REPORT TO
INFRASTRUCTURE VICTORIA
22 JULY 2019

GOULBURN

INDUSTRY PROFILE
FINAL

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EXECUTIVE SUMMARY

Overview of region

The Goulburn region is situated in the north of Victoria. The region is bounded by Loddon Campaspe to the west; New South Wales to the north; Ovens Murray to the east and metropolitan Melbourne to the south. Goulburn's proximity to southern New South Wales means that the region also provides services to, and receives services from New South Wales, as well as drawing considerable freight movements between the two areas.

Being located in the peri-urban fringe, Goulburn has major road infrastructure that keeps the region well-connected to metropolitan Melbourne and Sydney via the Hume Freeway as well as the Goulburn Valley Freeway/Highway. These are supplemented with rail and small regional airports, both capable of carrying passengers and freight. Goulburn is also home to significant water storages of the Murray Darling Basin such as the Goulburn Weir, as well as a major irrigation district being sourced from Lake Eildon.

Goulburn's economy is mainly focused on agriculture, manufacturing and health care. Greater Shepparton, serving as the regional hub, provides economic diversity, services and employment opportunities for the region. The Goulburn region is also abundant in natural resources such as timber, sand and stone, gold, coal, other mineral resources as well as solar and wind energy. As energy policy heads towards renewables, the region could also benefit from heavier investment in renewable energy sources.

Revealed comparative advantage (RCA) index methodology

Using the theories and approaches of revealed comparative advantage (RCA) outlined in the accompanying assessment framework report, an analysis of the comparative advantage of Goulburn is provided below.

A revealed comparative advantage index (CAI) assumes that the historical economic performance of a region can serve as a good indicator of the industries which have a comparative advantage in that region. The revealed CAI measures the concentration of industries in a particular region compared to the Victorian or Australian economy (that is, it compares the proportion of an industry's contribution to the region's gross value added (GVA), relative to the proportion at the State and National level). Specifically, industries with a CAI above 1 have a higher proportion of GVA in that region compared to the state or national economy and can indicate a potential strength and comparative advantage within the region.

Additional explanation about the RCA and CAI approach used in this profile (including the limitations of the approach) are provided in the body of the report at Chapter 2.

Top 20 highest RCA industries

Table ES1 summarises the highest revealed comparative advantage industries (Level 2 ANZSIC[1]) for the LGAs within Goulburn, using the Victorian CAI comparison.

Traditionally considered a 'food bowl' for Victoria, Goulburn is heavily reliant on primary (agriculture) and secondary (food product and beverage manufacturing) industries. Agriculture demonstrates a strong comparative advantage across Strathbogie, Murrindindi, Moira and Greater Shepparton. Agriculture is a significant proportion of each LGA's economic activity, and has demonstrated strong growth across those LGAs of between 23 – 50 per cent in the last decade. The performance of agriculture in these areas is a result of the modern farm businesses that utilise the highly fertile soils, mild climates and access to irrigation water from the Murray and Goulburn rivers. The region is a nationally significant production base for dairy, apples, pears and stone fruits. The resilience of these industries is evident in response to depressed commodity prices, variable seasonal conditions and the increasing cost of irrigation water.

The food and beverage processing industries are interlinked with the dairy and horticultural sectors that dominate the region. Food Product Manufacturing in Moira (9.3 Victorian CAI, 112 per cent growth and 21 per cent GVA) demonstrates a strong comparative advantage, strong sectoral growth in the last decade and is the largest in Goulburn. Areas such as Greater Shepparton (2.9 Victorian CAI, negative 11 per cent growth and 6 per cent GVA) and Mitchell (1.6 Victorian CAI, negative 12 per cent growth and 3.5 per cent GVA) these areas demonstrate weaker comparative advantages in food product manufacturing. This could reflect the agricultural product market conditions that they trade in or the structural issues related to the cost competitiveness of manufacturing locally. These sectors are identified as having potential future growth opportunities. For this to be realised, continued improvements in production, labour and supply chain efficiencies will be essential to remaining competitive.

Other primary industries including Aquaculture in Murrindindi (43.5 Victorian CAI, negative 22 per cent growth and 1 per cent GVA) and in Strathbogie (16.5 Victorian CAI, 144 per cent growth and less than 1 per cent GVA) both demonstrate strong comparative advantages but represent such a smaller proportion of GVA that it is difficult to identify substantial economic development opportunities relevant to such sectors. Forestry and Logging (11.1 Victorian CAI, negative 51 per cent growth and 1 per cent GVA) in Murrindindi and Non-Metallic Mineral Mining across Murrindindi (7.3 Victorian CAI, negative 6 per cent growth and less than 1 per cent GVA), Strathbogie (6.7 Victorian CAI, 4 per cent growth and less than 1 per cent GVA) and Mitchell (5.5 Victorian CAI, negative 51 per cent and less than 1 per cent GVA) represent very little economic activity but have significant comparative advantages. This could reflect the emerging nature of these sectors, but without further information, little inference is able to be made regarding these sectors' future prospects.

TABLE ES 1   TOP 20 HIGHEST REVEALED COMPARATIVE ADVANTAGE BY LGA, GOULBURN

Industry (Level 2 ANZSIC)	LGA	CAI (Victorian comparison)	CAI (National comparison)	10 year growth	% of LGA GVA	Quadrant
2. Aquaculture (appears: 2 times)*	Murrindindi (S)**	43.5	15.4	-22%	1%	Top left
2. Aquaculture (appears: 2 times)	Strathbogie (S)	16.5	5.8	144%	0%	Top right
1. Agriculture (appears: 4 times)	Strathbogie (S)	13.2	16.5	50%	41%	Top right
12. Beverage and Tobacco Product Manufacturing	Strathbogie (S)	12.1	9.5	-63%	4%	Top left
3. Forestry and Logging	Murrindindi (S)	11.1	6.2	-51%	1%	Top left
11. Food Product Manufacturing (appears: 2 times)	Moira (S)	9.3	12.0	112%	21%	Top right
1. Agriculture (appears: 4 times)	Murrindindi (S)	7.9	10.0	27%	25%	Top right
1. Agriculture (appears: 4 times)	Moira (S)	7.6	9.6	23%	24%	Top right

[1] Australia and New Zealand Standard Industrial Classification

Industry (Level 2 ANZSIC)	LGA	CAI (Victorian comparison)	CAI (National comparison)	10 year growth	% of LGA GVA	Quadrant
9. Non-Metallic Mineral Mining and Quarrying (appears: 3 times)	Murrindindi (S)	7.3	1.8	-6%	0%	Top left
9. Non-Metallic Mineral Mining and Quarrying (appears: 3 times)	Strathbogie (S)	6.7	1.6	4%	0%	Top right
57. Internet Publishing and Broadcasting	Greater Shepparton (C)	6.0	2.9	82%	0%	Top right
44. Accommodation	Murrindindi (S)	5.6	3.7	-2%	3%	Top left
9. Non-Metallic Mineral Mining and Quarrying (appears: 3 times)	Mitchell (S)	5.5	1.3	-51%	0%	Top left
5. Agriculture, Forestry and Fishing Support Services (appears: 2 times)	Moira (S)	4.9	4.4	67%	1%	Top right
82. Adult, Community and Other Education	Murrindindi (S)	4.4	5.1	146%	2%	Top right
1. Agriculture (appears: 4 times)	Greater Shepparton (C)	4.3	5.5	41%	13%	Top right
4. Fishing, Hunting and Trapping	Murrindindi (S)	3.7	1.6	157%	0%	Top right
5. Agriculture, Forestry and Fishing Support Services (appears: 2 times)	Greater Shepparton (C)	3.2	2.9	95%	1%	Top right
31. Heavy and Civil Engineering Construction	Mitchell (S)	3.2	2.3	92%	4%	Top right
11. Food Product Manufacturing (appears: 2 times)	Greater Shepparton (C)	2.9	3.8	-11%	6%	Top left

Note: *Revealed industries that appear in more than one LGA are identified "appears: x times.". **LGAs are classified as follows: (C) Cities, (S) Shires, (RC) Rural Cities.

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

SWOT and needs analysis

To help understand what the infrastructure investment opportunities and constraints look like for the Goulburn, ACIL Allen undertook Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis as well as a needs analysis. The information underpinning the SWOT and needs analysis was derived from a desktop research process which examined publicly available data and information. **Table ES2** provides the results of this analysis for the industries identified in **Table ES1**. That is, **Table ES2** provides the results of the SWOT and needs analysis for those industries identified in **Table ES1** that are deemed to have a high CAI and high share of GVA for the LGA they operate in. It identifies the potential investment opportunities and constraints that are important considerations for meeting the future infrastructure requirements of revealed sectors and other sectors important to Goulburn's economy.

Revealed industries identified in **Table ES1** are assessed for their RCA comparison to Victoria, the contribution to an LGA's GVA and consideration of an industry's performance over the past decade. This approach identifies the most important industries to the region. This guides the initial SWOT analysis process. However, due to some of the limitations of the RCA (see Section 2.1), it is important to review available industry, sector and regional development literature as well as consult with relevant regional stakeholders to identify industries that the region considers as important for future economic development. In Goulburn's case, opportunities have been identified in food product manufacturing, agricultural production and tourism.

Due to the categorisation of industries in the ANZSIC codes, tourism does not have a demonstrated RCA. The data simply will not allow for this calculation to be undertaken. However, this sector demonstrates many economic development opportunities for Goulburn.

A further assessment of the priority industries considers service industries that may contribute to the performance of a primary or secondary industry – for Agriculture, this may include Agriculture, Forestry and Fisheries Services Support.

In order to include industries that could be considered emerging or have demonstrated growth but are starting from low base, it is necessary to cross-check the opportunities identified in the literature with the emerging industries presented in **Table ES1**. Outside of Agriculture and Manufacturing, there are no industries in the top 20 that are identified in the literature that either align with the small industries (<1% GVA) demonstrating high RCA or have demonstrated strong growth over the past decade. This may reflect the limitations of the revealed industry categorisation at the ANZSIC code 2-digit level, which presents a high-level industry descriptor.

The SWOT analysis is then used to identify actionable or practical issues which are compared against the documented infrastructure needs of the region/industries. This comparison is then used to identify potential opportunities and constraints facing industries which could be addressed through future infrastructure investments, as shown in **Table ES2** below.

TABLE ES 2   WHAT ARE THE INFRASTRUCTURE INVESTMENT OPPORTUNITIES AND CONSTRAINTS FOR GOULBURN?

Industry	Revealed sectors	Relevant LGAs	Identified needs	Opportunities to address needs	Constraints to economic development of the sector
Agriculture, Forestry and Fisheries	Agriculture (Dairy, apples, pears, stone fruit)	Greater Shepparton	Improved road linkages between dairy and fruit producers, storage, processors and Melbourne markets	Develop the road freight linkages between the producers and processors in the Goulburn Valley and the Melbourne markets and air freight	Inefficient freight network constrains the ability of Goulburn to increase the quantity of agricultural produce exported into Asia
			Improved local or country roads between the regional centres and agritourism experiences on the Murray Rivers Public amenities such as toilets, signage, rest areas, camping sites Farm-stay accommodation Caravan park accommodation Provision of food and beverage services Access to reliable telecommunications and mobile broadband	Prioritise and develop country road or unsealed road routes between passenger transport corridors and farm experiences. In addition, provide necessary enabling infrastructure such as public amenities and special signage. Ensure suitable mobile phone and internet connectivity is developed for areas where tourists will likely visit	Inadequate supporting services and enabling infrastructure to constrain the potential access to agritourism experiences in Moira and along the Murray River
Manufacturing	Food product manufacturing (dairy and fruit)	Greater Shepparton Strathbogie Moira	Supply chain linkages including road and rail transport infrastructure Digital connectivity to enable further process automation and utilisation of sensor technologies	Develop the transport infrastructure that links food and beverage processors with producers and consumers	Inadequate road freight connections between processors, producers and consumers to remain competitive with low cost producers locally and overseas

Industry	Revealed sectors	Relevant LGAs	Identified needs	Opportunities to address needs	Constraints to economic development of the sector
Mining and energy	(Identified as emerging industry, based on the future opportunities identified in the SWOT however, it does not have an RCA as such)	Strathbogie Moira	Enabling infrastructure for the solar industry in the North, including electricity distribution and connections	Development of enabling infrastructure such as connecting roads and transmission network connections is essential to the efficient, cost-effective and safe operation of solar and wind power generation infrastructure	Inadequate enabling infrastructure will constrain growth in renewable energy production in the region
Tourism	(Identified as emerging industry, based on the future opportunities identified in the SWOT however, it does not have an RCA as such)	Moira Strathbogie Greater Shepparton	The tourism and supporting service sectors need public amenities for nature based or rural tourism sites, which include infrastructure that encourages accommodation, linkages between experiences, specific infrastructure that would enable development of tracks and trails in National Parks, such as the Strathbogie Ranges and Barmah National Park	Development of enabling infrastructure, such as public amenities, at nature-based tourist destinations will encourage investment in tourist experiences and supporting services (food, beverage and accommodation)	Limited public amenities at nature-based or remote tourist destinations constrains the potential numbers of visitors able to access the site or length of time that they will stay at a site

SOURCE: ACIL ALLEN

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BACKGROUND

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1.1 Overview of the Goulburn region

The Goulburn region is situated in the north of Victoria. The region is bounded by Loddon Campaspe region to the west; New South Wales to the north; Ovens Murray region to the east and metropolitan Melbourne to the south.

The Goulburn region accounts for 7 per cent of Victoria's land area, at approximately 16,513 km². As at 2018, the Ovens Murray region had an estimated resident population (ERP) of 165,228 or 2.6 per cent of Victoria's population. The region's population and total land size by LGA are shown in **Table 1.1** below.

TABLE 1.1   POPULATION AND AREA BY LGA, OVENS MURRAY REGION, 2018

Local Government Area (and sub-region)	Population	Share of region ERP	Area (km²)	Share of region area
Greater Shepparton City (Shepparton regional hub)	66,007	40%	2,422	15%
Mitchell Shire (Southern peri-urban fringe)	44,299	27%	2,862	17%
Moira Shire (Rural areas)	29,799	18%	4,046	25%
Murrindindi Shire (Southern peri-urban fringe)	14,478	9%	3,880	23%
Strathbogie Shire (Rural areas)	10,645	6%	3,303	20%
Goulburn region[1]	**165,228**	**100%**	**16,513**	**100%**

Notes (1) Totals may not sum to 100 per cent due to rounding.
SOURCE: ABS CAT NO. 3218.0, REGIONAL POPULATION GROWTH, AUSTRALIA.

The LGAs of Goulburn are further aggregated into sub-regions based on economic and environmental characteristics shown below (see **Figure 1.1** for a map of sub-regions):

— the Shepparton regional hub (yellow)
— the southern peri-urban fringe (red)
— the rural areas (green).

FIGURE 1.1   SUB-REGION MAP, GOULBURN REGION, 2019
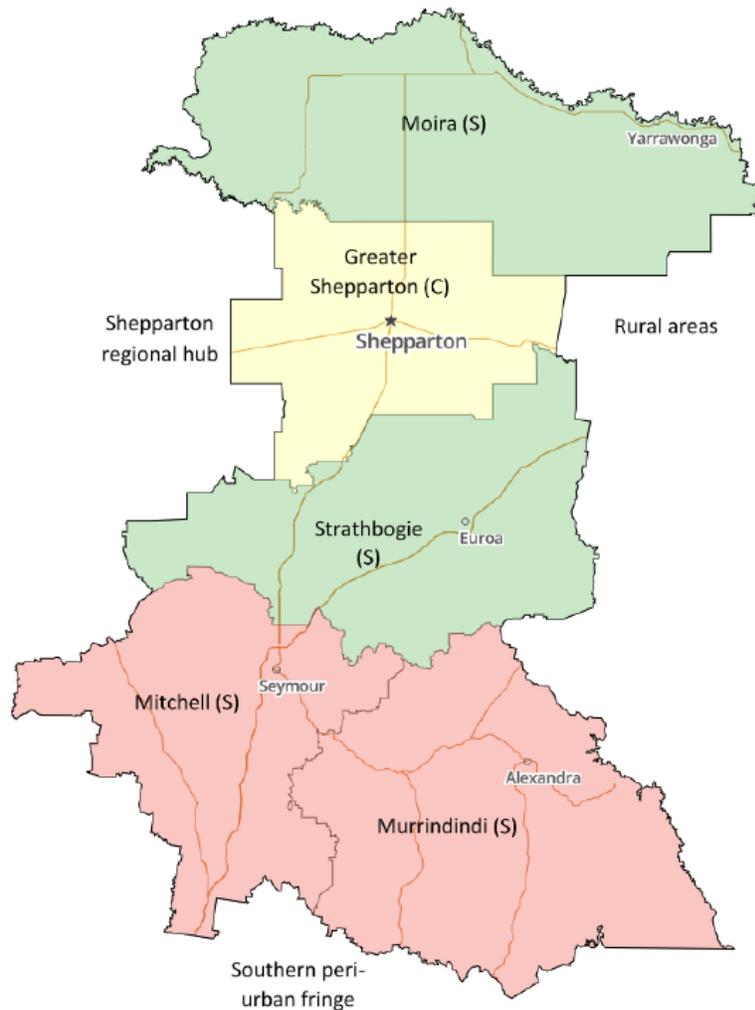
Goulburn shares a border with metropolitan Melbourne. While some of the southern parts of the region are within Melbourne's peri-urban fringe and are thus impacted by population and associated development pressures, northern areas of the region are dominated by rural areas with smaller established towns, lower population growth and fewer associated development pressures. The region is well connected to key economic centres such as Melbourne through transport infrastructure such as the Hume Freeway and passenger and freight rail lines.

Further details of the key natural and environmental attributes, infrastructure and sub-regions are provided in the following sections.

1.1.1   Key natural and environmental attributes

Key attributes of the Goulburn region in terms of natural resources and environmental features are described below.

Natural resources include:

— minerals in the form of sand and stone products

— timber

— solar and wind energy

— gold, coal and other mineral resources
— water.

Key environmental assets include:
— the Ramsar-listed Barmah Forest National Park
— the Cathedral Ranges State Park.
— Lake Eildon National Park
— rivers and lakes.

1.1.2   Key infrastructure

Being located in the peri-urban fringe, Goulburn has major road infrastructure that keeps the region well-connected to metropolitan Melbourne and Sydney via the Hume Freeway. These are supplemented with rail and small regional airports, both capable of carrying passengers and freight. The Goulburn region is also home to significant water storages of the Murray Darling Basin such as the Goulburn Weir, as well as a major irrigation district being sourced from Lake Eildon.

A summary of the key infrastructure in Goulburn is in **Box 1.1**.

BOX 1.1   KEY INFRASTRUCTURE, GOULBURN REGION, 2019

Roads
— Hume Freeway connecting Melbourne to Sydney via Seymour.
— Goulburn Valley Freeway connecting Eildon to Shepparton.
— Murray Valley Highway connecting Towong to Wodonga and out to Robinvale.
— Midland Highway connecting to Geelong via Shepparton.
— Maroondah Highway connection Alexandra to Melbourne.
— Melba Highway connecting Yea to Melbourne.

Rail
— Shepparton to Sydney and Melbourne through Seymour: passenger route.
— North east freight line connecting Melbourne to Sydney through Shepparton.
— The Inland Railway (expected to be operational by 2025).

Water
— Goulburn Weir.
— Goulburn Murray Irrigation District primarily sourced from Lake Eildon.

Other significant infrastructure
— Many smaller regional airports.
— Water storage and distribution from the Goulburn Weir and the Goulburn Murray Irrigation District primary sourced from Lake Eildon.
— Puckapanyal defence site
— Recycled water available for use for crops and crazing.
— Regional hospital in Shepparton.

SOURCE: GOULBURN REGIONAL PROFILE 2018

The main transport routes and airports for the Goulburn region are illustrated in **Figure 1.2**.

FIGURE 1.2   TRANSPORT INFRASTRUCTURE, GOULBURN REGION, 2019

SOURCE: GOULBURN REGIONAL PROFILE 2018

1.1.3   Other regional attributes

Goulburn's economy is mainly focused on agriculture, manufacturing and health care. Greater Shepparton, serving as the regional hub, provides economic diversity, services and employment opportunities for the region. Goulburn is also abundant in natural resources such as timber, sand and stone, gold, coal, other mineral resources as well as solar and wind energy. As energy policy heads towards renewables, the region could also benefit from heavier investment in renewable energy sources.

A summary of other attributes for Goulburn is provided in **Box 1.2**.

BOX 1.2   OTHER REGIONAL ATTRIBUTES, GOULBURN REGION, 2019

The other key attributes of the Goulburn region include:
— Strong growth in construction services, especially in light of continued developments in Shepparton.
— There are mining prospects in the region for gold, precious metals, base metals, brown coal and molybdenum.
— Potential to develop renewable energy sources in close proximity to distribution infrastructure.

SOURCE: GOULBURN REGIONAL PROFILE 2018

1.2 Sub-regions of Goulburn

There are differences across the Goulburn region relating to key attributes, and infrastructure. A large share of the population lives in several major regional centres while agricultural activity is spread across rural communities. These sub-regional differences are discussed for Goulburn's sub-regions below.

Shepparton regional hub

Comprising the Greater Shepparton LGA, the Shepparton regional hub shares the following characteristics:

— The workforce participation rate continues to be lower than the state-wide average, though it remains higher than the other regions in Goulburn. Increased service sector growth in Shepparton could help alleviate wages and employment pressures in the region.
— The region has high rates of social housing, homelessness and poor population health.
— The clearing of native vegetation for private land and agricultural use has changed the landscape of the region, providing strong basis to support dairy and horticulture industries in the region.

The peri-urban fringe

Comprising the Mitchell and Murrindindi LGAs, the peri-urban fringe of the Goulburn region shares the following characteristics:

— Public administration is the largest industry in this region due to the presence of the Puckapunyal Military area.
— There are significant tourism assets in the region, housing numerous wineries and the Cathedral Ranges State park.
— Population growth is likely to drive opportunities in construction and services in this region.
— The risk of natural hazards from isolated forested areas in the region will continue to present environmental challenges in the region.

Rural areas

Comprising the Strathbogie and Moira LGAs, the rural areas share the following characteristics:

— Agriculture is the dominant industry in this region and will continue to face challenges with the underlying structural changes to the Victorian economy.
— While crime is relatively low, the health outcomes within this region continue to be lower than the Victorian average.
— Modest population growth forecast.

1.3 Industry composition

The Gross Regional Product (GRP) of region is approximately the sum of industrial Gross Value Add (GVA).[2] **Figure 1.3** shows the 2017-18 distribution of GVA across the largest industries for the Goulburn and its LGAs. The biggest industries by GVA in the Goulburn region are: Agriculture, Forestry and Fishing (18.0 per cent), Manufacturing (12.7 per cent), Health Care and Social Assistance (10.8 per cent), Construction (9.0 per cent), and Electricity, Gas, Water and Waste Services (7.3 per cent). These five industries comprise over half of Goulburn's GVA.

There is noticeable variation in the composition of Goulburn's LGAs, with the key industries varying between LGAs. Some noticeable differences include the Strathbogie LGA having a larger Agriculture, Forestry and Fishing industry (42 per cent) relative to Goulburn as a whole and the Moira LGA having a relatively large Manufacturing industry at 25 per cent. The Mitchell LGA has a relatively large Construction industry (19 per cent) and Public Administration and Safety industry (17 per cent).

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[2] GRP is the sum of GVA at basic prices plus taxes less subsidies on products.

FIGURE 1.3   GVA SHARE OF KEY INDUSTRIES IN THE GOULBURN, 2017-18
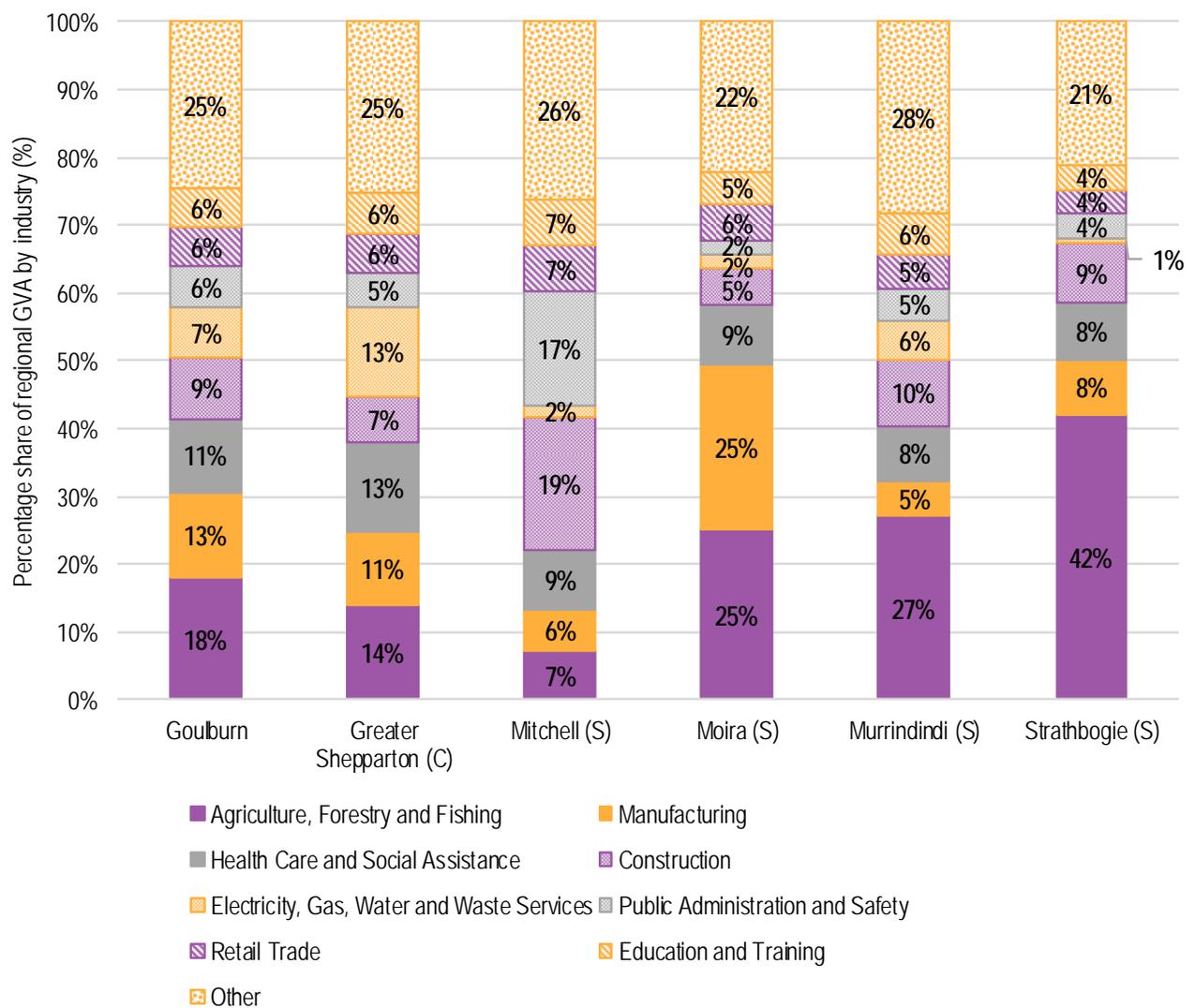
Note: Other includes industries with less than 9 per cent of Goulburn GVA: Professional, Scientific and Technical Services; Transport, Postal and Warehousing; Financial and Insurance Services; Accommodation and Food Services; Wholesale Trade; Administrative and Support Services; Other Services; Rental, Hiring and Real Estate Services; Arts and Recreation Services; Information Media and Telecommunications; and Mining.
SOURCE: IV DATA 2019

Between 2007-08 and 2017-18, there was a sizable decline in the share of GVA from:

— Transport, Postal and Warehousing, decreasing from 4.5 per cent to 3.4 per cent (a 24 per cent reduction).

— Public Administration and Safety, declining from 7.6 per cent to 6.1 per cent (a 19 per cent reduction).

— Manufacturing, declining from 14.4 per cent to 12.7 per cent (a 12 per cent reduction).

Since 2007-08 there has been an increase in the share of GVA from Professional, Scientific and Technical Services, increasing from 2.8 per cent to 4.7 per cent (a 67 per cent increase); Electricity, Gas, Water and Waste Services, increasing from 4.6 per cent to 7.3 per cent (a 59 per cent increase); and Health Care and Social Assistance, increasing from 8.0 per cent to 10.8 per cent (a 36 per cent increase).

This is somewhat consistent with trends occurring across Victoria, such as a general decline in the manufacturing sectors and an increase in service-based industries, particularly health-related services associated with ageing populations.

FIGURE 1.4   GVA SHARE OF KEY INDUSTRIES IN THE GOULBURN REGION 1991-92 TO 2017-18

SOURCE: IV DATA 2019

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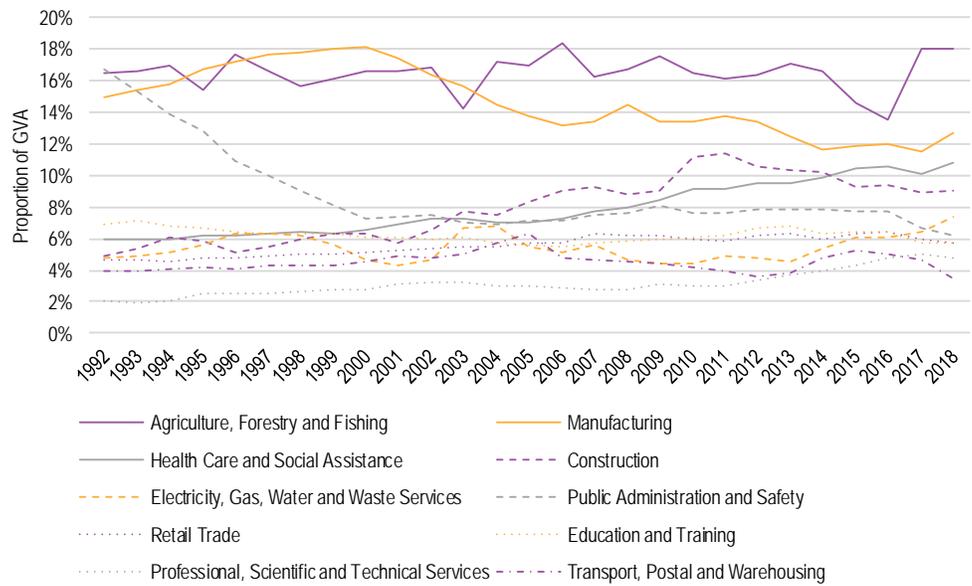
REVEALED COMPARATIVE ADVANTAGE

2.1 Revealed comparative advantage index

Using the theories and approaches of revealed comparative advantage (RCA) outlined in the accompanying assessment framework report, an analysis of Goulburn's comparative advantage is provided below.

A revealed comparative advantage index (CAI) assumes that the historical economic performance of a region can serve as a good indicator of the industries which have a comparative advantage in that region. The strength of an RCA approach is that it enables the identification of significant industries in each region while using a relatively simple and consistent methodology. In other words, with RCA, the results are truly comparative across regions because, for each region, the results are derived in a consistent way. Specifically, industries with a CAI above 1 have a higher proportion of GVA in that region compared to the state or national economy and can indicate a potential strength of a region.

The revealed CAI measures the concentration of industries in a particular region compared to the Victorian or Australian economy (that is, it compares the proportion of an industry contribution to the regions GVA, relative to the proportion at the State and National level). The reasons why both comparators are important are outlined in **Box 2.1** below.

While both comparisons have been used for this analysis and reported in the sections below, the analysis of the top revealed industries focuses on industries assessed against the Victorian CAI. This has been done for two reasons. First, it is consistent with the focus of this study, which is on Victoria's regions. Second, there were some minor gaps in the Level 2 ANZSIC data used to undertake the LGA-level analysis which would have impacted the consistency in which national CAI comparisons can be reported.

Furthermore, the analysis in this chapter reports on rates of industry growth as it provides insight into industries that have grown rapidly over the past decade and hence could be expected to continue to grow in the future. It also identifies industries that have declined over the past decade.

BOX 2.1   EXPLANATION UNDERPINNING ACIL ALLEN'S USE OF VICTORIAN AND NATIONAL CAI COMPARISONS

The RCA approach was developed initially to calculate relative advantage or disadvantage of a country in certain goods and services as evidenced by trade flows. In recent years, the concept has been adopted to assess the comparative advantage of industries in a region.

When assessing regional RCA, there was a question of which denominator to use in the index.

A key reason for using a national denominator (in addition to a Victorian denominator) to calculate the CAI for various industries is that while a particular industry may be significant compared to the Victorian average, it may not be significant compared to the broader Australian economy. When the CAI for a particular industry, within a particular region, shows a similar strength compared to both the Victorian and the national averages, this is likely to indicate a stronger comparative advantage than one in which the two CAI's conflict.

Therefore, under this framework, two comparisons (Victorian and national) have been provided to assist IV in understanding a region's/industry's comparative advantage from multiple perspectives.

For example, the CAI of a mining commodity may be very strong in a particular region compared to Victoria because there happens to be an economic deposit within that region that is not available elsewhere in Victoria. When compared to Australia as a whole, however, a low CAI would indicate that there are more competitive mining provinces elsewhere in Australia. In contrast, a high CAI using both the Victorian and national denominators is likely to indicate that not only is there an economic deposit present, but that it is potentially a world class deposit.

SOURCE: ACIL ALLEN

Limitations of CAI

The RCA approach tells us how regions compare to that of the broader economy in terms of size. Where there is variation in size relative to the broader economy, RCA can be in indicator of an industry's strength and 'importance' to the future of the regional economy. However, it is only one indicator and further analysis is needed to determine if the industry warrants future investment and attention by government. Furthermore, the RCA approach does not tell us if a high CAI industry is a driver or a consequence of growth. This is important because an industry may only exist as a consequence of government funding (as is the case for correctional facilities/prisons) and not because of the private market's demand for its goods and services. There may be policy or other reasons to support these industries, however, these reasons may not be overtly economic in nature.

2.2 Goulburn (Level 1 ANZSIC analysis)

Figure 2.1 shows the CAI index and industry growth for Level 1 ANZSIC industries in Goulburn. The size of the bubbles indicates the relative size of the industries. As noted above, the CAI can be used as an indicator of possible regional strength, particularly when combined with a growing share of regional GVA. The quadrant framework can assist in mapping the growth potential of an industry with a RCA.

Top right, comparative advantage and growth: These are the industry sectors that should be looked upon as most likely to drive regional growth and development. These are sectors for which a region most likely has comparative advantage in and have experienced growth over the past decade. Government policy should seek to ***facilitate*** growth in these sectors and attempt to leverage them by focussing on the economic linkages these sectors have to the region and the Victorian economy. Industries in Goulburn which appear to have comparative advantage and potential growth characteristics include Agriculture, Forestry and Fishing; Electricity, Gas, Water and Waste Services; and Health Care and Social Assistance.

Top Left, comparative advantage with no growth: These are the industry sectors which have a comparative advantage, but which have been in decline over the past decade. For the Goulburn region, this refers to the Public Administration and Safety industry. Government policy should seek to

identify and overcome constraints to the growth of these industries caused by infrastructure provision.

Bottom right, growth but not yet comparative advantage: These are the industry sectors that have experienced growth over the past decade but do not have comparative advantage. Our analysis shows that for Goulburn region, these include the Professional, Scientific and Technical Services; Mining; and Retail Trade industries. Government policy should look at this quadrant as identifying *potential emerging industries*.

Bottom left, no growth and no comparative advantage: These are the industry sectors for which there is no comparative advantage or growth – namely, the Information Media and Telecommunications; Financial and Insurance Services; and Transport, Postal and Warehousing. Government policy might be warranted here to *manage decline* or assist regions to transition out of these industries. Government support for these industries may have less to do with infrastructure provision and other forms (i.e. welfare) of industry support or structural adjustment.

FIGURE 2.1 REVEALED COMPARATIVE ADVANTAGE INDEX – GOULBURN 2017-18, LEVEL 1 ANZSIC
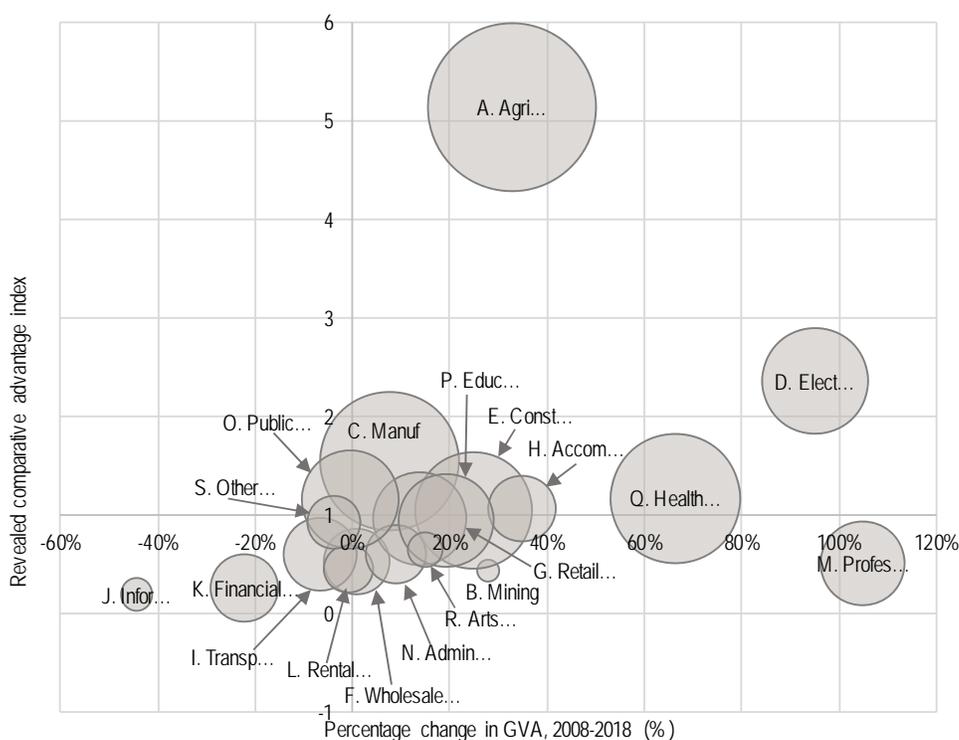
Note: This includes the revealed comparative advantage index of Goulburn relative to the Victorian economy.
SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

Table 2.1 summarises the highest revealed comparative advantage industries (Level 1 ANZSIC) for Goulburn. The revealed industries in the table relate to those which have the highest CAI using the Victorian comparison, not the national comparison. The Victorian comparisons have been selected because they are consistent with the regional focus of this study, and because there were some limitations in the ANZSIC data which meant there would have been gaps in the presentation of high-ranking national CAI industries in some LGAs.

TABLE 2.1 TOP 10 REVEALED COMPARATIVE ADVANTAGE INDUSTRIES FOR GOULBURN, LEVEL 1 ANZSIC

Industry (Level 1 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10 year growth	% of LGA GVA	Quadrant
A. Agriculture, Forestry and Fishing	5.1	6.1	33%	18.0%	Top right
D. Electricity, Gas, Water and Waste Services*	2.4	2.5	95%	7.3%	Top right
C. Manufacturing	1.5	1.9	8%	12.7%	Top right
Q. Health Care and Social Assistance	1.2	1.3	66%	10.8%	Top right
O. Public Administration and Safety	1.2	1.0	-1%	6.1%	Top left
H. Accommodation and Food Services	1.1	1.0	35%	2.9%	Top right
E. Construction	1.0	1.0	25%	9.0%	Top right
G. Retail Trade	1.0	1.1	14%	5.8%	Bottom right
P. Education and Training	0.9	1.0	19%	5.7%	Bottom right
S. Other Services	0.9	0.9	-4%	1.9%	Bottom left

Note: While this industry appears to have a comparative advantage at the 1-digit level, further analysis at the 2-digit level identifies that the sub-industries which comprise this industry sit outside the top 20 industries (2-digit industries) identified at Table 2.12.

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

2.3 Goulburn LGA analysis (Level 2 ANZSIC analysis)

The following section incudes revealed comparative advantage analysis by Level 2 ANZSIC industries for Goulburn's LGAs: Greater Shepparton, Mitchell, Moira, Murrindindi, and Strathbogie.

The analysis focuses on identifying the key Level 2 ANZSIC industries which fall in the *'top right'* and are found to have a likely comparative advantage and growth.

2.3.1 Greater Shepparton

Figure 2.2 shows RCA analysis by ANZSIC Level 2 industries for the Greater Shepparton LGA. Key industries of interest with a high CAI in the Greater Shepparton LGA include Internet Publishing and Broadcasting; Agriculture; Agriculture, Forestry and Fishing Support Services; and Food Product Manufacturing (see **Figure 2.2**).

FIGURE 2.2   COMPARATIVE ADVANTAGE INDEX FOR GREATER SHEPPARTON, 2017-18, LEVEL 2
ANZSIC
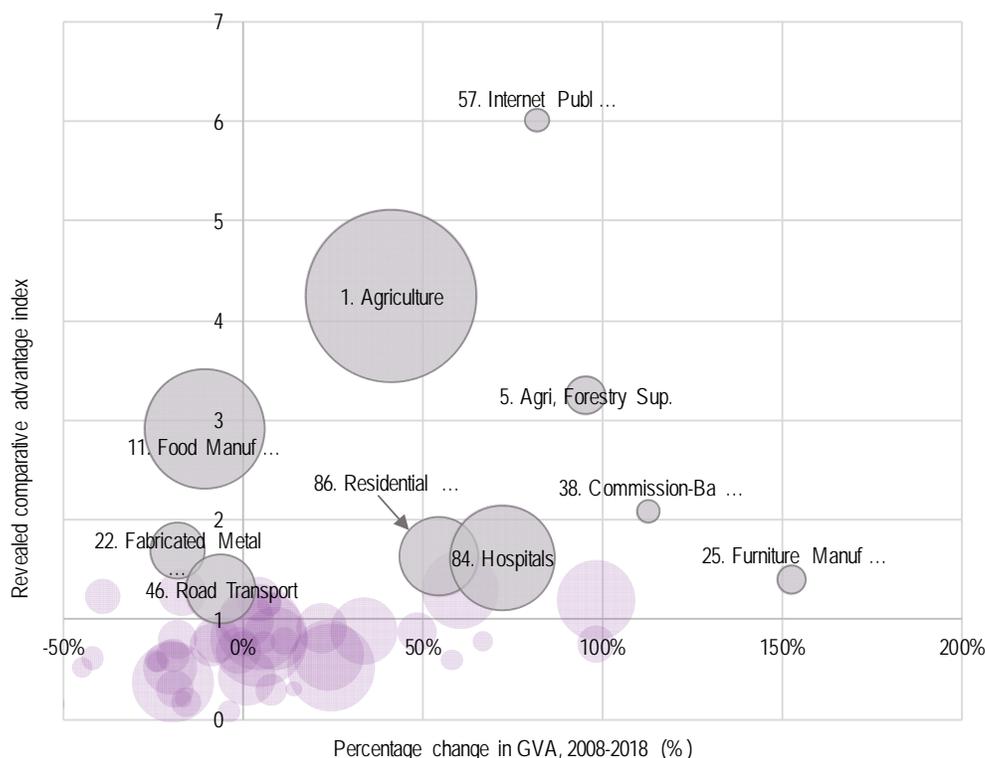
Note: This includes the revealed comparative advantage relative to the Victorian economy.
SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

Table 2.2 summarises the highest comparative advantage industries (Level 2 ANZSIC) for the Greater
Shepparton LGA using the Victorian CAI comparison. Important industries include Agriculture;
Residential Care Services; and Hospitals which each have large CAI, undergone notable growth over
the past 10 years and constitute a relatively large proportion of the Greater Shepparton's economic
output.

Various other industries have high CAI and growth but remain a small proportion of Greater
Shepparton's GVA, such as: Internet Publishing and Broadcasting; Agriculture, Forestry and Fishing
Support Services; Commission-Based Wholesaling; and Furniture and Other Manufacturing.

TABLE 2.2   TOP 10 REVEALED COMPARATIVE ADVANTAGE INDUSTRIES FOR GREATER
SHEPPARTON

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10 year growth	% of LGA GVA	Quadrant
57. Internet Publishing and Broadcasting	6.0	2.9	82%	0.3%	Top right
1. Agriculture	4.3	5.5	41%	13.3%	Top right
5. Agriculture, Forestry and Fishing Support Services	3.2	2.9	95%	0.7%	Top right
11. Food Product Manufacturing	2.9	3.8	-11%	6.5%	Top left
38. Commission-Based Wholesaling	2.1	1.2	113%	0.2%	Top right
22. Fabricated Metal Product Manufacturing	1.7	1.8	-18%	1.4%	Top left
86. Residential Care Services	1.6	2.0	55%	2.8%	Top right

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10 year growth	% of LGA GVA	Quadrant
84. Hospitals	1.6	5.5	72%	5.0%	Top right
25. Furniture and Other Manufacturing	1.4	1.7	152%	0.4%	Top right
46. Road Transport	1.3	1.1	-6%	2.2%	Top left

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

Table 2.3 summarises the largest industries (Level 2 ANZSIC) for the Greater Shepparton LGA.

TABLE 2.3 TOP 10 LARGEST INDUSTRIES FOR GREATER SHEPPARTON

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10 year growth	% of LGA GVA	Quadrant
1. Agriculture	4.3	5.5	41%	13.3%	Top right
11. Food Product Manufacturing	2.9	3.8	-11%	6.5%	Top left
84. Hospitals	1.6	5.5	72%	5.0%	Top right
32. Construction Services	0.8	0.7	4%	4.2%	Bottom right
69. Professional, Scientific and Technical Services	0.5	0.4	25%	3.4%	Bottom right
42. Other Store-Based Retailing	0.9	1.0	5%	3.2%	Bottom right
62. Finance	0.4	-	-19%	2.9%	Bottom left
85. Medical and Other Health Care Services	1.2	0.8	98%	2.8%	Top right
86. Residential Care Services	1.6	2.0	55%	2.8%	Top right
87. Social Assistance Services	1.3	1.9	61%	2.6%	Top right

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

2.3.2 Mitchell

Figure 2.3 shows RCA analysis by ANZSIC Level 2 industries for the Mitchell LGA. Key industries of interest with a high CAI in the Mitchell LGA include Non-Metallic Mineral Mining and Quarrying; Heavy and Civil Engineering Construction; Rail Transport; and Grocery, Liquor and Tobacco Product Wholesaling (see **Table 2.4**).

FIGURE 2.3   COMPARATIVE ADVANTAGE INDEX FOR MITCHELL, 2017-18, LEVEL 2 ANZSIC
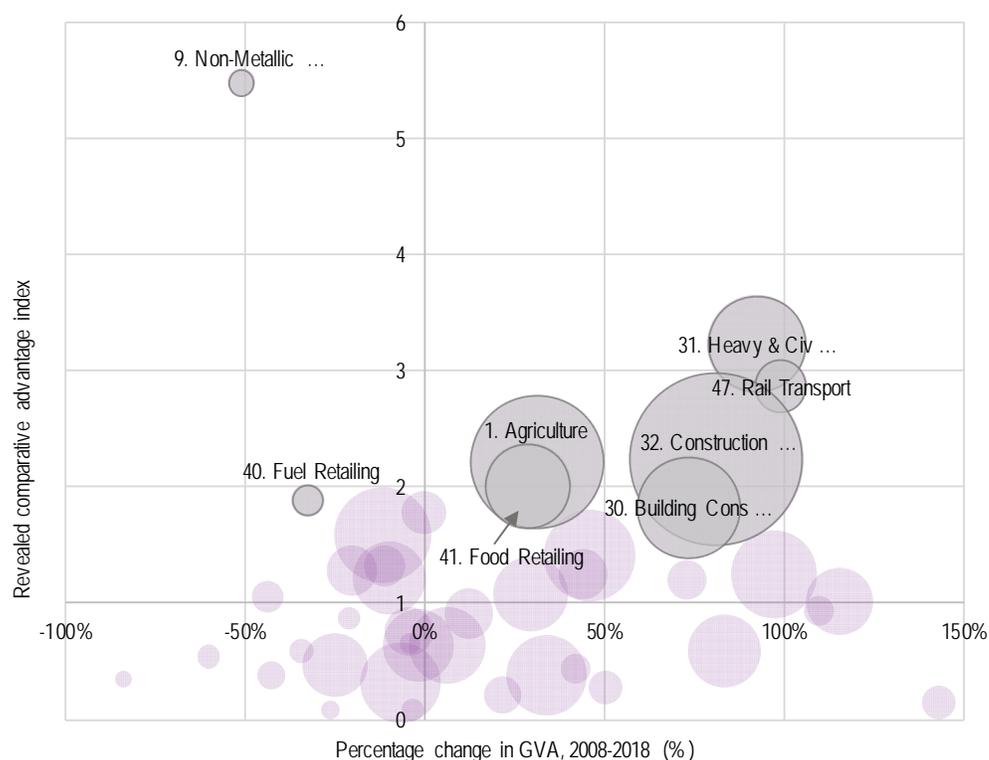
Note: This includes the revealed comparative advantage relative to the Victorian economy. The chart excludes 'Non-Store Retailing and Retail Commission Based Buying' and 'Grocery, Liquor and Tobacco Product Wholesaling' to focus the chart on the key industries.

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

Table 2.4 summarises the highest comparative advantage industries (Level 2 ANZSIC) for the Mitchell LGA using the Victorian CAI comparison. Important industries include Heavy and Civil Engineering Construction; Rail Transport; Grocery, Liquor and Tobacco Product Wholesaling; Construction Services; Agriculture; and Food Retailing. These industries have a large CAI, undergone notable growth over the past 10 years and constitute a relatively large proportion of Mitchell's GVA.

The Non-Store Retailing and Retail Commission Based Buying industry has high CAI and growth but remain a small proportion of Mitchell's GVA.

TABLE 2.4   TOP 10 REVEALED COMPARATIVE ADVANTAGE INDUSTRIES FOR MITCHELL

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10 year growth	% of LGA GVA	Quadrant
9. Non-Metallic Mineral Mining and Quarrying	5.5	1.3	-51%	0.3%	Top left
31. Heavy and Civil Engineering Construction	3.2	2.3	92%	3.7%	Top right
47. Rail Transport	2.9	1.8	99%	1.1%	Top right
36. Grocery, Liquor and Tobacco Product Wholesaling	2.7	3.1	588%	2.3%	Top right
32. Construction Services	2.2	2.0	81%	11.6%	Top right
1. Agriculture	2.2	2.8	31%	6.9%	Top right
43. Non-Store Retailing and Retail Commission Based Buying	2.1	0.8	3432%	0.2%	Top right

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10 year growth	% of LGA GVA	Quadrant
41. Food Retailing	2.0	1.5	29%	2.9%	Top right
40. Fuel Retailing	1.9	1.7	-33%	0.4%	Top left
30. Building Construction	1.8	1.7	73%	4.1%	Top right

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

Table 2.5 summarises the largest industries (Level 2 ANZSIC) for the Mitchell LGA.

TABLE 2.5   TOP 10 LARGEST INDUSTRIES FOR MITCHELL

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10 year growth	% of LGA GVA	Quadrant
32. Construction Services	2.2	2.0	81%	11.6%	Top right
1. Agriculture	2.2	2.8	31%	6.9%	Top right
30. Building Construction	1.8	1.7	73%	4.1%	Top right
31. Heavy and Civil Engineering Construction	3.2	2.3	92%	3.7%	Top right
11. Food Product Manufacturing	1.6	2.1	-12%	3.5%	Top left
45. Food and Beverage Services	1.4	1.1	46%	3.2%	Top right
85. Medical and Other Health Care Services	1.3	0.9	97%	2.9%	Top right
41. Food Retailing	2.0	1.5	29%	2.9%	Top right
62. Finance	0.3	-	-7%	2.5%	Bottom left
69. Professional, Scientific and Technical Services	0.4	0.3	34%	2.4%	Bottom right

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

2.3.3   Moira

Figure 2.4 shows revealed comparative advantage analysis by Level 2 ANZSIC industries for the Moira LGA. Key industries of interest with a high CAI in the Moira LGA include Food Product Manufacturing; Agriculture; Agriculture, Forestry and Fishing Support Services; and Textile, Leather, Clothing and Footwear Manufacturing (See Table 2.6).

FIGURE 2.4   COMPARATIVE ADVANTAGE INDEX FOR MOIRA, 2017-18, LEVEL 2 ANZSIC
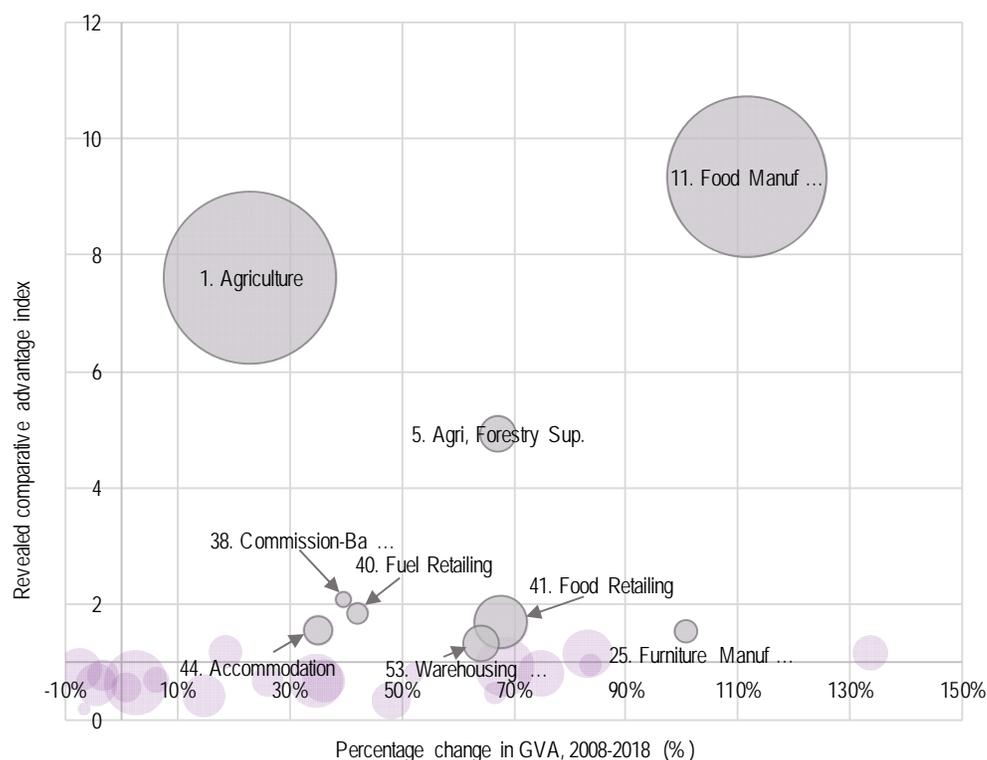
Note: This includes the revealed comparative advantage relative to the Victorian economy. The chart excludes '13. Textile, Leather, Clothing and Footwear Manufacturing' to focus the chart on the key industries.
SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

Table 2.6 summarises the highest comparative advantage industries (Level 2 ANZSIC) for Moira LGA using the Victorian CAI comparison. Important industries include Food Product Manufacturing; Agriculture; Agriculture, Forestry and Fishing Support Services; and Food Retailing each of which have a large CAI, undergone notable growth over the past 10 years and constitute a relatively large proportion of Moira's GVA.

Various other industries have high CAI and growth but remain a small proportion of GVA such as Textile, Leather, Clothing and Footwear Manufacturing; Commission-Based Wholesaling; Fuel Retailing; Accommodation; and Furniture and Other Manufacturing.

TABLE 2.6   TOP 10 REVEALED COMPARATIVE ADVANTAGE INDUSTRIES FOR MOIRA

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10 year growth	% of LGA GVA	Quadrant
11. Food Product Manufacturing	9.3	12.0	112%	20.7%	Top right
1. Agriculture	7.6	9.6	23%	23.8%	Top right
5. Agriculture, Forestry and Fishing Support Services	4.9	4.4	67%	1.1%	Top right
13. Textile, Leather, Clothing and Footwear Manufacturing	2.3	2.6	1262%	0.6%	Top right
38. Commission-Based Wholesaling	2.1	1.1	40%	0.2%	Top right
40. Fuel Retailing	1.8	1.7	42%	0.4%	Top right
41. Food Retailing	1.7	1.2	68%	2.4%	Top right

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10 year growth	% of LGA GVA	Quadrant
44. Accommodation	1.5	1.0	35%	0.7%	Top right
25. Furniture and Other Manufacturing	1.5	1.8	101%	0.4%	Top right
53. Warehousing and Storage Services	1.3	3.5	64%	1.1%	Top right

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

Table 2.7 summarises the largest industries (Level 2 ANZSIC) for the Moira LGA.

TABLE 2.7   TOP 10 LARGEST INDUSTRIES FOR MOIRA

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10-year growth	% of LGA GVA	Quadrant
1. Agriculture	7.6	9.6	23%	23.8%	Top right
11. Food Product Manufacturing	9.3	12.0	112%	20.7%	Top right
69. Professional, Scientific and Technical Services	1.2	1.0	462%	7.7%	Top right
32. Construction Services	0.6	0.6	3%	3.3%	Bottom right
84. Hospitals	0.9	3.1	68%	2.8%	Bottom right
85. Medical and Other Health Care Services	1.1	0.7	163%	2.5%	Top right
41. Food Retailing	1.7	1.2	68%	2.4%	Top right
42. Other Store-Based Retailing	0.7	0.7	35%	2.4%	Bottom right
86. Residential Care Services	1.1	1.4	83%	2.0%	Top right
45. Food and Beverage Services	0.8	0.6	75%	1.8%	Bottom right

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

2.3.4   Murrindindi

Figure 2.5 shows revealed comparative advantage analysis by Level 2 ANZSIC industries for the Murrindindi LGA. Key industries of interest with a high CAI in the Murrindindi LGA include Aquaculture; Forestry and Logging; Agriculture; Non-Metallic Mineral Mining and Quarrying; and Accommodation (see **Table 2.8**).

FIGURE 2.5   COMPARATIVE ADVANTAGE INDEX FOR MURRINDINDI, 2017-18, LEVEL 2 ANZSIC
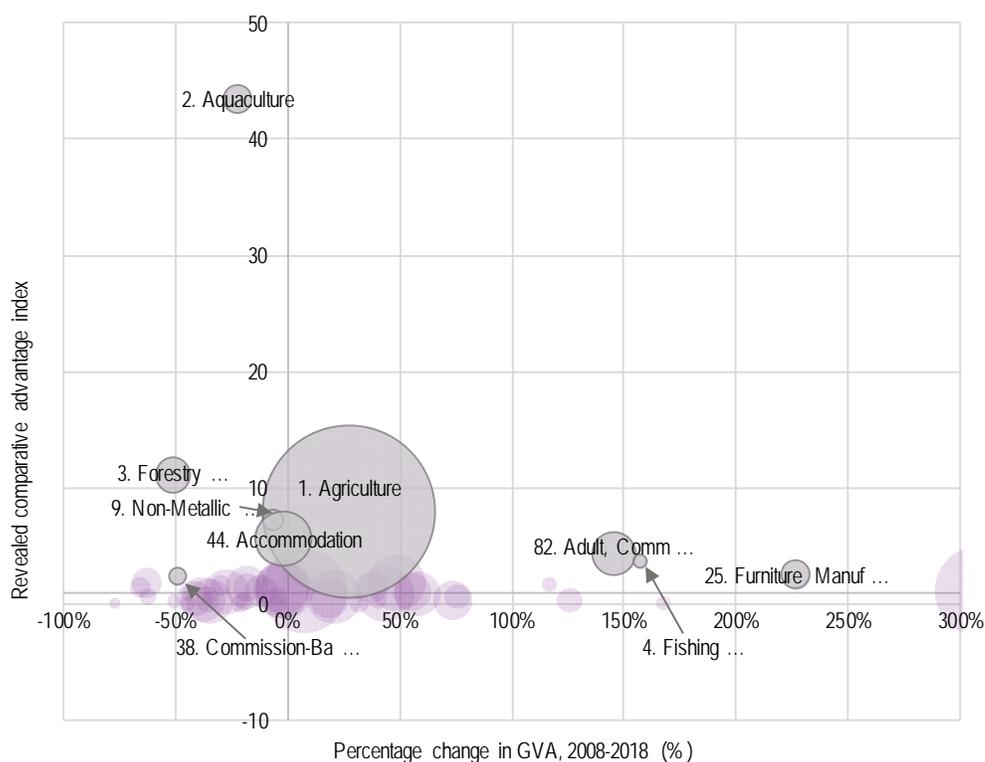
Note: This includes the revealed comparative advantage relative to the Victorian economy. The chart excludes 'Non-Store Retailing and Retail Commission Based Buying' to focus the chart on the key industries.
SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

Table 2.8 summarises the highest comparative advantage industries (Level 2 ANZSIC) for the Murrindindi LGA using the Victorian CAI comparison. Important industries include Agriculture and Adult, Community and Other Education, both of which have a large CAI, undergone notable growth over the past 10 years and constitute a relatively large proportion of the Murrindindi's GVA.

Other industries have high CAI and growth but remain a small proportion of GVA such as Fishing, Hunting and Trapping; Furniture and Other Manufacturing; and Non-Store Retailing and Retail Commission Based Buying.

TABLE 2.8   TOP 10 REVEALED COMPARATIVE ADVANTAGE INDUSTRIES FOR MURRINDINDI

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10-year growth	% of LGA GVA	Quadrant
2. Aquaculture	43.5	15.4	-22%	0.7%	Top left
3. Forestry and Logging	11.1	6.2	-51%	1.1%	Top left
1. Agriculture	7.9	10.0	27%	24.8%	Top right
9. Non-Metallic Mineral Mining and Quarrying	7.3	1.8	-6%	0.4%	Top left
44. Accommodation	5.6	3.7	-2%	2.7%	Top left
82. Adult, Community and Other Education	4.4	5.1	146%	1.6%	Top right
4. Fishing, Hunting and Trapping	3.7	1.6	157%	0.2%	Top right
25. Furniture and Other Manufacturing	2.5	3.1	227%	0.7%	Top right

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10-year growth	% of LGA GVA	Quadrant
43. Non-Store Retailing and Retail Commission Based Buying	2.4	0.9	945%	0.2%	Top right
38. Commission-Based Wholesaling	2.4	1.3	-49%	0.3%	Top left

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

Table 2.9 summarises the largest industries (Level 2 ANZSIC) for the Murrindindi LGA.

TABLE 2.9   TOP 10 LARGEST INDUSTRIES FOR MURRINDINDI

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10-year growth	% of LGA GVA	Quadrant
1. Agriculture	7.9	10.0	27%	24.8%	Top right
69. Professional, Scientific and Technical Services (Except Computer System Design and Related Services)	1.1	0.9	310%	7.1%	Top right
32. Construction Services	1.1	1.0	7%	5.9%	Top right
44. Accommodation	5.6	3.7	-2%	2.7%	Top left
84. Hospitals	0.9	2.9	44%	2.7%	Bottom right
45. Food and Beverage Services	1.2	0.9	-1%	2.7%	Top left
41. Food Retailing	1.9	1.3	49%	2.6%	Top right
30. Building Construction	1.2	1.0	-3%	2.6%	Top left
86. Residential Care Services	1.4	1.7	-2%	2.5%	Top left
67. Property Operators and Real Estate Services	0.7	0.4	21%	2.4%	Bottom right

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

2.3.5   Strathbogie

Figure 2.6 shows revealed comparative advantage analysis by Level 2 ANZSIC industries for the Strathbogie LGA. Key industries of interest with a high CAI in the Strathbogie LGA include Aquaculture; Agriculture; Beverage and Tobacco Product Manufacturing; and Non-Metallic Mineral Mining and Quarrying (see **Table 2.10**).

FIGURE 2.6   COMPARATIVE ADVANTAGE INDEX FOR STRATHBOGIE, 2017-18, LEVEL 2 ANZSIC
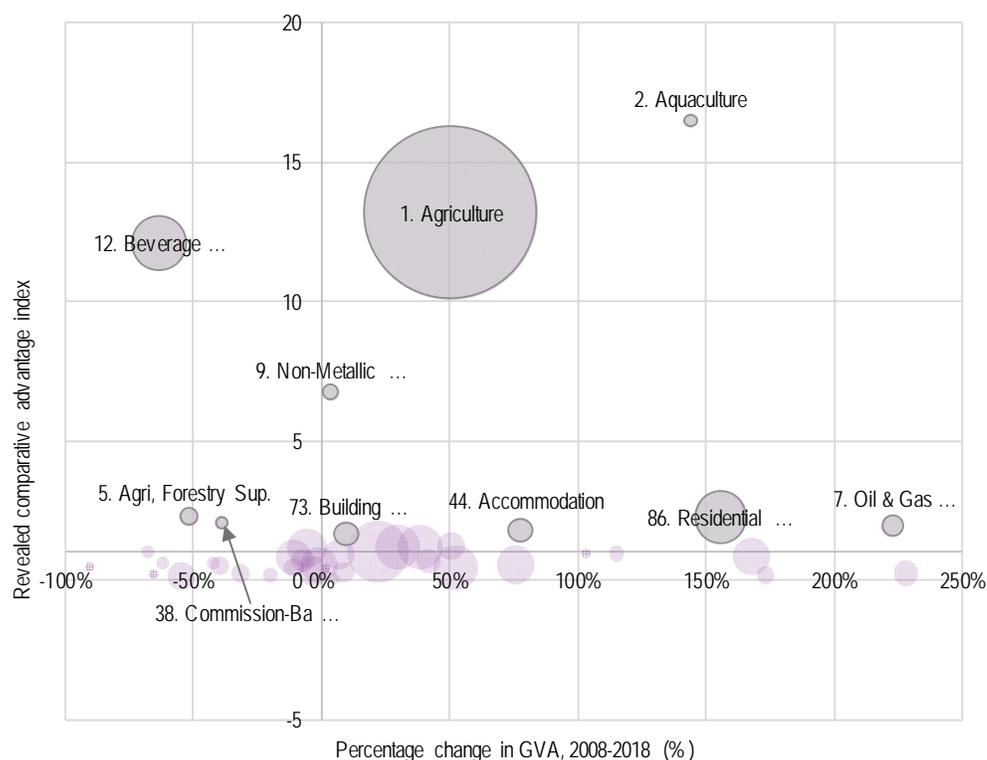
Note: This includes the revealed comparative advantage relative to the Victorian economy.
SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

Table 2.10 summarises the highest comparative advantage industries (Level 2 ANZSIC) for the Strathbogie LGA using the Victorian CAI comparison. Important industries include Agriculture and Residential Care Services, both of which have a large CAI, have undergone notable growth over the past 10 years and constitute a relatively large proportion of Strathbogie's GVA.

While Beverage and Tobacco Product Manufacturing; Agriculture, Forestry and Fishing Support Services; and Commission-Based Wholesaling have a high CAI, these industries have seen negative growth over the past 10 years.

Various other industries have high CAI and growth but remain a small proportion of Strathbogie's GVA, such as Aquaculture; Non-Metallic Mineral Mining and Quarrying; Oil and Gas Extraction; Accommodation; and Building Cleaning, Pest Control and Other Support Services.

TABLE 2.10   TOP 10 REVEALED COMPARATIVE ADVANTAGE INDUSTRIES FOR STRATHBOGIE

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10-year growth	% of LGA GVA	Quadrant
2. Aquaculture	16.5	5.8	144%	0.3%	Top right
1. Agriculture	13.2	16.5	50%	41.2%	Top right
12. Beverage and Tobacco Product Manufacturing	12.1	9.5	-63%	4.2%	Top left
9. Non-Metallic Mineral Mining and Quarrying	6.7	1.6	4%	0.4%	Top right
5. Agriculture, Forestry and Fishing Support Services	2.3	2.0	-52%	0.5%	Top left

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10-year growth	% of LGA GVA	Quadrant
86. Residential Care Services	2.3	2.7	155%	3.9%	Top right
38. Commission-Based Wholesaling	2.1	1.1	-39%	0.2%	Top left
7. Oil and Gas Extraction	2.0	0.3	223%	0.7%	Top right
44. Accommodation	1.8	1.2	77%	0.9%	Top right
73. Building Cleaning, Pest Control and Other Support Services	1.7	1.1	10%	0.8%	Top right

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

Table **2.11** summarises the largest industries (Level 2 ANZSIC) for the Strathbogie LGA.

TABLE 2.11   TOP 10 LARGEST INDUSTRIES FOR STRATHBOGIE

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10-year growth	% of LGA GVA	Quadrant
1. Agriculture	13.2	16.5	50%	41.2%	Top right
32. Construction Services	1.0	0.9	22%	5.3%	Top right
12. Beverage and Tobacco Product Manufacturing	12.1	9.5	-63%	4.2%	Top left
86. Residential Care Services	2.3	2.7	155%	3.9%	Top right
69. Professional, Scientific and Technical Services (Except Computer System Design and Related Services)	0.4	0.4	52%	2.8%	Bottom right
30. Building Construction	1.2	1.1	30%	2.7%	Top right
45. Food and Beverage Services	1.2	0.9	39%	2.7%	Top right
85. Medical and Other Health Care Services	0.9	0.6	168%	2.0%	Bottom right
46. Road Transport	1.2	1.0	-6%	2.0%	Top left
42. Other Store-Based Retailing	0.6	0.6	76%	2.0%	Bottom right

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

2.4 Summary (Level 2 ANZSIC analysis)

Table **2.12** summarises the highest revealed comparative advantage industries (Level 2 ANZSIC) for the LGAs within Goulburn, using the Victorian CAI comparison.

Traditionally considered a 'food bowl' for Victoria, Goulburn is heavily reliant on primary (agriculture) and secondary (food product and beverage manufacturing) industries. Agriculture demonstrates a strong comparative advantage across Strathbogie, Murrindindi, Moira and Greater Shepparton. Agriculture is a significant proportion of each LGA's economic activity, and has demonstrated strong growth across those LGAs of between 23 – 50 per cent in the last decade. The performance of agriculture in these areas is a result of modern farm businesses that utilise the highly fertile soils, mild climate and access to irrigation water from the Murray and Goulburn rivers. The region is a nationally significant production base for dairy, apples, pears and stone fruits. The resilience of these industries is evident in response to depressed commodity prices, variable seasonal conditions and the increasing cost of irrigation water.

The food and beverage processing industries are interlinked with the dairy and horticultural sectors that dominate the region. Food Product Manufacturing in Moira demonstrates a strong comparative advantage, strong sectoral growth in the last decade is the largest in Goulburn. Areas such as Greater

Shepparton and Mitchell demonstrate weaker comparative advantages in food product manufacturing. This could reflect the agricultural product market conditions that they trade in or the structural issues related to the cost competitiveness of manufacturing locally. These sectors are identified as having potential future growth opportunities. For this to be realised, continued improvements in production, labour and supply chain efficiencies will be essential to remaining competitive.

Other primary industries in the region including Aquaculture in Murrindindi and in Strathbogie, both demonstrating strong comparative advantages but representing such a smaller proportion of GVA that it is difficult to identify substantial economic development opportunities relevant to such sectors. Forestry and Logging in Murrindindi and Non-Metallic Mineral Mining across Murrindindi, Strathbogie and Mitchell represent very little economic activity but have significant comparative advantages. This could reflect the emerging nature of these sectors, but without further information, little inference is able to be made regarding these sectors' future prospects.

TABLE 2.12   TOP 20 HIGHEST REVEALED COMPARATIVE ADVANTAGE BY LGA, GOULBURN

Industry (Level 2 ANZSIC)	LGA	CAI (Victorian comparison)	CAI (National comparison)	10 year growth	% of LGA GVA	Quadrant
2. Aquaculture (appears: 2 times)*	Murrindindi (S)**	43.5	15.4	-22%	1%	Top left
2. Aquaculture (appears: 2 times)	Strathbogie (S)	16.5	5.8	144%	0%	Top right
1. Agriculture (appears: 4 times)	Strathbogie (S)	13.2	16.5	50%	41%	Top right
12. Beverage and Tobacco Product Manufacturing	Strathbogie (S)	12.1	9.5	-63%	4%	Top left
3. Forestry and Logging	Murrindindi (S)	11.1	6.2	-51%	1%	Top left
11. Food Product Manufacturing (appears: 2 times)	Moira (S)	9.3	12.0	112%	21%	Top right
1. Agriculture (appears: 4 times)	Murrindindi (S)	7.9	10.0	27%	25%	Top right
1. Agriculture (appears: 4 times)	Moira (S)	7.6	9.6	23%	24%	Top right
9. Non-Metallic Mineral Mining and Quarrying (appears: 3 times)	Murrindindi (S)	7.3	1.8	-6%	0%	Top left
9. Non-Metallic Mineral Mining and Quarrying (appears: 3 times)	Strathbogie (S)	6.7	1.6	4%	0%	Top right
57. Internet Publishing and Broadcasting	Greater Shepparton (C)	6.0	2.9	82%	0%	Top right
44. Accommodation	Murrindindi (S)	5.6	3.7	-2%	3%	Top left
9. Non-Metallic Mineral Mining and Quarrying (appears: 3 times)	Mitchell (S)	5.5	1.3	-51%	0%	Top left
5. Agriculture, Forestry and Fishing Support Services (appears: 2 times)	Moira (S)	4.9	4.4	67%	1%	Top right
82. Adult, Community and Other Education	Murrindindi (S)	4.4	5.1	146%	2%	Top right
1. Agriculture (appears: 4 times)	Greater Shepparton (C)	4.3	5.5	41%	13%	Top right
4. Fishing, Hunting and Trapping	Murrindindi (S)	3.7	1.6	157%	0%	Top right
5. Agriculture, Forestry and Fishing Support Services (appears: 2 times)	Greater Shepparton (C)	3.2	2.9	95%	1%	Top right
31. Heavy and Civil Engineering Construction	Mitchell (S)	3.2	2.3	92%	4%	Top right
11. Food Product Manufacturing (appears: 2 times)	Greater Shepparton (C)	2.9	3.8	-11%	6%	Top left

Note: *Revealed industries that appear in more than one LGA are identified "appears: x times. ** LGAs are classified as follows: (C) Cities, (S) Shires and (RC) Rural Cities.

*SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA*

2.4.1 Agricultural production by sector

The Level 2 ANZSIC industry, Agriculture, forms a large component of GVA for the majority of LGAs in Goulburn. **Figure 2.7** shows the estimated GVA of each of the sub industries which form Agriculture, for each LGA with a significant Agricultural industry.

Across Goulburn, Agriculture is primarily made up of Sheep, Beef Cattle and Grain Farming; and Dairy Cattle Farming; with selected LGAs having a sizable Fruit and Tree Nut Growing industries.

Across Greater Shepparton and Moira, Dairy Cattle farming is the key agricultural industry, accounting for 36 and 44 per cent of their agriculture GVA respectively. The key agriculture industry in Murrindindi and Strathbogie is Sheep, Beef Cattle and Grain Farming at 61 and 56 per cent respectively.

FIGURE 2.7   COMPOSITION OF LEVEL 2 ANZSIC INDUSTRY, AGRICULTURE, BY LGA
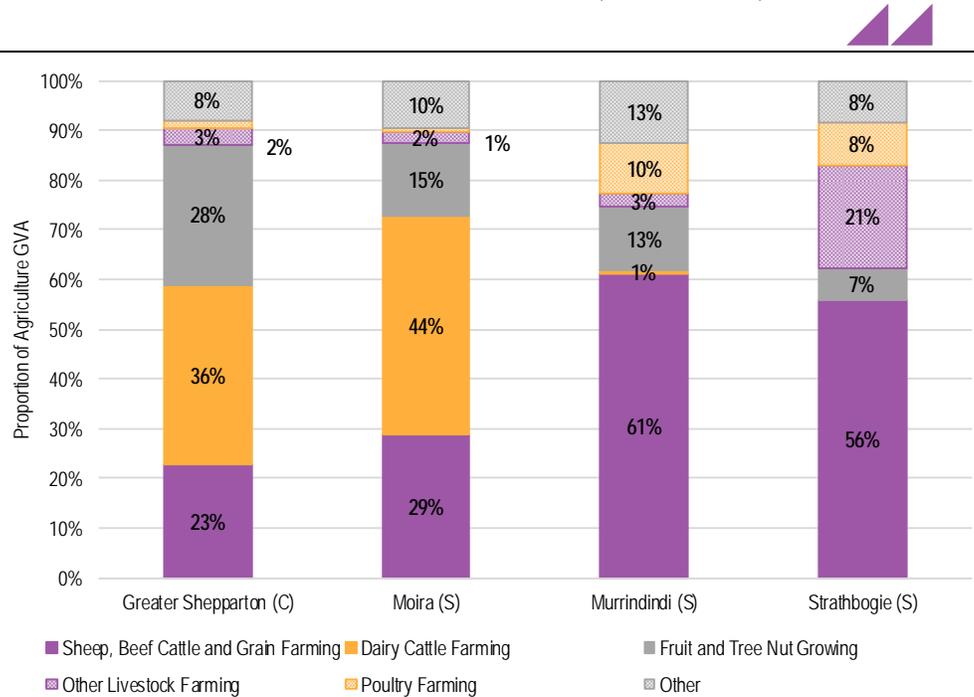
Note: Other includes: Mushroom and Vegetable Growing; Nursery and Floriculture Production; Other Crop Growing; and Deer Farming. LGAs are classified as follows: (C) Cities, (S) Shires, (RC) Rural Cities.
SOURCE: ACIL ALLEN CONSULTING SHARES OF EMPLOYMENT BY INDUSTRY

ANALYSIS OF REVEALED INDUSTRIES

This section outlines the SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis and need assessment processes undertaken by ACIL Allen for Goulburn. The analysis follows the process outlined in the assessment framework report which accompanies this profile. A SWOT examines the RCA industries identified in Chapter 2. The justification for inclusion of specific revealed industries in the SWOT is based on an assessment of several factors.

Firstly, revealed industries identified in **Table 2.12** are assessed for their RCA comparison to Victoria, the contribution to an LGA's GVA and consideration of the past decade's performance. This approach identifies the most important industries to the Goulburn region. This guides the initial SWOT analysis process. However, due to some of the limitations of the RCA (see Section 2.1), it is important to review available industry, sector and regional development literature as well as consult with relevant regional stakeholders to identify industries that the region considers as important for future economic development. In Goulburn's case, opportunities have been identified in food product manufacturing, agricultural production and tourism.

Due to the categorisation of industries in the ANZSIC codes tourism does not have a demonstrated RCA. The data simply will not allow for this calculation to be undertaken. However, this sector demonstrates many economic development opportunities for Goulburn. A further assessment of the priority industries identified that service industries may contribute to the performance of another industry. For Agriculture this may include Agriculture, Forestry and Fisheries Services Support.

In order to include industries that could be considered emerging or have demonstrated growth but are starting from a low base, it is necessary to cross-check the opportunities identified in the literature with the emerging industries presented in **Table 2.12**. Outside of Agriculture and Manufacturing, there are no industries in the top 20 that are identified in the literature that either align with the small industries (<1% GVA) demonstrating high RCA or have demonstrated strong growth over the past decade. This may reflect the limitations of the revealed industry categorisation at the ANZSIC code 2-digit level, which presents a high-level industry descriptor.

The SWOT analysis is then used to identify actionable or practical issues which are compared against the documented infrastructure needs of the region/industries. This comparison is then used to identify potential opportunities and constraints facing industries which could be addressed through future infrastructure investments.

3.1 SWOT analysis of the region and revealed industries

A summary of the SWOT for the revealed industries of Goulburn is provided in **Table 3.1** below. Information for the SWOT has been derived from multiple sources (which are largely publicly available) including data held by IV, regional plans, stakeholder consultations and industry and sectoral strategies.

TABLE 3.1   SWOT ANALYSIS FOR THE REVEALED INDUSTRIES OF GOULBURN

Category	Strengths	Weaknesses	Opportunities	Threats
Cross sector	– Goulburn Murray Irrigation District **Shepparton** – Major regional service centre	– Traditional use of the land for manufacturing and agriculture means areas may be contaminated with chemical residues – The population of over 60 year old's continues to rise, especially in Mitchell and Murrindindi. This continues the Australia-wide ageing trend stemming from lower birth rates and longer life expectancy across the country – Reliability of mobile and digital access is inadequate and constrains productivity and business competitiveness	– Improve digital connectivity through the Connecting Regional Communities Program and Mobile Blackspots Program – Opportunities through implementation of priority actions from the GMID Master Plan – Victoria's Climate Change Act 2017 establishes a long-term target of net zero greenhouse gas emissions by 2050, creating opportunities for low/zero emission sectors across the economy – Inland Rail will complete the spine of the national freight rail network, offering less than 24 hours transit time between Melbourne to Brisbane with 98% reliability. Scheduled to be completed by 2025, the Inland Rail includes Tottenham Victoria to Albury New South Wales project which will feature enhancement works along the rail corridor in Mitchell and through North East Victoria. – Goulburn Valley Highway Shepparton Bypass will address the current Goulburn Valley Highway's limitation around effectively catering to large and increasing traffic volumes using the highway. Goulburn Valley Highway is an essential transport route, connecting the Goulburn Valley region with Melbourne and forming a vital link in the national highway between Melbourne and Brisbane. **Shepparton** – Development of Goulburn Valley Freight and Logistics Centre. Intermodal transport terminal providing road and rail linkages with Port of Melbourne – Increasing access to digital economy through telecommunication and broadband infrastructure. Reduces distance between businesses and markets – Increased frequency and improved timetabling of rail services between Shepparton and Melbourne	– Climate change impacting on built environment, natural environment, health and human services, transport and availability of water – Structural shifts in agriculture and manufacturing sectors away from labour intensive to high technology and capital-intensive industries
Agriculture, Forestry and Fisheries	– Highly fertile soils and pastures suitable for dairy, beef cattle, horticulture and grain production (in North) – Significant water assets including Goulburn, Broken, Murray, Campaspe river – Irrigation infrastructure: Goulburn Murray Water Connections Project ($2B) upgrade of existing channels etc. reduced water loss 50% – Market access to Melbourne and Sydney due to central Victoria location. Shepparton considered logistics hub for the region – Reputation for food quality and safety that is highly valued by Asian consumers – Skilled workforce due to access to University of Melbourne Dookie Agricultural College and Goulburn Ovens TAFE and Centre for Excellence in Horticulture. – Local R&D capability **Fruit**	– An ageing farm workforce – Biosecurity threats (fruit fly) – Access to and cost of water for irrigation – Climate change impact: irrigation infrastructure vulnerable to extreme weather or disasters	– Develop fresh fruit export markets into Asia based on the region's reputation for quality and safety and limited trade barriers – Expansion of intensive agriculture in key commodities grown in the region (i.e., poultry, beef and pigs) and utilisation of by-products such as manure which can be converted to biogas and fertiliser Improve access for key commodities to Melbourne-Sydney markets via upgrades to linking rail infrastructure and Hume Highway linkages Feed inputs (grain and hay) produced locally, reduces cost of production – Increase diversification to include breeding of alpacas, deer and goats **Mitchell** – Opportunities exist to develop a value-added agricultural produce industry that develops a brand based on the regions attributes. There is quality land available on the Goulburn flats, which could be used for viticulture **Moira** – Opportunities exist to develop Agri-tourism focused industry in the Murray Valley (Murray Farm to Plate Program). Producers in Moira Shire engaging with Murray Regional Tourism to develop farm-gate and direct marketing approaches. They can then contribute to a network of businesses (cluster)	– Overreliance on the food sector can lead to significant disinvestment during dry periods and economic downturns – Climate change may impact the region has the highest risk of erosion from bare soils in dryland areas, threatening soil health – The frequency and severity of natural hazards such as bush fires, droughts and floods – Biosecurity risks associated with climate change: changed distribution of pests and diseases – Increased bushfire risk from climate change to impact farm businesses – Reduction in water security as a potential climate change impact – Cost and availability of irrigation water into the future

Category	Strengths	Weaknesses	Opportunities	Threats
	– 50% of value from fruit production (Goulburn) – Pome fruit (apples and pears) and stone fruit main crops **Vegetables** – Produces 50% Vic's tomatoes – Growth in hydroponic farming (Tatura Fresh, Katunga Fresh producing premium truss tomatoes for domestic and export markets) **Dairy** – Important sector driven by domestic and international demand (Asia) – Goulburn home to largest dairy processors (Bega Cheese, Tatura Milk, Freedom Foods, Unilever and Saputo, Dairy Australia) **Beef** – Important sector but small comparatively to other sectors **Mitchell** – Commercial beef and sheep operations – Smaller farming operations produce honey, chicken, olive oil, tea and coffee (trade online and at farmers markets)			
Manufacturing	**Food processing** – Important sector ($2.5B) including dairy, fruit, vegetables and beverages – Centred around Goulburn, Shepparton, Cobram and Broadford – Significant investment in dairy product manufacturing (baby formula, milk powder) **Mitchell** – Sugar and confectionary processing (Nestle)	– Victoria's economy continues to shift away from a resource-based economy to a service-based economy. This trend is also reflected in the Goulburn region with the continual decline in employment and value add in manufacturing, coupled by the increase in employment and value add in professional services – Manufacturing industry likely to be impacted by the deindustrialisation and structural changes with an expected further decline of the industry in future – Automation is likely to continue to affect future jobs in the service industries and may present new and testing challenges in next 10 to 15 years	**Food processing** – Increase investment into specialist fruit processing. Leverage proximity to produce, efficient supply chains and established markets	– Increasing international competition for the regions processed goods from cheap imports
Transport	**Shepparton** – Greater Shepparton is known as regional Victoria's largest truck sales and service centre and is recognised as a major transport hub of regional Australia	– Integration of the regions road and rail networks inhibits the ability of sectors to get products to markets in major capital cities and to ports for export	**Mitchell** – Strategic location to attract transport, warehousing and distribution businesses that need proximity to Hume highway. (food production and processing in North and markets in South (Melbourne)	– Introduction of carbon and other emissions reductions schemes place additional operational costs on the industry
Mining and energy	**Renewable energy** – Resource availability: Strathbogie ranges (wind), northern areas (solar), agricultural	– Infant industry that competes with low-cost emission intensive producers – High cost of energy	**Renewable energy** – Victoria's Climate Change Act 2017 establishes a long-term target of net zero greenhouse gas emissions by 2050. This increases viability of renewable energy	– Unsupportive national climate policy framework – Energy infrastructure is critical for all

Category	Strengths	Weaknesses	Opportunities	Threats

	areas (bioenergy from agricultural waste)		investments into the future
			– Release of new planning guidelines for large-scale solar farms
			– Renewable energy increasingly becoming cost competitive compared to traditional energy sources
			– Explore opportunities for renewable energy generation and alternative waste treatment including small scale renewable storage on small and smart grid options
			  – Wind energy in the Strathbogie Ranges
			  – Solar energy, particularly in the northern parts of the region
			  – Hydroelectricity related to key water resources
			  – Bioenergy and biofuel generation from waste products, such as agricultural wastes
			Moira
			– Opportunities to further develop large scale solar power projects (large projects approved including at Numurkah and Wunghnu
				Victoria and is largely under private ownership; infrastructure is considered in reasonable condition and has been performing within acceptable limits
				– Electricity reserves are not anticipated to meet the operators reliability standards by 2024-25

Tourism	– Nature based tourism: Murray River, Strathbogie ranges, Goulburn River and Upper Yarra (Murrindindi LGA), Cathedral Range State Park, Barmah National Park **Shepparton** – Shepparton Art Museum – Bangarang Cultural Centre – first Aboriginal Cultural 'keeping place/museum' to be developed and managed by the Aboriginal community in Australia **Mitchell** – Natured based features (Goulburn River, Tallarook Ranges, Trawool Valley) – Cultural heritage: military history and rail heritage. Well known attractions Vietnam Veteran Commemorative Walk, Australian Light Horse Memorial Park, Pioneer Park and Heritage Rail Service Centre **Murrindindi** – Lake Eildon	– Not a well-known destination for overseas or overnight tourist from outside the region	**Shepparton** – Nature based tourism experiences in the Goulburn River Parkland corridor – Expansion of the Eastbank Precinct – Continued development of the Australian Botanic Gardens – Further development of Kidstown as a visitor attraction – Upgrade of Victoria Lake Caravan Park – Indigenous cultural experiences – New Shepparton Art Museum to be finished by 2020 **Mitchell** – Opportunities around Seymour and Surrounds and Kilmore/Broadford – Develop thoroughbred and recreational equine industry in Seymour. Growth of the sector could encourage growth of complimentary sectors such as feed supplies, vet services etc. – Opportunity to extend the rail trail starting position from Tallarook to Seymour – Further utilise the Goulburn River for tourism uses **Moira** – Opportunity for expansion of tourism experience at Lake Mulwala (Yarrawonga) **Murrindindi** – Improve linkages between destinations and services for pedestrians, cyclists and horse riders. Also identify and upgrade road links for key attractions and businesses – Opportunities to support development of houseboat and broader tourism industry in Lake Eildon through Lake Eildon Blueprint **Strathbogie** – Opportunities exist to develop outdoor soft adventure activities such as walking, cycling and horse riding in conjunction with Goulburn River Valley tourism industries. Connect existing tracks and trails of significance. – Support development of Great Walk on the Strathbogie Ranges	– Climate change impacts on river or lake focused tourist experiences. Potential longer drought periods could reduce accessibility or quality of experiences – Natural disasters such as bushfires and flooding – Blue Green algae outbreak and its impact on river focused tourist experiences

Category	Strengths	Weaknesses	Opportunities	Threats
			– Develop Violet Town and Euroa as cycling training camp bases – Develop an iconic winery cycle route (Nagambie Lakes region and link with Strathbogie Ranges)	

SOURCE: VARIOUS SOURCES

VICTORIAN GOVERNMENT (2018) INVEST IN VICTORIAN AGRICULTURE AND FOOD: GOULBURN VALLEY. ACCESSED 6 JUNE 2019 (HTTPS://INVEST.AGRICULTURE.VIC.GOV.AU/#/REGION/GOU)

VICTORIAN GOVERNMENT (2014) HUME REGIONAL GROWTH PLAN. ACCESSED 6 JUNE 2019 (HTTPS://WWW.PLANNING.VIC.GOV.AU/__DATA/ASSETS/PDF_FILE/0021/94611/HUME-REGIONAL-GROWTH-PLAN-MAY-2014.PDF)

URBAN ENTERPRISE (2017) GREATER SHEPPARTON ECONOMIC DEVELOPMENT, TOURISM AND MAJOR EVENTS STRATEGY 2017 2021. ACCESSED 6 JUNE 2019 (HTTP://GREATERSHEPPARTON.COM.AU/ASSETS/FILES/DOCUMENTS/BUSINESS/GREATER_SHEPPARTON_EDTES_MAR2017.PDF)

MITCHELL SHIRE COUNCIL (2016) ECONOMIC DEVELOPMENT STRATEGY: BACKGROUND DISCUSSION PAPER.

MOIRA SHIRE COUNCIL (2018) MAJOR TOWNS' STRATEGY PLAN REVIEW (YARRAWONGA, COBRAM, NUMURKAH AND NATHALIA).

MURRINDINDI SHIRE COUNCIL (2017) MURRINDINDI SHIRE COUNCIL PRIORITY ACTION PLAN 2017-18

SENSE OF PLACE CONSULTING (2015) TRACKS AND TRAILS STRATEGY 2015 – 2018. ACCESSED 6 JUNE 2019 (HTTPS://WWW.STRATHBOGIE.VIC.GOV.AU/COUNCIL/PLANS-POLICIES-STRATEGIES-A-REPORTS/ECONOMIC-DEVELOPMENT)

REGIONAL DEVELOPMENT VICTORIA (2019) GOULBURN REGIONAL PARTNERSHIP ROADMAP. ACCESSED 7 JUNE 2019 (HTTPS://WWW.RDV.VIC.GOV.AU/REGIONAL-PARTNERSHIPS/GOULBURN/PRIORITIES)

YARRAWONGA CHRONICLE (2018) FARM GATE PROGRAM TO INVIGORATE THE MOIRA REGION. ACCESSED 7 JUNE 2019 (HTTPS://WWW.YARRAWONGACHRONICLE.COM.AU/@NEWS/2018/06/06/118991/FARM-GATE-PROGRAM-TO-INVIGORATE-THE-MOIRA-REGION)

OTHER VICTORIAN GOVERNMENT SOURCES: (REGIONAL ADAPTATION SNAPSHOT HUME: HTTPS://WWW.CLIMATECHANGE.VIC.GOV.AU/__DATA/ASSETS/PDF_FILE/0030/392925/D18-001.REGCCASNAPSHOTREPORTS_HUME_FALR.PDF); (HTTPS://INLANDRAIL.ARTC.COM.AU/BENEFITS); (HTTPS://INLANDRAIL.ARTC.COM.AU/MITCHELL);(HTTPS://INLANDRAIL.ARTC.COM.AU/NORTH-EAST-VICTORIA); (HTTPS://WWW.CLIMATECHANGE.VIC.GOV.AU/REDUCING-EMISSIONS/EMISSIONS-TARGETS); (HTTPS://WWW.PREMIER.VIC.GOV.AU/NEW-LARGE-SCALE-SOLAR-GUIDELINES-BOOST-SECTOR-CONFIDENCE/) AND (HTTP://GREATERSHEPPARTON.COM.AU/COUNCIL/MAJOR-PROJECTS/SAM/BACKGROUND/HISTORY)

To ensure the SWOT can be translated into actionable strategies, ACIL Allen has used a technique which applies four fundamental questions to the information provided above. These questions are derived from combining elements of the SWOT. They help to identify the region's 'opportunities' and 'constraints' that could be progressed/addressed through future infrastructure investment.

3.1.1   Strengths – Opportunities assessment

This part of the SWOT considers: Which of the region's/sector's strengths can be used to maximise the opportunities identified?

Agriculture (Dairy, fruit (apples and pears), stone fruit)

Goulburn is a well-known centre for irrigated fruit and dairy milk production. The region's highly fertile soils and access to Goulburn, Broken, Murray, Campaspe, Ovens River and Broken creek for irrigation water are the foundations of its productive capacity. The recent upgrade of the irrigation infrastructure through the Goulburn Murray Water Connections Project has increased the water use efficiency and will generate long-term savings. Due to the maturity of the region's industries, the main opportunities relate to further developing the domestic and export markets, enhancing the efficiency and capacity of the road transport supply chain which is a key feature of the region's comparative advantage and leveraging agritourism opportunities to attract visitors.

Driving domestic and export demand for the region's fresh and processed fruit, milk and milk products is an important strategy. This opportunity is dependent on the region's capacity to harvest, transport, process and store produce locally and efficient links to road, rail and air freight hubs. Opportunities that enhance this process will support a reduction in supply chain costs, increase capacity and maintain the region's reputation for clean and quality produce. This may include developing the Goulburn Valley Freight and Logistics Centre, aimed at providing an intermodal transport terminal that improves road and rail linkages with the Port of Melbourne. The region's long-term freight task is expected to increase if these growth scenarios occur. The local transport hub is Shepparton which is a truck service centre for Victoria. The Inland Rail project, once completed, will enhance supply chains and improve the region's connection to the national freight network between Melbourne and Brisbane.

For many overseas and domestic tourists, the farm experience is unique and if developed properly, can present an authentic experience that makes connections between the environment, the health conscious consumer and the traditional farmer. These potential agritourism type experiences have the potential to draw visitors out of Melbourne to Goulburn. For example, producers in Moira are developing their capacity to offer farm to plate type experiences to visitors. It is envisaged that a cluster of farm-to-plate experiences anchored on the Murray River could drive economic development for the region.

Food and Beverage Product Manufacturing (meat, milk product, fruit and meat)

The Goulburn Valley has a strong reputation as a 'food bowl' and processing centre for Victoria. Shepparton, Cobram and Broadford are the centres for processing fruit and milk and other food products. The towns are connected to Melbourne and Sydney via the Hume Freeway. Significant investment in dairy product manufacturing for high value products such as baby formula and milk powder are important to the region. Future opportunities for food and beverage product manufacturing are all focused around building on the current strengths which relate to the proximity of a fresh and reliable supply of produce, efficient transport linkages to markets and availability of local skilled and unskilled workforce. However, as mentioned earlier, the performance of food and beverage processors has been mixed over the past decade. This highlights that the challenging market conditions for processors are impacting these industries' future viability. There may be opportunities for processors to diversity into more niche product offerings or preparation of convenience style products which have been a growing sector in recent years.

Mining and Energy

Through the *Climate Change Act 2017*, the Victorian Government has set a long-term target of net zero emissions by 2050. This is a key opportunity for the renewable energy sector across the state.[3]

Goulburn has a vast amount of renewable energy sources available. Wind energy in the Strathbogie Ranges, solar in the northern areas and agricultural waste available for bioenergy production has potential everywhere. Solar farms have emerged in Moira centred on Numurkah and Wunghnu. There is potential for further development of this area if the essential enabling infrastructure and demand for renewable energy sources increases.

Tourism

Goulburn is well-endowed with nature-based tourism sites including the Murray River, Strathbogie Ranges, Goulburn River and Upper Yarra and Cathedral Ranges State Park. In Mitchell, the Tallarook Ranges and Trawool Valley are key tourism assets. Cultural heritage such as military and rail, including the Vietnam Veteran Commemorative Walk, Australian Light Horse Memorial Park, Pioneer Park and Heritage Rail Service Centre all have visitor appeal. Not traditionally known as a destination for overseas tourists to visit or stay longer than a day trip, there are opportunities to enhance the experience offering to these markets. Development of enabling infrastructure for nature-based sites in the Goulburn River Parkland corridor, Australian Botanic Gardens and Kidstown in the Greater Shepparton area could generate more demand. The redevelopment of the Shepparton Art Museum could also increase visitation in the area. Focusing on an area's strength, such as development of the horse racing infrastructure around Seymour, can generate greater visitation of events which benefits complimentary service sectors locally.

Expansion of the tourism experiences around Lake Mulwala can generate economic activity for Yarrawonga. In Murrindindi, upgrading the linking roads and footpaths between services and tourist destinations remain priorities. Finally, Strathbogie's many nature-based tourist experiences require enabling infrastructure to become a tourist destination. Development of the Great Walk in the Strathbogie Ranges could make the region a priority destination. Whilst development of cycling base camps around Violet Town and Euroa or a winery cycle route in the Nagambie Lakes region could target a more specific visitor market segment. These opportunities all require significant planning for enabling infrastructure that links the experiences on offer.

3.1.2   Strengths – Threats assessment

This part of the SWOT considers: How can the region's/sector's strengths be used to minimise the threats identified?

The projected impacts of climate change have significant consequences for the viability of agricultural production and irrigated agriculture in Goulburn. To reduce the impact of extended dry periods on the local economy, the region must develop industries that perform independent of climate variability. For Goulburn, this could be developing tourist destinations that provide experiences that leverage the region's natural assets, agricultural and cultural heritage, whilst not relying on good seasons to be successful. In the Murray River and Goulburn River areas, the reliance on water flow for agricultural success is all too evident. However, walks, cycling or farm-to-plate experiences are less impacted. Goulburn needs to develop a variety of nature based and targeted experiences that endure through periods of longer droughts and greater extreme weather events such as fire and flood.

3.1.3   Weaknesses – Opportunities assessment

This part of the SWOT considers: How can the region's/sector's weaknesses be minimised by using the opportunities identified?

The ongoing structural shift in the manufacturing and agricultural industries from low-skilled manual based jobs to highly skilled, automated and capital intense industries is a challenges the Goulburn region's economic growth prospects. While businesses continue to grow and expand, employment numbers in the industry have been declining. The negative growth for Food Product and Beverage

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Manufacturing industries shows the underlying vulnerabilities for these sectors. To off-set these issues, the industry needs to continue driving efficiency gains through the system, upgrading technology, building more efficient supply chain linkages and conducting R&D.

Whether adequate access to digital technologies is constraining progress, it is unclear. However, for the adoption of robotic and sensory technologies to occur, the demand on the current digital and telecommunication infrastructure could increase substantially.

3.1.4   Weaknesses – Threats assessment

This part of the SWOT considers: How can a region's/sector's weaknesses be minimised to avoid the threats it/they are facing?

In the future, the availability of irrigation water and its cost will become significant challenges for the viability of agricultural production in Goulburn. Fortunately, the recent upgrade of the irrigation channels and distribution networks has reduced water losses and improved usage. This will require maintenance and upgrades into the future.

3.2 Needs analysis of the region and relevant industries

This section identifies the needs for industry sectors and at a two-digit ANZSIC level for the Goulburn and within the Greater Shepparton, Mitchell, Moira, Murrindindi, Strathbogie LGAs. These needs have been developed based on the SWOT analytical processes.

3.2.1   What is important to the region?

Agriculture, Forestry and Fisheries

The agriculture, forestry and fisheries industries are the largest source of GVA, demonstrate strong CAI and source of growth for the region in the last decade:

— Strathbogie (13.2 CAI Vic comparison, 50 per cent growth and 41 per cent GVA)
— Murrindindi (7.9 CAI Vic comparison, 27 per cent growth and 25 per cent GVA)
— Moira (7.6 CAI Vic comparison, 23 per cent growth and 24 per cent GVA)
— Greater Shepparton (4.3 CAI Vic comparison, 41 per cent growth and 13 per cent GVA).

Dairy, apples and pears, stone fruit and beef cattle are the main production sectors for the region. Future growth of these sectors can depend on either productivity gains on-farm or developing existing or new markets to capture greater value.

What needs could be addressed by government?

— Improved road linkages between dairy and fruit producers, storage, processors and Melbourne markets.
— Improved local or country roads between the regional centres and agritourism experiences on the Murray Rivers.
— Public amenities such as toilets, rest areas and camping sites.
— Access to telecommunications and mobile broadband.

Manufacturing

The food and beverage processing industries are important processors of local dairy and horticultural products. The performance of these industries has been mixed over the last decade.

Beverage and Tobacco Manufacturing demonstrates a strong comparative advantage in Strathbogie (12.1 Victorian CAI, negative 63 per cent growth and 4 per cent GVA). Food Product Manufacturing in Moira (9.3 Victorian CAI, 112 per cent growth and 21 per cent GVA) demonstrates a strong comparative advantage, strong sectoral growth in the last decade and is the largest in Goulburn.

Food Product Manufacturing in Greater Shepparton (2.9 Victorian CAI, negative 11 per cent growth and 6 per cent GVA) and Mitchell (1.6 Victorian CAI, negative 12 per cent growth and 3.5 per cent GVA) demonstrate weaker comparative advantages and have contracted in the past decade. This could reflect the agricultural product market conditions that they trade in or the structural issues related to the cost competitiveness of manufacturing locally. These sectors are identified as having potential future growth opportunities. For this to be realised, continued improvements in production, labour and supply chain efficiencies will be essential to remaining competitive.

What needs could be addressed by government?
— Supply chain linkages including road and rail transport infrastructure.
— Digital connectivity to enable further process automation and utilisation of sensor technologies.

Mining and energy

Through the *Climate Change Act 2017*, the Victorian Government has set a long-term target of net zero emissions by 2050. This is a key opportunity for the renewable energy sector across the state.[4]

The renewable energy industry is not a revealed industry in Goulburn. Solar farms are being developed and the industry is emerging in the North of the region. More opportunities exist to expand the solar in this area, but also wind in the Strathbogie Ranges. It is recognised that in the future bioenergy and biofuel technologies could be utilised in Goulburn due to accessibility to agricultural production. These areas would benefit from enabling infrastructure to encourage investment.

What needs could be addressed by government?
— Enabling infrastructure for the solar industry in the North, including electricity distribution and connections.
— Develop supporting infrastructure to enable development of wind energy generation.

Tourism

Nature-based, agritourism and targeted experiences (cycling camp facilities) have significant potential in the Goulburn region. Although no revealed comparative advantages exist due to the nature of the industry data definitions, the literature highlights the potential for these sectors.

What needs could be addressed by government?

The tourism and supporting service sectors need public amenities for nature based or rural tourism sites, which include infrastructure that encourages accommodation, linkages between experiences, specific infrastructure that would enable development of tracks and trails in National Parks, such as the Strathbogie Ranges.

3.2.2   What opportunities and constraints does Government face in addressing these needs?

Table 3.2 summarises the opportunities and constraints government could consider in addressing the infrastructure needs of the revealed industries of Goulburn which have a high comparative advantage.

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[4] https://www.climatechange.vic.gov.au/reducing-emissions/emissions-targets

Industry	Revealed sectors	Relevant LGAs	Identified needs	Opportunities to address needs	Constraints to economic development of the sector
Agriculture, Forestry and Fisheries	Agriculture (Dairy, apples, pears, stone fruit)	Greater Shepparton	Improved road linkages between dairy and fruit producers, storage, processors and Melbourne markets	Develop the road freight linkages between the producers and processors in the Goulburn Valley and the Melbourne markets and air freight.	Inefficient freight network constrains the ability of Goulburn to increase the quantity of agricultural produce exported into Asia
			Improved local or country roads between the regional centres and agritourism experiences on the Murray Rivers Public amenities such as toilets, signage, rest areas, camping sites Farm-stay accommodation Caravan park accommodation Provision of food and beverage services Reliable access to telecommunications and mobile broadband	Prioritise and develop country road or unsealed road routes between passenger transport corridors and farm experiences. In addition, provide necessary enabling infrastructure such as public amenities and special signage. Ensure suitable mobile phone and internet connectivity is developed for areas where tourists will likely visit	Inadequate supporting services and enabling infrastructure to constrain the potential access to agritourism experiences in Moira and along the Murray River
Manufacturing	Food product manufacturing (dairy and fruit)	Greater Shepparton Strathbogie, Moira	Supply chain linkages including road and rail transport infrastructure Improved digital connectivity to enable further process automation and utilisation of sensor technologies	Develop the transport infrastructure that links food and beverage processors with producers and consumers	Inadequate road freight connections between processors, producers and consumers to remain competitive with low cost producers locally and overseas
Mining and energy	(Identified as emerging industry, based on the future opportunities identified in the SWOT however, it does not have an RCA as such)	Strathbogie Moira	Enabling infrastructure for the solar industry in the North, including electricity distribution and connections	Development of enabling infrastructure such as connecting roads and transmission network connections is essential to the efficient, cost-effective and safe operation of solar and wind power generation infrastructure	Inadequate enabling infrastructure will constrain growth in renewable energy production in the region

Industry	Revealed sectors	Relevant LGAs	Identified needs	Opportunities to address needs	Constraints to economic development of the sector
Tourism	(Identified as emerging industry, based on the future opportunities identified in the SWOT however, it does not have an RCA as such)	Moira Strathbogie Greater Shepparton	The tourism and supporting service sectors need public amenities for nature based or rural tourism sites, which include infrastructure that encourages accommodation, linkages between experiences, specific infrastructure that would enable development of tracks and trails in National Parks, such as the Strathbogie Ranges and Barmah National Park	Development of enabling infrastructure, such as public amenities, at nature-based tourist destinations will encourage investment in tourist experiences and supporting services (food, beverage and accommodation)	Limited public amenities at nature-based or remote tourist destinations constrains the potential numbers of visitors able to access the site or length of time that they will stay at a site

SOURCE: ACIL ALLEN

ABOUT ACIL ALLEN CONSULTING

ACIL ALLEN CONSULTING IS THE
LARGEST INDEPENDENT,
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AND PUBLIC POLICY CONSULTANCY.

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AND INNOVATIVE ADVICE HAS BEEN
DEVELOPED OVER A PERIOD OF
MORE THAN THIRTY YEARS.