be defined as the formalised, systematic and comprehensive process of evaluating the environmental impacts of an action and its alternatives. (Therivel et al)

> *"Strategic environmental assessment is the term used to describe the application of environmental assessment to various stages in the planning process that occur prior to the consideration of specific projects. It may be given another name, depending on the nature of the planning stage involved.*
>
> *Regardless of the terminology used, strategic assessment primarily differs from project-specific assessment in terms of scale and timing. In regard to scale, strategic assessment:*
>
> > *i) incorporates a number of potential developments as opposed to a single project;*
> > *ii) considers a broader range of alternatives;*
> > *iii) involves a wider geographic area; and,*
> > *iv) addresses environmental impacts at a more aggregated level.*
>
> *In terms of timing, the period between the conduct of a strategic assessment and the resulting environmental impacts will be longer than is the case with project-specific assessments."* (OECD, 1999 p5)

In a recent book published by the United Nations Development Program (UNDP) and the Organisation for Economic Cooperation and Development (OECD) titled *Sustainable Development Strategies – A Resource Book*, sustainability is described as being all about achieving "... positive economic and social development, with out

excess environmental degradation, in a way that protects the rights and opportunities of coming generations and contributes to compatible approaches elsewhere." (Dalal-Clayton and Bass, p5). There is a need to take a strategic approach in order to achieve a sustainable outcome. This also needs to be " ... both long-term in its perspective and integrated or joined up in linking various development processes so that they are as sophisticated as the challenges are complex." (Dalal-Clayton and Bass, p6).

> *"At the heart of the concept is the belief that social, economic and environmental objectives should be complimentary and interdependent in the development process. Sustainable development requires policy changes in many sectors and coherence between them. It entails balancing the economic, social and environmental objectives of society- the three pillars of sustainable development - integrating them wherever possible, through mutually supportive policies and practices and making trade-offs where it is not."*(Dalal-Clayton and Bass, p12).

This is described in figure 7.1.

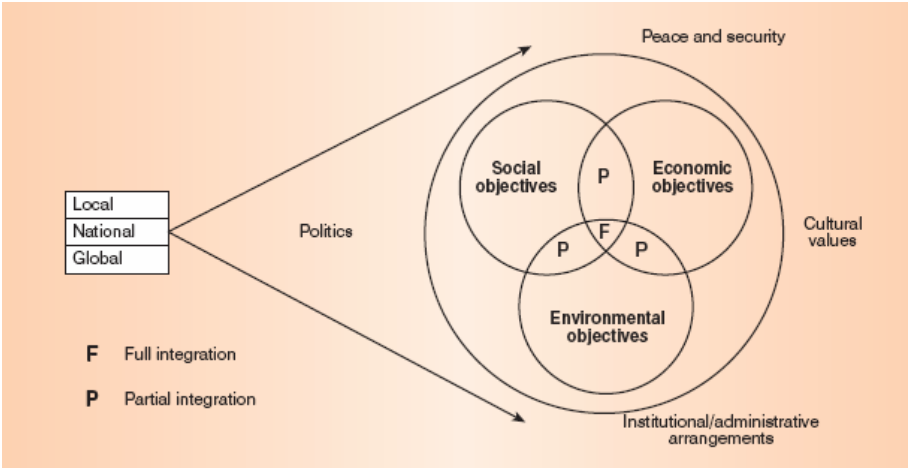


Figure 7.1: The System of Sustainable Development
Source: (Dalal-Clayton and Bass, p12).

Dalal-Clayton and Bass have described the practical outcomes of sustainable development processes in 2 categories:

1. *Institutions and mechanisms which produce decisions to balance social, economic and environmental objectives, and which ensure that they are implemented. For example: particular planning and policy processes and procedures such as environmental impact assessment and stakeholder participation.*
2. *Activities on the ground which add good environmental, social and / or economic practice to what might otherwise have been narrower goals. For example: new forms of natural resource management or integrated development projects.* (p12)

In achieving sustainability, there is a need to recognise the complimentary complexity of the issues – are all linked to each other and the policy responses need to be holistic and multi faceted and not single issue focused.

The following sections provide a discussion of the options available to achieve a sustainable future for Gunnedah. The discussion builds on the discussions in the previous chapters.

The matters to be discussed in this section are as follows

- Preserving Rural Land
- Rural Land Uses and Lot Sizes
- Settlement Hierarchy
- Rural Residential Development
- Biodiversity Conservation
- Incentives
- Economic Development
- Social Sustainability

Each of these will be discussed.

7.2 Preserving Rural Land

Rural land has 3 productive components. It is a source of food and fibre, a biodiversity resource and a place for people to live. These relate to the three components of ESD in the following manner:

Source of Food and Fibre	➔	Economic
Biodiversity Resource	➔	Environment
Place to live	➔	Social Equity

There is a need to find the balance between of all three of these components.

Agricultural land is a resource, it is not a commodity. It is a resource that is dwindling in NSW as productive land is converted to residential and rural residential use. It is acknowledged that this is not happening to a large degree in the Shire, except for land around Gunnedah where there have been some recent subdivision of land in to 40 ha lots. There is, therefore a need to allow farms to continue by not permitting unnecessary fragmentation of them.

> *"Prime agricultural soils represent the highest level of agricultural productivity; they are uniquely suitable for intensive cultivation with no conservation hazards. It is extremely difficult to defend agricultural lands when their cash value can be multiplied tenfold by employment for relatively cheap housing. Yet the farm is the basic factory - the farmer is the country's best landscape gardener and maintenance workforce, the custodian of much scenic beauty. The market values of farmland do not reflect the long-term value or the irreplaceable nature of these living soils. An omnibus protection of all farmland is difficult to defend; but protection of the best soils in a metropolitan area would appear not only the sensible, but clearly desirable." (McHarg, 1992 p 60)*

One major issue with planning for the preservation of agricultural land is the size of the holdings that currently exist. The smaller the lot the more likely it is to be used for a residential use and when there is a mixture of rural residential (this can range from 1 – 2 ha to 40 ha) and agriculture – both extensive and intensive – this can lead to rural land use conflict. Where there are a number of larger lots it is easier to protect the resource for agricultural use because of the ability to locate any dwellings away

from the agriculture that is practiced on the adjoining land. There is also a higher probability that the land will be used for agriculture rather than rural residential if it is a larger size.

It should be recognised that this desire to subdivide is based on the farmers' belief that they should be permitted to subdivide the land or that they have a 'right' to subdivide. At no time has there been any indication from the Council or State Government that they would be able to subdivide some time in the future. It is a resource that can be utilised in the future if it is not subdivided. However, experience has shown that once land is subdivided, even into rural residential lots of 10 to 20 ha to 40 ha and even up to 100 ha, the ability for it to be used for agricultural use is lost. It can be sold as an intact holding which can then be used as a rural residence if desired as an interim use, but the important thing to note is that the resource has been preserved.

As planners seek to balance the needs of agricultural producers with those of rural residential dwellers and biodiversity habitat, they must also bear in mind the importance of preserving the rural landscape. In Australia, planning policy and regulation are the main mechanisms for doing this, but overseas research (Daniels and Daniels 2003) shows that there is a need to balance these mechanisms with incentives, economic development initiatives and farming infrastructure while encouraging community engagement, communication and education. There is also a need to understand and take advantage of the linkages between these three components. An effective policy regime for preserving important rural landscapes requires the application of all these elements, as outlined in figure 7.2.

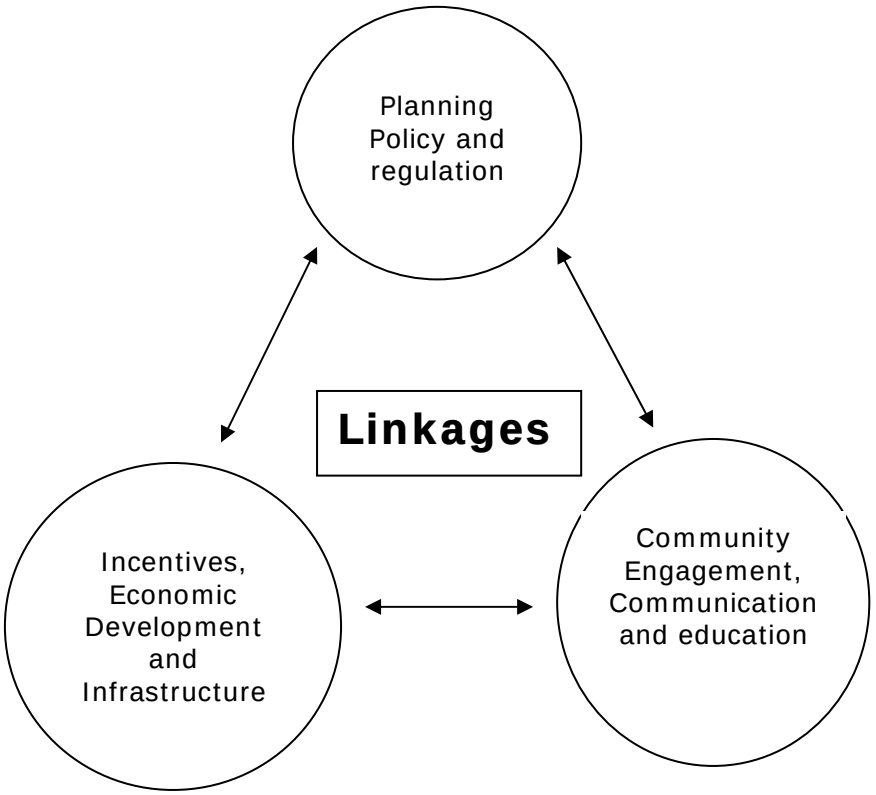


Figure 7.2: Policy responses to preserving rural landscapes
Source: Sinclair and Bunker (in Press)

It is not intended to discuss these aspects in detail here, suffice to say that to be effective, there is a need to address all of them and not only one or 2, as is the case at present where there has traditionally been an emphasis on zoning and regulation and the linkages to incentives, economic development and the need for farming infrastructure as well as techniques to engage the community, communicating with the community and educating the community of the benefits of preserving farmland. Whilst it is acknowledged that Local Government can play a role in promoting farmers markets, for example or publishing information about the issues surrounding rural land use conflict, they are mostly issues of State Government responsibility.

7.3 Rural Land Uses

This section provides a discussion on the following land uses that have been identified in the research and discussions conducted in the formulation of this strategy as requiring specific management due to particular issues:

- Agricultural Uses
- Tourist Development

Each will be discussed separately.

7.3.1. Agricultural Uses

From a land use planning perspective, there are 3 broad agricultural uses in NSW: irrigated plants / horticulture, intensive animal keeping and extensive agriculture. It follows, therefore that there is a need define these uses separately. Both of the intensive uses should require consent and extensive agriculture should not as it is considered that it does not, generally, cause major land degradation or water quality problems (unless it is associated with major land clearing), it generally occupies land already cleared and used historically for that purpose.

The Standard LEP which is to be used as the basis for the preparation of the Gunnedah Shire LEP defines these 3 uses as follows:

> ***"extensive agriculture"*** *means:*
>
> > *(a) the production of crops or fodder (including irrigated pasture and fodder crops), or*
> > *(b) the grazing of livestock, or*
> > *(c) bee keeping,*
>
> *for commercial purposes, but does not include any of the following*
>
> > *(d) cotton and rice cultivation,*
> > *(e) intensive livestock agriculture,*
> > *(f) aquaculture,*
> > *(g) turf farming,*
> > *(h) animal boarding or training establishments,*
> > *(i) farm forestry,*
> > *(j) horticulture or viticulture.*
>
> ***"horticulture"*** *means the cultivation of fruits, vegetables, mushrooms, nuts, cut flowers and foliage and nursery products for commercial purposes, but does*

not include retail sales or viticulture.

"intensive livestock agriculture" *means the keeping or breeding of cattle, poultry, goats, horses or other livestock, that are fed wholly or substantially on externally-sourced feed, and includes operation of feed lots, piggeries, poultry farms or restricted dairies, but does not include the operation of facilities for drought or similar emergency relief or extensive agriculture or aquaculture.*

The new definitions will be in the LEP which is to be one of the outcomes of this process. It is recommended that extensive agriculture be permitted without consent in the agricultural areas and that horticulture and intensive animal establishments require consent. The reasons will be outlined separately as follows:

- The **extensive agriculture** definition uses as its basis cropping and grazing for commercial purposes that does not need the continual application of water or feed not occurring naturally. It is also is practiced on a broad scale with the area used being hundreds and in some cased thousands of hectares. Periodic feeding for drought and water application is considered to be included in this. Irrigated pasture (growing oats) and the growing of irrigated fodder crops (lucerne) are considered to be an extensive form of agriculture because the inputs and the extensive nature of the activity are not considered to be a major cause of nutrient export or land degradation when compared to market gardening or turf farming.

- The **horticulture** definition identifies forms plant growing that traditionally can cause some form of external impact which has the potential to cause land degradation, water quality problems or land use conflict. It has also traditionally been grown on a smaller scale than extensive agriculture. Therefore there is a need to require development consent so that there is the ability to ensure that the impact can be minimised.

- The **intensive livestock agriculture** definition relies on a feeding method based wholly or substantially on externally-sourced feed. This type of use is also traditionally intensive and can cause some form of external impact which has the potential to cause land degradation, water quality problems or land use conflict. Therefore there is a need to require development consent so that there is the ability to ensure that the impact can be minimised. It is noted that this is the case with the current LEP.

The definitions in the Standard LEP as outlined above are considered to be ambiguous because some of the agricultural systems are defined and others are not. This can lead to uncertainty and confusion, which could ultimately end up with the matter being determined by the courts. It is noted that the Department of Planning have stated that one of the objectives of the standard LEP was to reduce this confusion and ambiguity. A review of the definitions in the Standard LEP reveals that some of the farming systems identified as being excluded from the extensive agriculture definition are defined (intensive livestock agriculture, aquaculture, turf farming, animal boarding or training establishments and horticulture). However cotton and rice cultivation, farm forestry and viticulture are not defined. These will be discussed below:

- The ***extensive agriculture*** definition includes 3 agricultural systems that are included and a list of others that are not to be included. It is not considered

that fodder (including irrigated pasture and fodder crops), the grazing of livestock, or bee keeping need to be separately defined because they are commonly used and understood agricultural terms. However, the term 'crops' can include both irrigated and dryland systems. Irrigated crops, traditionally include cotton and rice but in some areas includes wheat, sorghum and sunflowers. From the potential of land use impact on adjoining land or the environment, there is not such a difference between dryland or irrigated cropping that would necessitate the need for development consent. However, it is unclear if cotton and rice farming (which are not separately defined) require consent if extensive agriculture does not require consent. It is considered that cotton and rice farming should not require consent because the major impact from irrigated cropping is the water and how it is delivered or stored on the property as well as some of the harvesting techniques (particularly cotton where chemicals are sprayed over the crop to defoliate it). It is noted that irrigation water requires licensing under the provisions of the Water Act and that pesticide spraying requires certain procedures of notification of owners and the preparation of a pesticide management plan. These 2 requirements are considered to be sufficient to ensure that the impact on neighbours and the environment is minimised. It is also noted that irrigated cropping does not currently require consent. Therefore, it is recommended that the term 'crops' be clarified by inserting '(dryland and irrigated)' and deleting '(d) cotton and rice cultivation' as it is not considered that they should require development consent (which could be an interpretation of the definition and its use).

- *Farm Forestry* includes plantation forests for timber production. It has the impact of changing the landscape from one of openness to vegetated and in some parts of the State, can lead to a major change in the landscape. For this reason, some Councils require consent for farm forestry. Therefore there is a need to define it in the Standard LEP. In the case of Gunnedah Shire, however, it is not considered to be and issue because of the general flatness of the terrain and therefore should not require consent.

- The *horticulture* definition specifically excludes 'retail sales' and 'viticulture'. Both of these terms are not separately defined in the Standard LEP. The term retail is self explanatory, but viticulture has some impacts and should be separately defined. Viticulture is the growing of grapes and in the NSW context this is mostly grapes for wine production which are grown in vineyards. Vineyards that produce wine on a commercial basis are usually greater than 5 – 10 ha and mostly larger than this. They can cause some form of external impact especially at harvest time when they use mechanical harvesters and sprays – both of which are known to cause rural land use conflict. Therefore, they should require development consent. If they require consent they should be defined so that there is not any confusion – particularly those smaller ones where there could be some confusion. A suitable definition would be similar to that used for the Cessnock LEP 1989 (commercial vineyard) and is as follows:

  > *"Viticulture means a plantation of grape vines, commercially grown for grape or wine production purposes"*

- The definition of *intensive livestock agriculture* includes operation of feed lots, piggeries, poultry farms or restricted dairies. There are definitions of feed lots

and restricted dairies but not piggeries or poultry farms (which are more common). In order to stop any confusion, there should be definitions of these 2 uses – particularly as there are a number of these uses throughout NSW. Appropriate definitions would be as follows:

> *Piggeries means a place where pigs are raised using artificial feeding methods and the animals are kept in buildings or yards.*
>
> *Poultry Farm means the rearing of all types of poultry where imported feed and water is provided as a whole or supplementary ration. The birds may be housed or free range.*

The term "sustainable agriculture" has many connotations and is linked to the concept of Ecologically Sustainable Development, which embodies the 3 themes of Environment, Economics and Social.

A definition of sustainable agriculture in the ' Strategic Plan for Sustainable Agriculture - Sydney Region' is

> *"Agriculture that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends"*

Another definition is provided by the Standing Committee on Agriculture of the Australian Agriculture Council Working Group on Sustainable Agriculture:

> *"Sustainable Agriculture is the use of farming practices and systems which maintain and enhance the economic viability of agricultural production; the natural resource base; and other ecosystems which are influenced by agricultural activities*

All of these definitions embrace the concepts of environmental and economic issues, but do not consider the social aspects of sustainable agriculture. These include the capacity of agriculture to meet the demands of the population for healthy and fresh food and fibre products, as well as its ability to have a minimal impact on the amenity and peace of mind of community members, thus reducing rural land use conflict.

New definitions for sustainable agriculture should be incorporated and be as follows:

> Sustainable Agricultural use of land *means the use of land for animal boarding or training establishments, cattle feedlots, extensive agriculture, intensive horticulture, intensive livestock keeping establishments, opportunity feedlots or turf farming, which can be maintained and managed so that the land remains*
>
> - *environmentally sustainable (that is, environmental pollution and land degradation arising from the use is minimised);*
> - *socially sustainable (that is, land use conflict and loss of amenity of the surrounding area arising from the use is minimised); and*
> - *economically sustainable (that is, there is a capability of making a net farm profit from the use).*(Wollondilly Shire Council)

7.3.2. Rural Tourist Development

It has been recognised that rural tourism can provide a boost to the economic development in the rural area. There is a need therefore to encourage it by ensuring that the planning controls have sufficient flexibility in them.

The main issue concerning tourist facilities that requires attention is the contradiction between the definitions. The current provisions in the LEP for tourist related developments are ambiguous and contradictory. The source of the problem is the definition of the term 'tourist facility" which is defined as follows

> ***"tourist facilities*** *means an establishment providing for holiday accommodation or recreation and may include a boat shed, boat landing facilities, camping ground, caravan park, holiday cabins, hotel, house boat, marina, motel, playground, refreshment room, water sport facilities, farm-stay accommodation or a club used in conjunction with any such facilities."*

It can be seen that this includes a number of other uses which are separately defined in the LEP. Of note are the terms 'club', 'hotel', 'motel', 'recreation facility' and 'refreshment room'.

A review of the current LEP has shown that, some of the specific uses are prohibited themselves but could also be permitted as a tourist facility as this is permitted with consent. Examples are found in the Rural 1(a), 1(b) and 1(c) zones where a tourist facility would be permitted with consent but hotels, motels and refreshment rooms are prohibited. Case law interprets such a situation as permitting the use where there is an ambiguity in the zoning table where a use is prohibit under one definition and permitted under another. So it can be seen that the prohibition in certain zones are in fact ineffective.

Bed and Breakfast and Farmstay accommodation also need to be considered in the context of the definition of tourist facilities. It is noted that there is not a specific definition of farmstay nor bed and breakfast establishments. These are becoming an increasingly large form of tourist accommodation and there is a need to include separate definitions for each type.

It can be seen therefore that there is a need to rationalise this and make it less complex. It would seem the best option is to separately define the component parts and not have the definition of 'tourist facility' at all. Suggested definitions are as follows (please note that the definitions caravan park, hotel, motel are the same as the existing LEP):

- *Bed and Breakfast establishment* means the use of no more than three bedrooms, contained within a building lawfully being used as a dwelling house, for the overnight accommodation of no more than six travellers.
- *Camping ground or Caravan Park* means a site used for the purpose of:
  (a) placing moveable dwellings (as defined in the *Local Government Act 1993*) for permanent accommodation or for temporary accommodation by tourists, and
  (b) the erection, assembly or placement of cabins for temporary accommodation by tourists.

- *Ecotourism facility* means a facility for nature based tourism that is managed in an ecologically sustainable way to ensure that the facility and associated activities do not adversely impact on the environment or intentionally disturb wildlife or their habitats. It must include one or more tourist accommodation buildings and a building or buildings at which education about, and interpretation of, the natural and cultural environment are provided.
- *Farmstay* means the provision of accommodation, provided within a tourist accommodation unit in association with a working farm. It can also include bed and breakfast establishments.
- *Hotel* means a building or place specified or proposed to be specified in a hotelier's licence granted under the *Liquor Act 1982*
- *Motel* means a building or place used for the temporary or short-term accommodation of travellers or the general public, whether or not a restaurant is included, but does not include a hotel.
- *Restaurant* means a building or place used principally to provide food for people to consume in that building or place.
- *Rural tourist facility* means an establishment providing for the accommodation of tourists in tourist accommodation buildings and can include a restaurant but which does not include a bed and breakfast establishment, camping ground or caravan park or hotel
- *Tourist* a person who is visits and stays overnight for a continuous period not exceeding 30 days, and who has a primary place of residence elsewhere.
- *Tourist accommodation building* means a building or part of a building containing one or more tourist accommodation units.
- *Tourist accommodation unit* means a room or suite of rooms used for the temporary accommodation of tourists but does not include bed and breakfast accommodation, camping ground or caravan park, hotel or motel.

The adoption of the term ‘tourist accommodation building’ and ‘tourist accommodation unit’ and ‘tourist’ will enable the matter to be simplified. It can cover such activities as cabins, farmstays and ecotourism facilities that are currently being provided in the rural areas. It also deals with the issue of the length of stay.

7.4 Designating Rural Land

As a basis for a future response in a new Local Environmental Plan, a methodology based on a combination of existing land use, lot size and physical features as well as proximity to services and infrastructure has been applied to the rural land. Consideration also needs to be given to the preservation of future land use opportunities.

The first step is to categorise the physical features into areas of similarities. Then designations are considered which bring policy considerations to bear on the land units.

7.4.1. Rural Land Units

Landuse surveys and holding size analyses have been used to identify land with common features as a foundation for future zoning. The landuse survey is used because it provides an overview of the existing landuse pattern within an area and therefore gives an indication of the predominant landuses which should be conserved. It is important to consider the size of the lots and holdings within an area because the

existing fragmented lot patterns contribute to rural land use conflicts and the ability of the area to be protected from such rural landuse conflicts.

The methodology used identifies a series of land units as the basis for the land use designations. These land units are areas, which are contiguous, have similar characteristics and are generally homogenous in nature. These characteristics can be topographical, the abundance of vegetation, the similarities in landuses, land tenure, landscape character or the like. They have also been based on an understanding of the issues affecting the Shire as well as a review of planning policies of other local government areas. Comments from the community were also taken into consideration. In particular is the desire of the community for preservation of agricultural land and conservation of vegetation and the natural features and environmental qualities of the area as well as the demand for rural lifestyle opportunities. It is important to note that these units are based on the existing land uses and landforms and that no attempt has been made at this stage to consider the policy and planning provisions that relate to the land. This is the next step.

The methodology is described in Appendix 4. Based on this methodology, there are 5 broad land units within the Shire. The land units are shown on Map 7.1 and are as follows:

- Agriculture (Cropping and Grazing)
- Agricultural Landscape
- Native Vegetation
- Rural Residential
- Villages

The *Agriculture* land unit is based on the high class agricultural land in the floodplain along the Namoi and Mooki Rivers as well as Cox's Creek. Photo 7.1 shows the land unit. This covers most of the Shire and also includes the hilly land to the east and northeast.

Photo 7.1: Agriculture Land Unit
Date of Photo: July 2005

The *Agricultural Landscape* land unit is based on the less productive hilly land to the south, southwest and west of Gunnedah. This land unit includes a large number of rural residential uses having sizes from 2 ha up to 40 ha. Photo 7.2 shows the land unit.

Photo 7.2: Agricultural Landscape Land Unit
Date of Photo: July 2005

The *Native Vegetation* land unit consists of the land that is covered by a significant amount of native vegetation which is scattered across the Shire. The land is mostly in State Forests as well as on steep land amongst the plains. It does provide a rich source of biodiversity. Photo 7.3 shows the land unit.

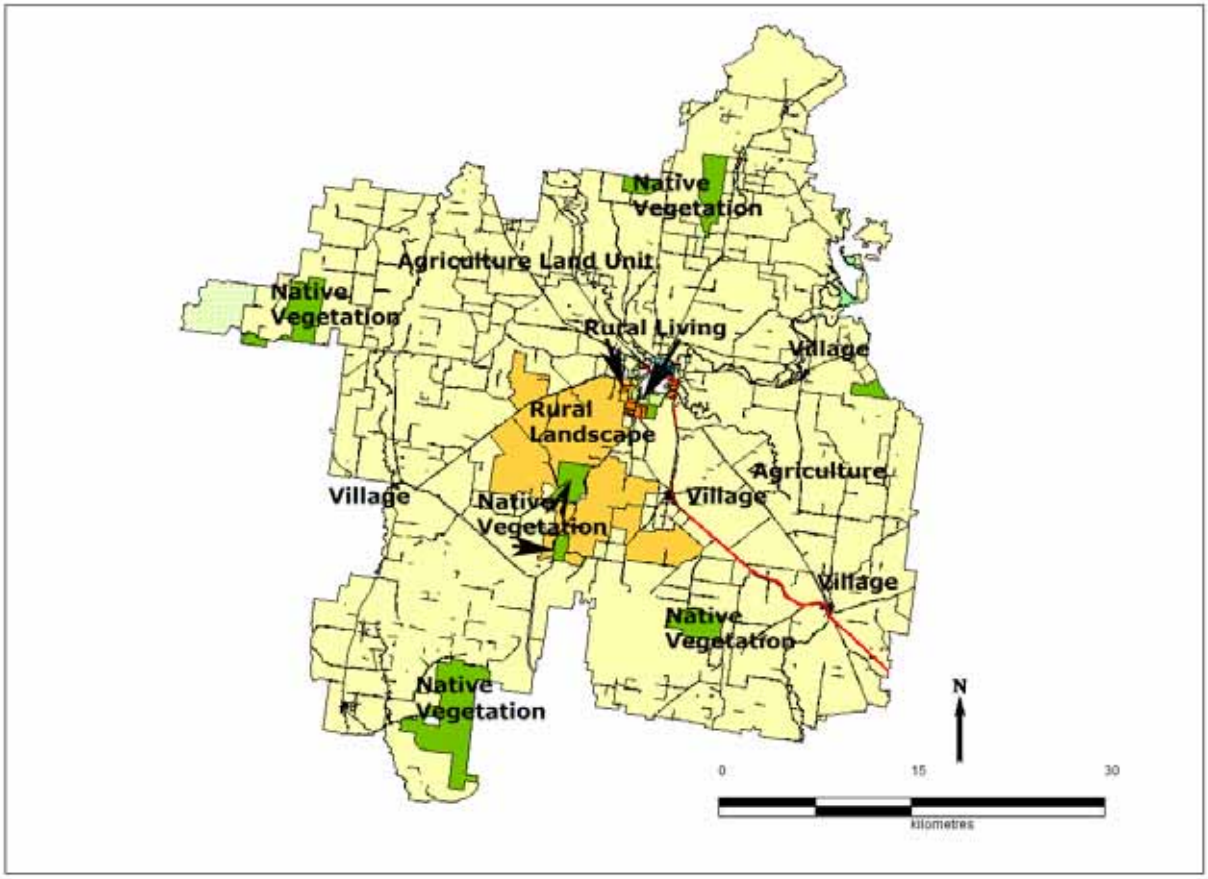
Photo 7.3: Native Vegetation Land Unit
Date of Photo: July 2005

The *Rural Residential* land unit covers the existing rural residential subdivisions around Gunnedah. It is mostly land that has been subdivided into 1 to 2 ha lots. The land is not all subdivided and has a diversity of topography and areas of native vegetation. Photo 7.4 shows this land.

Photo 7.4: Rural Residential Land Unit
Date of Photo: July 2005

Village land unit is the current urban areas of Carroll, Breeza, Mullaley and Tambar Springs Photo 7.5 shows the village land unit of Mullaley.

Photo 7.5: Village Land Unit
Date of Photo: July 2005

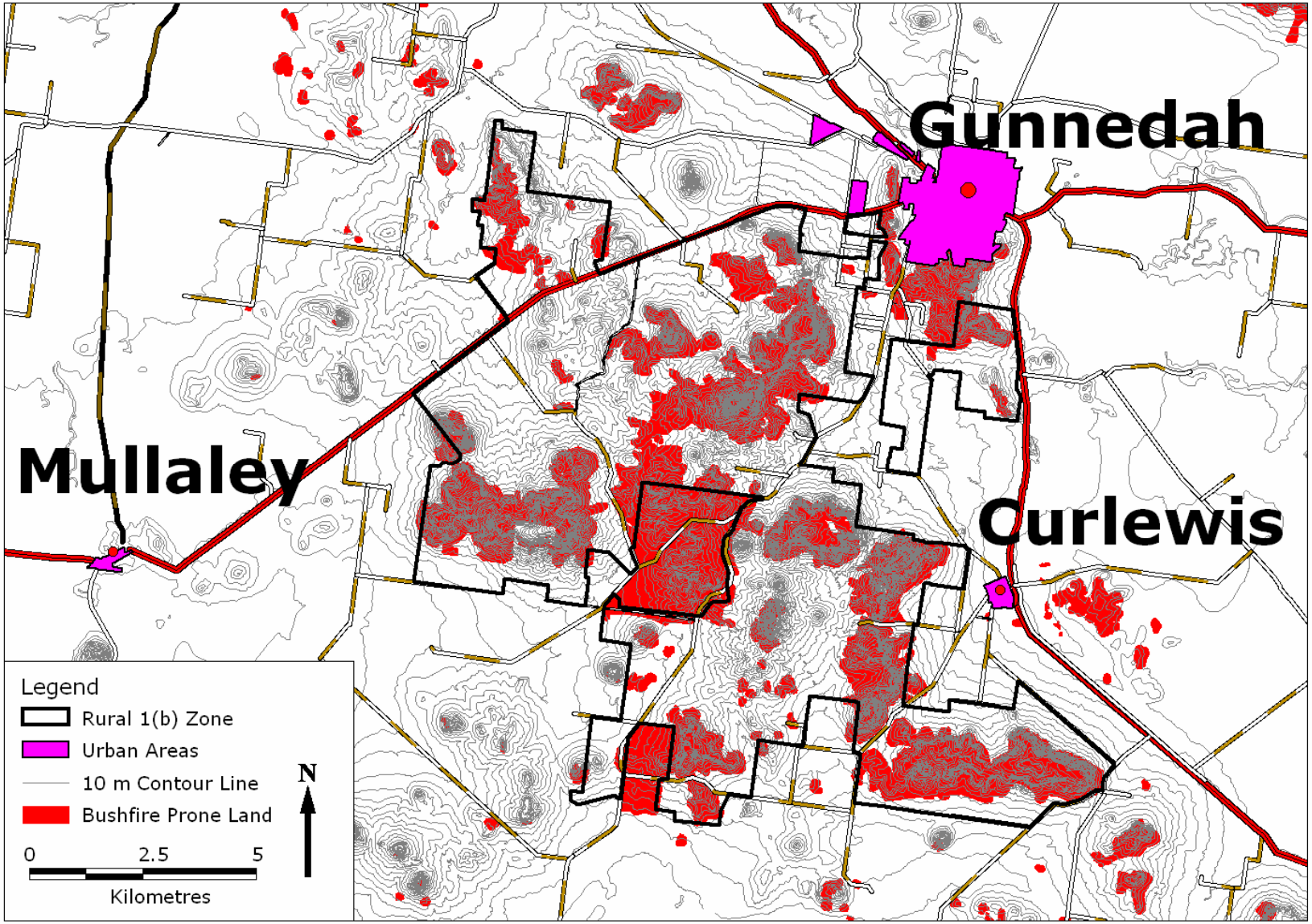


Map 7.1: Rural Land Units

7.4.2. Rationalisation of Rural 1(b) Zone Boundaries

The rural 1(b) zone is located on the hilly land to the south west of Gunnedah and Curlewis. It provides for 'rural living' type of rural residential development as outlined in chapter 2 (section 2.3.6). Council's property records reveal that it has a total area of 33,177 ha and 192 landowners who own a total of 272 lots. The land use survey has shown that there are 102 dwellings and that the land is mostly used for grazing on a full time and part time (rural residential) basis. There is some limited cropping on the more gentle sloping land. The zone is shown as the rural landscape land unit on map 7.1. The area has been the subject of a 40 ha subdivision minimum since the introduction of LEP 1998. Since that time, there have been approximately 20 40 ha lots created, which have subsequently been built on. It should be noted that there is capacity for 670 lots to be created in the zone, using the current minimum of 40 ha. It is further noted that a subdivision for 32 lots was approved in 2005 on a property called 'Leybern', however no dwellings have yet been constructed on this subdivision and, Council records show that none of the lots has been sold. Over the past 5 years, there has been 1 – 2 dwellings per year constructed in the Rural 1(b) zone which is not a high demand. On a demand of 2 dwellings per year, it is estimated that there is a supply that would last for 335 years – this is considered to be far too excessive.

Map 7.2 shows the zone outline in relation to Gunnedah and the topography of the land (shown by the grey lines) and the bushfire risk areas (shown by the shading) – both of these are considered to be constraints to further subdivision of the land. It can be seen that most of the land is steep and bushfire prone.



Map 7.2: Rural 1(b) Zone Constraints

It is significant to note that the 'Leyburn' subdivision proposal outlined above had considerable opposition from the neighbours who did not want to see the land subdivided further.

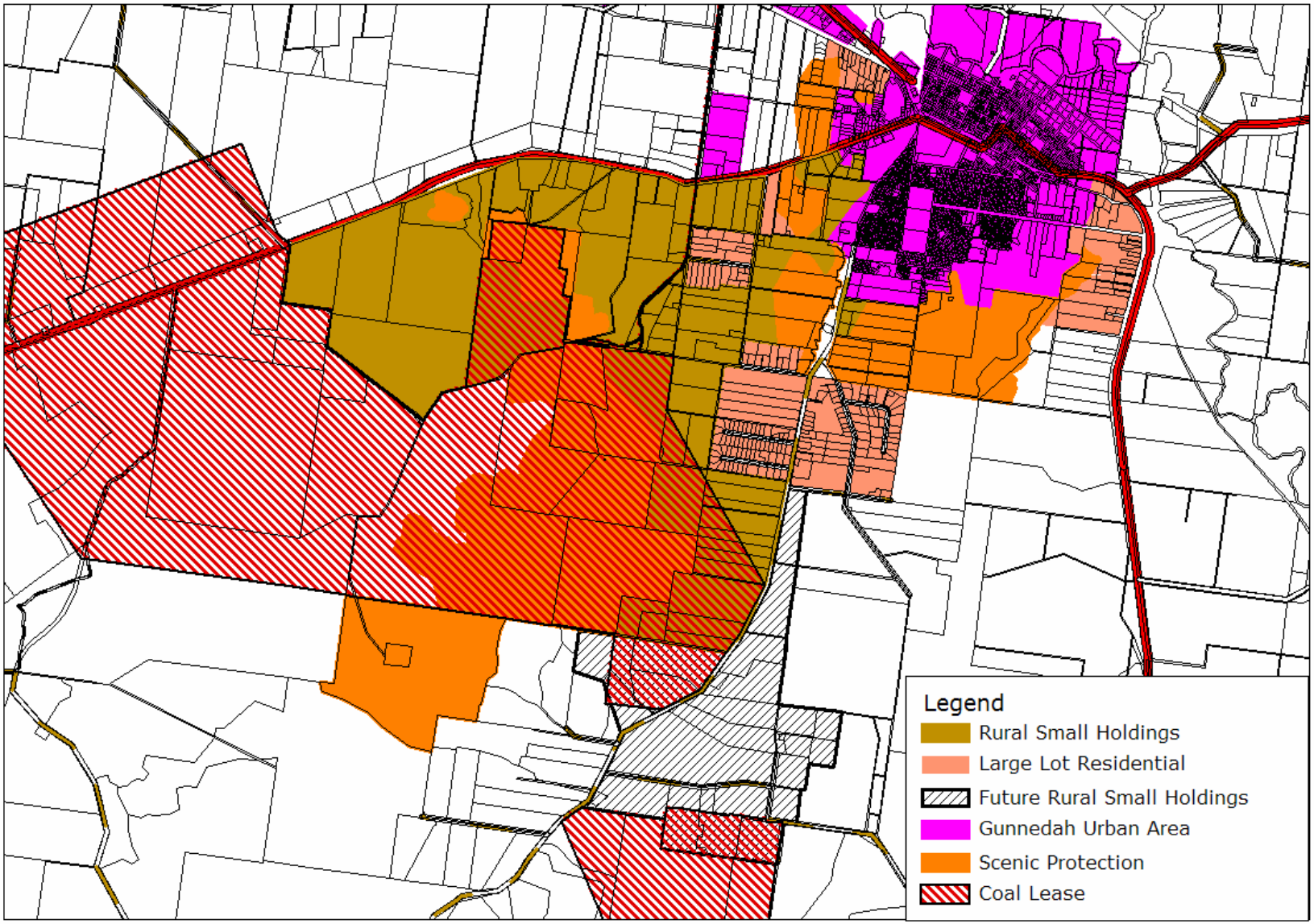
There is a need to address the current oversupply of land in the zone. When reviewing an area like the rural 1(b) zone (which is an area for rural residential development), it should be done having regard to sound planning principles. The demand for rural residential subdivision is accepted, however it should be located in an area that is suited to this type of development. Below is a list of the matters that should be considered when assessing land for rural residential development:

- Proximity to Agricultural uses.
- Current fragmentation of the land.
- Slope of land – greater than 20% should not be built on nor accessed over.
- Flooding and Drainage as well as Bushfire risk
- Native Vegetation.
- Proximity to Urban Centres.
- Utility servicing
- Road surface and Access
- Supply and Demand
- Appropriate subdivision minima
- Local Issues

The above criteria have been applied to the current rural 1(b) zone and the proposed new boundaries are shown on map 7.5. The new designation has been termed 'rural small holding' in line with the provisions of the Standard LEP. It should be noted that the land identified as 'Large Lot Residential' is the current Rural 1(c) zone and this has also been altered in line with the provisions of the Standard LEP. The ridge that runs in a north – south direction from the Oxley Highway has been used as the southern and south western boundary. As this ridge is a significant landscape feature, it is considered that it should be protected from development that will detract from the scenic landscape character. It should be noted that the land in question is steep and covered in vegetation (this can be seen from map 7.4) and is unlikely to be developed in the future. This will have the same restrictions as the current environmental protection –scenic zone and should be called 'Environmental Management' in line with the provisions of the Standard LEP. The northern boundary of the proposed rural small holdings designation is the Oxley Highway and the western boundary is Barlow Road. Wondabah Road is the eastern boundary of the zone along with the existing rural 1(c) zone.

The land has some constraints of slope and bushfire, particularly along Barlow Road and this will have to be taken into consideration when assessing development applications. In addition, the access to the Oxley Highway should be limited as far as possible. All of these constraints should be included in the DCP that is to be prepared along with the new draft LEP.

The existing coal lease for the coal mine at Black Jack Road, although not currently being mined, still exists and covers part of the proposed new zones. This will have to be addressed with the location of dwelling houses because of potential mine subsidence issues.



Map 7.5: Rural Small Holding Designation

Water supply to these lots will be from on-site sources. The NSW Farm Dams Policy limits the size of dams on small lots and therefore, new dams cannot be relied upon for a source of water. The reliance on groundwater is not to be encouraged because of the uncertainty of the yields and therefore the groundwater resource is unknown and likely to be unreliable. There is also the potential for interference with neighbouring groundwater supplies. Traditionally, similar developments have relied on rainwater tanks. This is considered to be adequate but the size of the tank may have to be increased to allow for extended periods of no rain. It would also be appropriate for the potential for groundwater use to be a matter for consideration at the subdivision stage and it would be appropriate to require testing of the groundwater to ascertain whether it could be used as a source of water to supplement rainwater tanks. It is noted that the current LEP has a requirement as part of Clause 15 relating to dwellings in rural zones and states that Council must consider 'a water supply satisfactory to the Council is or will be provided and the land is sufficient size and soils are of appropriate quality for the effective on-site disposal of domestic waste'. It would be appropriate to insert a clause in the LEP which is similar but relates to the subdivision stage and not the dwelling house stage of the development process.

As well as reducing the area of the current 1(b) zone, a review has also been undertaken of the current subdivision minimum of 40 ha. Discussion with local real estate agents has revealed that there is a demand for 10 ha lots. A review of the yield from the proposed new zone has been carried out and is outlined in table 7.1.

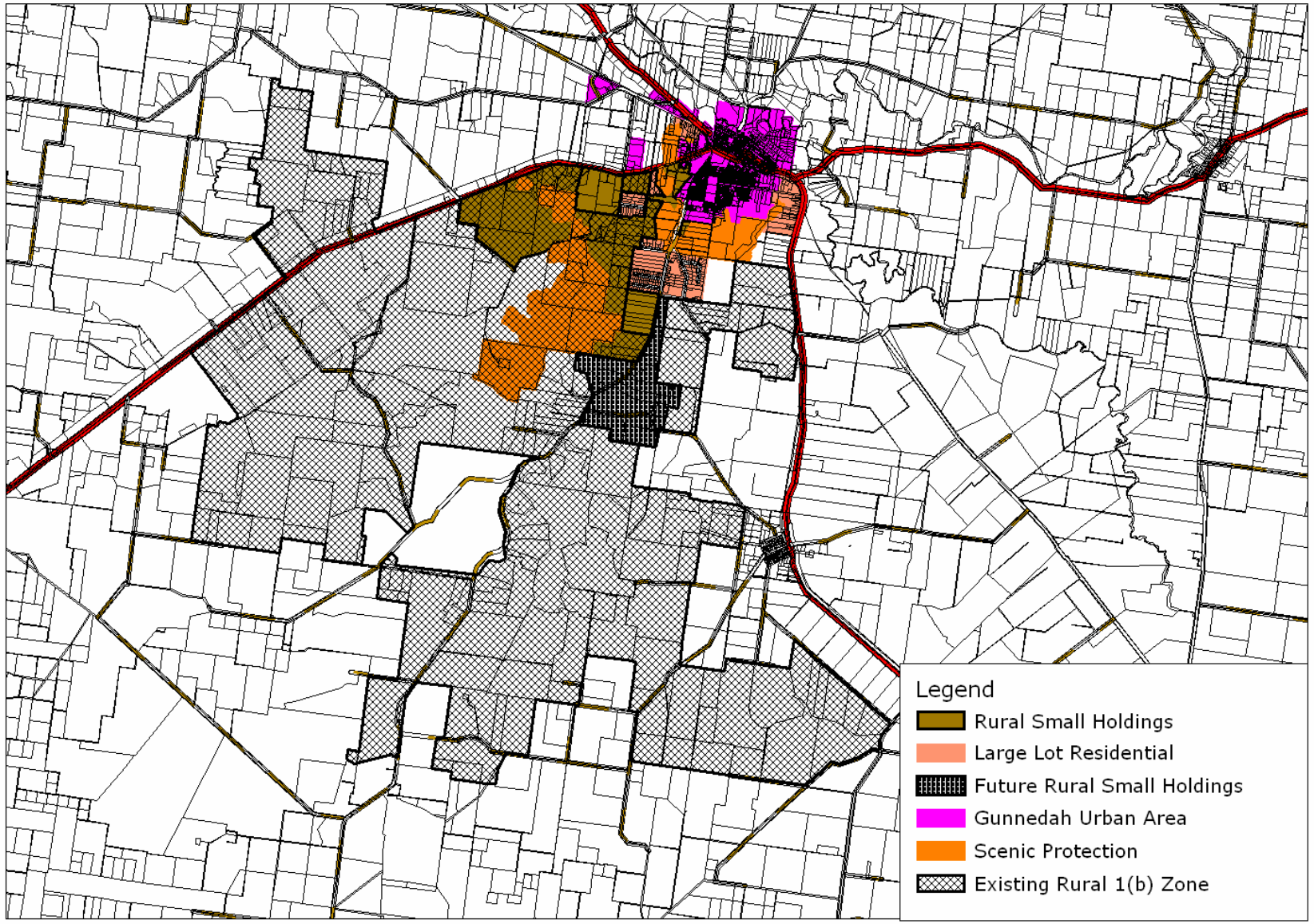
Table 7.1: Lot Yield Proposed Rural Small Holding Designation

Land Use	Number of Lots	Total Area	Potential Lots 10 ha
Vacant Land	46	2,077	149
Dwelling House	37	641	26
Total	**83**	**2,459**	**175**

The demand for dwellings in the current Rural 1(b) zone is 2 dwellings per year over the past 5 years. However, it is considered that this could be increased with the increasing level of development in Gunnedah as well as the potential for increased population in relation to the coal industry. The supply of 175 lots is considered to be adequate for 20 years. The Council should monitor the take up to ensure that there is an adequate supply of land. It should be noted that the environmental limitations of the land will mean that the actual lot yield when done on an individual site basis may be less than the 175 outlined in the table.

The land between Wondabah and Booloocooroo Roads to the south of Gunnedah is currently zoned rural 1(a). This land is the area that should be designated for future rural smallholdings area once the current area has been developed. This land is considered to be more favourable than extending along the Oxley Highway. It is noted that the RTA have expressed concern with further development having access off the highway.

Map 7.6 shows the extent of the existing Rural 1(b) zone and the proposed new rural small holdings designation that is recommended to become a zone. It can be seen that it has been significantly reduced.



Map 7.6: Changes to Rural 1(b) Zone

7.4.3. Rural Land Designations

The land units can be translated into future zones. However, as this is a strategy and does not zone the land, the term land use designation has been used to describe them. In determining the boundaries of the land designations, the potential for the expansion of existing agricultural activities, such as intensive plant and animal growing has been considered. It is important to consider the future needs of these activities as well as the traditional agricultural uses of cropping and grazing.

The utilisation of landuse zoning to segregate landuses is a commonly used practice in New South Wales. In rural areas however there has generally been one or 2 generic type zones that have been called a "rural" zone. One of the major reasons for zoning an area is to preclude or regulate specific uses that are considered to be not in keeping with the general amenity of the area.

Zone names such as residential, commercial and industrial are used to identify a list of specific land uses that are permissible in a particular location. Rural zones are often less specific. The term rural describes a character, not a use. It is therefore appropriate to use a zone name that provides an indication of the uses that are carried out within that area.

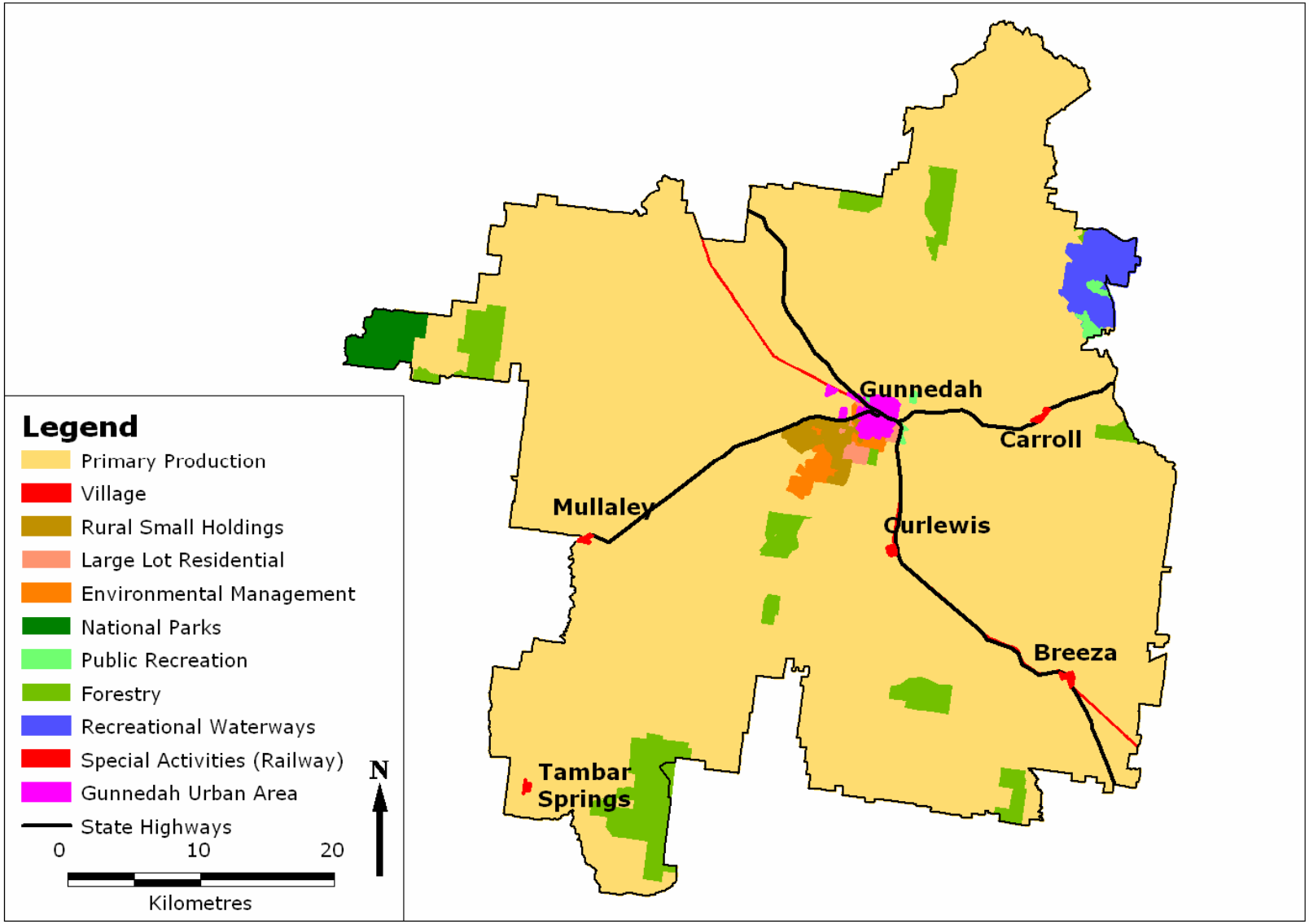
Zoning can also be used to identify the major objective for any future as well as existing development in an area for example, if an area is of high conservation status then a zone name outlining this is also appropriate.

A sieve methodology has been used to determine the land use designations. It is described in Appendix 4.

The designations are as follows:

- Primary Production
- Rural Small Holdings
- Rural Fringe
- Village

They are outlined on Map 7.2 and are discussed below.



Map 7.3: Land Use Designations

Primary Production

This covers the majority of the Shire and in particular includes the floodplains of the Mooki and Namoi Rivers and Cox's creek. It The land is mostly class 2 and 3 and is used mostly for intensive plant growing including cotton and irrigated cropping as well as irrigated lucerne.

Intensive forms of plant growing will be encouraged because of the high soil quality. Dwellings should be located so that they do not have any impact on the adjoining land. Agriculture is the main use to be practiced on this land and other uses such as tourist accommodation are to be prohibited. A Total Farm Management Assessment will be required to be submitted with applications for intensive forms of agriculture.

The subdivision minima would be 600 ha.

A set of desired future character statements (which can ultimately become the zone objectives) should be prepared for the designation and it should include the following matters:

- Preservation of high class agricultural resources
- Promotion and maintenance of sustainable agriculture.
- Reduction of rural land use conflict.
- Protection and improvement of water quality.
- Preservation and enhancement of native vegetation, including habitat corridors.
- Protection of the amenity of existing residents.
- Buildings to blend into the landscape.
- Protection of the amenity of existing residents.

Rural Small Holdings

This is an area that is located to the south west of Gunnedah within close proximity to the town. It has been identified as an area where people can have a rural residential style of lifestyle on relatively large lots.

The subdivision minimum is to remain at 10 hectares and the minimum size for a dwelling is to be 10 ha.

A set of desired future character statements (which will ultimately become the zone objectives) should be prepared for the designation and it should include the following matters (the first 4 are the objectives as stated in the Standard LEP):

- To enable small-scale sustainable primary industry and other compatible land uses.
- To maintain the rural and scenic character of the land.
- To ensure that development does not unreasonably increase the demand for public services or public facilities.
- To minimise conflict between land uses within the zone and adjoining zones.

In addition, it is considered that the following should apply:

- To preserve the open rural landscape and its cultural heritage values.
- To protect and improve water quality and maintenance of environmental flows
- To ensure that land is developed to its capability
- To protect of the amenity of existing residents; and
- To ensure that dwellings blend into the landscape by having non-reflective colours, appropriate landscaping and low scale.

This is for rural residential uses, as discussed in section 7.4.2. The standard LEP objective outlined above for this zone states that it is to be for 'small scale sustainable primary industry' which means intensive forms of agriculture. This would cause rural land use conflict with the rural residential development and also contradict the forth objective which is to minimise rural land use conflict. It is therefore recommended that the first objective be deleted, when preparing the draft LEP.

Controls should also be placed on the height of dwellings as well as the impact they have on the landscape by way of location and appearance. For example, they should be located below ridgelines and be of colours that blend in with the surrounding environment.

Consideration should be given to placing controls on the clearing of land and preservation of areas of known biodiversity habitat and important habitat linkages.

Large Lot Residential

This designation covers the existing rural residential zone and has been included to provide a better description of the rural residential land use and the desires of the existing and future land owners.

The mixture of rural uses is to be retained with controls placed on the location of houses so that they do not create a conflict by being too close to the boundaries, thereby creating rural land use conflict. Rural tourism and accommodation uses are to be encouraged. Agriculture, particularly intensive forms of it are not to be encouraged as they have the potential to cause land use conflict with the predominately rural residential uses in the area.

Lot sizes are to remain as 6,000 m^2 minimum with an average of 1.2 hectares (excluding lots of 3 ha and greater).

A set of desired future character statements (which will ultimately become the zone objectives) should be prepared for the designation and it should include the following matters (the first 4 are the objectives as stated in the Standard LEP):

- To provide residential housing in a rural setting while preserving environmentally sensitive locations and scenic quality.
- To ensure that large residential allotments do not hinder the proper and orderly development of urban areas in the future.
- To ensure that development in the area does not unreasonably increase the demand for public services or public facilities.
- To minimise conflict between land uses within the zone and adjoining zones.

In addition to these, it is considered that the following should be included.

- To provide for a range of land uses, services and facilities;
- Ensure that new dwellings respect the character of surrounding dwellings;
- Ensure new residential development has regard to the scale and form of existing development.

One issue with the objectives in the Standard LEP is that the second objective assumes that this area will become a residential zone in the future. However, this is not considered likely due to the type of development envisaged (high value large lot development) as well as the separation from the urban area by the hilly land. For these reasons, it is considered that the second objective of the standard LEP not be applied to this designation.

Controls should also be placed on the height of dwellings as well as the impact they have on the landscape by way of location and appearance. For example, they should be located below ridgelines and be of colours that blend in with the surrounding environment.

Consideration should be given to placing controls on the clearing of land and preservation of areas of known biodiversity habitat and important habitat linkages. There is also a need to prohibit any further intensive forms of agriculture to minimise any future rural land use conflict.

Village

There are a number of villages that exist which are zoned as such. They each have a special character which needs to be preserved. The designation of them as village will help to preserve this.

A set of desired future character statements (which will ultimately become the zone objectives) should be prepared for the designation and it should include the following matters:

- Retain rural village character.
- Ensure that new dwellings respect the character of surrounding dwellings.
- Ensure new residential development has regard to the scale and form of existing development.

The uses that would be permitted without consent, require consent and which would be prohibited for this designation would be those that currently apply to the Residential 2 Village Zone.

7.5 Rural Dwelling House Minimum

The issue surrounding rural lot sizes can be categorised into the subdivision minimum and the minimum lot size for a dwelling house. Both are used to minimise fragmentation of rural landscapes.

7.5.1. Minimum size for Dwelling House

The issues surrounding rural lot sizes can be categorised into the subdivision minimum and the minimum lot size for a dwelling house. It is important to make the distinction between them and to recognise that it is the minimum size for a dwelling

house that is the most important aspect. It is also necessary to have regard to the State Government Policy which is as follows:

> *"Minimum lot sizes for subdivisions that may be eligible for a dwelling consent should be determined based on the area required to sustain a farming enterprise typical for that locality*."

There are a number of issues that have to be taken into consideration when considering the most appropriate subdivision minimum. They are as follows:

- Current fragmentation and holding pattern;
- Current subdivision and dwelling house minimum;
- Range of holding sizes;
- Current dwelling entitlements;
- Potential to increase the fragmentation;
- Number of potential subdivisions at the current minimum;
- Impact on the ability to provide services and facilities;
- Impact on traffic generation and the need for road upgrading; and
- The impact on the ability to do boundary adjustments
- The area of the land required to sustain a farming enterprise typical for the area
- The value of rural land in the Shire

There also has to be an acknowledgement that a number of farms in the Shire have an off farm source of income which supplements the income gained from agriculture. Anecdotal evidence suggests that this is an increasing trend, in the Gunnedah Shire as well as all across the State.

The Department of Primary Industries has provided information on this which provides for a range from 400 ha for the black soil plains and 600 ha for the more hilly land in the east of the Shire. These figures are based on the viability of holdings determined from ABS Agricultural Census returns to determine the area of land required to sustain a farming enterprise as well as information from the District Agronomist.

Economic Assessment

The following assessment has been based on the methodology that has been prepared by the Department of Primary Industries and Department of Planning. It is reproduced as Appendix 4 It has been used to provide a commercial farm size for the Shire. The steps in the methodology are outlined then the results of how it has been applied to the Shire are shown. The full workings are reproduced as Appendix 5.

Step 1 – Identify Key Agricultural Industries & Enterprises in the LGA:

- What are the Main Agricultural Industries?

- What is the Shire well known for?

- Has Agriculture in the Shire changed over time? If so, what has happened?

Step 2 – Identify the Characteristics of Farms in the Shire:

- What are the land use characteristics of major agricultural enterprises?
- Are there distinctly different patterns of agriculture in different areas across the Shire?

Step 3 – For Key Agricultural Enterprises identified:

- Determine the Existing Production Levels of key enterprises
  - ⇨ Crop yields
  - ⇨ Livestock Performance
  - ⇨ Carrying Capacity
- Determine Input/Production Costs

Step 4 - Determine Appropriate Gross Margins for key enterprises:

- Deduct Input costs from gross income.

Step 5 – Determine a target income for a commercial farming unit

(Break even point)

Step 6 – Calculate the Overhead Costs

- Rates, electricity, phone, farm maintenance, depreciation, family labour

Step 7 - Calculate the area needed to generate the breakeven level of income

- Gross margins multiplied by area of enterprise

The methodology has been applied to the Shire and the following is the outcome. It has been arranged to answer the questions in the methodology outlined above.

*1. Key Agricultural Industries & Enterprises in the LGA***:**

1. Main Agricultural Industries?

   ⇨ Cereal Cropping and Beef cattle
   ⇨ Irrigated Agriculture which is mostly cotton

2. What is the Shire well known for?

   ⇨ Cattle, Grain and Irrigated Agriculture

3. Has Agriculture in the Shire changed over time? If so, what has happened?

Over the past 30 years, there has been an increase in cattle production on the lighter soils to the west of Gunnedah and a decrease in cropping in this area. On the black soil plains, there has been some more sorghum planted but wheat remains the dominant grain crop. Cotton has also increased due to the availability of irrigation water – both from the River as well as from underground sources.

2. Identify the Characteristics of Farms in the Shire:

4. What are the land use characteristics of major agricultural enterprises?

⇨ Diversified farms with a mix of livestock & cropping

5. Are there distinctly different patterns of agriculture in different areas across the Shire?

⇨ Irrigated and dryland agriculture. Most farms have cropping and grazing. Carrying capacity reduces as one moves further west.

3. Production Levels of Key Enterprises on Farms

Determine the Existing Production Levels of key enterprises

⇨ Crop yields - Dryland wheat is 4 – 5 tonnes per ha

⇨ Livestock Performance Indicators: Carrying Capacity of 3.25 DSE per ha with a conversion rate of 10 DSE per head of large stock. (Source: Tamworth Rural Land Protection Board).

4. Gross Margins for key enterprises:
(source: DPI 2006)

	$/ha
Wheat – Long Fallow	$220.39
Beef – Young Cattle 15 – 20 months	$138.5

5. Target income for a commercial farming unit

Return on investment – Estimate $60,000 cropping enterprise, considered break even point. Source: DPI Methodology and ABARE. This is considered to be an 'ideal' figure and a more realistic income level would be the average income for individuals in the Shire. This is estimated by the ABS as being $34,541 at 30 June 2003. This can be increased to $35,000 and $36,000 to provide a more accurate figure for 2006.

Step 6 – Calculate the Overhead Costs
Rates, electricity, phone, farm maintenance, depreciation, family labour, fencing, water supply machinery repairs

Estimated 40% of total farm costs

7. Area needed to generate income

The methodology has been applied for wheat and beef cattle. The assumptions are that wheat occupies 55% of the property and beef 35% with 10 % unproductive for farming. An allowance has been made for the cattle to graze on the wheat stubble for 3 months of the year. The farm sizes for the range of incomes discussed above is shown in table 7.2. It should be noted that the income in this table has been calculated using DPI published gross farm budgets and can be described as an 'ideal'

income and may vary having regard to local conditions and management practices. However, DPI advise that it can be used to generate an income figure that is considered adequate for the Shire.

Table 7.2: Farm Income Estimate

	Farm Size	
Income	Not Grazing Stubble	Grazing Stubble
$60,000	2,593	1,789
$34,541	1,492	1,030
$35,000	1,512	1,044
$36,000	1,556	1,073

Therefore, it can be seen from the income figures that the farm size needed to generate an adequate income which would be a commercial farming unit would be 1,100 ha.

The DPI have also requested that the ABS Agriculture Census data be analysed to provide another indication of the farm size. The average farm size is 794 ha.

Current Holding Analysis

The following methodology has been developed based on the current holding patterns, subdivision scenarios as well as the average holding patterns for the Shire.

The holding size ranges for the Agriculture Designation are shown in figure 7.1. The range of holdings allows for an assessment of the spread of the holdings for agriculture and rural residential uses. This is done because most of the rural residential uses are on the lower end and agriculture is on the higher end of the holding range. It can be seen that the range with the largest numbers is 202.01 to 400 ha range, followed by the 400.01 to 600 ha range. There are 55% of all holdings greater than 200 ha which is the current minimum.

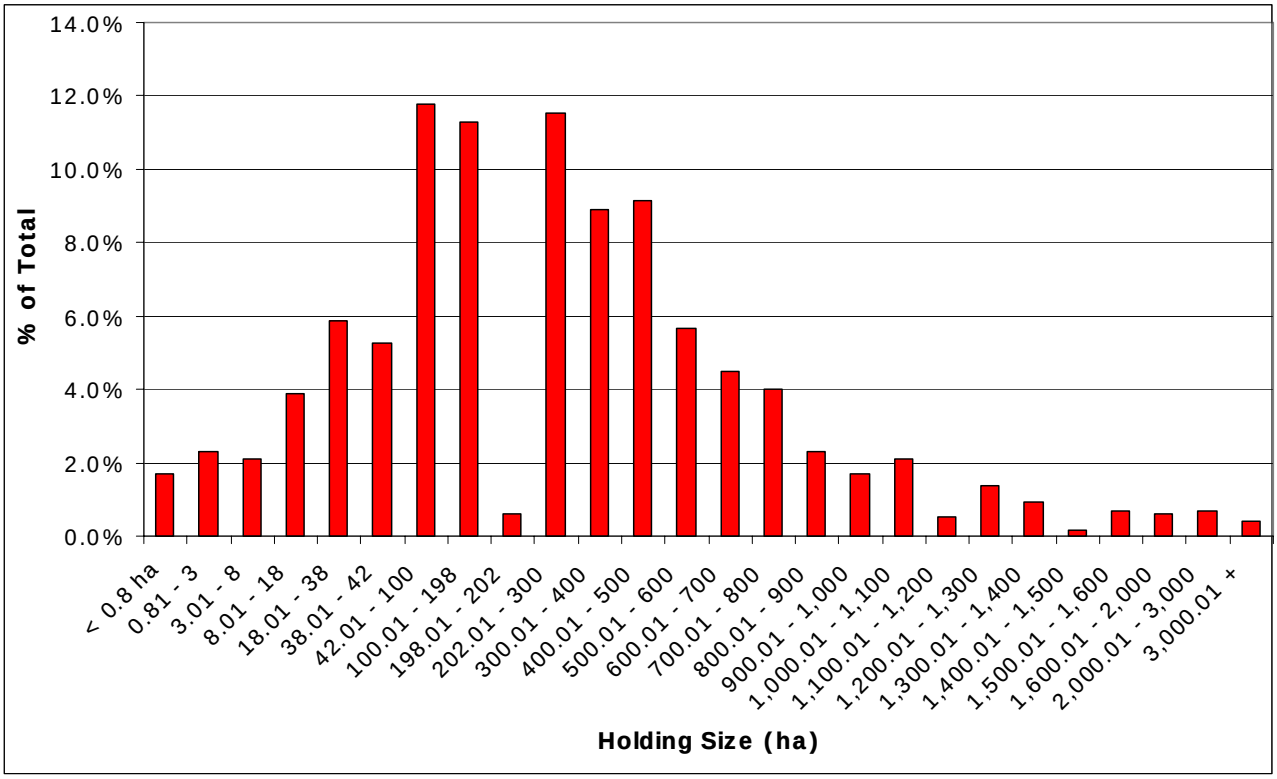


Figure 7.2: Holding Range for Agriculture Designation
Source: Council Property System

Analysis has also been carried out of current average holding size. Table 7.1 shows this. The table shows the average for all holdings in the Shire as well as using some gradations to take out smaller holding patterns as well as the larger holdings. The large holdings greater than 3,000 ha have been taken out.

Table 7.3: Average Holding Sizes

	Total Number of Lots	Total Number of Holdings	Total Area	Average Holding size
All Holdings	4,631.00	1,207.00	443,238	367
10 ha to 5,000 ha	4,536.00	1,123.00	442,977	394
40 ha to 3,000 ha	4,191.00	990.00	422,067	426
100 ha to 3,000 ha	3,857.00	803.00	410,980	512
200 - 3,000	3,574.00	661.00	388,617	588
300 -3,000	3,149.00	519.00	353,009	680

Source: Council Property System
Note: * Holdings are made up of a number of individual lots.

The number of potential lots that could be created if all current holdings were subdivided to the existing minimum in the LEP has been assessed. A range of holding sizes below and above the current minima has also analysed. The results of this analysis is provided in figure 7.3.

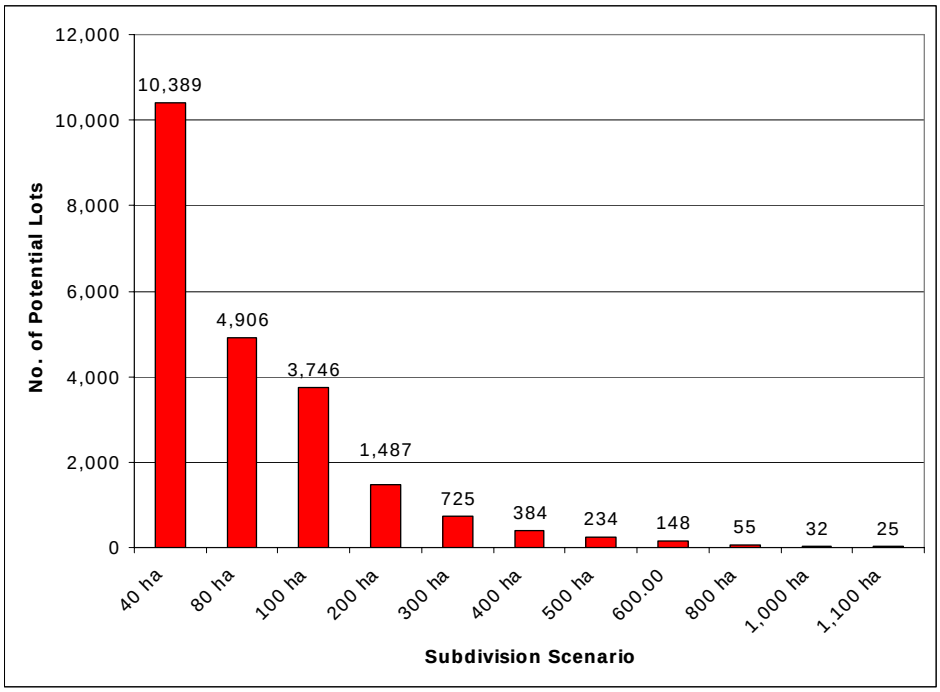


Figure 7.3: Subdivision Scenarios Rural 1(a) Zone
Source: Council Property System

It can be seen from the above data that at the current 200 ha range, there would be an additional 1,487 lots created. At 300 ha there would be 725. It is not until 600 ha that the potential number of lots drops – 148. It should be noted that the higher number of potential subdivisions can cause a drain of the Council's resources, particularly for road repairs and reconstruction.

The number of farms that are above a range of holding sizes has been analysed to provide an indication of the current number of farms that could be said to be sustainable. This data is presented in figure 7.4 It can be seen that at 200 ha there are 655 farms, at 400 ha 410 farms and 600 ha there are 232 farms. At 1,100 ha there are 59 farms and at 1,800 ha there are 17 farms.

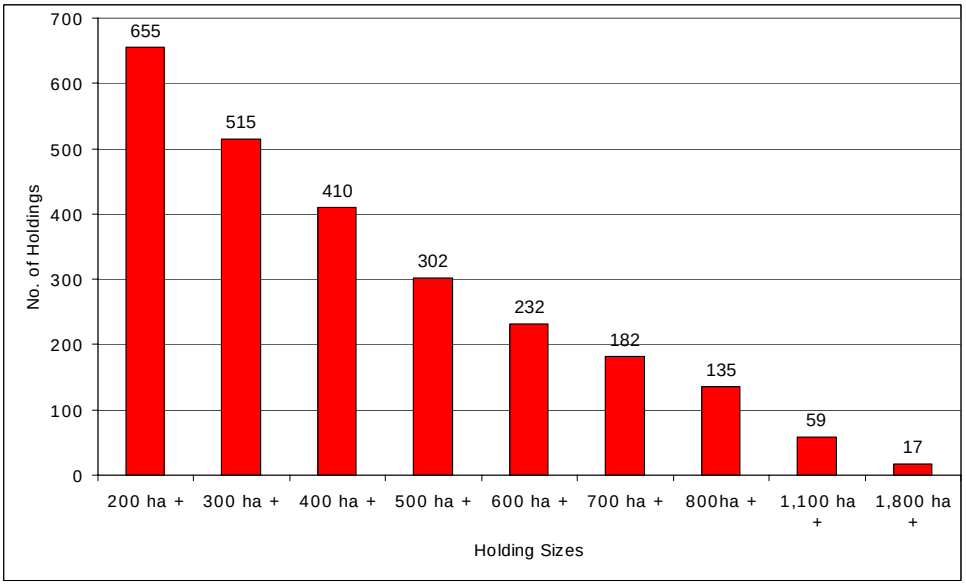


Figure 7.4: Number of Farms in holding size ranges

Minimum Holding Size for a dwelling

The minimum holding size for a dwelling house needs to take into consideration a number of factors as follows:

- Commercial Farm size
- Current average holding size range
- Potential for future fragmentation
- Number of holdings above a range of potential minimums
- The number of farms counted by the ABS Agricultural Census
- Probability of rural residential use of productive land

The above data has provided a number of figures. It should be noted that the method for estimating the commercial farm size is based on generic data and may vary having regard to local climatic, soil and management practices. It should also be noted that the typical farming enterprise in the Shire is cattle and wheat. Whilst it is acknowledged that some people have irrigated agriculture, they also may run cattle as well as some wheat or other type of dryland cropping. It is therefore difficult to set a range of holding sizes the Shire. Therefore, one size has been recommended.

The ideal farm size for Gunnedah Shire is 1,100 and here are 59 holdings above this figure. The average holding size for 200 to 3,000 ha farms is 588 ha and for 300 to 3,000 ha are 680. Based on the majority of holdings being greater than 200 ha, it can be said that the average holding size for existing farms would be between 588 ha and 680 ha. When the potential fragmentation is considered, at 600 ha there would be 148 additional lots created. There are also 232 farms above this figure.

The price of land in the Shire as well as its productive potential means that the probability of land being used for rural residential use is not very high. This is also less probable having regard to the recommendation for a rural small holding zone.

Bearing in mind all of the factors outlined above, it is considered that the minimum holding size for dwelling houses across the Shire should be 600 ha.

Current lots less than 200 ha

The next matter to investigate is the number of existing dwelling subdivisions that may be eligible of a dwelling house that have not applied of consent to construct one in the zone in which the minimum is to be increased. The owners of these lots would have an expectation that they would have the ability to construct a dwelling on the lot and if the minimum is increased, there not be any legal opportunity to construct a dwelling. The LEP makes provision for dwelling eligibility subject to consent for holdings or lots under the following circumstances:

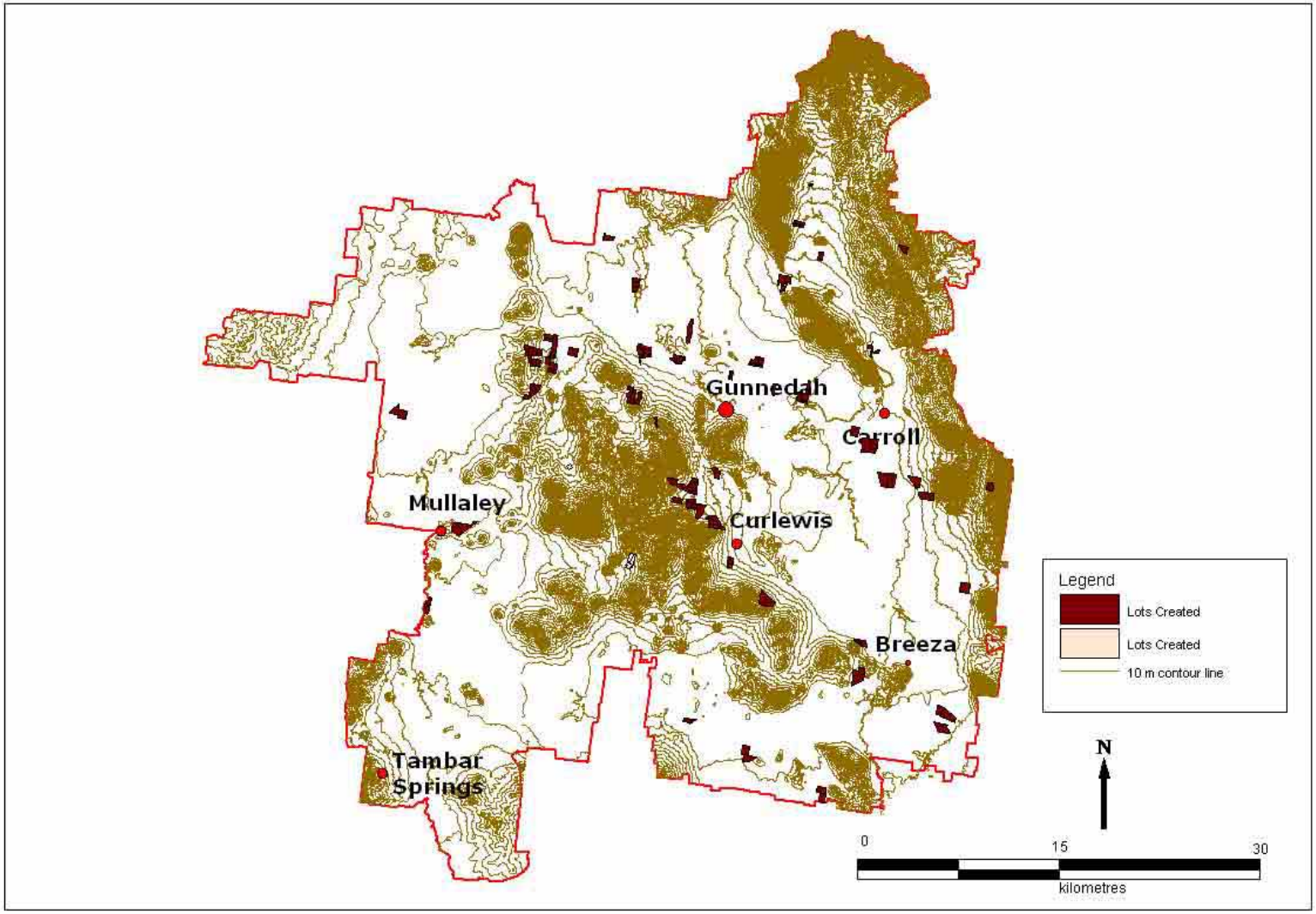
- Holdings with an area of greater than 200 ha;
- Holdings less than 200 ha but which are defined as an ‘existing holding’ (which is defined as all adjoining or adjacent lots held in one ownership on 25 September 1998, being the date that the current LEP was gazetted); or
- The lot is less than 200 ha but is in an approved subdivision (this includes lots that were approved under the current and previous LEPs).

Council records show that there are a number of subdivisions in the rural 1(a) zone that have not had a dwelling constructed on them. They have been reduced to 59 by a sieve methodology that excluded small lots, lots on steep land and high quality land. They range in size from 3 ha to 188 ha. Their location is shown on map 7.1 and it can be seen that they are scattered over the LGA with some on the highly productive floodplain adjoining intensive plant uses whilst others are on the lesser quality soils of the hilly land around Gunnedah.

It is considered that this eligibility should be preserved by keeping the 'existing holding' date as the date of gazettal of the current LEP and permitting dwellings to be constructed on lots that have been created between that date and the date of gazettal of the proposed LEP. However there should be some criteria put in place for the construction of these dwellings to ensure that they do not have a detrimental impact on the surrounding land. Such criteria should include the following:

- Proximity to intensive plant uses
- Standard of access
- Status of native vegetation

There should also be a sunset date for the clause of 2 years. This means that if no development application is submitted within 2 years from the gazettal of the new LEP, the eligibility will be withdrawn. Subject to consent being granted, the applicant would have 5 years in which to physically commence the dwelling house. To ensure that the owners are aware of the proposal to increase the minimum, they should all receive a letter advising them of the fact.



Map 7.1: Location of approved subdivisions less than 200 ha.

7.5.2. Boundary Adjustments

Boundary adjustments occur when one landowner wishes to sell part of the land to an adjoining owner. There is no additional dwelling entitlement created but the areas to be transferred are often less than the subdivision minimum which creates an undersized lot in the zone without a dwelling entitlement. Ordinarily, such a lot cannot be created because of the minimum lot size criteria. However, if the clear intention is to create the lot for agriculture purposes and this can be proven, it can lessen any potential for the new lot to be sold and a request being made for a dwelling house on the lot.

It is recommended therefore that the following be adopted for boundary adjustments to create lots less than the minimum in the zone:

- Where there is no dwelling house on either of the lots to be adjusted, it is permissible to create a new lot, but not an additional lot provided that there is proof that it has the ability to be and is intended to be used for agriculture.
- If there a dwelling house on either lot or if one is to be constructed on one of the lots to be created, there must be a consolidation with other land owned by the same owner to increase the size of each lot to the minimum for subdivision.

7.5.3. Subdivision for Intensive Agriculture

The LEP allows for the creation of lots less than the minimum if the land is to be used for an intensive agricultural purpose. Clause 13 lists a number of criteria that have to be met and these are as follows:

> *(1) the allotment to be created is intended to be used for the purpose of specialised or intensive agriculture, which may consist of intensive horticulture or animal husbandry, and is of a size capable of being used for that purpose, and*
> *(2) creation of the allotment will not adversely affect the agricultural viability or potential of the residue of the land subdivided and the residue is capable of economically supporting an agricultural use of a type common in the locality, and*
> *(3) the proposed use to which the allotment will be put is an efficient agricultural use, having regard to the size and layout of the allotment, and*
> *(4) an adequate water supply is available or can be made available to the proposed allotment and is of a suitable capacity for the proposed use, and*
> *(5) the soil, topography, drainage and other physical characteristics of the land are suitable for the proposed use, and*
> *(6) adequate all-weather vehicular access is available or can be made available to the land, and is of a suitable standard and capacity, and*
> *(7) the proposed use will not adversely affect the amenity of the land surrounding the proposed allotment.*

This can cause fragmentation of the land and lead to rural living style uses if the land is on sold and the new owner does not intend to use the land for intensive agriculture and instead uses it for a residential use. This can lead to rural land use conflict and have a detrimental impact on the surrounding farming activities, which are being carried out on larger holdings. Whilst it is difficult to ensure that a prospective owner

will carry out intensive agriculture per se. One way to ensure that the land is in fact used for the purpose of agriculture is to first require the submission of a report stating the economic sustainability of the enterprise as well as requiring that a dwelling can only be erected after the establishment of the use and its operation for a 12 month period. This will ensure that the subdivision is a bona fide subdivision for an intensive agricultural use and is not going to be used for a rural residential use.

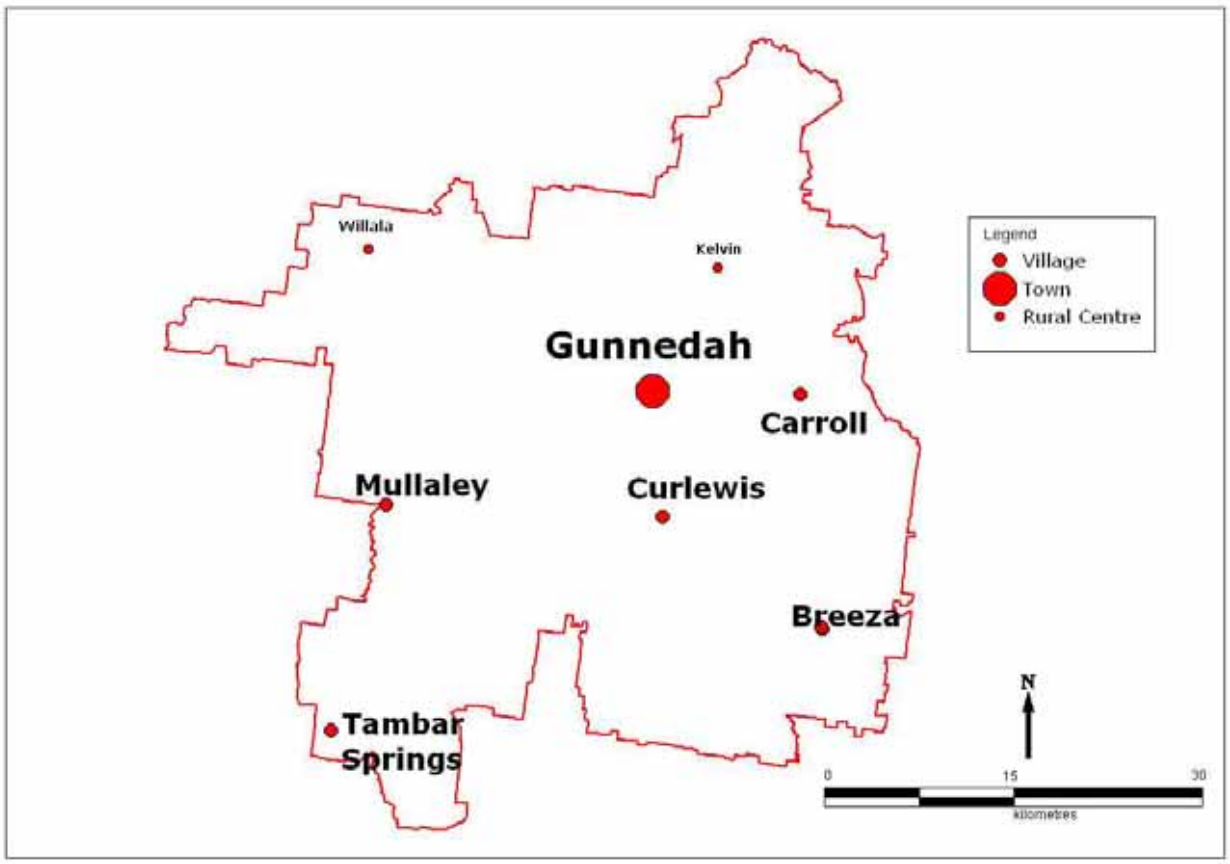
7.6 Settlement Hierarchy

A 3-order hierarchy is suggested for Gunnedah Shire. It is based on the criteria listed in chapter 2 and is as follows:

A hierarchy of settlements can be based on this as well as other factors and for an area like Gunnedah Shire should take the following form:

Regional Centre	➔	Tamworth
↕		
Town.	➔	Gunnedah
↕		
Village.	➔	Breeza, Carroll, Curlewis, Mullaley and Tambar Springs
↕		
Rural Centre.	➔	Kelvin. Willala,

The purpose of the hierarchy is to acknowledge that some settlements because of their lack of services and facilities are not able to expand. For a settlement to be able to expand, there is a need for basic services and facilities including weekly shopping and a school. The regional centre and towns are usually able to grow with a mixture of rural residential and urban development subject to constraints and the villages and rural centres, because of the lack of services and facilities don't have the potential to grow. However, if the Council is to propose that one of these is to grow there will be a need to assess the levels of service and then upgrade them if they are insufficient. Map 7.5 shows the hierarchy.



Map 7.5: Proposed Settlement Hierarchy

7.7 Villages

The villages in the Shire provide a place for people to live. Some of them have the potential for expansion, whilst others do not. The major issues for the potential of a village to expand are as follows:

- Provision of reticulated water and sewerage
- Provision of adequate access to the higher order centres (road and public transport)
- Ability to provide for social services and facilities
- Presence of unconstrained land surrounding the village

The above criteria are not exclusionary per se and if the Council can provide an adequate level of service to the community that is to live there, it may be appropriate to allow them to grow.

Having regard to the constraints of the surrounding land and proximity to Gunnedah, it is considered that Curlewis, Breeza and Mullaley are the only settlements with some potential for expansion. The reasons for this are as follows:

- *Curlewis.* This is close to Gunnedah and has existing community infrastructure (school, hall and playing fields). The issue of water and sewer will have to be investigated. There is also a number of lots that are vacant or have the potential to be subdivided without the need to expand the town immediately.

- *Breeza.* This is located on the Kamilaroi Highway between Gunnedah and Quirindi and has good access to these towns. A hall is located to the north of the highway. There is considerable land that is zoned for village but has not yet been built on, particularly on the hill to the south of the main road. There is also the potential for a small rezoning of the land on the side of the hill for large lots of 4,000 m^2 to 1 ha in size, which should be adequate for effluent disposal. However, this will have to be assessed by detailed study. There is land to the north of the main road in the vicinity of the hall that is zoned as village but that is low lying and flood prone. This land is also vacant and therefore it should be rezoned to agriculture.
- *Mullaley.* This is located on the Oxley Highway between Gunnedah and Coonabarabran and has adequate access to Gunnedah as well as Coonabarabran. There is existing shopping and community facilities as well as a school. There is potential for the village to be expanded to serve the role of providing road based businesses such as trucking. The lots will have to be large enough to support onsite effluent disposal.

However, in order to assess the ability of the current services in each town, an audit of these should be carried out along with some consultation with the local residents. Once this has been done, there will need to be investigations carried out into the effluent disposal capability of the soils.

The village of Carroll is severely flood affected. There are a number of vacant lots south of Edwards Street which are located within the floodway. These lots should be rezoned to agriculture to limit the number of potential houses that can be constructed on them. This is in line with the Government's recently adopted Floodplain Development Manual – the management of flood liable land.

7.8 Village Enhancement

There is scope for the towns and villages of the Shire to be enhanced by the provision of funds to be used for local projects that could include urban design issues such as street furniture and localised signage as well as other village improvement matters. Such funding can be made available to communities based on discussions with the community as to what is needed. The local tradespeople and community can become involved in the construction and design of the improvements.

7.9 Biodiversity

It is noted in chapter 5 that the Council is legally obliged under the provisions of the Local Government Act to consider Ecologically Sustainable Development (ESD) in the carrying out of all functions in relation to the rural lands. It is noted that the Gunnedah LEP does not mention this and it should be amended to incorporate the concepts of ESD.

First of all there needs to be an assessment of the value of the biodiversity. Once this has been done the Council can consider the implementation of a number of policy options, which are as follows:

- A specific zone in a Local Environmental Plan (LEP).
- Provisions within a Development Control Plan (DCP).
- Identification of linkages.

- Incentives.

Each will be discussed as options to be considered. However, there is the potential to put an overlay over the areas of dense vegetation which have been identified in the land use survey to act as an initial step towards a more comprehensive biodiversity conservation mechanism.
However, it is acknowledged that the Council does not have sufficient information on the significance of the biodiversity as there has not yet been a biodiversity study of the Shire. Having regard to this, it is recommended that this matter not be dealt with in the current LEP but that it is considered in the next review of the LEP. In the interim, it is recommended that a biodiversity study be carried out to identify the most significant areas and those which are potentially threatened. It would be appropriate for such an assessment to be carried out by the Namoi CMA. The Council should focus on the areas that are likely to be developed in the interim. This includes the land in the current rural 1(b) and proposed Agricultural Landscape designation.

It should be pointed out that one mechanism alone will not achieve the desired end of preservation of biodiversity and that a combination of two, three or all four of the above mechanisms may be required.

7.9.1. Zone in LEP

A "Nature Conservation Zone" within an LEP could contain certain provisions that would ensure the preservation of significant habitats with identified biodiversity values. This zone could place restrictions on the clearing of land, and the uses that would be permissible to be carried out on such land. This could be seen as being a drastic step and could have a significant impact on the future use of the land. It would have to be backed up by a specific study of the area that would identify the land and its biodiversity value. The identification of land as a nature conservation zone could also be used as a requirement for some form of incentive scheme that will be discussed below. Such a zone is being proposed in the City of Shellharbour as part of its draft rural LEP.

An alternative way to conserve the biodiversity and not specifically zoning the land is to have a zone that reflects use or character of the land – Rural Landscape for example – and create an overlay hatching. This would be tied to a clause in the LEP that would have restrictions on the uses and activities that can be carried out on the land. This has the advantage of not creating a specific zone, but the disadvantage of not highlighting the biodiversity significance of the land in question.

The boundaries of these zones or hatchings need to recognise the topography and vegetation boundaries rather than merely following a cadastral (lot) boundary. The benefit of this approach is that it allows the land to be protected and the other land to be used for appropriate agricultural uses, rather than restricting a large part of land or allowing significant vegetation areas to be degraded by inappropriate land management practices.

7.9.2. Provisions in a DCP

Provisions within a Development Control Plan could provide specific details on the preservation of biodiversity within the area. This could include issues such as the

construction of fences, the proximity of buildings to native vegetation areas as well as clearing of land.

7.9.3. Habitat Linkages

It is noted that there are a number of existing habitat linkages within the Shire. The presence of these linkages provides the ability of wildlife to move between one area and another and therefore contribute to the preservation of biodiversity within the Shire and wider region. The conservation of biodiversity within the Shire is integral to the future of the rural land and the wildlife linkages therefore are also integral with any rural planning policy to be prepared. The identification and protection of these linkages via a LEP would be a mechanism and would also put the wildlife linkages in the context of the rural landuses within the whole of the Shire. There is also a need to provide some detail as to how these linkages can be preserved and maintained as well as identifying specific ones that may need to be enhanced. This can be done by way of specific provisions within a DCP.

7.9.4. Incentives

The provision of incentives for biodiversity conservation provides a good opportunity to conserve this important resource within the Shire. Financial incentives could be provided for people to conserve biodiversity on their property. The financial incentives could be by way of a rate rebate for people who have entered into an agreement with the Council to conserve and / or enhance a biodiversity corridor that has been identified. There would have to be a separate category for ecological significance and currently, there is no such categorisation in the Local Government Act. The only way that it could be applied at present would be through an environmental levy on all ratepayers that would include a component for biodiversity conservation. Once this has been collected, a financial assistance grant can be made under the provisions of section 356 of the Local Government Act. This is a complex way of achieving the outcome and it would be easier if there was to be an amendment to the act to insert a provision for a rating category for ecological significant land preservation. It would also be possible for the State Government to contribute to this, as the biodiversity resource is a Sydney regional and state significant one. For particular properties which have been identified as having potential for further development, it is possible that an incentive could be provided to the developer to gain a higher density for the conservation of specific parts of biodiversity or the provision of an enhancement of a biodiversity corridor. Such a scheme operates in the Hunter Valley Vineyards area of the Cessnock City Council where a density bonus is given for tourist accommodation in return for a planting of particular wildlife corridors.

There are significant policy and financial implications for the Council to consider if it is to embrace these. However, it should be discussed and considered.

7.10 Economic Development and Tourism

Economic development is an important component for the rural strategy. It is important to recognise the contribution of the existing rural economy to the Shire and the Council should take positive steps to encourage this. It can also provide policies that will allow them to expand.

To enable the economic development to occur, there is a need to review the policies dealing with development applications for such uses as tourist facilities, bed and breakfast establishments and other tourist accommodation uses.

The area produces a variety of produce which can be sold to the local residents as well as the tourist. This can be done through the establishment of farmers markets. Alternatively, promotion of the local produce can be done through specific events in Sydney, such as the Pyrmont and Fox Studios' Farmers Markets. These could be expanded. The Hawkesbury Harvest Farm Gate Trail concept could be modified and used, particularly during the Country Music Festival.

The Shire has a number of interesting and significant geological features and mineral occurrences which could be used as the basis for Geotourism, which incorporates the geological features as a key component for tourism. It is noted that the surrounding Shires have done this.

7.11 Social Sustainability

An integral component of ESD is social sustainability. Defining social sustainability has been the subject of considerable debate but has broadly focussed on ensuring *quality of life* or *community wellbeing.* It is considered as being achieved through a balance of economic, social and environmental issues resulting in a better *quality of life* for the existing and future community. The NSW Office of Social Policy (see Office of Social Policy, *Quality of Life - A Social Policy Approach*, July 1994) recommends that the following factors are integral to achieving this balance:

- *Social justice* needs such as equal access to education, health, welfare, personal safety, housing and broader community and cultural services and facilities
- *Economic development* particularly in terms of employment, quality of working life and personal economic situation
- *Environmental policy* related to the physical aspects of communities such as livability, community values and ecological sustainable development.

More recent work undertaken by Wills (2001) identifies seven key outcomes for achieving *quality of life* and *community wellbeing.* These focus on social/cultural, economic and environmental outcomes and are described as:

- *Livability* – natural and built environments for healthy and easy living
- *Equity* – equal opportunity for the development of human potential
- *Conviviality* – people living well together
- *Adequate prosperity* – consuming less but with sufficiency
- *Sustainability* – sufficient development without threatening viability
- *Viability* – remaining within the ecological limits and maintaining species diversity
- *Vitality* – resulting from activity, participation and interaction between people

For the rural areas of the Shire it is important to ensure that social sustainability is a key component of the strategic planning framework for this community. Quality of life and community wellbeing are key outcomes to be integrated into a holistic planning approach for this community. However, it should be pointed out that a lot of people

move to the rural areas for a lifestyle knowing that certain facilities and services are not there.

To be socially sustainable, the Rural Strategy should to address the issues raised above and provide adequate level of services in the rural areas for those residents.

Chapter 8: Strategy

8.1 Vision

A vision for the rural lands is:

> *Provide a context for sustainable rural living whilst recognising the importance of economic, social and environmental matters as well as the value of rural land for rural purposes.*

The preparation of a set of specific strategies for the rural areas will help to achieve the stated vision and strategy of the Council.

This vision can be achieved by the adoption of the growth management philosophy, development principles, objectives, implementation strategies and policy actions that have been provided in this document.

8.2 Growth Management Philosophy

Growth Management is the mechanism by which the growth of an area can be managed. It has to consider the rural and urban areas. The growth management philosophy for the rural lands must consider the broader policy framework of plans and policies affecting land use. It also must consider Ecologically Sustainable Development and Total Catchment Management.

The growth management philosophy for the Shire is as follows

- Limit expansion to those towns that have the capacity for growth;
- Provide for new rural residential development only where appropriate services can be provided and where environmental impacts can be minimised;
- Encourage a wide range of agricultural and other complimentary rural uses such as tourism having regard to environmental impact.
- Encourage and promote a diverse range of agricultural and other rural uses; and
- Embody the concepts of
    - Ecologically Sustainable Development
    - Total Catchment Management, including the Actions in the Namoi Valley Catchment Blueprint

8.3 Conservation and Development Principles

When considering the preparation of a strategy for the future of the rural lands, it is necessary to outline a series of principles under which development should take place.

These are intended to be used by Council when it is considering development applications and proposals for the rezoning of land. They are set out below.

Growth Management

- Embody the concepts of Ecologically Sustainable Development;
- Provide a choice of living opportunities and types of settlement;
- Establish and adhere to a settlement hierarchy;
- Limit expansion to those villages that have the capacity for growth;
- Avoid development in areas of conservation significance;

Land Use Planning

- Develop a land use framework that provides certainty for the residents;
- Allow for there to be flexibility in the implementation of land use policies;
- Ensure that there is sufficient land stocks to meet the residential and rural residential needs of the community;
- Establish a retail hierarchy that retains the regional significance Tamworth whilst allowing for appropriate levels of retail use in other centres in accordance with the settlement hierarchy;

Community Services and Quality of Life

- Ensure that settlements have access to an appropriate level of community services and facilities

Economic Growth

- Provide for a diversity of employment opportunities which capitalise on the economic strengths of the Gunnedah Shire;
- Develop strategies to retain the existing businesses;
- Ensure that the current diversity of economic activity continues;
- Build on the industry sectors that have been identified as the drivers of the future economy;
- Encourage a wide range of agricultural and other complimentary rural uses such as tourism having regard to environmental impact;
- Target job opportunities and education that allows for the retention of young people in the community;

Infrastructure

- Ensure that there is appropriate infrastructure provided to the towns and villages as outlined in the settlement hierarchy;
- Plan for population growth to minimise the impact of development on the road system;
- Ensure that where necessary, adequate upgrading of roads, recreation and community facilities occurs in association with development;
- Coordinate with the relevant Government Authorities to ensure provision of Police, Ambulance, Health and Education services and facilities in association with development;

Water Catchments

- Embody the concept of Total Catchment Management, including the actions in the Namoi River Catchment Blueprint
- Protect the water quality of the Namoi and Mooki Rivers as well as Cox's Creek and their tributaries;
- Where possible, improve the water quality of rivers, creeks and other waterbodies;

Ecological Management and Biodiversity

- Enhance and maintain the ecological integrity of the Shire
- Protect and conserve the biodiversity of the region
- Ensure that habitat of flora and fauna is conserved

Scenic Landscapes

- Protect the integrity of both modified and natural landscapes
- Ensure that development has regard to the natural values and features;

Heritage

- Preserve the heritage and culture of Gunnedah Shire

Natural Hazards

- Recognise the impact of natural hazards on the future settlement pattern and rural land uses.

8.4 Strategies

The strategies listed below outline the matters that need to be considered when looking at the future of the rural lands of Gunnedah Shire. They incorporate objectives, implementation strategies and policy actions.

The strategies have been grouped into the two categories outlined in Chapter 5 and are as follows:

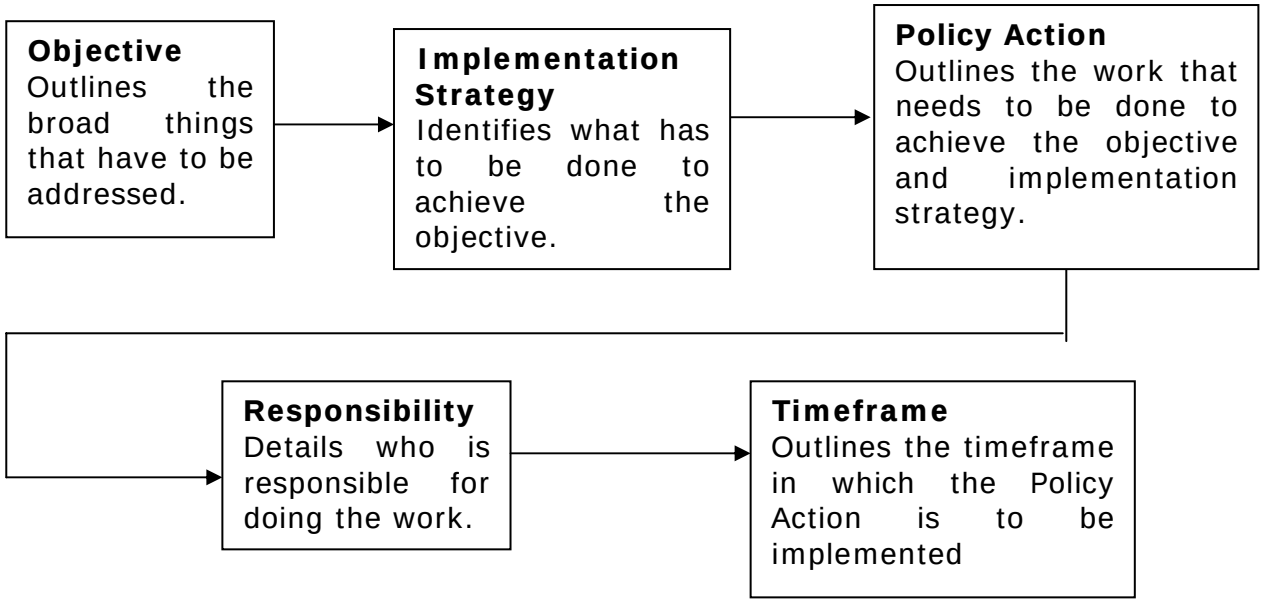
Social and Economic Factors	Environmental Opportunities and Constraints
▪ Growth Management	▪ Water Catchments
▪ Land Use Planning	▪ Ecological Management and Biodiversity
▪ Community Services and Quality of Life	▪ Scenic Landscapes
▪ Economic Growth	▪ Heritage and Culture
▪ Infrastructure	▪ Natural Hazards

The implementation strategies contained in this section expand on the objectives and state how they are to be achieved and point towards the policy and actions that are required to carry out the strategy. The policy actions outline the detail of the strategies and provide an indication of what work is required.

This section is laid out so that it is easy to identify what actions are required for the strategies which are outlined. The following chart shows how it is to be read.

The timeframe has been selected to allow them to be built into the State and Local political processes and are broken into three sections:

- *short term* which is nought to two years,
- *medium term* which is two five years, and
- *long-term* which is five years and beyond.



8.5 Social and Economic Factors

8.5.1. Growth Management

Objective: Provide for coordinated and effective and sustainable growth the economic, social and environmental aspects of the rural area.

Implementation Strategy	*Policy Action*	*Responsibility*	*Time-frame*
1. Promote a balanced approach to growth that provides for sustainable growth management.	1.1 Adopt the growth management philosophy outlined in section 8.3 of this document and which is shown on Map 7.3	Council	Short term and ongoing
2. Prepare a hierarchy of settlements.	2.1 Adopt the settlement hierarchy outlined in section 7.6 of this document and as outlined below: *Regional Centre* Tamworth *Town* Gunnedah *Villages* Breeza, Carroll, Curlewis and Tambar Springs *Rural Centres* Kelvin and Willala 2.2 Allow for the growth and future development of the town of Gunnedah, 2.3 Allow for the growth and future development of the villages within the existing zoned boundaries. 2.4 Provide a mix of housing opportunities which includes urban, rural residential surrounding specified settlements and farm housing. 2.5 Allow for the growth of certain villages provided that the particular constraints can be overcome.	Council and Government Agencies	Short to medium term

Implementation Strategy	*Policy Action*	*Responsibility*	*Time-frame*
3. Provide for the economic, social and cultural growth and in particular, maintain and enhance rural job opportunities.	3.1 Prepare Strategies for the economic and social growth in Gunnedah Shire.		
4. Ensure that land is released in an effective and efficient manner.	4.1 Prepare a land release monitor for residential and rural residential land.	Council and Government Agencies	Short to medium term

8.5.2. Land Use Planning

Objective: Develop a land use framework that will give a level of certainty to the people who live in the Gunnedah Shire

Implementation Strategy	*Policy Action*	*Responsibility*	*Time-frame*
1. Develop a new suite of land use designations.	1.1. Adopt the following land use designations as outlined on map 7.3: ▪ Primary Production ▪ Forestry ▪ Rural Small Holdings ▪ Large Lot Residential ▪ Village 1.2 Prepare a draft LEP to formalise these as statutory zones.	Council and DIPNR	Short term
2. Include in each land use designation a set of desired future character statements which will provide the basis for the objectives of each zone.	2.1. Prepare a set of desired future character statements for each of the land use designations which address the matters outlined in section 7.4.3.	Council	Short term
3. Identify minimum lot sizes that will enable the continuation of the use.	3.1. Adopt the following lot size minimum for the corresponding land use designation: ▪ Primary Production 600 ha ▪ Rural Small Holdings 10 ha ▪ Large Lot Residential 6,000 m^2 average of 1.2 ha	Council	Short term
4. Ensure that there is adequate provision for tourist facilities	4.1. Provide for tourist accommodation and resort style development and for small-scale bed and breakfast accommodation and tourism activities in Rural		

Implementation Strategy	*Policy Action*	*Responsibility*	*Time-frame*
	zonings which are consistent with the environment capacity of the area		
5. Prepare management guidelines for land uses in rural areas.	5.1. Prepare a Development Control Plan to provide effective and appropriate land use management guidelines for rural land.	Council	Short term

8.5.3. Community Services and Quality of Life

Objective: Ensure that residents have adequate access to and equity for the provision of services and facilities.

Implementation Strategy	*Policy Action*	*Responsibility*	*Time-frame*
1 Assess the adequacy of the services and facilities provided to the people who live in Gunnedah Shire.	1.1 Carry out a survey and consultation program with the people living in rural areas to ascertain their needs. This is to be done in conjunction with the Social Plan.	Council and State Government	Short to medium term
2 Ensure that there is adequate levels of service for senior living developments	2.1 Prepare a strategy to provide for seniors living facilities.		
3 Improve the delivery of services and facilities to provide for an adequate quality of life for the residents	3.1 Improve the amount of aged accommodation, public transport, youth employment opportunities.		
4 Recognise and support the cultural diversity of Gunnedah Shire .	4.1 Develop plans to ensure that the cultural diversity of the Gunnedah Shire is preserved and fostered.	Council, State and Federal Government and Community	Short to medium term
5 Monitor the provision of services and facilities for the people who live in rural areas to ensure that they are receiving adequate level of service.	5.1 Prepare a set of Quality of life indicators which can be measured and used to assess the level of service provided to the people of rural areas. This is to be done in conjunction with the Social Plan.	Council and State Government	Short to medium term

8.5.4. Economic and Employment Opportunities

Objective: To provide for economic development opportunities that is in keeping with the character of Gunnedah Shire

1	Prepare an Economic Development Strategy for the Shire	1.1	Focus economic development on the key sectors of Retial, Tourism, Industrial use, Mining and Agriculture.	
2	Collaborate with local organisations to develop a plan for the future economic prosperity of the Shire	2.1	Liaise with the Gunnedah Development Board to identify common issues that can be pursued together	
3	Continue to promote and support the existing businesses	3.1	In conjunction with Regional Business Enterprise services, Chambers of Commerce and Progress Associations advise the existing businesses of relevant opportunities and provide updates on best business practices, funding opportunities, etc.	Council, and Government Agencies

8.5.5. Infrastructure Requirements

Objective: Provide an adequate level of infrastructure for the people who live and work in the Gunnedah Shire.

Implementation Strategy	*Policy Action*	*Responsibility*	*Time-frame*
1 Provide adequate levels of service for public transport	1.1 Prepare a strategy to provide public transport between the villages of the Shire and Gunnedah as well as Tamworth and Sydney 1.2 Encourage the use of busses, trains and airlines.	Council	
2 Provide development only in areas that have adequate road access	2.1 Prepare a plan to ensure that there is adequate levels of access to each of the towns in the settlement hierarchy	Council	
3 Ensure that there is adequate provision of reticulate water for those villages that are to be expanded	3.1 Carry out investigations into the capacity of water provision for the villages of Curlewis and Mullaley	Council	
4 Ensure that the most appropriate sewage disposal system is provided for all land in the rural areas	4.1 Adopt a policy of not permitting any new subdivision of rural land for rural residential development of less than 1 ha unless it can be connected to a reticulated sewerage system.	Council	Short to medium term
5 Ensure that there are adequate Community facilities to house the required level of social services.	5.1 Develop and implement action plans for the rural villages and centres to ensure that the appropriate levels of infrastructure are provided.	Council and Government Agencies	Short to medium term
6 Ensure that Recreation facilities are adequate to serve the needs of the residents of rural areas.	6.1 Develop and implement action plans for the rural villages and centres to ensure that the appropriate levels of infrastructure are provided.	Council and Government Agencies	Short to medium term

8.6 Environmental Opportunities and Constraints

8.6.1. Water Catchments

Objective: To ensure that the quality of surrounding waterways is not adversely affected by development.

Implementation Strategy	*Policy Action*		*Responsibility*	*Time-frame*
1. Consider the cumulative impact of development on the catchment.	1.1	Establish a set of Catchment Health Indicators by which the cumulative impact of development can be measured and managed. This is to be done in conjunction with the State of the Environment Reporting.	Council and, DIPNR & DEC	Short Term
2. Ensure development does not increase the sedimentation load in surrounding water bodies.	2.1	All development is to utilise best management practices for soil and water management on the site.	Council	On-going
3. Ensure new development is located so it does not have a detrimental impact on nearby watercourses.	3.1	All development to be located an appropriate distance from waterways and develop means of protecting riparian zones.	Council	On-going
4. Ensure Domestic and other forms of Effluent Disposal does not have a detrimental impact on water quality.	4.1	On-site effluent disposal is to be in accordance with a DCP dealing with On-site Sewage Management and the NSW Environment and Health Protection Guidelines for On-site Sewage Management for Single Households.	Council	On-going

8.6.2. Ecological Management and Biodiversity

Objective: To ensure that the ecological integrity of the rural lands are enhanced and maintained.

Implementation Strategy	*Policy Action*	*Responsibility*	*Time-frame*
1 Recognise and understand the biodiversity values of rural lands.	1.1 Prepare plans linking core areas of remnant vegetation to facilitate species migration. 1.2 Establish a land use and management approach consistent with State, regional, local biodiversity goals, including Regional Vegetation Management Plans and Catchment Blueprints 1.3 Consider the implementation of environment protection zones and other measures to protect significant biodiversity areas.	Council and Government Agencies in partnership with the community	Short term and ongoing
2 Preserve the existing biodiversity habitat on private lands throughout rural areas.	2.1 Identify and protect significant linkages of native vegetation.	Council	Short term
3 Encourage the State Government to continue to investigate and identify the biodiversity values of Gunnedah Shire	3.1 Implement actions in the NSW Government Biodiversity Strategy and Australian Local Government Biodiversity Strategy that have identified Gunnedah Council as a lead organisation.	Council and Government Agencies in partnership with the community	Short term and ongoing
4 Increase awareness and involvement in identifying, protecting and enhancing biodiversity.	Prepare guidelines for tree / vegetation evaluation including use of the 7 part test for significance under the provisions of the Threatened Species Conservation Act (for DA Assessment).	Council and Government Agencies	Short term and ongoing

8.6.3. Scenic and Landscape

Objective: Ensure that development has a minimal impact on the natural and modified scenid landscape of Gunnedah Shire

Implementation Strategy	*Policy Action*	*Responsibility*	*Time-frame*
1 Incorporate the preservation of landscape into a development control plan for rural areas.	1.1 Ensure that dwelling houses and outbuildings in rural areas are classified as local development under the provisions of the Environmental Planning and Assessment Act. 1.2 Develop guidelines for the siting and design of buildings in the rural landscape.	Council	Short term and ongoing

8.6.4. Heritage and Culture

Objective: To preserve the rural heritage and culture of Gunnedah Shire.

Implementation Strategy	*Policy Action*	*Responsibility*	*Time-frame*
1. Ensure that the heritage resources of Gunnedah Shire are protected	1.1 Implement the Heritage Study.		
2. Protect and enhance the recognised heritage values.	1.2 Prepare guidelines to ensure that the heritage values of the landscape are preserved and not harmed by development and incorporate these into a LEP and / or DCP.	Council	Short term
3. Identify the Aboriginal Heritage significance of Gunnedah Shire	1.3 Carry out an assessment of the Aboriginal Heritage of the Shire, in consultation with local Aboriginal groups, with the aim to prepare planning guidelines to ensure that it is protected.		
4. Promote and support the rural culture of the Shire	1.4 Publish information on heritage items and include in community and tourist information 1.5 Support cultural and tourist activities which promote rural heritage eg local shows, agricultural days, heritage tourist trails etc	Council	Short term
5. Provide incentives to protect the heritage values.	1.6 Encourage landowners to carry out a heritage curtilage study and conservation plans of historic homesteads including homestead gardens.	Council	

8.6.5. Natural Hazards

Objective: Recognise the impact of natural hazards on future land use and settlement.

Implementation Strategy	*Policy Action*	*Responsibility*	*Time-frame*
1. Ensure bush fire risk is considered in all future settlement areas.	1.1 Ensure that all future rezoning of land adheres to the principles of Planning for Bushfires 2001. 1.2 Provide information on the Bushfire regulations covering Gunnedah Shire. 1.3 Provide information on the Emergency Services Disaster Management and Response Plan.	Council and Government Agencies	Short term
2. Ensure that land degradation is minimised.	2.1 Do not allow development to occur on land where vegetation clearing will result in unacceptable levels of erosion. 2.2 Ensure developers and residents are aware of best land management practices for maintenance of ground cover and thus minimising erosion.	Council and Government Agencies	
3. Minimise the potential salinity to cause a hazard	3.1 Liaise with the Namoi Valley Catchment Management Authority	Council and Government Agencies	
4. Identify the flooding of land as a constraint to future development.	4.1 Implement the findings of the Floodplain Management Plan for the Namoi and Mooki Rivers 4.2 Ensure that localised flooding is taken into account when assessing DAs for dwellings that have access over watercourses. 4.3 Identify flood prone lands within the Shire and particularly those areas where flooding poses a significant risk to new development or productive land management.	Council and Government Agencies	

Implementation Strategy	*Policy Action*	*Responsibility*	*Time-frame*
	4.4 Identify areas where flooding could be exacerbated by inappropriate development in the locality or upstream. 4.5 Provide information on the Emergency Services Disaster Management and Response Plan.		

Chapter 9: Conclusion

The rural lands of Gunnedah Shire are an important component of the Shire. They provide both a productive economy as well as a scenic rural landscape which attracts a large number of people to the area to live in the urban and rural environments.

There is a need to plan for the future of the Shire's rural lands to ensure that they are conserved for future generations and so that the environmental, social and economic issues can all be addressed to achieve a balanced and sustainable future.

This document has outlined the existing situation with regards to the physical, social and economic environment of the Gunnedah Shire. It has discussed the following as it relates to the Shire:

- The variety of physical, social and economic features of the Shire
- The planning policy framework;
- The existing development pattern; and
- Ecologically Sustainable Development;
- The environmental opportunities and constraints as well as the social and economic factors that have to be taken into consideration when considering the future of the Shire.

A growth management philosophy has been outlined which reinforces the desire to remain sustainable. A set of development principles have been prepared to guide future development to ensure that it achieves the balance between a productive economy, social sustainability and minimising environmental impacts. The strategies prepared canvas the areas of social and economic factors and environmental opportunities and constraints within the local government area.

It is now necessary for the Council to implement the strategies outlined in this document so that development in the rural areas can be sustainable into the future and the rural lands continue to make a positive contribution to the identity and social, environmental and economic sustainability of Gunnedah Shire.

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Appendix 1: Brief

GUNNEDAH RURAL LANDS STUDY AND STRATEGY	
Specific Aims	• To identify suitable locations to be included in the Rural 1(a) and Rural 1(b) zone of the Draft Gunnedah Local Environmental Plan, 2004 • To identify appropriate areas within the Rural 1(a) zone which may be suitable for further subdivision and potential closer settlement. • To provide outcomes formulating appropriate strategic planning provisions in the Rural 1(a) and Rural 1(b) zoned land. • To consider strategic implications in the Rural 1(a) zone of relaxation of the 'Existing Holding' provisions. • To examine the current settlement patterns in the Rural 1(a) and Rural 1(b) zone • To examine the land management units in relation to good quality agricultural land. • To consult stakeholders in the decision making process. • To examine the implications of fragmentation of agricultural land.
Study Area	• The Study area shall comprise the sections of the LGA zoned Rural 1(a) and Rural 1(b) under Gunnedah LEP 1998.
Project Plan and Timing:	
The Study will be completed within 12 weeks of the appointment of a consultancy	
Project Plan/Tasks	
Task 1: Project Initiation Initial meeting with relevant Council officers to: • Define the major issues concerning the future development of the rural zoned land in the Gunnedah Shire; and • Identify key stakeholders	

Task 2: Literature Review and available information

- Review studies and research LEP's, including:
  - Gunnedah Local Environmental Study 1982
  - Gunnedah Local Environment Plan, 1986
  - Gunnedah Local Environmental Plan, 1998
  - Gunnedah Local Environmental Study, 2004
  - Analysis for the supply and demand of land in rural areas comprising the Rural 1(a) and Rural 1(b) zones.
  - Analysis of the current and historical transfer of ownership details of rural holdings
  - Analysis of the historical settlement patterns within the Rural zones
  - Analysis of the infrastructure constraints on lots within the Rural 1(a) zone under 200ha
  - Analysis of the location and quantity of separate titles falling within the 'Existing Holding' provisions which do not sustain a dwelling.
  - Analysis of current and future subdivision potential within the Rural 1(b) zone.
- Refine key issues and elements, and
- Identify knowledge gaps

Task 3: Rural Analysis

- Undertake a land use survey of the Study Area using statistical research, field work and aerial photography; and
- Undertake analysis of information to assist in identifying opportunities and constraints to development within the Study Area. The analysis to include consideration of relevant matters including:
  - Existing and potential sustainable agricultural enterprises,
  - Any places, buildings and landscapes with recognised cultural heritage significance,
  - Topography and landform
  - Natural Resources Land Management Units
  - The management and conservation of surface and groundwater resources and natural vegetation/ fauna habitats.
  - The location and capability of existing physical infrastructure
  - Suitability of areas for on-site effluent disposal
  - Identifying any appropriate non-agricultural uses within the Rural zones
  - Potential landuse conflict between existing and potential agricultural enterprises and smaller rural blocks under 200ha; and
- Consult with relevant stakeholders such as NSW Department of Agriculture, Liverpool Plains Land Catchment Committee, Local Rural Property Owners, Local Real Estate Agents, Department of Infrastructure, Planning and Natural Resources and the Gunnedah & District Development Board.

Task 4: Finalise Rural Lands Study

- Determine the physical, environmental and infrastructure constraints and opportunities for development following on from the rural analysis
- Consider the issue of equity for landowners excluded from building on rural allotments under 200ha due to the provisions of the current LEP.
- Make recommendations regarding the appropriate management and development of land within the Study Area with sufficient detail to enable the recommendations to be reflected in the Rural Lands Strategy Draft.

Task 5: Prepare Gunnedah Rural Lands Strategy • Submit draft Strategy to Council for review with sufficient detail to allow recommendations to be considered for incorporation into the Draft Gunnedah LEP. • Conduct workshop with key stakeholders to discuss recommendations of the Study
Task 6 – Confirm and Present Final Strategy • Modify the Strategy to incorporate comments from the review, and • Present the final Strategy to Council

Appendix 2: Land Use Survey Methodology

A major component of this study has been a land use survey of all of the land within the rural parts of the Shire. The purpose of the land use survey is to gain an indication of the land use trends.

The preparation of a land use survey is one of the most important components when zoning rural land. Each parcel of land within the rural lands has been inspected and given a land use designation. This has been entered into Council's Property Information database and mapped using a GIS.

The first step was to identify a set of spatial boundaries which would form the basic level of data representation. The geographical localities were used. This has two benefits, the first being that the area is generally mapped and can be identified easily and secondly it is easier for the public to understand the data once it has been collected and published.

The next step is to identify the categorisation of the land uses to be surveyed. The land use has been categorised into primary and secondary land use categories. The primary land use categories are as follows:

- Rural Residential
- Intensive Plants
- Intensive Animals
- Extensive Agriculture
- Vacant
- Commercial
- Extractive industry
- Public Use
- Village
- Native Vegetation

Definitions of each use which were used for the purpose of identifying the land uses are as follows:

- *Rural Residential* means a house on a lot that is greater than 1 ha generally, and is in a rural environment where the main source of income is from other sources than agriculture use of the land.
- *Intensive Plants* means the growing of vegetables and ornamental plants for commercial gain using the application of irrigated water and includes market gardening, protected cropping structures, orchards, vineyards, and other similar uses.
- *Intensive Animals* means the rearing of animals using a feeding method other than natural grazing and includes poultry and piggeries mainly.
- *Extensive Agriculture* means the growing of plants using natural rainfall or the rearing of animals using grazing as a feeding method. It also includes the growing of fodder crops and irrigated pasture.
- *Vacant* land is land that is mostly cleared of native vegetation and which does not have any dwellings or other structures on it.
- *Commercial* uses are uses that are used for a commercial or industrial type of use and which do not have any dwellings associated with them.
- *Extractive Industry* means a use that extracts material from the land and includes sand and clay mining and quarrying of sandstone and other stones.

- *Public Uses* mean a use that is commonly used and or operated by a public authority or associated body. It includes community facilities, golf courses and Government owned uses of the land
- *Village* includes a cluster of houses on small lots in the range of less than 1000 m^2 and up to 4000 m^2 and which have a general store or other commercial uses in close proximity
- *Native Vegetation* means a lot that has no dwellings or structures on it and which has the majority of the land covered in native vegetation.

The detailed categorisation is presented in the following table:

LAND USE SURVEY CODES

PRIMARY		SECONDARY	
Description	**Code**	**Description**	**Code**
Rural Residential	RR	Dwelling	DW
Vacant	VA	Cleared Land	CL
Native Vegetation	NV	National Park	NP
		Private Land	PR
		Public Reserve	PC
		State Forest	SF
Intensive Plants	IP	Irrigated	IR
		Olive	OL
Intensive Animals	IA	Cattle Feedlots	CF
		Piggery	PG
		Poultry	PO
Commercial	CO	Airstrip	AS
		Auto Electrician	AE
		Coal Loader	CL
		Cotton Gin	GN
		Crematorium	CR
		Fertiliser Sales	FS
		Manufacturing	MF
		Petrol Station	PS
		Truck	TR
Urban	UR	Town Gunnedah	TG
		Village – Breeza	VB
		Village - Carroll	VC
		Village – Curlewis	VL
Extractive Industry	EI	Coal	CM

PRIMARY		SECONDARY	
Extensive Agriculture	EA	Cropping and Grazing	CG
Public Use	PU	Aged Housing	AH
		Airport	AP
		Agquip	AQ
		Cemetery	CE
		Church	CH
		Council Depot	CD
		Crown Land	CL
		Electricity	EL
		Grain Silo	GS
		Hall	HL
		Lake	LK
		Playing Fields	PF
		Radio Mast	RM
		Race Course	RC
		Rifle Range	RL
		Research Station	RS
		Showground	SG
		Speedway	SW
		Telstra	TL
		Waste Disposal	WD
		Water & Sewerage	WS

There are 3 components to the carrying out of the land use survey as follows:

- Preliminary identification of land use.
- Study area inspection.
- Data entry and mapping.

Preliminary identification of land use occurred in the office prior to the field inspection. Aerial photography and satellite imagery was used to identify the land use. The major things to be picked out are extensive Agriculture, intensive plants, dwellings on small lots, vacant land, lots which are totally covered with native vegetation, and extractive industries. Dwelling locations for the rural land was obtained from the 1:25,000 topographic maps. Only one major land use was identified. An assumption can be made that a dwelling house rural residential uses except where they are vacant. An assumption was also made that lots less than 100 ha which did not have an intensive agricultural or commercial, industry, public or government use were rural residential.

This information was entered into the Geographical Information System (GIS) using the coding that has been identified for the primary and secondary land uses. Maps were produced using MapInfo GIS software.

The study area inspection was carried out by windscreen survey of all of the roads within the rural parts of the Shire. This was done to check the primary land use categories and also to enter secondary ones that could not be identified from the

aerial photos. As each road is driven on the land use is clarified against the preliminary identification. Signage, which gives an indication that the property may be use for a secondary use such as a home business or a commercial use was also noted.

The data from the field survey was entered into the GIS and the new mapping and databases were produced.

Appendix 3: Community Workshop Outcomes

Gunnedah Rural Strategy
Community Workshop Outcomes

The information provided below is the outcomes of the Community Workshop held for the Gunnedah Rural Strategy. It was held on Thursday 23 June in Gunnedah. It is a record of the information provided by the community in response to the questions provided.

Vision

Do you want to see more economic development, if so, what types?

- Yes.
- Value-added industries for agricultural commodities, intensive primary industries, viticulture, tree plantations, orchards, vegetables, tourism, paper mill, ethanol plant. No prison, small to light industry. backpacker hostel,. School to teach foreigners English.

Do you want to preserve good quality agricultural land?

- Yes that we don't have negative impact on excepted farming practices.

Where do you want to see rural residential development?

- Villages. Less productive land within the reaches of the town's infrastructure.

Are there any services or facilities that you need in your area?

- Better roads and transport infrastructure
- communications and broadband.
- Better policing and services. Services surrounding towns.
- Medical doctors.
- Support schools and education.

Are there any environmental attributes that should be conserved? What are they?

- No skyline developments.
- preservation of integrity of flood plains.
- Decontamination of abattoir site.

What types of future land uses would you like to see in your area?

- Use of recreational areas without onerous insurance demands.
- Motor tyre disposal storage - disused quarries.
- Preservation of genuine culturally significant sites. Aboriginal sites and historical

Are there any uses that you don't want in your area? Which ones?

- Gaol. Nuclear waste facilities

Actions

What actions can you as a community member do to achieve your vision for the future?

- Community members and organisations from across the Shire meeting individually then together to discuss and formulate ideas and concerns.
- Have a 24 hour library and cafe to serve the community.
- Provide a drinking water fountain for centre link in the service each brains basic need-water. ???
- And positive acknowledgement of local children and people of all ages and workers.
- Nurture community.
- Have sister cities for bush towns in modern countries and Third World countries to work with them and share knowledge.
- Living takes teamwork.

What should the Council and State Government do to achieve your vision for the future?

- The State Government should be more attentive of Local Government concerns and desires.
- Decentralise Government authorities and essential services.

Vision

Do you want to see more economic development, if so, what types?

- Productive-all ages-training facilities example universities and hospitals.
- Secondary industries examples silo building and mechanical repairs for retirement and tourism. Relating to agriculture. Meat processing. Not at the cost of our lifestyle.
- Coal development.

Do you want to preserve good quality agricultural land?

- Yes.
- Flexibility in zoning and flexibility in sizes. Responsible productive sustainable use of land. Freedom to choose.

Where do you want to see rural residential development?

- Suitable areas only with sufficient facilities available.
- Away from flood area.
- Lighter soils.

Are there any services or facilities that you need in your area?

- Increased medical facilities.
- Better Internet and mobile phone coverage.
- Allow secondary students to complete education in outlying areas example Tambar Springs, Curlews, Carroll via technology.

- Public transport and community transport.
- Tertiary/training at hospitals and apprentices.
- Sealed roads.
- Rail services.
- The police.
- No prison
- Yes prison.

Are there any environmental attributes that should be conserved? What are they?

- Wondabah forest preserved for recreation.
- Water quality.
- Biodiversity.
- Native animals and flora.
- Soil preservation.

What types of future land uses would you like to see in your area?

- Permaculture.
- Organic.
- Lifestyle blocks.
- Intensive agriculture which is sustainable and viable.

Are there any uses that you don't want in your area? Which ones?

Monopolisation of industry
Toxic waste.
Hazardous industries.
No restriction to legal sustainable agricultural production.

Actions

What actions can you as a community member do to achieve your vision for the future?

- Attend workshops.
- Support community members.
- Encourage initiative.
- Ability to make submissions in the draft planning process.
- Communicate with Council.
- Encourage economic activity and decentralisation.

What should the Council and State Government do to achieve your vision for the future?

- Communicate with community.
- Funding community projects/sustainable.
- Plan future development.
- Support rural primary production/secondary industry.
- Reverse centralisation processes with incentives to develop industry services in the rural area.

Vision

Do you want to see more economic development, if so, what types?

- Yes.
- Private abattoir with value adding.
- Col mining development.
- Gaol.
- Truck stop / rest area.
- Light industry.
- Ethanol plant.

Do you want to preserve good quality agricultural land?

- Yes.
- Preservation of economic base in Shire.

Where do you want to see rural residential development?

- Not on floodplain for prime agricultural land.
- Grouped, that is not isolated development.
- Keep pace with urban sprawl.

Are there any services or facilities that you need in your area?

- More public transport within Shire and to Sydney, etc.
- Better roads - more tarring of rural roads.
- More regular grading of gravel roads.
- Wider roads.

Are there any environmental attributes that should be conserved? What are they?

- Water quality - underground and surface.
- Timber.
- Native grasses.
- Open nature of townships - not over cluttered.

What types of future land uses would you like to see in your area?

- Nursery for growing native grasses.
- Market driving it, but has to be sustainable.

Are there any uses that you don't want in your area? Which ones?

- Nuclear waste deposits.
- Rural areas used for metro waste disposal.
- Don't want prime land usage for mining and development.
- Over planting of trees.
- Ribbon development.

Actions

What actions can you as a community member do to achieve your vision for the future?

- Involve the whole community and encourage them with rural industries.
- Be passionate and determined to see your vision through.
- Do your home work on pros and cons and cost of vision-benefits, etc.
- Community supporting community gets other people interested.
- Talk to the decision makers or people that can open doors.
- See what other people are doing.

What should the Council and State Government do to achieve your vision for the future?

- Business incubating.
- Rate relief schemes.
- Be pro-active that is target an industry we can service and support and actively pursue not just knee jerk.
- Be open to new ideas and a willingness to try things and spend money to make some.

Vision

Do you want to see more economic development, if so, what types?

- Yes increased population.
- Cleanup existing failed development.
- Encourage industry.
- Plantation forest.
- Encourage industry example: ethanol, vegetable industry - fresh and frozen processed and tourism and festivals.

Do you want to preserve good quality agricultural land?

- Yes

Where do you want to see rural residential development?

- Only on marginal land which is nonviable, flood free. Existing holdings may have a residential building permit.

Are there any services or facilities that you need in your area?

- Ag. College / university.
- Increased medical services (24 hours) mental health stand alone.
- Extend town water area.
- 24 hour police Station.
- Bitumen roads.
- Garbage.
- Fix the clock.
- Increased aged facilities

Are there any environmental attributes that should be conserved? What are they?

- Water tank (hundred percent).
- Housing development and existing.

What types of future land uses would you like to see in your area?

- Wind power/solar.
- Appropriate zoning will help determine appropriate use of the land.

Are there any uses that you don't want in your area? Which ones?

- Lobby local planning authorities, community to gain community support.
- Lobby State Government authorities.
- Encourage development-work together for the best practice results.

Actions

What actions can you as a community member do to achieve your vision for the future?

- Lobby local planning authorities, community to gain community support.
- Lobby State Government authorities.
- Encourage development-work together for the best practice results.

What should the Council and State Government do to achieve your vision for the future?

- Transport upgrade and competition in the air services.
- Revise zoning.
- State Government stop locking up forest for political gain.
- Startup incentives for businesses.
- Implemented water plan (sharing and conservation).
- Advertise Shire as desirable area.
- Packages available.
- Local Government encourage suppliers to reduce cars or services etc.
- Cut and assist in reducing red tape. Fast track development.
- Finance departments to be accountable for their decisions.

Vision

Do you want to see more economic development, if so, what types?

- Ethanol, power station, manufacturing, abattoir, mining, gas.

Do you want to preserve good quality agricultural land?

- Yes. Broad acre grazing and intensive.

Where do you want to see rural residential development?

- Within 10 kilometres from town. Tar roads.
- Sustainable water. Low quality soils (class four and five agricultural suitability).

Are there any services or facilities that you need in your area?

- Medical services.
- Upgrade phone services to Sydney services.
- Rail services.

Are there any environmental attributes that should be conserved? What are they?

- Freedom to farm.
- Sustainable water use.
- Conservation of waterways and trees.
- Attention to floodplains.
- Conservation of floodplains and drainage

What types of future land uses would you like to see in your area?

- Conservation of agriculture.
- Intensification of agriculture.

Are there any uses that you don't want in your area? Which ones?

- Subdivision far from Gunnedah.
- Intensive feedlots close to town.
- Gaol.
- Pollution.

Actions

What actions can you as a community member do to achieve your vision for the future?

- Input into Council meetings.
- Lobby Councillors and politicians.
- Work with community groups.
- Form community groups.
- Be pro-active not reactive.

What should the Council and State Government do to achieve your vision for the future?

- Listen to those who elected them.
- Be more cooperative to those who wish to set up or expand their businesses in Gunnedah.
- Be pro-active not reactive.
- Be more cooperative with groups when they do come to town. Communication.
- Be realistic don't promote development based on assumptions.

- Survey existing businesses to see their opinion on how they have been treated

Vision

Do you want to see more economic development, if so, what types?

- Slaughterhouse.
- Niche businesses example olive processing involving locals as well as out-of-town.
- Events.
- Manufacturing.
- Return of Government services.

Do you want to preserve good quality agricultural land?

- Yes. To feed the nation.

Where do you want to see rural residential development?

- None.
- On marginal/low value land. Because of loss of productive land.
- Attention to water supplies.
- 1 to 20 acre block in 10 to 20 kilometre radius of town.

Are there any services or facilities that you need in your area?

- Doctors and professionals (dentists).
- Teachers.
- Increased trade.
- Law enforcement.
- Pub hours are too late and create antisocial behaviour.

Are there any environmental attributes that should be conserved? What are they?

- State forests.
- Water-ground water use no TF licenses sold off the farm that is not allotted to.
- Clearing controls.

What types of future land uses would you like to see in your area?

- Traditional agriculture and diversity.
- Market gardens.
- Cut flowers example Eucalyptus.

Are there any uses that you don't want in your area? Which ones?

- Nuclear dump.
- Drugs (cocaine, etc.)
- 100 acre lots.

Actions

-

- GDDB coordinate. Need support for business, Council and community.
- Paid coordinator. Performance required.
- Pull in community groups, sporting groups, service clubs.
- Councillors get out to these groups.
- Ensure that all reports/decisions do not gather dust.
- Reinstate services.
- Make realistic decisions on forest logging and groundwater.
- Grants for projects.
- Process development applications more quickly.
- Encourage development applications.

Vision

Do you want to see more economic development, if so, what types?

- Yes.
- Value adding to present production. Agricultural niche markets.
- Mining and coal - a power station?
- Tourism-food and wine trails, ecotourism, rural experiences, bridging the gap between city and country.
- Ethanol plant.

Do you want to preserve good quality agricultural land?

- Land of all agricultural types (classes) are all important and have a role to play.
- Not necessarily quality agricultural land.

Where do you want to see rural residential development?

- In well-planned discrete communities.
- Do we have enough already?.
- What size blocks should eventuate?
- Legislation example regarding native vegetation should be in place.
- Planning should be merit-based.
- Minimise agricultural conflict between the small lot patterns and working farms.

Are there any services or facilities that you need in your area?

- Cost-effective and reliable communication system.
- Natural gas.
- Education.
- Health and medical services.

Are there any environmental attributes that should be conserved? What are they?

- Diversity-flora and fauna.
- Air quality.
- Water quality.
- Visual quality and rural landscapes.

What types of future land uses would you like to see in your area?

- Intensified residential use of land.
- Minimising urban sprawl.
- Not nuclear developments.
- A Gaol would be okay. Contrary opinions to this.
- Innovative water use for irrigation.
- No tips or dumps even on farms everything should go to transfer station.
- Educational impetus to reduce chemical usage on farms.
- Any intensive agriculture should be subject to strict guidelines.

Actions

What actions can you as a community member do to achieve your vision for the future?

- Keep attending meetings, get involved, voice your opinion, be positive about what you want, lobby Council and politicians.
- Be informed, look at what has happened elsewhere. Don't reinvent the wheel. But don't make their mistakes either.
- Support and elect Councillors who are progressive and share your vision.

What should the Council and State Government do to achieve your vision for the future?

- The State Government could re-decentralise to local Government areas.
- State Government should support Councils with suitable resources. Especially road funding.
- Government should be streamlined as far as red tape is concerned - more action without studies which go nowhere.
- Put local issues back into Local Government hands.

Photo Board Responses

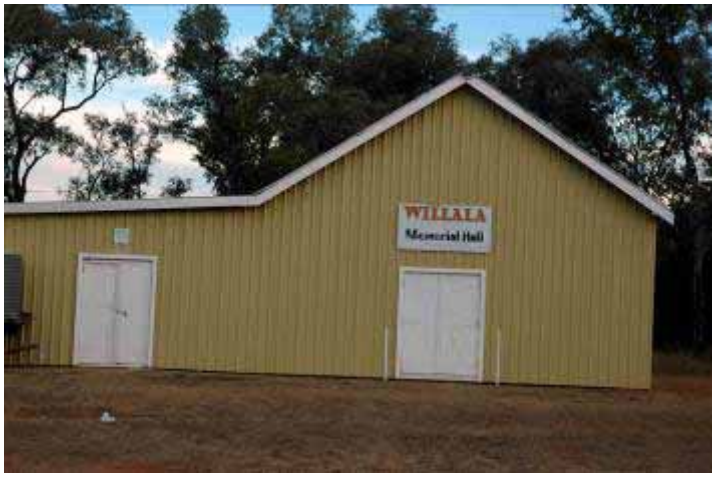
- Lifeline
- postcard
- relaxing
- most valuable resource
- where are the European carp?
- Erosion
- River-sometimes empty sometimes full
- Banks need fencing off to stop stock erosion
- country serene
- short term
- life
- Bare banks muddy waters
- peaceful
- lifeblood
- wet and dry
- precious resource
- lovely free of pollution

- Environmental impact
- finite resources
- dependent on the world money market
- Gunnedah on the move
- economic benefits of mine should be shared i.e. mine = ours
- money going overseas
- a big mess
- no real benefit to Gunnedah Shire
- good work conservation in mine area
- employment
- I wonder
- growth opportunity we must embrace
- opportunity for all
- pros and cons
- jobs

- Well fenced a safe resting paddock
- good fencing
- a result of putting roads on stock routes
- grazing country
- practical use movement of stock
- very important
- well-managed land use
- farming / pasture - no primary industries no secondary industries no national well-being
- Great for genuine graziers exploited by loop grazing
- no wonder it's not water
- signs spoil the pastoral peace of the picture

- Fix the Road
- more use for rural roads
- could not agree more
- local knowledge economic decision
- rural road sometimes
- how about some bitumen?
- Good sign rural road
- more road funds for rural roads
- reflects the Shire's ability to maintain and upgrade the Road however they have a great parking area
- rural means rural
- country road -you know you're in the bush
- keep it that way
- good area
- non subdividable for small allotments
- just seal the Road
- typical of Gunnedah Shire
- nice to see those beautiful blue hills in the distance and all that good ground cover
- country road

- Drought will always be with us. Are we prepared enough?
- Practical use of Rural Land Protection Board
- environmentally degrading
- Drought proof resource
- extra drought resource
- keeping the roadside vegetation under control
- on the long paddock
- supporting cattle in drought
- essential to retain
- roadside grazing
- Are they drought affected or speculation stock?
- no simply stop travelling the stock route
- the drovers life has pleasures that the townsfolk need to know
- locals should get first option
- drought resource



- Vital community asset
- Great meeting place. Community
- essential community
- community spirit
- community
- good dancing and tennis
- working together community
- the essence of us all
- community Centre
- thanks Gunnedah from the Kelvinites
- hub of the district

- Tourism
- sustainable resource
- picnic place
- natural resource
- where are the saw millers (endangered)
- tourism bush walking
- ecotourism opportunity
- why is a State forest different to an Unstated forest?
- Essential landscape. Hazard reduction worries
- house for wild animals
- not enough
- Fire Hazard

- tourism opportunity that should be supported and promoted
- tourism
- road to nowhere
- and the Coonabarabran Shire
- natural wildlife
- town emblem great sign
- country people promoting country
- Acknowledge Nancy Small who got all this going
- Great image
- rundown
- cuddly
- house for wildlife
- tourist asset
- invaluable

- Backpackers
- small-scale
- Aussie bush and business tourism
- diversification
- potential sideline to agribusiness
- growth industry
- positive
- outsiders can help us to appreciate our precious rural resource
- Great in our area backpackers welcome
- welcoming
- Great mailbox – dry

- Productive agriculture
- has to be a better way
- unacceptable movement of water
- think about piping water-evaporation
- prime land can be utilised better
- intensive agriculture use resources sustainability
- water is our most precious asset
- use pipes to replace ditch
- who pays?
- Necessity
- wasted water-should be in pipes
- Cotton growing technology keeps improving-keep up the pressure
- not be best efficient use of water
- the water channel needs weeds to produce water
- unsustainable

- Optimum education
- small town country education-basic values
- are our smaller schools getting all they need?
- Keep primary education local
- centre of community
- Great picture-we need more education facilities
- education in the little country school is the best
- memories
- different schools of thought need to be well grounded
- good service for small communities
- upgrades?
- Centre of excellence for country kids
- we need a safe place for our children
- excellent small school
- we should keep our country community school
- valuable learning environment

- Community volunteers. Environmental preservation.
- Community spirit
- voluntary? - essential service
- community volunteers
- three cheers for the firemen
- needed
- essential service (over governed)
- the community fostering of small local brigades has gone
- local volunteers
- community asset
- not enough
- loneliness
- misguided assistance

- Good business
- important
- essential small community service
- important community service and meeting place
- community business
- very important
- people should be allowed to choose between a range of lifestyles
- essential community asset
- we need it
- community hub
- servicing our needs
- good service small Centre

- Excess use?
- Or electricity
- increased productivity
- use of natural resource
- makeshift
- productive development
- sustainable farming
- exhausting
- practical
- must be fair and sustainable
- expensive
- noisy
- harnessing our most useful resource we've got to watch ourselves not misuse
- good for dry times

- Needs help
- unstable soils
- needs urgent repair strategy
- would rather salt bush
- bring on the rain
- tough country
- needs help
- if we could turn back times
- burr needs a predator
- needs care
- looks like home
- overgrazed
- let it rain and become green
- potential
- a lot of land bared

- Unprotected soil
- rural production
- planned farming practice
- primary production
- house in hills should not protrude on landscape
- water supply
- our future
- balanced farm use
- what a lovely scene-pristine
- fine farming
- productive land use
- beautiful soil

Appendix 4: Methodology for Rural Land Use Designations

The following method is used to identify the land units and designations discussed in chapter 3.

1. Data Gathering

- Land Use Survey
- Lot size analysis
- Slope mapping
- Fauna And Flora Study / Vegetation cover
- Soils mapping
- Drainage and Catchments
- Agricultural land classification
- Landscape features
- Water quality and quantity

2. Identify Constraints

- Urban expansion areas
- Rural residential areas
- Intensive agricultural uses
- Land use conflicts
- Native vegetation areas
- Water courses
- Steep land

3. Identify Land Units

- Similar topographic features
- Clusters of land uses

4. Assess Agricultural Potential

- Identify high class land
- Rank areas for land uses
- Identify lot sizes and land uses

5. Consider the Appropriate Zone

- Agriculture
- Mixed Use / Agricultural landscape
- Nature conservation
- Rural living
- Rural urban fringe

Appendix 5: Methodology to Determine a Minimum Lot Size

PLEASE NOTE THAT THIS METHODOLOGY HAS BEEN PROVIDED BY THE DPI AND DoP AS A DRAFT

Minimum Lot Sizes
How to use the framework

The following framework provides two options that may be used to identify or determine minimum lot sizes. They provide a realistic snapshot of what could be regarded as a commercial farm size for a locality.

The fi rst option (A) depends on the current activities in an area and provides a macro approach, while the second option (B) builds on this through a detailed economic approach. It is recognised that this framework is not a science as agriculture itself is open to many variables, including climate and market returns. It does, however, provide a way to arrive at a representative number that considers the economic realities of a typical commercial farm in an area based on the best available knowledge at the time of assessment.

Option A (steps 1 and 2) can assist local and State government to determine an acceptable minimum lot size without detailed analysis. This is the recommended approach to determining a minimum allotment size for an entire LGA.

Alternatively, by 'drilling down' through a more detailed economic analysis, (Option B, Steps 1 through 7) and compiling data for subdistricts, local government will be able to determine minimum allotment sizes appropriate for the promotion of sustainable agriculture in that locality. This will enable councils, with the assistance of agricultural specialists, to establish appropriate minimum allotment sizes where landuse strategies identify distinct precincts within which certain types of agriculture are proposed to be undertaken. For example, these include dryland enterprises specifically associated with particular soil or landscape features or more intensive irrigated agriculture.

Councils are encouraged and it is strongly recommended that in using the framework to determine a minimum allotment size, agricultural professionals, including the local Agricultural Environmental Officer (DPI), are consulted.

Where the framework Option B is taken, there is allowance for up to a 20% variation from the agreed minimum determined (using Option A) for the area. This takes into account the assumptions made in relation to this process which include:

- the full costs of establishment can be met;
- equity of the costs associated with loan repayments can be met;
- the level of income used is adequate (based on ABARE estimations); and
- the full costs of production can be met, for example, environmental impacts can be managed on the holding.

Minimum Lot Sizes

Option A: Basic assessment

Step 1: Identify the key agricultural industries and enterprises in the LGA
What are the main agricultural industries in the LGA?

These may include the type and mix of crops, the grazing enterprises, and horticultural or vegetable crops.

What is the LGA well-known for? Most LGAs have economic development reports that provide a detailed account of agriculture in the area, and which can be used to contribute to this procedure.

Has agriculture in the LGA changed over time and if so what has happened? It is important to look at the changes in crops or livestock over time and the number and size of holdings that make up the enterprises. While holding size may be fairly stable, factors such as drought and seasonal variability, or fluctuating commodity prices, will affect economic returns, and should all be considered. In some areas changes in enterprises may occur due to technological change, or new market opportunities.

It is important to identify any major shifts and trends in enterprises as a result of technological, market or environmental influences.

Industry organisations, government agencies such as the Australian Bureau of Statistics (ABS) and ABARE and the farm service sector may be able to provide information on key enterprises and trends across the LGA. Once the major agricultural enterprises have been identified across the LGA, the process of undertaking some case studies can begin.

Step 2: Identify the characteristics of farms in the LGA

What are the land use characteristics of the major existing agricultural enterprises in the area?

The mix of crops and livestock enterprises across the LGA may vary according to factors such as locality, topography, soil type and climate.

Are there distinctly different patterns of agriculture in different areas across the LGA? Different areas may need to be considered for special provisions where the potential for conflict may arise, i.e. intensive agriculture.

In cropping areas, several crop options may need to be investigated, while grazing enterprises may operate both sheep and cattle enterprises, for example.

Assessment of holding size and pattern. The size of existing commercial holdings may be a useful indication of a realistic holding size in the area. It is important to recognise that some farmers are constantly adjusting their holding size and enterprise selection in response to economic conditions, so this may be a factor in determining the base size of a holding considered to be reflective of commercial farms in an area. An estimate of a realistic holding size can be determined at this point.

Care should be taken in looking at holdings. Many farmers lease or share farm production on other land held in different ownership. Hence land ownership is not always indicative of an area that would be considered to be a commercial farm. The farming community is often the best source of information in relation to what area is required for a commercial farm.

DPI is also developing a suite of farm models systems across the state that reflects different farming systems and has been developed to examine enterprise change. The farm models systems also examine sizes of the farms in their analysis which can be useful for this work (Davies & Mullen, 2004).

Local government cadastral and rates information may be used to provide a précis of holding(s) held by one owner, which may give an indication of holding size.
Note: Local government cadastral information is useful to establish lots and portions held by individual owners and therefore provides *an indication* of the holding sizes in an LGA. However, it is imperative that holding size and ownership information is lawfully collected, stored and used in accordance with the *Privacy and Personal Information Protection Act* 1998.

Option B: Using economic analysis to determine basic commercial farm size

The following steps build on the previous section and using economic analysis, provide an additional way of considering the many facets of farming practice that will help local government plan for commercial farming.
Whilst recognising that each commercial farm operation is unique, this analysis uses a general approach that considers a typical farm in an area that is commercial in its operation. A number of assumptions are made throughout this procedure, and although not complex, the process will benefit from the assistance of an agricultural farm management consultant, agricultural economist or farm business specialist. It is important that Council staff involved in planning for sustainable agriculture gain a good understanding of the factors affecting agricultural production and viability across the local government area.
Steps 1 and 2 from Option A are used, then the following:

Step 3: Determine the existing production levels of key enterprises on farms

Useful guides on production levels, such as crop yields and livestock performance, can be sourced from:
• Australian Bureau of Statistics (ABS);
• Australian Bureau of Agricultural and Resource Economics
4 (ABARE);
• Department of Primary Industries (DPI);
• Rural Lands Protection Boards (RLPBs); and
• industry sources.
It is essential to account for the variability in production across the area resulting from seasonal fluctuations and due to agronomic conditions such as soil type and topography.
Information on the LGA's biophysical characteristics, if available, is useful for determining variation in production. For example, soil maps may indicate the different types of soils across an area, and their suitability to different enterprises.
For the purposes of determining the size for a sustainable farming operation, it is suggested that a conservative estimate of production be used, to account for the considerable variation in skills and levels of farmers and farm managers and operators.
In the case of livestock enterprises, a key index is the carrying (stocking) capacity of the land, often recorded as DSEs (dry sheep equivalents) per hectare. The carrying capacity will vary according to many factors including the soils, climate, level of pasture improvement and season, for example. Understanding seasonal variation is critical and the impact of drought and markets is especially

important for grazing enterprises. Statistical information is available to determine district averages, but information from local and expert sources is recommended, such as RLPBs, stock agents, farm service firms, and industry experts, should provide some typical ranges.

It is critical to note that although an LGA may have variability in the quality of agricultural land in terms of soil type, landform and other attributes that lowers its agricultural capability; it is accordingly often seen as unsuited to agriculture. However, it may be suited to specific forms of agriculture or require a larger area and/or different management techniques to be sustainable as a commercial farm. Such land is also not automatically suitable for subdivision for lifestyle purposes as it may be sensitive to erosion, effluent disposal, and have servicing, access, biodiversity and bushfire issues.

Agricultural suitability mapping that was produced by the previous Department of NSW Agriculture (now Department of Primary Industries), considered specific agricultural limitations that encompassed biophysical, market and climate parameters at the time of mapping. It is a guide to local government to indicate the potential land suitability across an LGA at the time and helped define areas of prime crop and pasture land as Class 1, 2 or 3. These maps have and continue to be improperly used in the assessment of individual properties in some LGAs, contrary to their intended use and the State Government Policy for Sustainable Agriculture (1999). Lands classed as 4 or 5 still have potential for agriculture but again this has been regarded as reason to its allocation to other landuses rather than recognising that it has value to a number of agricultural uses such as low density grazing and/or forestry.

Step 4: Determine appropriate gross margins for the key enterprises

Gross margin budgets are a simple cost and return analysis of a farm activity, at a given time. The gross margin is calculated by deducting input and production costs from gross income based on an estimated yield or production level and the prevailing market prices. Gross margin budgets are a useful way of comparing farm enterprise activities, and can also be used to provide an indication of the productivity of farming land when appropriate yield or production levels and realistic commodity prices are used.

It is important to note that a gross margin budget does not contain costs of general farm overheads that are incurred regardless of choice of enterprise, and typically they do not make an allowance for the farmer's labour. This must be accounted for separately (see below).

The Department of Primary Industries provide annually typical gross margin budgets for the major broad scale agricultural enterprises in NSW. The most recent versions are available on the Department's web site: http://www.dpi.nsw.gov.au/reader/dpi.

A gross margin budget is only a snapshot of enterprise performance and when being used for estimating longer term economic performance, it is important that an average yield or production level is chosen which reflects seasonal variation under average management. Similarly, prices should be those which are

realistic for the market, not based on short term peaks.
Using the key enterprises identified in Option A, Step 1, the gross margin budgets should be adjusted to the productivity levels identified in Option A, Step 2. Local expertise from agricultural advisers, economists or farm management consultants can help to refine such gross margins to the local situation.
In order to derive a "whole" farm gross margin, the farm can be proportionally allocated to provide the area of each enterprise. The enterprise gross margins can then be multiplied by the enterprise areas and totalled to provide a whole farm summary. For example, in a given year a mixed farming operation with rotational cropping may have 50% of the farm under crops, and 25% under grazing and 25% fallow (as part of a three in five year rotation). The cropping area may consist of 40% wheat, 40% sorghum and 20% canola. On a 1000 ha property, this would mean annually, 250 ha grazed, 250 in fallow (with some grazing value), 200 ha in wheat, 200 in sorghum and 100 ha in canola. A purely livestock property may need to allocate proportions to various cattle and sheep enterprises and perhaps fodder production.
In practice it is also important to identify areas of the property 6 which are not contributing directly to or being used for agricultural production, but are typical components of the property, such as roads, water bodies, rocky ridges, buffer areas and conservation areas such as riparian zones, shelter belts, wildlife corridors and densely timbered areas. Farm gross margins should reflect sustainable land use, that is, enterprises and production levels that are within the capability of the land and its natural resources.
An alternative approach is to base the total farm production on the type of farm, where total farm production needs to be proportionally allocated to each enterprise gross margin. For example, a typical cropping enterprise may gain its income from an area consisting of 40% wheat, 40% sorghum and 20% canola across a range of land types. Likewise, a grazing property may contain different grazing areas and types as well as enterprises e.g. sheep and cattle.

Step 5: Determine a target income level for a commercial farming unit

A reasonable estimate of the level of net income needed to indicate economic sustainability is required. The following is suggested as a starting point.
The Australian Bureau of Agricultural and Resource Economics (ABARE) publishes each year a report on its long running survey of major broad scale agricultural industries or specialist industry reports in partnership with industry groups.
A selection of farms is surveyed across the major agricultural zones, to provide an indication of the economic performance of those industries. Results are typically reported according to industry, state or zone (pastoral, wheat-sheep, or high rainfall). Comprehensive cost and income data is collected to determine a range of farm economic performance parameters. In particular, farm cash income is adjusted for asset and stock changes and family labour costs to estimate farm business profit, which is further adjusted according to debt levels to provide farm business profit at full equity. This

profit when divided by farm capital and assets gives a rate of return on capital for the farm (ABARE 2003, 2004). The ABARE reports typically cover a 3 year period so that the recent level of performance of various industries can be gauged. A farm 'business' should generate an acceptable return on invested capital and assets, but what is an appropriate rate of return for agriculture varies according to different expectations. The ABARE reports show the range of economic performance of farms in the survey. As a starting point, it is suggested that the 'break even point' is a suitable baseline from which to consider an acceptable rate of return. The break even point occurs when farm business profit is zero, that is, when income covers production costs, family labour and overheads. This point can be gleaned from the ABARE data by deducting farm business profit (at full equity) from farm cash income. The ABARE data can thus provide a picture of the average farm income

needed before a return on capital is generated.

The ABARE information also illustrates the variability of farm cash income, further reinforcing the need to use such information carefully in its use.

Table 1 shows ABARE data for the years 2000/01 to 2002/03 for broad acre cropping in NSW. The third year is preliminary data only. The break even income ranges between $38,000 and $65,000 (preliminary) at 100% equity. For the purposes of the example below, $60,000 has been selected as a starting point for a target income on a cropping enterprise.

Table 2 shows the equivalent data for the beef industry. The break even point ranged between $44,000 and $66,000. These are the target incomes that would need to be reached before a profit is generated, assuming full equity and when overhead costs have been considered.

Step 6: Calculate the overhead costs

Gross margin budgets do not include many farm fixed costs or costs that are incurred regardless of which crop or enterprise is undertaken, or indeed whether there is any production such as during a drought. Examples are Council rates, electricity and phone costs, and farm maintenance such as fencing, water supply, and machinery repairs. Depreciation is another important item. These costs are typically referred to as overhead costs. Often family labour or income is regarded as an overhead cost, but in this exercise it is accounted

2000/01 (e) 2001/02 (p) 2002/03 (s)
Farm Cash Income ($) 39,513 44,470 8,800
Farm Business Profit (at 100% equity) ($) - 6,300 530 - 57,100
Rate of Return (%) 0.6 0 -4.3
Break Even Income ($) 45,813 43,940 65,900
Average Equity (%) 97 98 n.a.

Table 2: NSW Beef Industry
Source: ABARE (2003)
(e) Final estimate
(p) Preliminary estimate
(s) Provisional estimate

2000/01 (e) 2001/02 (p) 2002/03 (s)
Farm Cash Income ($) 124,183 186,710 - 17,600
Farm Business Profit (at 100% equity) ($) 69,619 148,180 - 82,200
Rate of Return (%) 4.0 7.4 -4.1
Break Even Income ($) 54,564 38,530 64,600
Average Equity (%) 79.6 81.0 n.a.

Table 1: NSW Wheat and other crops
Source: ABARE (2003)
(e) Final estimate

(p) Preliminary estimate
(s) Provisional estimate

for by the target income.) However, any additional farm labour such as permanent staff should be included either in gross margin or overhead costs.

It is not easy to find published information on overhead costs because they are so variable. Discussion with industry experts and farmers is probably the best guide. DPI experts (L. Davies, pers. comm.) suggest that overhead costs can be significant relative to those costs included in gross margin budgets, often approaching 50% of total farm costs. Overheads for cropping enterprises are often higher than for livestock enterprises because of the greater investment in machinery and corresponding maintenance and depreciation costs. For the purpose of determining a commercial farming size, it is suggested that a conservative figure of 40% be used, unless more accurate local data is available.

The gross margin budgets discussed above include a summary of variable costs on a hectare or DSE basis. The overhead costs can be estimated as a percentage of these, and can be totalled for the farm as per Step 7 below.

Overhead costs may vary from district to district because of a range of local factors. Where available, the expertise of a local agricultural economist, farm business accountant or farm management advisor should be sought.

Step 7: Calculate the area needed to generate the break even level of income

This step involves the selection of a farm with a typical mix of enterprises for a locality or selecting a particular case study farm, as discussed in Step 2. By dividing the farm area proportionally into the various enterprises and selecting suitable gross margin budgets for these enterprises as per Step 4, the gross margin for the whole property can be determined by multiplying the area of each enterprise by the relevant gross margin budget on a per hectare basis.

Similarly, the overhead costs for the property can be accounted for by determining a percentage of the total farm costs, and calculating them by comparison with gross margin costs. These overhead costs should then be deducted from the whole farm gross margin to estimate net farm income.

This income level can then be compared with that selected in Step 5 as being required for break even point, the benchmark above which a commercial operation can be considered profitable.

This net farm income is that which provides the farm operators with their income and living expenses (eg. for a farm family) and which is the starting point for generating a return on investment and assets.

It should be noted that the above procedure makes no allowance for interest and repayment of farm debt, as it assumes a full equity situation. In reality most farms will be below 100% equity and a higher level of farm income will need to be generated to cover this. The ABARE survey reports provide a snapshot of farm equity levels for various industries.

Case Study: Cropping/cattle enterprise in Northern NSW

After assessing the case study with

Option A, the recommendation is made to establish the minimum lot size for a new farm at 800 ha.

For the purpose of illustrating the procedure, take a simplified case of a mixed farming enterprise in northern NSW using two alternative approaches.

Option A: Step 1

Agricultural enterprises in the sample LGA are typically mixed farming enterprises, in this example, growing wheat and cattle.

Option A: Step 2

An assessment of the Council's cadastre and holdings data, and after speaking to agronomists in the district, indicate that commercial farms in this area average 800+ ha.

Option B: Step 3

Looking at the area, a simplified farm operation is worked out. It is located in an area typified by heavier grey clays on the floodplains and lighter red soils on the adjacent slopes and hills. The heavier soils in the locality are mainly used for cropping while the lighter soils are more sustainable under grazing enterprises. Our case study farm consists of approximately 60% of heavy clay soils almost totally used for wheat cropping and 40% of lighter soils used for cattle grazing.

On this sample farm, the only cropping enterprise is dryland wheat production grown continuously using short fallow and minimum or zero tillage techniques. Around 55% of the farm is under wheat, i.e. 440 ha. Around 35% of the farm (280 ha) is used for raising and fattening cattle, typically turned off at 15-20 months. The remaining 10% of the farm is non-productive area, including roads, house paddock, water areas, ridge top, and some dense timber.

Assume that typically in the locality, yields for this form of wheat growing average around 2.5 tonnes per hectare, taking into account seasonal effects.

For the cattle enterprise let's assume a stocking capacity of 3 DSE per hectare. There are some small areas of semi improved pasture which help with fattening.

Option B: Step 4

Use the DPI Farm Enterprise Budget for Dryland Wheat (Northern Zone – East, Winter 2004) (http://www.dpi.nsw.gov.au/reader/dpi), assuming average wheat yields of 2.5 t/ha and a wheat prices of $172/t (AH12 on farm).

The Gross Margin for wheat is $201.81 per hectare, say $200/ha.

11

Total variable costs in the budget are shown as $228.19 per hectare, say $230.

For cattle, the Farm Enterprise Budget for young cattle (15-20 months) indicates a Gross Margin of $26.68 per DSE. At a carrying capacity of 3 DSE/ha, this means a Gross Margin of $80.04 per hectare, say $80/ha.

The variable costs can be determined from the budget at $5.89 per DSE or $17.67 per hectare, say $18/ha. Note that this is for a self replacing herd.

Option B: Step 5

A target income is required that covers the livelihood of this family farm.

The ABARE data in Tables 1 and 2 suggests that break even incomes in recent years have been in the $40,000 to $60,000 range.

For this case study assume a target income level of $60,000 as the starting point for considering farm viability.

Option B: Step 6

As this is a mixed farm, the greater proportion of farm costs are associated with the cropping

enterprise, as indicated by the variable costs in Step 4.
Assume that overhead costs are 40% of total farm costs.

Option B: Step 7

The net farm income for our simplified farm is itemised in the following Table 3.
So after deducting the overhead costs ($70, 827) from the total costs, after gross margin ($177, 067-

Table 3: Eight hundred ha wheat and cattle farm in Northern NSW

Note: In Table 3, the overhead costs are 40% of total costs. Therefore the gross margin costs ($106,240) are 60% of total costs ie. total costs are $177,067. So 40% of 177,067 is $70,827.

Enterprise Dryland
wheat Cattle
Non-productive
land
Total
Area (ha) 440 280 80 **800**
GM/ha ($) 200 80 0
Total GM ($) 88,000 22,400 0 **110,400**
GM variable costs ($) 101,200 5,040
106,240
GM variable costs
(% of total costs) **60**
Total costs ($) **177,067**
Overhead
(% of total costs) **40**
Overhead costs (%) **70,827**
Net farm income ($) **39,573**

Table 4

Enterprise Dryland
wheat Cattle
Non-productive
land
Total
Area (ha) 550 350 100 **1000**
GM/ha ($) 200 80 0
Total GM ($) 110,000 28,000 0 **138,000**
GM variable costs/ha
($) 230 18 0
GM variable costs ($) 126,500 6,300 0
132,800
GM variable costs
(% of total costs) **60**
Total costs ($) **221,333**
Overhead
(% of total costs) **40**
Overhead costs (%) **88,533**
Net farm income ($) **49,467**

Table 5

Enterprise Dryland
wheat Cattle
Non-productive
land
Total
Area (ha) 660 420 120 **1200**
GM/ha ($) 200 80 0
Total GM ($) 132,000 33,600 0 **165,600**
GM variable costs/ha
($) 230 18 0
GM variable costs ($) 151,800 7,560 0
159,360
GM variable costs
(% of total costs) **60**
Total costs ($) **265,600**
Overhead
(% of total costs) **40**
Overhead costs (%) **106,240**
Net farm income ($) **59,360**

$70,827=$106,240), the net farm income is only approaching $40,000 per annum, not quite the target income level of $60,000 sought.
In this simplified case, the operator may attempt to improve income levels by diversifying into more profitable crops or enterprises, increasing yield levels, or by **expanding the size of the farm**.
Where more rotational cropping is introduced then crop areas need to account for the fact that land is periodically in fallow and may not produce a crop every year.
Comparing existing holding sizes as identified in Step 2 will also help to identify the current range of farm sizes in the local government area. If holding sizes are greater for these typical types of enterprises, it suggests the estimated farm size is conservative and perhaps should be larger to meet current trends and long term expectations for profitable agriculture.
The above example of an 800 ha property does not achieve the

current target income. The exercise may be repeated by increasing farm size until the target income is reached. Tables 4 and 5 show the same method for farm sizes of 1000 and 1200 hectares respectively, with corresponding increases in areas for the enterprises. The target income is reached with a property size of 1200 hectares for this particular financial period.

The above example is based on recently published budgets for common broad scale enterprises in NSW. Because markets and prices vary, such budgets are only a snapshot and they should be reviewed regularly using the most reliable data. It is recommended that above and below average scenarios be tested to indicate the sensitivity of net farm incomes to prices and seasonal impacts on yield, particularly during droughts. For example, for the above case study in Option B, if the equivalent DPI Farm Enterprise Budget for dryland wheat for 2005 was used, a much different estimate would have resulted, since the decline in wheat price to $150/t pushed the gross margin down to $127/ha, while costs increased slightly. While this was offset marginally by improved results for beef cattle, the net farm income estimate declines to around $6,000. That is, a much larger farm area would have been required.
In other words, the target income needs to be robust enough to buffer landholders against below average seasonal conditions or price troughs.
It is important that the percentage of the farm available for productive enterprises be realistically quantified. Parts of the farm not in production may include house and infrastructure areas, areas for conservation, tree plantings, ridges, dams and riparian areas. This can be around 30% of a holding, especially with landholder's efforts in conserving areas of remnant vegetation, or sacrificing land for salinity control or other landuses e.g. forestry.
The budget could be reworked to identify what scale of enterprise is required to generate incomes above the target level. However, estimating the value of the farm and assets and determining an acceptable rate of return is a challenging task and should be left to farm management specialists. Hence the approach used here is to provide a benchmark to indicate what scale of enterprise is needed to start defining an appropriate commercial farm size, and ultimately a minimum allotment size that is reflective of protecting land in holdings of an adequate size for agriculture.
In the above discussion and example, farm debt has not been considered. The ABARE survey reports provide a picture of average farm equity and the majority of farms are likely to have some indebtedness. So the net farm income will also have to be raised to cover the servicing of farm debt, in addition to generating a rate of return. Increasing the size of a farm is one way of dealing with this.
This approach is reflective of the way farms that conduct multienterprise or farming systems are structured (Davies & Mullen 2004). NSW DPI is developing whole farm models that are representative of a range of farming systems across the state for assessing enterprise change impacts. This information is also another potential source of providing a picture of a

Interpreting the Budget Information

representative farm in a region. In the case of horticultural and agroforestry enterprises, estimates of target income may require more consideration since there is often a considerable lag time between tree establishment and full production, sometimes well over a decade. This delay in reaching a profit must be factored into the target income level. Furthermore, with tree crops, farmers have less flexibility to switch between enterprises, and so their operation must be based on a sustainable sized operation to withstand seasonal and market fluctuations. It is recommended that specialist economic advice be sought when planning sustainable holding sizes for horticulture and agroforestry.

Conclusion

The above procedure attempts to provide a reasonably simple method of understanding the economics associated with farm productivity and commercial returns, and the relationship with estimating a commercial holding size. From here a minimum allotment size can be determined with other considerations that may affect the long term needs of agricultural landuse in an area. It is important to consider the trends associated with increasing holding size and the opportunities associated with agriculture.

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Appendix 6: Farm Budget

Farm Budget – Wheat and Young Cattle

Please note that this is a copy of the spreadsheet prepared by the Department of Primary Industry which has been used to arrive at the size of a farm. It has been used to derive the range of holidng sizes outlined at the end of the table.

	Shire	***Gunnedah***	
Figures associated with predominant farming systems			
Go to the following Web Address for Gross Margin information	http://www.agric.nsw.gov.au/reader/budget		
Cropping Production System	North East NSW DRYLAND WHEAT (Long Fallow, Minimum Till)		
Crop Type		wheat	
Yield (Tonnes /Ha)		3.5	
$ / Tonne on farm		$160.00	
Total Income from Gross Margin $/ha		$560.00	
Total Variable Costs $/ha		$339.61	
Gross Margin /ha		**$220.39**	**OK Positive Gross Margin**
Animal Prodution System	Young Cattle 15-20 months (moderate growth		
Herd Size (enterprise unit)		100	
DSE / Head (Gross Margin)		16.45	
DSE / ha (RLPB Rates)		3.25	
Total Income (per enterprise unit)		$57,803.00	
Total Income / Head		$578.03	
Total Income / DSE		$35.14	
Total Income / ha		**$114.20**	
Variable Costs (per enterprise unit)		$11,734.00	Find the relevant Rural Lands Protection Board Here
Variable Costs / Head		$117.34	
Variable Costs / DSE		$7.13	Contact the relevant Rural Lands Protection Board Here
Variable Costs / ha		**$23.18**	
Gross Margin / ha		**$91.02**	**OK Positive Gross Margin**

Note: need to factor in Native veg/water reforms, cliamte variability/drought, unproductive land, protion of mixed farming, area used by farm infrastructure, overhead costs etc…..

					Overhead (fixed) costs as a percentage of total costs
	% of total area	Area ha	Gross Margin income $	Gross Margin Variable costs $	40%
cropping	55.0%	1426.2	$798,694.22	$484,365.26	$336,937.35
grazing	35.0%	907.6	$103,649.14	$21,040.76	
unproductive land	10.0%	259.3			
	Total	**Total Area**	**Total Income**		**Gross Margin**
	100.0%	**2593.2**	**$902,343.36**		$396,937.35

Total Costs
$842,343.36

Annual Net Farm Income
$60,000

	Farm Size	
Income	Not Grazing Stubble	Grazing Stubble
$60,000	2,593	1,789
34,541	1,492	1,030
35,000	1,512	1,044
36,000	1,556	1,073