





CGRC Rural Lands Strategy

Rural Lands Issues Paper:

FARM HOLDINGS AND LAND USE



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1. Executive Summary

Just over 96% of the Cootamundra-Gundagai Regional Council Local Government Area (LGA) is zoned rural, the majority of which is zoned RU1 Primary Production. Cropping including wheat, canola and hay (at 40%) and pastures for cattle and sheep (at 50%) comprise the majority of the land use. About 4% of the rural land is zoned RU3 Forestry. Intensive land use comprises less than 0.5% of the land use.

The value of agricultural commodities produced in the LGA in 2011 was \$103M, 60% of which was livestock products with the balance from cropping.

The topography, soils and rainfall vary across the LGA. Land capability is correlated to these biophysical resources.

Landholdings across the LGA do not exhibit any clear spatial patterns. On land zoned RU1 there are 1,165 holdings with an average size of 304ha.

2. Introduction

Cootamundra-Gundagai Regional Council is the merged local government area of former Cootamundra and Gundagai Shires. The two towns of Cootamundra and Gundagai are the main population centres with a number of villages and rural communities also serving as residential options. All of these residential areas have strong existing and historical connections to the surrounding rural lands and the architecture and wealth of the towns in particular are directly attributable to the agricultural industry.

The total land area is 398,141.7 hectares, home to 11,141 people (*ABS, 2016*). Agriculture, Forestry and Fishing is the largest employment industry, employing 15.3% of employed persons. Manufacturing (which includes agricultural value add industries) is a close second, employing 10.6% of employed persons (*Census Time Series Profile, 2011*).

In 2011 the combined value of agricultural commodities produced from the Cootamundra-Gundagai Regional Council Local Government Area was \$103 million, however this figure does not capture other agricultural outputs such as agritourism, local markets, events and so on.



Rural Lands Strategy Background

The merger of Gundagai Shire Council and Cootamundra Shire Council as Cootamundra-Gundagai Regional Council has stimulated the need for new planning instruments and policies; in particular a Local Environment Plan and Development Control Plan which cover the regional council area. A strategy to deal specifically with the rural lands of CGRC is proposed which aims to analyse agricultural trends and opportunities for the area. This strategy will help to update mapping for the new Local Environmental Plan while also providing rationale and reasoning for zoning and minimum lot sizes in rural areas.

Rural land is often neglected from a planning perspective due to more pressing planning needs in larger centres, however agricultural land often has a disproportionate impact on residential and economic activity when compared to development in a town, with intensive feedlots, quarries, landfills, etc. Furthermore, agricultural activities themselves such as piggeries, vineyards, feedlots and so on have a long-term impact on the use and viability of the site and surrounding lands. Through the strategic planning process, controls and principles of development can be placed on agricultural land to ensure the viability of the land into perpetuity as well as providing opportunities for emerging and new agricultural enterprises to establish in the area.

The two former shires have varied terrain and soil quality which makes formulating one course of action or plan for rural land difficult. However, this should be viewed as an opportunity which will make Cootamundra-Gundagai Regional Council more attractive and marketable to residents, visitors and prospective residents as a wide variation of agricultural pursuits can be explored in this single local government area.

It is Council's intention that the Rural Lands Strategy serves not only as a land use planning document, but as a plan for economic success and growth through the shared identity of agriculture. This leverages off what Cootamundra-Gundagai Regional Council does best (agriculture), connections to logistic hubs and routes as well as capitalising on changing recreation and tourism trends.

Purpose of the Issues Papers

The Issues Papers are integral to the success of the Rural Lands Strategy as they are background documents based on research and science; analysing trends elsewhere and juxtaposing this with the situation within Cootamundra-Gundagai Regional Council.

There are ten Issues Papers which will be produced with the community having shaped not only the overarching theme of each paper, but also having identified a number of existing constraints and opportunities to be investigated. Based on the findings of the Issues Papers and workshops during the "listening" phase, a directions paper will be produced which will list key directions for the Rural Lands Strategy.



3. Land Use

Just over 96% of the Cootamundra-Gundagai Regional Council Local Government Area (LGA) is zoned rural. The breakdown of land area by zone for all rural zones is summarised in Table 1.

| Tabl | le | 1: |
|------|----|----|
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Area by Rural Zone (ha)

| RU1 | RU2 | RU3 | RU4 | R5 | Total |
|---------|-----|--------|-------|-----|---------|
| 365,602 | 21 | 15,919 | 1,364 | 184 | 383,090 |
| 95% | <1% | 4% | <1% | <1% | 100% |

The data in Table 1 shows the majority of land in the LGA is currently zoned RU1 Primary Production with the next largest proportion of land zoned RU3 Forestry. The majority of the land zoned RU3 Forestry is located in the southern end of the LGA.

Land use in the rural zones across the LGA is provided in Figure 2 and summarised in Table 2.

Table 2: Land Use

| Land Use | Area (ha) |
|-------------------------------------|-----------|
| Cropping | 141,447 |
| Improved pastures | 111,312 |
| Native pastures | 87,999 |
| Production native forest | 13,995 |
| Other mineral use | 11,186 |
| Residential and farm infrastructure | 6,512 |
| River | 4,080 |
| Managed resource protection | 1,859 |
| Plantation forest | 1,742 |
| Transport and communication | 682 |
| Perennial horticulture | 534 |
| Irrigated cropping | 497 |
| Intensive animal production | 338 |
| Mining | 275 |

| Irrigation perennial cropping | 181 |
|-------------------------------|---------|
| Reservoir/dam | 162 |
| Services | 92 |
| Marsh/wetland | 76 |
| Intensive horticulture | 19 |
| Manufacturing and industrial | 15 |
| Seasonal horticulture | 6 |
| Waste treatment | 4 |
| Nature conservation | 3 |
| Utilities | 1 |
| Total | 383,016 |

Source: http://www.agriculture.gov.au/abares/aclump/land-use/alum-classification

The data in Table 2 and Figure 2 is based on the rural zones depicted in Table 1 only. All other zones within the LGA are identified in Figure 2 as white. The data in Table 2 and Figure 2 indicates:

- Just under 40% of the land is used for cropping, the majority of which is located in the northern half and south western side of the LGA;
- Just over 50% of the land is used for pastures supporting grazing enterprises, the majority found in the southern portion of the LGA;
- Just under 60% of the pastures are improved pastures and the balance are native pastures;
- 4% of the LGA is private or plantation forestry;
- Intensive land use including irrigation, horticulture and animal feedlots makes up less than 0.5% of the land use; and
- Cropping and pastures make up nearly 90% of the land use depicted in Table 2 and Figure 2. It is likely areas depicted as cropping would also be used for grazing, and some of the areas depicted as pastures would also be used for cropping. At a minimum the improved pastures and cropping area, considered to be arable, is 66% of the area depicted in Table 2 and Figure 2.





4. Value and Type of Agricultural Commodities Produced

According to the Australian Bureau of Statistics (ABS) Agricultural Census, 2011¹ data, the value of agricultural commodities produced in the LGA in 2011 was estimated at \$103M. This information is summarised in Table 4 and Table 3.

The value of livestock products, and livestock numbers² in LGA in 2011 is provided in Table 3.

| Сгор | Value \$ | No. of Head |
|-------------|--------------|-------------|
| Wool | 18,127,061 | |
| Milk | 1,770,557 | 1,176 |
| Eggs | 886,791 | 17,325 |
| Meat | | |
| Sheep | 15,910,885 | 623,389 |
| Beef Cattle | 23,475,566 | 81,579 |
| Poultry | 312,943 | |
| Pigs | 67,747 | 198 |
| Goats | 29,884 | 1,823 |
| Total | \$60,581,435 | |

Table 3: Livestock Production

The data in Table 3 indicates:

- Livestock products provided just under 60% of the total value of agricultural commodities produced in the LGA in 2011;
- Cattle provided just under 40% of the value of livestock products produced;
- Wool provided 30% of the value of livestock products produced;

¹ Australian Bureau of Statistics (n.d.), 7503.0 – Value of Agricultural Commodities Produced, Australia 2010-11, 2018, Retrieved from http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/7503.02010-11?OpenDocument

² Australian Bureau of Statistics (n.d.), 7121.0 Value of Agricultural Commodities Produced, Australia, 2010-11, 2018, Retrieved from http://abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/7121.02010-11?OpenDocument

- Sheep meat provided just over 25% of the value of commodities produced; and
- Milk and eggs provided just under 5% of the value of livestock products produced.

Furthermore, the data in Table 3 was based on the former boundaries of the Cootamundra and Gundagai LGAs. From this data:

- Sheep and pigs are spread relatively evenly between the two former LGA areas;
- Nearly 75% of the beef cattle are located in the former Gundagai LGA;
- Nearly all dairy cows are located in the former Cootamundra LGA; and
- 82% of the poultry and goats are located in the former Cootamundra LGA.

Crop production in the LGA in 2011 based on the ABS agricultural census^{3 and 4} is provided in Table 4.

| Crop | Value \$ | Area (ha) | Tonnes |
|----------------|------------|-----------|--------|
| Barley | 720,087 | 1,350 | 3,735 |
| Oats | 660,797 | 2,458 | 3,325 |
| Triticale | 1,394,217 | 2,935 | 8,416 |
| Wheat | 20,159,737 | 24,475 | 30,621 |
| Other cereal | 495,407 | 1,448 | 2,144 |
| Canola | 9,454,133 | 9,876 | 19,090 |
| Lupins | 999,434 | 1,366 | 3,437 |
| Other crops | 29,257 | | |
| Нау | 5,316,884 | 5,336 | 23,779 |
| Wine grapes | 527,909 | 350 | 1,738 |
| Fruit and nuts | 2,491,280 | 140 | 227 |
| Total | 42,249,142 | 49,734 | |

Table 4: Crop Production

³ Australian Bureau of Statistics (n.d.), 7503.0 – Value of Agricultural Commodities Produced, Australia 2010-11, 2018, Retrieved from http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/7503.02010-11?OpenDocument

⁴ Australian Bureau of Statistics (n.d.), Value of Agricultural Commodities Produced, Australia, 2010-11, Catalogue No. 7503.0, Canberra http://abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/7121.02010-11?OpenDocument

The data in Table 4 indicates:

- Crops contributed to just over 40% of the value of commodities produced;
- Wheat comprised nearly 50% of the value and area of crops produced;
- Canola comprised about 20% of the value and area of crops produced;
- The predominant cropping system is winter cereals rotated with oilseeds (canola), legumes (lupins) and (most likely) pastures;
- Hay comprised nearly 15% of the value and 10% of the area of crops produced; and
- Wine grapes, fruit and nuts provided just under 10% of the value of crops produced and comprises 1% of the total area in Table 4.

Furthermore, the data in Table 4 was based the former boundaries of the Cootamundra and Gundagai LGAs. From this data:

- About 85% of all crop production is carried out in the former Cootamundra LGA;
- Hay and fodder crop areas of production are similar in each former LGA;
- Most of the fruit and nut trees are in the former Cootamundra LGA; and
- Nearly all the wine grapes are produced in the former Gundagai LGA.

5. Land Capability

Land capability for land zoned rural in the LGA is depicted in Figure 3 and summarised in Table 5. This data is based on *Emery, KA 1988* using a land classification system of Class 1 to Class 8, with Class 1 being capable of most agricultural land uses and Class 8 being land not suitable for agriculture.



Source: https://data.bioregionalassessments.gov.au/datastore/dataset/08cacd00-81e9-4fec-8a68-c9f047bb13c8

| Table 5: | Land Capabili | ity | | | |
|--------------|---------------|-------------------------------------|------------------------------|---|---|
| Class | Area (Ha) | Suitable for | Limitations | Land Use Suitability | Land Use Examples |
| Class 1 | 2,289 | Regular cultivation | Very slight to negligible | Suitable for most rural land use | Horticulture, intensive cropping & grazing |
| Class 2 | 62,846 | Regular cultivation | Slight but significant | Capable of a wide range of land uses | Intensive cropping, grazing & forestry |
| Class 3 | 53,092 | Regular cultivation | Moderate | Capable of most land uses | Cropping, grazing & forestry |
| Class 4 | 85,131 | Grazing with occasional cultivation | Moderate to severe | Capable of a range of land uses | Cropping, grazing & forestry |
| Class 5 | 30,446 | Grazing with occasional cultivation | Severe | Capable of some land uses | Grazing & forestry |
| Class 6 | 99,369 | Grazing with no cultivation | Very severe | Capable of a limited range of land uses | Grazing & forestry |
| Class 7 | 44,748 | Other | Extremely severe | May be suitable for commercial plantations | Commercial plantations & biodiversity habitat |
| Class 8 | 1,442 | Other | Extremely severe | Non-farming only | Cliffs, quarries and billabongs |
| State Forest | 3,563 | | | | |
| Total | 382,926 | | | | |

The data in Figure 3 and Table 5 indicates:

- 31% of rural land in the LGA is classified as Class 1, 2 or 3. This land is suitable for regular cultivation and can be considered to be prime agricultural land. The majority of this land is located in the north of the LGA, and along the main waterways in the central and southern portions of the LGA (refer to Figure 4);
- 56% of rural land in the LGA is classified as Class 4, 5 or 6 which is interspersed throughout the LGA, less so to the north. This land is best suited to grazing with Classes 4 and 5 also suitable for occasional cropping; and
- 13% of the land zoned rural in the LGA is Class 7, 8 or State Forest. There is a correlation between Class 7 land and local topographic and landscape features including either native vegetation and/or ridge tops on grazed land.

Prime agricultural land in the LGA is depicted in Figure 4.



There is a distinct correlation between prime agricultural land (Figure 4) and agricultural land use (Figure 2) with the majority (if not all) of prime agricultural land being used for cropping. It is likely a significant proportion of farms in the LGA with significant cropping enterprises also have livestock enterprises, a system known as mixed farming. The correlation between prime agricultural land and cropping land use indicates cropping is a dominant agricultural land use. Across the LGA it can be assumed those landscapes suited to cropping are being cropped.

6. Soils

Soil types for land zoned Rural in the LGA are depicted in Figure 5 and summarised in Table 6.

Figure 5: Soil Types



CGRC Farm Holdings and Rural Land Use Issues Paper

Table 6:

| Soil Type | Area (ha) |
|---|-----------|
| Hilly with some steep hilly red soils | 119,064 |
| Irregularly stepped, rolling red earths and yellow mottled soils | 91,053 |
| Undulating to rolling and hilly red soils and yellow mottled | 32,920 |
| Undulating to rolling red earths and red soils | 30,104 |
| River terraces and flood plains, dark loamy soils | 25,379 |
| Undulating plateau red and yellow earths | 22,582 |
| Plains – red soils | 18,904 |
| Narrow flood plains and terraces, brown soils | 17,070 |
| River flood plains and terraces yellow mottled soils | 8,160 |
| Rolling to nearly flat red earths | 6,140 |
| Hills and/or undulating ridges, red soils | 4,351 |
| Strongly undulating to hilly country, red soils and red earths | 3,007 |
| Rolling to steep hilly red soils and yellow mottled soils | 1,828 |
| Hilly to mountainous yellow soils red soils shallow grey-brown sandy soils yellow mottled soils | 1,252 |
| Undulating to rolling yellow mottled soils, red and yellow | 612 |
| Sugarloaf country generally conical hills of red soils | 591 |
| Total | 383,017 |

The data in Figure 5 and Table 6 indicates:

- Just over 30% of the rural land in the LGA is hilly to steep hilly red soils;
- Just under 25% of the rural land in the LGA is rolling red earths and yellow mottled soils;
- Nearly 40% of the land zoned rural in the LGA comprises six soil types each covering between 4% and 9% of the total land area;
- A further eight soil types cover 7% of the land zoned rural in the LGA; and
- There is a correlation between soil type (Figure 5), land use (Figure 2) and land capability (Figure 3).

7. Rainfall

Rainfall is a key driver of agricultural productivity and land use. Average annual rainfall for the LGA is depicted in Figure 6.



Source: <u>http://www.bom.gov.au/isp/ncc/climate_averages/rainfall/index.jsp?period=an&area=ns#maps</u>

Figure 6 indicates rainfall is higher in the south-east and decreases to the west and to the north. The highest rainfall areas correlate to areas used for forestry as depicted in Figure 2. The lower rainfall areas correlate to the areas used for dryland cropping.

8. Landholdings

To identify the spatial distribution of land holdings zoned rural in the LGA, Council's cadastre database was interpreted to create a landholdings map in Figure 7. Each landholding in Figure 7 is depicted as a different colour.

Figure 7: Landholdings



The main limitation of the Land Holding Analysis is that it is based on land ownership, and it is likely that there is a portion of lands held in different names but operated by one farming business. Farm businesses also tend to ignore LGA boundaries, and it is also likely there are farming operations conducted outside of the LGA that are not captured in this assessment. The assessment also does not recognise land that is leased or share-farmed. Despite this limitation, this assessment still provides a key overview of land holdings patterns in the rural zones of the LGA.

Each individual landholding in Figure 7 is depicted as a different colour. From Figure 7 it is evident that there is no discernible spatial pattern of landholdings across the LGA and also no evidence of the fragmentation of agricultural land holdings.

The lack of a clear pattern of landholdings in Figure 7 most likely relates to land capability and rainfall. That is, prime agricultural land as depicted in Figure 4 is mostly located in areas of lower rainfall (refer to Figure 6) and so productivity impacts of reduced rainfall are compensated for by more productive land.

To further examine landholding patterns each landholding was categorised in Figure 8 according to a range of farm sizes above and below the current minimum lot sizes on RU1 land of 40ha (former Gundagai LGA) and 200ha (former Cootamundra LGA) as depicted in Figure 8.



The data presented in Figure 8 for land zoned RU1 has been summarised in Table 7. All holdings less than 5ha were assumed to be essentially large lot residential, crown land⁵ or concessional lots and excluded from the assessment.

⁵ Land referred to as Crown Land in this instance may also be land owned by Council, State or Federal Government entity, church or other community groups.

| Table 7: | RU1 Zone | Landholdings | Analysis |
|----------|----------|--------------|----------|
|----------|----------|--------------|----------|

| Holding Size (ha) | No. of Holdings | Proportion of Holdings | Area (ha) | Proportion of Area | Average Size (ha) | Median Size (ha) |
|----------------------|--------------------|---------------------------|-----------|-----------------------|----------------------|---------------------|
| 5 – 40 | 404 | 35% | 6,700 | 2% | 17 | 15 |
| 40 - 80 | 135 | 12% | 7,584 | 2% | 56 | 52 |
| 80 - 200 | 172 | 15% | 23,242 | 7% | 135 | 84 |
| 200 - 400 | 171 | 15% | 49,278 | 14% | 228 | 282 |
| 400 - 800 | 170 | 15% | 94,807 | 27% | 558 | 545 |
| 800 - 1,200 | 57 | 5% | 56,059 | 16% | 983 | 963 |
| >1,200 | 56 | 5% | 116,597 | 33% | 2,082 | 1,769 |
| Total | 1,165 | | 354,268 | | 304 | 109 |

Both average and median size for each holding size range is provided to show variance within the datasets. The average is the total area divided by the number of holdings and tends to be skewed by larger holdings, hence is usually greater than the median. The median is the mid-point of each dataset. Once the median is identified half the dataset will be greater than the median and half the dataset will be less. The median farm size (Figure 8) is 109ha, so 50% of farms are larger than 109ha and 50% of farms are less than 109ha.

The following conclusions can be made using the data from Table 7:

- The average holding size is 304ha and median holding size is 109ha;
- There are 1,165 holdings covering an area of 354,268ha which is 97% of the RU1 zone. The balance of the area is either held in holdings less than 5ha, has incomplete ownership details, or is Crown Land;
- There are 761 holdings larger than 40ha, covering 98% of the area, with an average size of 457ha and a median size of 264ha;
- There are 539 holdings less than 80ha which is 46% of the total holdings covering 4% of the area;
- There are 711 holdings less than 200ha which is 61% of the total holdings covering 11% of the area;
- There are 478 holdings ranging from 40ha to 400ha in size covering 23% of the area and with an average size of 168ha and a median size of 142ha;
- There are 283 holdings larger than 400ha covering 75% of the RU1 zone in the LGA, with an average area of 945ha and a median size of 664ha;

- The large number of landholdings less than 80ha indicates that the minimum lot size of 40ha may
 result in undesirable impacts on fragmentation of agricultural lands; and
- There are 454 holdings larger than 200ha, covering 89% (316,742ha) of the RU1 zone in the LGA with an average size of 698ha and a median size of 479ha.

It is not possible to ascertain what holding sizes presented in Table 7 are being used for commercial agriculture or rural living purposes. As the data in Table 7 is based on holdings larger than 5ha it is likely all holdings presented in Table 7 are being used for some form of agriculture. However, some assumptions can be made relating landholding size, landownership and available ABS data.

To investigate trends in land ownership between the two former LGAs the proportion of landholdings by area and number in Table 7 by each of the former LGAs is depicted in Graph 1.



Graph 1: Proportion of Landholdings size by number RU1

The data in Graph 1 indicates there is no significant difference in the number of landholders in each former LGA for each of the landholding category sizes in Table 7.



The data in Graph 2 indicates no difference in the total area of landholdings 200ha or less with the former Cootamundra LGA having the larger area in landholdings of 200ha to 1,200ha and the former Gundagai LGA having a larger area of landholdings more than 1,200ha. This pattern most likely reflects the larger holdings in the former Gundagai LGA and the grazing enterprises located in the south of the LGA.

The data in Table 7 indicates nearly 90% of the area in the RU1 zone is occupied by holdings 200ha or larger. The ABS 2011 agricultural census data⁶ listed the total area of holdings as 306,513ha with 429 holdings at an average size of 714ha. This is similar to the number of holdings larger than 200ha of 454ha at 316,742ha with an average size of 698ha (refer to Table 7).

Therefore, it can be assumed the commercial farm size is generally larger than 200ha for the predominant land uses - grazing and cropping - which comprise 90% of the rural land uses (refer to Table 2).

Figure 2 indicates the majority of the areas used for cropping in the LGA are located in the north, central and south-west portions of the LGA. The ABS agricultural census data addressed in Section 3 noted the majority of crop production occurs in the former Cootamundra LGA. The cropping system is a winter cereal system produced in rotation with oilseeds, legumes and pastures. The landholdings pattern in Figure 8 indicates the majority of enterprises in the cropping areas are 200ha or larger.

The dominant land use in the areas identified as Class 4, 5, 6 and 7 in Figure 3 is grazing. The landholdings pattern in Figure 8 indicates the majority of grazing enterprises are 200ha or larger.

The existing pattern of landholdings is one indicator of the current size required for commercial cropping and grazing enterprises which are the predominant forms of agriculture in the LGA (ie on land areas greater than 200ha).

Industry trends and land ownership patterns are likely to support these assumptions as the current trend for cropping and grazing farm enterprises is to increase in size and scale to address, but not limited to, opportunities for diversification, changes in farm management, farm succession planning as well as responding to changing terms of trade.

Apart from cropping and grazing, for example, intensive farming enterprises such as feedlots, wine grapes, nuts and fruit have been identified to make up less than 0.5% of total rural land area. It has been assumed for this analysis that decisions about the location of these enterprises are likely to be influenced by other factors other than just land size given the average holding size of 714ha based on ABS data.

⁶ Australian Bureau of Statistics (n.d.), 7121.0 Value of Agricultural Commodities Produced, Australia, 2010-11, 2018, Retrieved from http://abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/7121.02010-11?OpenDocument

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