

REPORT TO  
**INFRASTRUCTURE VICTORIA**  
22 JULY 2019

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# CENTRAL HIGHLANDS

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INDUSTRY PROFILE  
**FINAL**





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# EXECUTIVE SUMMARY

## Overview of region

The Central Highlands region is situated in central Victoria to the west of Melbourne. The region shares boundaries with Wimmera Southern Mallee region to the west, Loddon Campaspe region to the north, Melbourne metropolitan area to the east and Great South Coast region and Barwon region to the south.

Central Highlands has a diverse economy based upon manufacturing, services and agriculture. Located on the fringe of Melbourne, the region is growing, with families moving to the eastern portion of the region (due to cheaper housing costs and strong transport links) and commuting to work in Melbourne. Growth in the region is underpinned by the city of Ballarat, the principal urban centre in Central Highlands and largest employer across the region.

Several major highways and rail lines link the Central Highlands with adjoining regions, Melbourne metropolitan area and key ports in Melbourne and Geelong. The region has several small airports such as Ballarat Airport which is used for emergency services, civil operation and flight training for community groups/organisations. Transportation is primarily by road and rail, with the city of Ballarat serviced by four major highways providing access to Melbourne's metropolitan area and container port and key regional ports in Geelong and Portland.

## 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 Central Highlands 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) for the local government areas (LGAs) within Central Highlands, using the Victorian CAI.

The region is characterised as highly concentrated in agricultural production, with Agriculture and the complementary Support Services industries' strong CAIs, growth in the past decade and high proportion of total GVA across rural LGAs. For example, Agriculture in the Pyrenees LGA (14.5 Victorian CAI, 58 per cent growth and 45 per cent of GVA), Golden Plains LGA (12.9 Victorian CAI, 102 per cent growth and 40 per cent of GVA), Hepburn LGA (7.4 Victorian CAI, 114 per cent growth and 23 per cent of GVA) and Ararat LGA (7.2 Victorian CAI, 15 per cent growth and 23 per cent GVA) are all the largest industries for their respective LGA and demonstrate significant growth during the past decade. Smaller comparative advantages exist in the Moorabool and Ballarat LGAs. The strong comparative advantage and growth has been driven by the performance of lamb and wool production, wheat production and strong horticultural sectors such as vegetables, mushrooms and potatoes. The complimentary Agriculture, Forestry and Fisheries Services Support industries also demonstrated strong comparative advantages and growth.

While higher comparative advantages are demonstrated in Non-Metallic Mineral Mining and Quarrying in Moorabool LGA (25.5 CAI, 29 per cent growth and 1 per cent GVA) and Golden Plains LGA (17.2 Victorian CAI, 8 per cent decline and 1 per cent GVA), these industries represent minor contributors to their LGA's GVA and inherent growth opportunities are less evident.

Beverage and Tobacco Product Manufacturing in the Pyrenees LGA (11.1 CAI, 64 per cent decline and 4 per cent GVA) is the only Manufacturing industry that demonstrates a strong comparative advantage for Central Highlands. However, it must be noted that while Food Product Manufacturing (section 2.3) demonstrates relatively small comparative advantages, these are small but important industries for Ararat LGA (1.8 CAI, 22 per cent growth and 4.1 per cent GVA), Ballarat LGA (1.9 CAI, 2 per cent growth and 4.2 per cent GVA), Golden Plains LGA (1.8 CAI, 159 per cent growth and 3.9 per cent GVA) and Hepburn LGA (1.6 CAI, 80 per cent growth and 3.5 per cent GVA). These secondary industries source sheep, grain and horticulture and viticulture products locally.

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

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)*	Moorabool (S)**	25.5	6.2	29%	1%	Top right
9. Non-Metallic Mineral Mining and Quarrying (appears: 3 times)	Golden Plains (S)	17.2	4.1	-8%	1%	Top left
5. Agriculture, Forestry and Fishing Support Services (appears: 5 times)	Moorabool (S)	16.9	15.0	290%	4%	Top right
5. Agriculture, Forestry and Fishing Support Services (appears: 5 times)	Hepburn (S)	15.2	13.7	603%	3%	Top right
1. Agriculture (appears: 4 times)	Pyrenees (S)	14.5	18.2	58%	45%	Top right
1. Agriculture (appears: 4 times)	Golden Plains (S)	12.9	16.2	102%	40%	Top right
12. Beverage and Tobacco Product Manufacturing	Pyrenees (S)	11.1	8.7	-64%	4%	Top left
2. Aquaculture (appears: 2 times)	Golden Plains (S)	10.6	3.7	73%	0%	Top right
5. Agriculture, Forestry and Fishing Support Services (appears: 5 times)	Golden Plains (S)	10.3	9.1	139%	2%	Top right
6. Coal Mining (appears: 2 times)	Moorabool (S)	10.0	1.1	266%	3%	Top right
44. Accommodation	Hepburn (S)	8.6	5.8	44%	4%	Top right
60. Library and Other Information Services	Pyrenees (S)	8.4	45.3	-52%	0%	Top left

Industry (Level 2 ANZSIC)	LGA	CAI (Victorian comparison)	CAI (National comparison)	10 year growth	% of LGA GVA	Quadrant
2. Aquaculture (appears: 2 times)	Pyrenees (S)	7.6	2.7	135%	0%	Top right
5. Agriculture, Forestry and Fishing Support Services (appears: 5 times)	Pyrenees (S)	7.6	6.7	123%	2%	Top right
1. Agriculture (appears: 4 times)	Hepburn (S)	7.4	9.4	114%	23%	Top right
1. Agriculture (appears: 4 times)	Ararat (RC)	7.2	9.0	15%	23%	Top right
6. Coal Mining (appears: 2 times)	Ballarat (C)	7.1	0.8	120,305%	2%	Top right
9. Non-Metallic Mineral Mining and Quarrying (appears: 3 times)	Ararat (RC)	6.5	1.6	150%	0%	Top right
4. Fishing, Hunting and Trapping	Pyrenees (S)	6.4	2.8	1276%	0%	Top right
5. Agriculture, Forestry and Fishing Support Services (appears: 5 times)	Ballarat (C)	6.0	5.5	603%	1%	Top right

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 Central Highlands, ACIL Allen undertook a 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 the region'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 the Central Highland's case, opportunities have been identified in Agriculture, Forestry and Fisheries, Manufacturing, Mining and Energy 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 the region. A further assessment of the priority industries considers service industries that may contribute to the performance of a primary or secondary industry – for Tourism, this may include Accommodation.

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 ES1. Outside of Agriculture, Manufacturing and Tourism (Accommodation), 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.

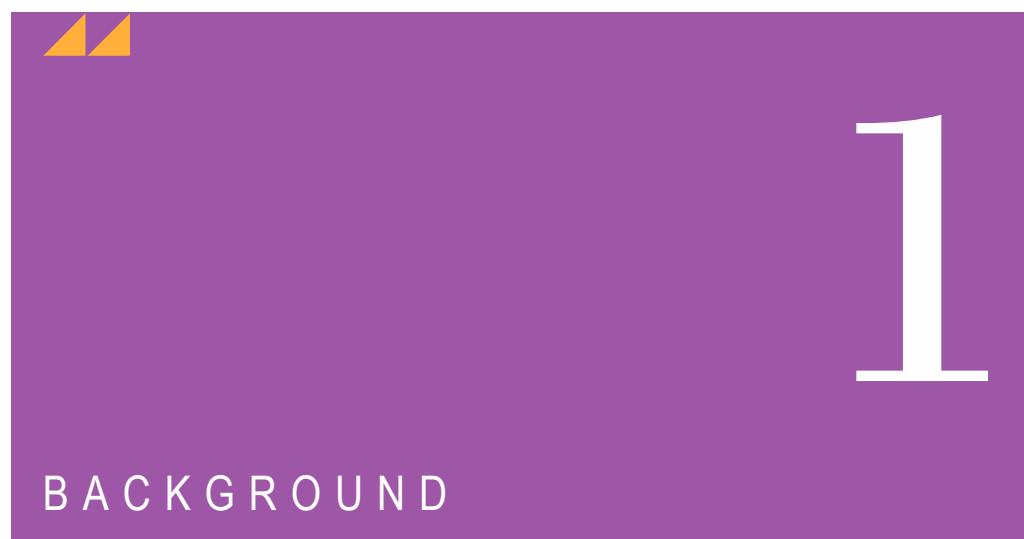
The SWOT analysis is then used to identify actionable or practical issues which are compared against the documented infrastructure needs of the region/industries. This comparison is then used to identify potential opportunities and constraints facing industries which could be addressed through future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

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

Industry	Revealed sectors	Relevant LGAs	Identified needs	Opportunities to address needs	Constraints to economic development of the sector
Agriculture, Forestry and Fisheries	Agriculture (poultry and horticulture)	Golden Plains Moorabool	Reliable irrigation water supply for intensive agriculture, such as poultry farms	Infrastructure investment to achieve greater water security in these LGAs will become critical to ensure the ongoing viability or further development of intensive agriculture in a changing climate	Availability of irrigation water, which is a function of availability and quality of irrigation infrastructure, such as the Bacchus Marsh Irrigation District
	Agriculture (Sheep, Grain, Horticulture, Intensive livestock)	Pyrenees Golden Plains Hepburn Ararat	The sheep, grain, horticulture and intensive farming industries would benefit from improved access to NBN and mobile broadband services	Enhance investment in NBN or telecommunication assets in prime agricultural production areas including for intensive livestock and horticulture production	Limited access to fast and reliable internet services in rural LGAs, compared to metropolitan regions. This constrains farm businesses ability to implement the latest technology on-farm
		Pyrenees Golden Plains Hepburn Ararat	The sheep, grain, horticulture and intensive farming industries and input suppliers need quality transport routes to markets, storage, processors and direct to customers	Invest in priority road infrastructure that improves access between agricultural production and domestic and international markets	Inadequate roads in rural areas limit farm businesses ability to sell agricultural produce in a timely, safe and efficient manner
Manufacturing	Food Product Manufacturing	Ararat Golden Plains Ballarat Hepburn	Meat, grain and horticulture processors need reliable and cost-effective access to water, energy and waste services	To encourage investment in new processing facilities, access to reliable and modern utility services for water, energy and waste is essential	Meat, grain and horticulture processing is highly water and energy intensive. Without access to such services and resources, businesses are unable to develop or expand
Mining and energy	Wind energy power generation (Identified as emerging industry, based on the future opportunities identified in the SWOT however, it does not have a RCA as such)	Hepburn	Proximity to the energy source and to parts of the electricity grid with spare capacity The ability to create buffers to sensitive land uses Access to appropriate transport infrastructure	Development of enabling infrastructure such as connecting roads and transmission network connections is essential to the efficient, cost-effective and safe operation of wind turbine infrastructure	New wind turbine developments are located in remote rural areas on greenfield sites that require access to enabling infrastructure
Tourism	(Identified as emerging industry, based on the future opportunities identified in the SWOT however, it does not have an RCA as such)	All	Nature based tourism sites including National Parks require basic amenities and infrastructure to encourage investment in experiences, food and accommodation services	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





## 1.1 Overview of the Central Highlands

The Central Highlands region is situated in central Victoria to the west of Melbourne. The region shares boundaries with Wimmera Southern Mallee and Loddon Campaspe regions to the north; Melbourne metropolitan area to the east; and Great South Coast and Barwon regions to the south. The Central Highlands region accounts for 6.4 per cent of Victoria's land area (covering an area of 14,672 km<sup>2</sup>). As at 2018, the Central Highlands had an estimated resident population (ERP) of 199,563 persons or 3.1 per cent of Victoria's population. The region's population and land size by local government area (LGA) are shown in Table 1.1 below.

TABLE 1.1 POPULATION AND AREA, LGA AND SUB-REGION, CENTRAL HIGHLANDS REGION, 2018

Local Government Area and (sub-region)	ERP	Share of region ERP	Area (km <sup>2</sup> )	Share of region area
Ararat Rural City (Western rural areas)	11,795	6%	4,211	29%
Ballarat Rural City (Ballarat regional hub)	107,325	54%	739	5%
Golden Plains Shire (Peri-urban eastern fringe)	23,120	12%	2,703	18%
Hepburn Shire (Peri-urban eastern fringe)	15,812	8%	1,473	10%
Moorabool Shire (Peri-urban eastern fringe)	34,158	17%	2,111	14%
Pyrenees Shire (Western rural areas)	7,353	4%	3,435	23%
<b>Central Highlands region<sup>(1)</sup></b>	<b>199,563</b>	<b>100%</b>	<b>14,765</b>	<b>100%</b>

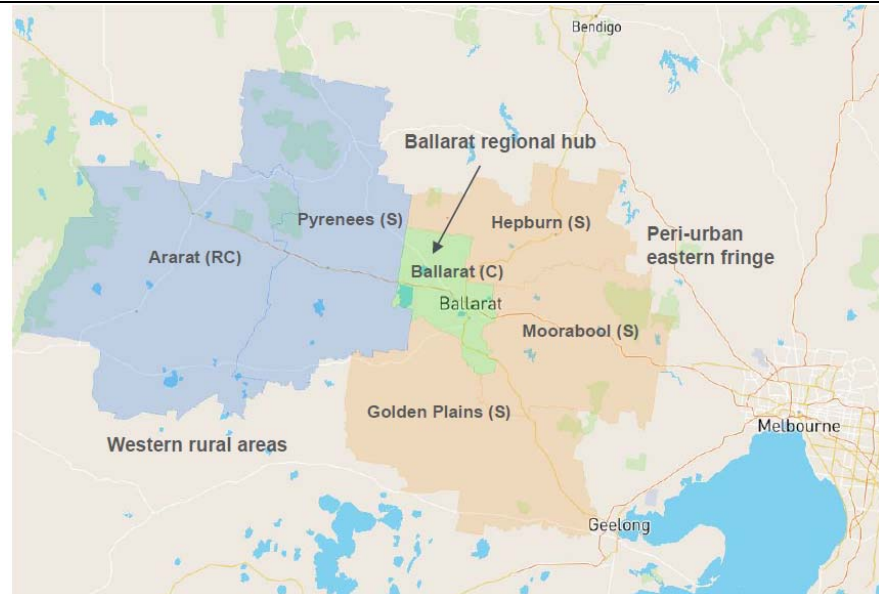
Note: (1) Totals may not sum to 100 per cent due to rounding.

SOURCE: ABS CAT NO. 3218.0, REGIONAL POPULATION GROWTH, AUSTRALIA.

The sub-regions of the Central Highlands have been aggregated from LGAs based on common economic, social and environmental characteristics. A list of sub-regions and map (see Figure 1.1) are provided below:

- Western rural areas (blue)
- Ballarat regional hub (green)
- Peri-urban eastern fringe (orange)

FIGURE 1.1 SUB-REGION MAP, THE CENTRAL HIGHLANDS, 2019



SOURCE: CENTRAL HIGHLANDS REGIONAL PROFILE 2018.

Central Highlands is a diverse economy based upon manufacturing, services and agriculture. Located on the fringe of Melbourne, the region is growing, with families moving to the eastern portion of the region (due to cheaper housing costs and strong transport links) and commuting to work in Melbourne. Regional growth is underpinned by the city of Ballarat the principal urban centre in Central Highlands and largest employer across the region.

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 Central Highlands region in terms of natural resources and environmental features are described below.

Natural resources include:

- gold
- copper
- coal
- solar and wind energy
- timber.

Key environmental assets include

- farmland (suitable for dryland farming)
- Grampians National Park
- State parks near Melbourne.

### 1.1.2 Key infrastructure

Several major highways and rail lines link the Central Highlands with adjoining regions, Melbourne metropolitan area and key ports in Melbourne and Geelong. The region has several small airports such as Ballarat Airport which is used for emergency services, civil operation and flight training for community groups/organisations. Transportation is primarily by road and rail. Ballarat is serviced by four major highways providing access to Melbourne's metropolitan area and container port and key

regional ports in Geelong and Portland. There are numerous reservoirs located in the region. A summary of key transport, water and power infrastructure is provided in Box 1.1.

**BOX 1.1 KEY INFRASTRUCTURE, THE CENTRAL HIGHLANDS, 2019**

**Roads**

- Western Highway (418 kms): Ballarat – Melbourne (services western Victoria and links to South Australia).
- Midland Highway (452 kms): Ballarat – Geelong and Bendigo (services central Victoria).
- Glenelg Highway (301 kms): Ballarat – Portland (services western Victoria).
- Sunraysia Highway (345 kms): Ballarat – Mildura (services western Victoria and links to South Australia).
- Pyrenees Highway (206 kms): Ararat – Bendigo (services western Victoria).

**Rail**

- Direct passenger rail services from Ararat to Melbourne through Ballarat and from Maryborough to Melbourne.
- Freight rail lines to Melbourne, Geelong and Portland.

**Water**

- Lal Lal reservoir (water storage).
- White Creek reservoir (water storage).
- Merrimu reservoir (water storage).
- Pykes Creek reservoir (water storage).
- Goldfields Superpipe (supplies Ballarat with water).
- Ballarat North Treatment Plant (waste water treatment and supply of recycled water).

**Power**

- Large wind farm located at Waubra (capacity to power 120,000 homes).

**Airports**

- Several small airports service the region (e.g. Ballarat).
- Access to Avalon and Tullamarine Airports (located just outside the Region) providing passenger flights and air-freight services.

**Seaports**

- Landlocked region with no seaports.
- Rail and road access to Port Melbourne, Port Geelong and Portland Port.

*SOURCE: CENTRAL HIGHLANDS REGIONAL PROFILE 2018.*

Locations of major transport routes across the Central Highlands and linkages to adjoining regions and airports are shown in Figure 1.2.

FIGURE 1.2 TRANSPORT INFRASTRUCTURE, THE CENTRAL HIGHLANDS, 2019



SOURCE: CENTRAL HIGHLANDS REGIONAL PROFILE 2018.

### 1.1.3 Other regional attributes

The Central Highlands has a diverse economy based on manufacturing, agriculture and services. The region is in close proximity to the Melbourne Metropolitan area – supporting population growth. Ballarat (the region's largest urban centre) comprises nearly half of the region's population with an economy based on services (health and education) and manufacturing (e.g. food processing). Ballarat also has strong transport linkages with Melbourne and key infrastructure in surrounding regions such as Avalon Airport and Geelong and Portland Ports. Outside of Ballarat, economic activity is based around livestock industries (such as sheep and wool and dairy cattle) which are major exports for the region. A summary of key strengths is provided in Box 1.2.

## BOX 1.2 OTHER REGIONAL ATTRIBUTES, THE CENTRAL HIGHLANDS, 2019

**Agriculture**

- Livestock industries (i.e. sheep grazing, wool and dairy cattle).

**Economy**

- Service sector employment is growing i.e. health, education and food services.
- Increasing demand for skilled labour (especially in services).
- Growth of businesses in the construction, accommodation and food service sectors
- Strong transport and labour market linkages with Melbourne

**Ballarat**

- Regional hub and source of employment, major service centre for surrounding farming communities.
- Processing and transport of locally produced agricultural products for export.
- Food product manufacturing (e.g. McCain Foods and Mars).
- Transport equipment manufacturing (e.g. Ballarat North Workshops – train and tram maintenance/upgrades).

**Geography**

- Located within commuting distance of major urban centres of Melbourne and Geelong.

SOURCE: CENTRAL HIGHLANDS REGIONAL PROFILE 2018.

## 1.2 Sub-regions of the Central Highlands

There are infrastructure and other differences within the LGAs of the Central Highlands. As an example, some LGAs contain a mixture of industries while others are largely rural based. Some of the differences in economic, environmental and social characteristics within the region are described below.

### Ballarat Regional Hub (Ballarat Rural City Council)

Comprised of Ballarat Rural City Council, the “Ballarat Regional Hub” sub-region (highlighted in green in Figure 1.1) contains 54 per cent and 5 per cent of Central Highlands region’s ERP and area respectively. Key facts about the Ballarat Regional Hub sub-region include:

- contains the major urban centre of Ballarat
- largest industry is manufacturing (Gross Value Added (GVA))
- growing population
- diverse industry base (health and education services, manufacturing and construction)
- agglomeration and relocation of services in Ballarat away from rural areas
- major centre of employment for the surrounding area.

### Peri-urban Eastern Fringe (Golden Plains, Hepburn and Moorabool Shire Councils)

Comprising the Golden Plains, Hepburn and Moorabool Shire Councils, the “Peri-urban Eastern Fringe” sub-region (highlighted in orange in Figure 1.1) contains 37 per cent and 42 per cent of Central Highlands region’s ERP and area respectively. Key facts about the Peri-urban Eastern Fringe sub-region include:

- contains the township of Bannockburn (5,001 | 2016 Census) and Creswick (2,742 | 2016 Census) and urban area of Bacchus Marsh (17,302 | 2016 Census)
- largest industry is agriculture (based on GVA)
- large commuter population based in the region working in Melbourne’s metropolitan area
- income levels above the state average
- low levels of social disadvantage relative to the rest of Victoria (excluding Hepburn Shire)
- performs well on social indicators relating to health, education and early childhood outcomes.

### Western Rural Areas (Ararat Rural City and Pyrenees Shire Councils)

Comprising the Ararat Rural City and Pyrenees Shire Councils the “Western Rural Areas” sub-region (highlighted in orange in Figure 1.1) contains 10 per cent and 52 per cent of the region’s ERP and area respectively. Key facts about the Western Rural Areas sub-region include:

- contains the townships of Ararat (6,925 | 2016 Census), Beaufort (1,539 | 2016 Census) and Avoca (972 | 2016 Census)
- largest industry is agriculture (by GVA)
- comparatively lower incomes (compared with other LGAs)
- relatively high levels of disadvantage (compared with other LGAs in Victoria)
- high proportion of early school leavers relative to the state average
- high proportion of youth engaged in full-time employment as opposed to study or training
- poor performance on social indicators relating to health, education and early childhood outcomes.

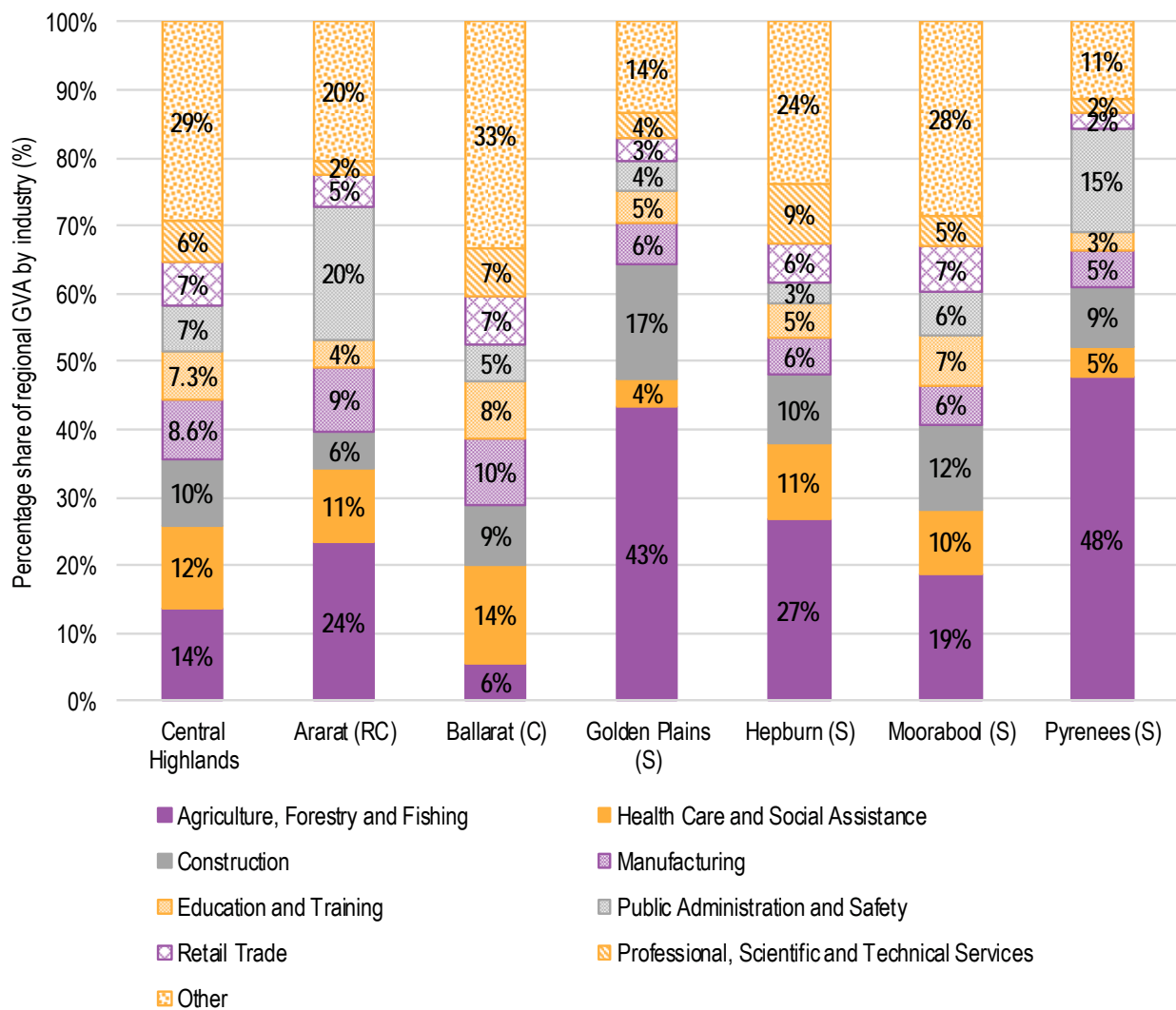
## 1.3 Industry composition

The Gross Regional Product (GRP) of the Central Highlands region is the sum of industrial Gross Value Add(GVA)<sup>1</sup>. Figure 1.3 shows the 2017-18 distribution of GVA across the largest industries for the Central Highlands and its six LGAs. The biggest industries by GVA in the Central Highlands are: Agriculture, Forestry and Fishing (14 per cent), Health Care and Social Assistance (12 per cent), Construction (10 per cent), Manufacturing (8.6 per cent) and Education and Training (7.3 per cent). These five industries comprise just over half of the Central Highlands’ GVA.

Ballarat and Moorabool LGA each have a relatively diversified economy with a relatively even spread across multiple industries. Ararat LGA has a large Agriculture, Forestry and Fishing industry (24 per cent) and Public Administration and Safety industry (20 per cent). Golden Plains and Pyrenees LGAs have very large Agriculture, Forestry and Fishing industries at 43 per cent and 48 per cent respectively.

<sup>1</sup> 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 CENTRAL HIGHLANDS REGION, 2017-18



Note: Other includes industries with less than 5 per cent of Central Highlands GVA: Financial and Insurance Services; Transport, Postal and Warehousing; Accommodation and Food Services; Electricity, Gas, Water and Waste Services; Information Media and Telecommunications; Wholesale Trade; Mining; Rental, Hiring and Real Estate Services; Other Services; Administrative and Support Services; and Arts and Recreation Services. LGAs are classified as follows: (C) Cities, (S) Shires, (RC) Rural Cities.

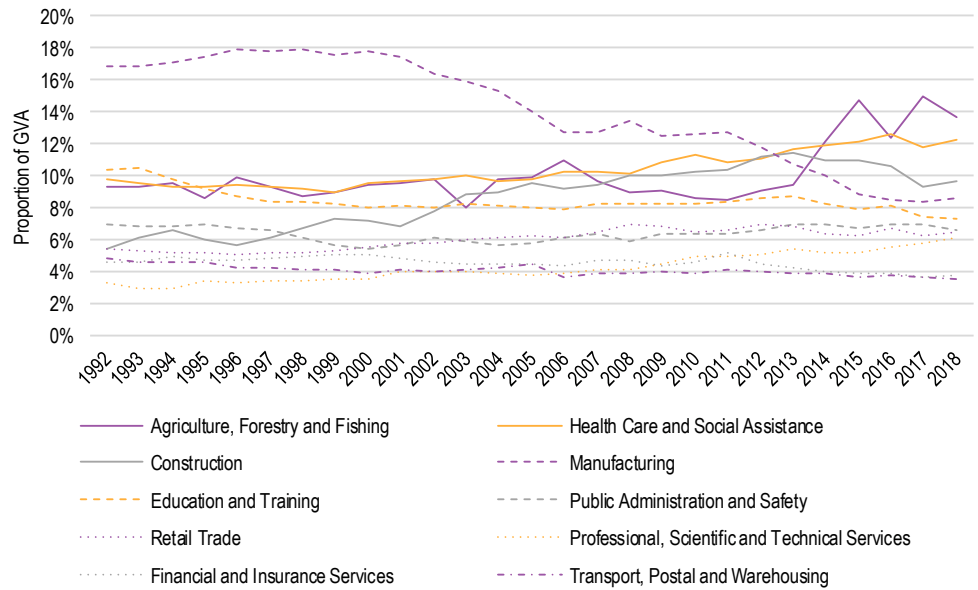
SOURCE: IV DATA 2019

Figure 1.4 shows the GVA share of key industries in the Central Highlands from 1991-92 to 2017-18. The share of GVA from Manufacturing has declined from 13 per cent in 2008 to 8.6 per cent in 2018; similarly, Financial and Insurance Services has seen a large decline over the past decade falling from 4.7 per cent in 2008 to 3.7 per cent in 2018.

Since 2007-08, there has been an increase in the share of GVA from Professional, Scientific and Technical Services increasing from 4.2 per cent to 6.1 per cent (a 47 per cent increase); and Agriculture, Forestry and Fishing increasing from 8.9 per cent to 13.6 per cent (a 52 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.

FIGURE 1.4 GVA SHARE OF KEY INDUSTRIES IN THE CENTRAL HIGHLANDS REGIONS 1991-92 TO 2017-18



SOURCE: IV DATA 2019





## 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 the comparative advantage of the Central Highlands 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 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 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 an indicator of strength and 'importance' to the future of the 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 Central Highlands (Level 1 ANZSIC analysis)

Figure 2.1 shows the CAI and industry growth for Level 1 ANZSIC industries in the Central Highlands. The chart excludes Agriculture and Mining which each have high CAI and growth to focus on the moderate CAI industries. 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 an 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 which 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 the Central Highlands which appear to have comparative advantage and potential growth characteristics include Agriculture, Forestry and Fishing; Mining; and Health Care and Social Assistance.

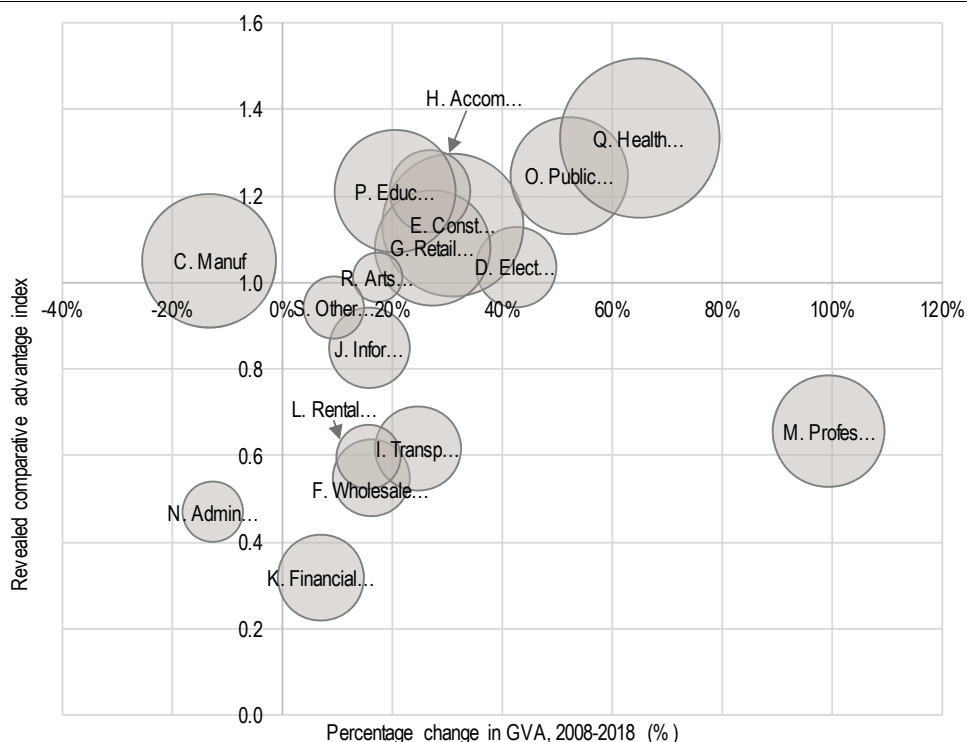
*Top Left, comparative advantage with no growth:* These are the industry sectors which have a comparative advantage, but have been in decline over the past decade. For Central Highlands, this

refers to the Manufacturing 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 for which a region does not have comparative advantage. Our analysis shows that for Central Highlands, these include Wholesale Trade; Transport, Postal and Warehousing; Financial and Insurance Services; and Professional, Scientific and Technical Services. 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 Administrative and Support Services industry. 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 – CENTRAL HIGHLANDS 2017-18, LEVEL 1 ANZSIC



Note: This includes the revealed comparative advantage index of the Central Highlands relative to the Victorian economy. This chart excludes Agriculture, Forestry and Fishing; and Mining (which have a very high CAI) to focus the chart on the cluster of moderate CAI industries.

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

Table 2.1 summarises the highest RCA industries (Level 1 ANZSIC) for the Central Highlands. 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 CENTRAL HIGHLANDS, 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	3.9	4.6	107%	13.6%	Top right
B. Mining	2.7	0.2	304%	2.2%	Top right
Q. Health Care and Social Assistance	1.3	1.5	65%	12.3%	Top right
O. Public Administration and Safety	1.2	1.1	52%	6.6%	Top right
H. Accommodation and Food Services	1.2	1.2	27%	3.3%	Top right
P. Education and Training	1.2	1.3	21%	7.3%	Top right
E. Construction	1.1	1.1	31%	9.7%	Top right
G. Retail Trade	1.1	1.3	27%	6.5%	Top right
C. Manufacturing	1.1	1.3	-13%	8.6%	Top left
D. Electricity, Gas, Water and Waste Services	1.0	1.1	43%	3.2%	Top right

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

## 2.3 Central Highlands LGA analysis (Level 2 ANZSIC analysis)

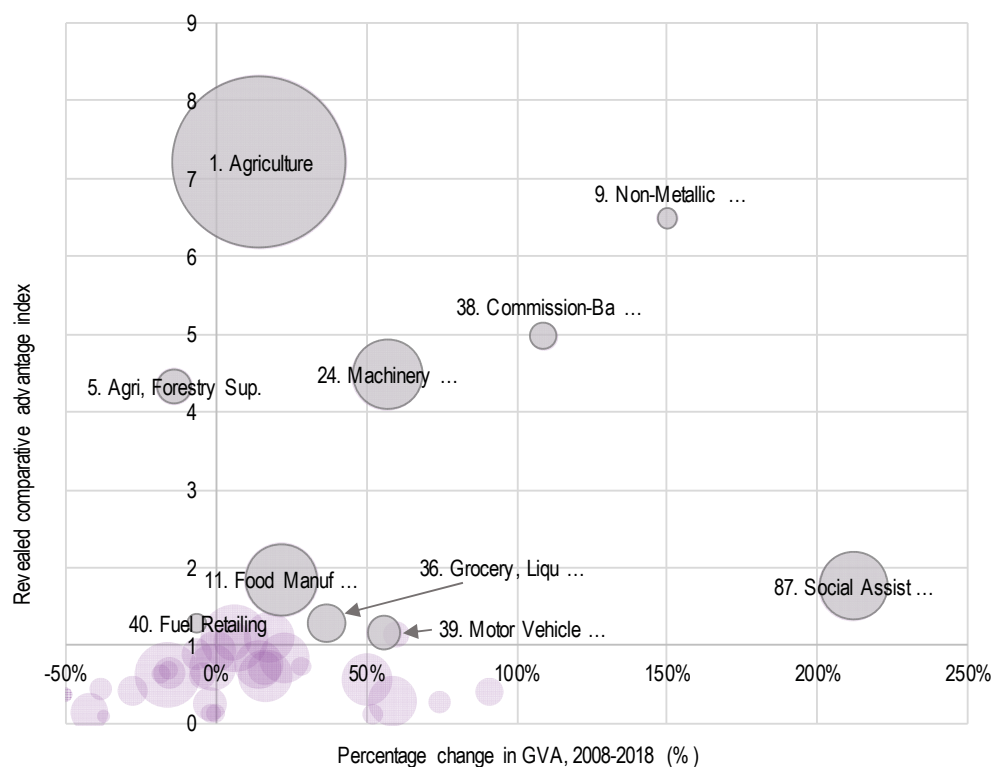
The following section includes revealed comparative advantage analysis by Level 2 ANZSIC industries for the Central Highlands LGAs: Ararat, Ballarat, Golden Plains, Hepburn, Moorabool and Pyrenees.

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 Ararat

Figure 2.2 shows RCA analysis by Level 2 ANZSIC industries for the Ararat LGA. Key industries of interest with a high CAI in the Ararat LGA include Agriculture; Non-Metallic Mineral Mining and Quarrying; Commission-Based Wholesaling; Machinery and Equipment Manufacturing; and Agriculture, Forestry and Fishing Support Services (see Table 2.2).

FIGURE 2.2 COMPARATIVE ADVANTAGE INDEX FOR ARARAT, 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 Ararat LGA using the Victorian CAI comparison. Important industries include Agriculture; Machinery and Equipment Manufacturing; Food Product Manufacturing and Social Assistance Services which have large CAI, have undergone notable growth over the past 10 years and constitute a relatively large proportion of Ararat's GVA. While Non-Metallic Mineral Mining and Quarrying and Commission-Based Wholesaling have seen growth over the past 10 years and have a high CAI, both currently account for a small proportion of Ararat's GVA.

TABLE 2.2 TOP 10 REVEALED COMPARATIVE ADVANTAGE INDUSTRIES FOR ARARAT

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10-year growth	% of LGA GVA	Quadrant
1. Agriculture	7.2	9.0	15%	22.5%	Top right
9. Non-Metallic Mineral Mining and Quarrying	6.5	1.6	150%	0.3%	Top right
38. Commission-Based Wholesaling	5.0	2.7	109%	0.6%	Top right
24. Machinery and Equipment Manufacturing	4.5	3.6	57%	3.8%	Top right
5. Agriculture, Forestry and Fishing Support Services	4.3	3.8	-14%	1.0%	Top left
11. Food Product Manufacturing	1.8	2.4	22%	4.1%	Top right
87. Social Assistance Services	1.8	2.5	212%	3.6%	Top right
36. Grocery, Liquor and Tobacco Product Wholesaling	1.3	1.4	37%	1.1%	Top right

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10-year growth	% of LGA GVA	Quadrant
40. Fuel Retailing	1.3	1.2	-6%	0.3%	Top left
39. Motor Vehicle and Motor Vehicle Parts Retailing	1.2	1.0	56%	0.9%	Top right

*SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA*

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

TABLE 2.3 TOP 10 LARGEST INDUSTRIES FOR ARARAT

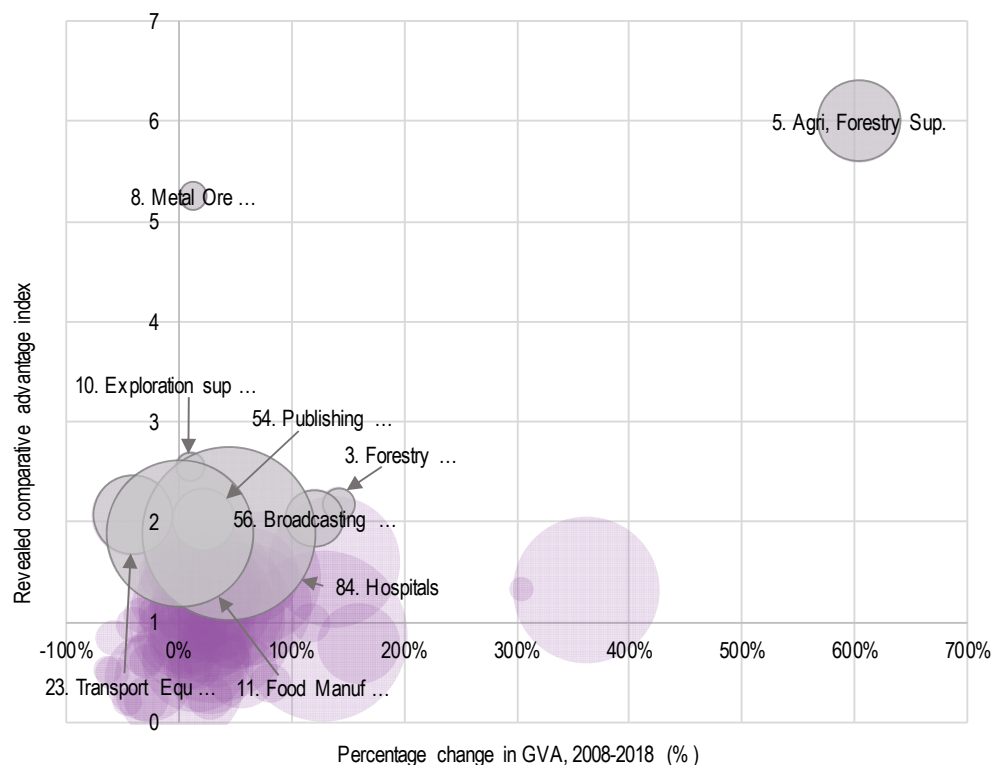
Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10-year growth	% of LGA GVA	Quadrant
1. Agriculture	7.2	9.0	15%	22.5%	Top right
11. Food Product Manufacturing	1.8	2.4	22%	4.1%	Top right
24. Machinery and Equipment Manufacturing	4.5	3.6	57%	3.8%	Top right
87. Social Assistance Services	1.8	2.5	212%	3.6%	Top right
84. Hospitals	1.1	3.6	6%	3.4%	Top right
32. Construction Services	0.6	0.5	-16%	3.2%	Bottom left
42. Other Store-Based Retailing	0.6	0.7	16%	2.1%	Bottom right
67. Property Operators and Real Estate Services	0.6	0.3	50%	1.9%	Bottom right
86. Residential Care Services	1.1	1.3	18%	1.9%	Top right
45. Food and Beverage Services	0.8	0.7	23%	1.9%	Bottom right

*SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA*

### 2.3.2 Ballarat

Figure 2.3 shows RCA analysis by ANZSIC level 2 industries for the Ballarat LGA. Key industries of interest with a high CAI in the Ballarat LGA include Coal Mining; Agriculture, Forestry and Fishing Support Services; Metal Ore Mining; Exploration and Other Mining Support Services; and Forestry and Logging (see Table 2.4).

FIGURE 2.3 COMPARATIVE ADVANTAGE INDEX FOR BALLARAT, 2017-18, LEVEL 2 ANZSIC



Note: This includes the revealed comparative advantage relative to the Victorian economy. This chart excludes Coal Mining (which have a very high growth) to focus the chart on the cluster of moderate CAI industries.

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

Table 2.4 summarises the highest comparative advantage industries (Level 2 ANZSIC) for the Ballarat LGA, using the Victorian CAI comparison. Important industries include Coal Mining and Agriculture, Forestry and Fishing Support Services, each of which have large CAI, undergone notable growth over the past 10 years and constitute a relatively large proportion of the LGAs GVA. The very large 10-year growth in coal mining is due to the sector coming from a low base in 2007-08 and increasing significantly in size since.

Metal Ore Mining; Exploration and Other Mining Support Services and Forestry and Logging has a high CAI and has seen growth but remains a small percentage of Ballarat's GVA.

TABLE 2.4 TOP 10 REVEALED COMPARATIVE ADVANTAGE INDUSTRIES FOR BALLARAT

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10 year growth	% of LGA GVA	Quadrant
6. Coal Mining	7.1	0.8	120,305%*	2.1%	Top right
5. Agriculture, Forestry and Fishing Support Services	6.0	5.5	603%	1.3%	Top right
8. Metal Ore Mining	5.3	0.0	13%	0.2%	Top right
10. Exploration and Other Mining Support Services	2.5	0.4	10%	0.2%	Top right
3. Forestry and Logging	2.2	1.2	142%	0.2%	Top right
23. Transport Equipment Manufacturing	2.1	1.9	-41%	1.2%	Top left

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10 year growth	% of LGA GVA	Quadrant
56. Broadcasting (except Internet)	2.0	1.8	121%	0.7%	Top right
54. Publishing (except Internet and Music Publishing)	2.0	2.3	23%	0.8%	Top right
84. Hospitals	1.9	6.5	44%	5.8%	Top right
11. Food Product Manufacturing	1.9	2.5	2%	4.2%	Top right

*Note: The large 10-year growth is a result of the industry reported size growing substantially in 2017 and 2018 off a very small base, thus leading to a large percentage increase in industry size.*

*SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA*

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

TABLE 2.5 TOP 10 LARGEST INDUSTRIES FOR BALLARAT

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10 year growth	% of LGA GVA	Quadrant
84. Hospitals	1.9	6.5	44%	5.8%	Top right
69. Professional, Scientific and Technical Services	0.9	0.7	128%	5.5%	Bottom right
32. Construction Services	1.0	0.9	30%	5.3%	Top right
42. Other Store-Based Retailing	1.2	1.4	29%	4.2%	Top right
11. Food Product Manufacturing	1.9	2.5	2%	4.2%	Top right
1. Agriculture	1.3	1.7	361%	4.1%	Top right
85. Medical and Other Health Care Services	1.4	1.0	67%	3.4%	Top right
81. Tertiary Education	1.4	7.3	13%	3.4%	Top right
87. Social Assistance Services	1.6	2.4	138%	3.3%	Top right
62. Finance	0.4	-	1%	3.2%	Bottom right

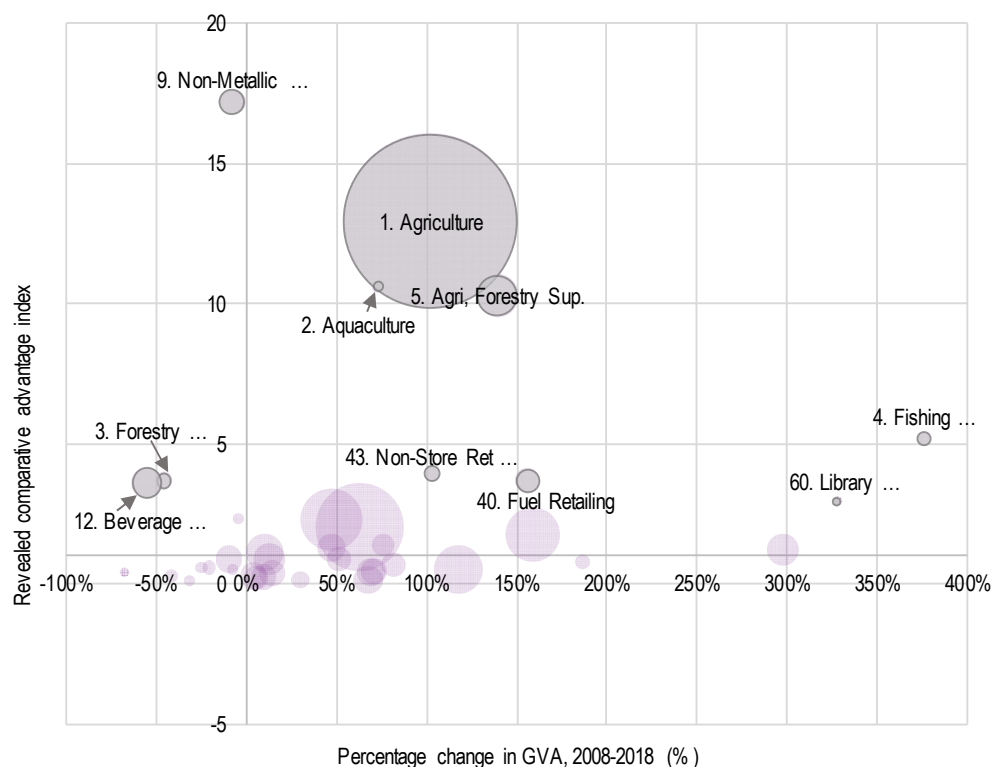
*SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA*

### 2.3.3 Golden Plains

Figure 2.4 shows RCA analysis by Level 2 ANZSIC industries for the Golden Plains LGA. Key industries of interest with a high CAI in the Golden Plains LGA include Non-Metallic Mineral Mining and Quarrying; Agriculture; Aquaculture; and Agriculture, Forestry and Fishing Support Services (See Table 2.6).



FIGURE 2.4 COMPARATIVE ADVANTAGE INDEX FOR GOLDEN PLAINS, 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 2.6 summarises the highest comparative advantage industries (Level 2 ANZSIC) for Golden Plains LGA, using the Victorian CAI comparison. Important industries include Agriculture and Agriculture, Forestry and Fishing Support Services which each have a high CAI, form a sizeable part of the economy and have seen growth over the past 10 years. While industries such as Aquaculture; Agriculture, Forestry and Fishing Support Services; Fishing, Hunting and Trapping; and Non-Store Retailing and Retail Commission Based Buying each have a high CAI and have seen large growth over the past decade, they account for a small percentage of the LGA's GVA.

TABLE 2.6 TOP 10 REVEALED COMPARATIVE ADVANTAGE INDUSTRIES FOR GOLDEN PLAINS

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10 year growth	% of LGA GVA	Quadrant
9. Non-Metallic Mineral Mining and Quarrying	17.2	4.1	-8%	0.9%	Top left
1. Agriculture	12.9	16.2	102%	40.4%	Top right
2. Aquaculture	10.6	3.7	73%	0.2%	Top right
5. Agriculture, Forestry and Fishing Support Services	10.3	9.1	139%	2.3%	Top right
4. Fishing, Hunting and Trapping	5.2	2.3	376%	0.3%	Top right
43. Non-Store Retailing and Retail Commission Based Buying	3.9	1.5	103%	0.3%	Top right
40. Fuel Retailing	3.7	3.3	156%	0.8%	Top right
3. Forestry and Logging	3.7	2.0	-45%	0.4%	Top left

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10 year growth	% of LGA GVA	Quadrant
12. Beverage and Tobacco Product Manufacturing	3.6	2.8	-55%	1.3%	Top left
60. Library and Other Information Services	3.0	15.8	327%	0.1%	Top right

*SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA*

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

TABLE 2.7 TOP 10 LARGEST INDUSTRIES FOR GOLDEN PLAINS

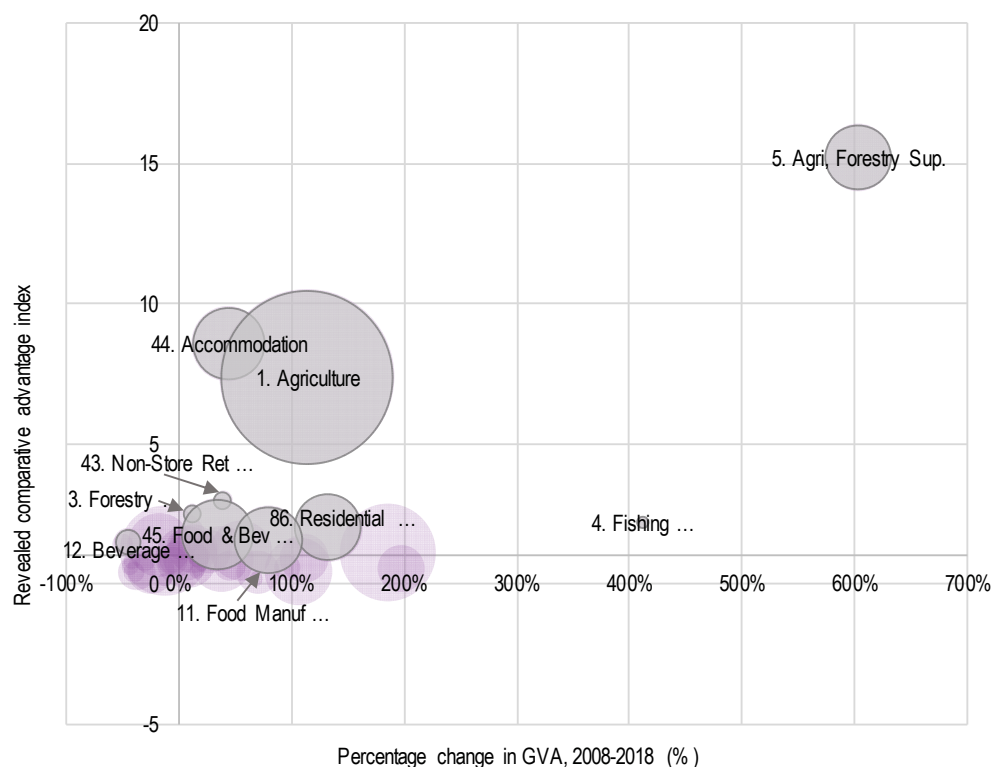
Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10 year growth	% of LGA GVA	Quadrant
1. Agriculture	12.9	16.2	102%	40.4%	Top right
32. Construction Services	2.0	1.7	63%	10.4%	Top right
30. Building Construction	2.3	2.0	47%	5.1%	Top right
11. Food Product Manufacturing	1.8	2.3	159%	3.9%	Top right
69. Professional, Scientific and Technical Services	0.5	0.4	118%	3.2%	Bottom right
5. Agriculture, Forestry and Fishing Support Services	10.3	9.1	139%	2.3%	Top right
86. Residential Care Services	1.1	1.4	425%	2.0%	Top right
46. Road Transport	1.1	0.9	10%	1.9%	Top right
31. Heavy and Civil Engineering Construction	1.2	0.9	298%	1.4%	Top right
41. Food Retailing	0.9	0.6	13%	1.3%	Bottom right

*SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA*

### 2.3.4 Hepburn

Figure 2.5 shows revealed comparative advantage analysis by Level 2 ANZSIC industries for the Hepburn LGA. Key industries of interest with a high CAI in the Hepburn LGA include Agriculture, Forestry and Fishing Support Services; Accommodation; Agriculture; and Non-Store Retailing and Retail Commission Based Buying (see Table 2.8).

FIGURE 2.5 COMPARATIVE ADVANTAGE INDEX FOR HEPBURN, 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 2.8 summarises the highest comparative advantage industries (Level 2 ANZSIC) for the Hepburn LGA, using the Victorian CAI comparison. Important industries include Agriculture, Forestry and Fishing Support Services; Accommodation; and Agriculture which each have a large CAI, have undergone notable growth over the past 10 years and constitute a relatively large proportion of the LGAs GVA. Non-Store Retailing and Retail Commission Based Buying; Forestry and Logging; and Fishing, Hunting and Trapping have high CAI and large growth but remain a small percentage of the LGA's GVA.

TABLE 2.8 TOP 10 REVEALED COMPARATIVE ADVANTAGE INDUSTRIES FOR HEPBURN

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10-year growth	% of LGA GVA	Quadrant
5. Agriculture, Forestry and Fishing Support Services	15.2	13.7	603%	3.4%	Top right
44. Accommodation	8.6	5.8	44%	4.1%	Top right
1. Agriculture	7.4	9.4	114%	23.0%	Top right
43. Non-Store Retailing and Retail Commission Based Buying	3.0	1.1	40%	0.3%	Top right
3. Forestry and Logging	2.5	1.4	12%	0.3%	Top right
4. Fishing, Hunting and Trapping	2.2	1.0	411%	0.1%	Top right
86. Residential Care Services	2.0	2.5	133%	3.5%	Top right
45. Food and Beverage Services	1.8	1.4	35%	4.0%	Top right
11. Food Product Manufacturing	1.6	2.1	80%	3.5%	Top right

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10-year growth	% of LGA GVA	Quadrant
12. Beverage and Tobacco Product Manufacturing	1.5	1.2	-44%	0.5%	Top left

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

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

TABLE 2.9 TOP 10 LARGEST INDUSTRIES FOR HEPBURN

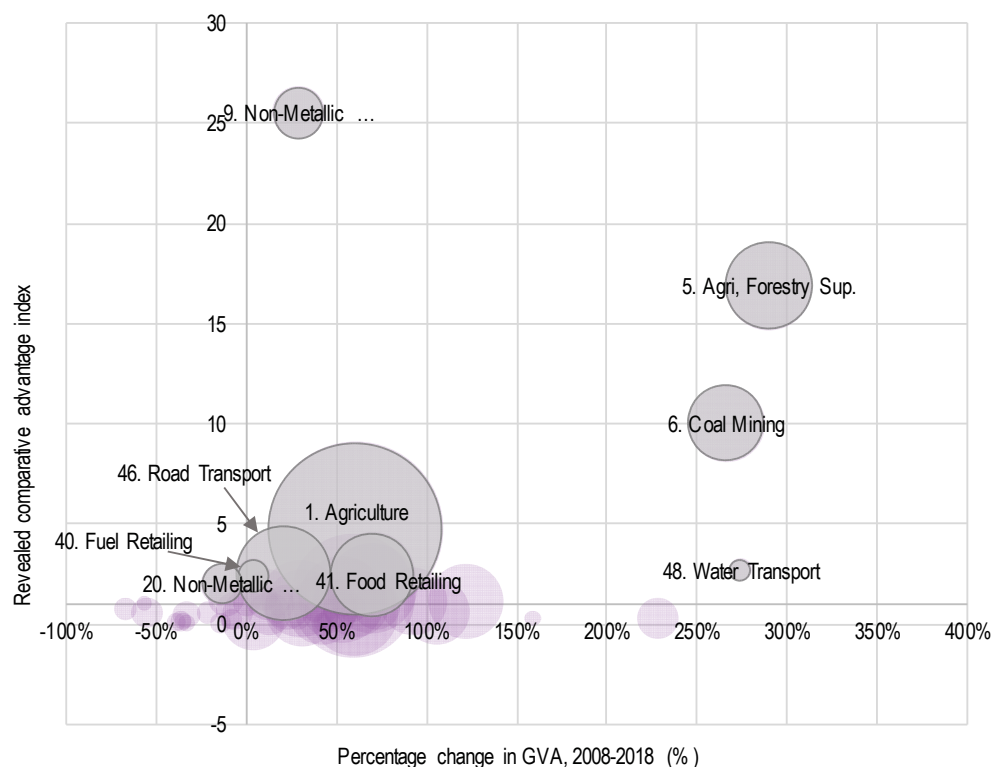
Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10-year growth	% of LGA GVA	Quadrant
1. Agriculture	7.4	9.4	114%	23.0%	Top right
69. Professional, Scientific and Technical Services	1.1	0.9	186%	7.1%	Top right
32. Construction Services	1.2	1.1	-12%	6.2%	Top left
44. Accommodation	8.6	5.8	44%	4.1%	Top right
45. Food and Beverage Services	1.8	1.4	35%	4.0%	Top right
11. Food Product Manufacturing	1.6	2.1	80%	3.5%	Top right
86. Residential Care Services	2.0	2.5	133%	3.5%	Top right
62. Finance	0.4	-	107%	3.5%	Bottom right
5. Agriculture, Forestry and Fishing Support Services	15.2	13.7	603%	3.4%	Top right
42. Other Store-Based Retailing	0.9	1.0	38%	3.1%	Bottom right

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

### 2.3.5 Moorabool

Figure 2.6 shows revealed comparative advantage analysis by Level 2 ANZSIC industries for the Moorabool LGA. Key industries of interest with a high CAI in the Moorabool LGA include Non-Metallic Mineral Mining and Quarrying; Agriculture, Forestry and Fishing Support Services; Coal Mining and Agriculture (see Table 2.10).

FIGURE 2.6 COMPARATIVE ADVANTAGE INDEX FOR MOORABOOL, 2017-18, LEVEL 2 ANZSIC



Note: This includes the revealed comparative advantage relative to the Victorian economy. The chart excludes 43. 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 2.10 summarises the highest comparative advantage industries (Level 2 ANZSIC) for the Moorabool LGA, using the Victorian CAI comparison. Important industries include Non-Metallic Mineral Mining and Quarrying; Agriculture, Forestry and Fishing Support Services; Coal Mining; and Agriculture – which each have a large CAI, have undergone notable growth over the past 10 years and constitute a relatively large proportion of the LGA's GVA.

TABLE 2.10 TOP 10 REVEALED COMPARATIVE ADVANTAGE INDUSTRIES FOR MOORABOOL

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10-year growth	% of LGA GVA	Quadrant
9. Non-Metallic Mineral Mining and Quarrying	25.5	6.2	29%	1.3%	Top right
5. Agriculture, Forestry and Fishing Support Services	16.9	15.0	290%	3.8%	Top right
6. Coal Mining	10.0	1.1	266%	2.9%	Top right
1. Agriculture	4.7	6.0	61%	14.8%	Top right
48. Water Transport	2.7	2.6	274%	0.3%	Top right
46. Road Transport	2.6	2.1	21%	4.4%	Top right
41. Food Retailing	2.5	1.8	70%	3.5%	Top right
40. Fuel Retailing	2.4	2.2	4%	0.5%	Top right
20. Non-Metallic Mineral Product Manufacturing	2.0	1.5	-13%	0.8%	Top left

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	1.8	0.7	698%	0.2%	Top right

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

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

TABLE 2.11 TOP 10 LARGEST INDUSTRIES FOR MOORABOOL

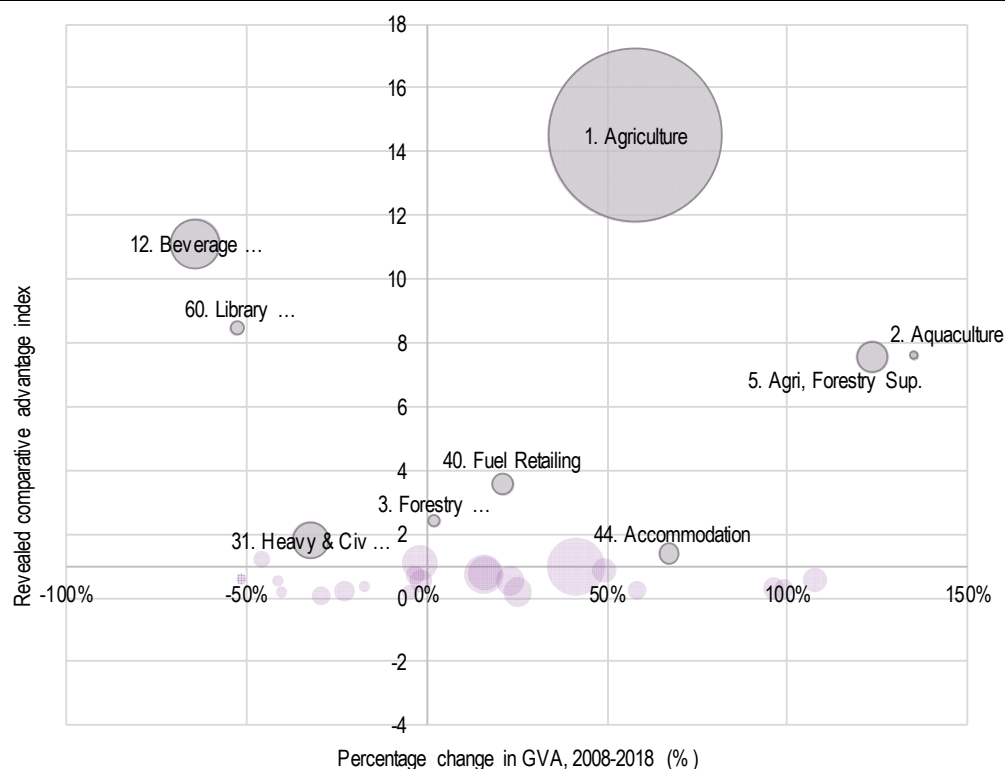
Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10 year growth	% of LGA GVA	Quadrant
1. Agriculture	4.7	6.0	61%	14.8%	Top right
32. Construction Services	1.4	1.3	59%	7.5%	Top right
46. Road Transport	2.6	2.1	21%	4.4%	Top right
30. Building Construction	1.8	1.6	70%	3.9%	Top right
84. Hospitals	1.2	4.1	53%	3.8%	Top right
5. Agriculture, Forestry and Fishing Support Services	16.9	15.0	290%	3.8%	Top right
69. Professional, Scientific and Technical Services	0.6	0.5	60%	3.7%	Bottom right
41. Food Retailing	2.5	1.8	70%	3.5%	Top right
45. Food and Beverage Services	1.3	1.0	30%	2.9%	Top right
6. Coal Mining	10.0	1.1	266%	2.9%	Top right

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

### 2.3.6 Pyrenees

Figure 2.7 shows revealed comparative advantage analysis by Level 2 ANZSIC industries for the Pyrenees LGA. Key industries of interest with a high CAI in the Pyrenees LGA include Agriculture; Beverage and Tobacco Product Manufacturing; Library and Other Information Services; Aquaculture; and Agriculture, Forestry and Fishing Support Services (see Table 2.12).

FIGURE 2.7 COMPARATIVE ADVANTAGE INDEX FOR PYRENEES, 2017-18, LEVEL 2 ANZSIC



Note: This includes the revealed comparative advantage relative to the Victorian economy. The chart excludes Fishing, Hunting and Trapping to focus the chart on the key industries.

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

Table 2.12 summarises the highest comparative advantage industries (Level 2 ANZSIC) for the Pyrenees LGA, using the Victorian CAI comparison. Important industries include Agriculture; and Agriculture, Forestry and Fishing Support Services. Both industries have a large CAI, have undergone notable growth over the past 10 years and constitute a relatively large proportion of the Pyrenees' local economy.

Aquaculture; Fishing, Hunting and Trapping; and Fuel Retailing each have a high CAI and have seen very large growth but remains a small percentage of the Pyrenees' GVA.

TABLE 2.12 TOP 10 REVEALED COMPARATIVE ADVANTAGE INDUSTRIES FOR PYRENEES

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10-year growth	% of LGA GVA	Quadrant
1. Agriculture	14.5	18.2	58%	45.3%	Top right
12. Beverage and Tobacco Product Manufacturing	11.1	8.7	-64%	3.9%	Top left
60. Library and Other Information Services	8.4	45.3	-52%	0.3%	Top left
2. Aquaculture	7.6	2.7	135%	0.1%	Top right
5. Agriculture, Forestry and Fishing Support Services	7.6	6.7	123%	1.7%	Top right
4. Fishing, Hunting and Trapping	6.4	2.8	1276%	0.3%	Top right
40. Fuel Retailing	3.6	3.2	21%	0.8%	Top right

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10-year growth	% of LGA GVA	Quadrant
3. Forestry and Logging	2.4	1.3	2%	0.2%	Top right
31. Heavy and Civil Engineering Construction	1.8	1.3	-32%	2.1%	Top left
44. Accommodation	1.4	0.9	67%	0.7%	Top right

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

Table 2.13 summarises the largest industries (Level 2 ANZSIC) for the Pyrenees LGA.

TABLE 2.13 TOP 10 LARGEST INDUSTRIES FOR PYRENEES

Industry (Level 2 ANZSIC)	CAI (Victorian comparison)	CAI (National comparison)	10 year growth	% of LGA GVA	Quadrant
1. Agriculture	14.5	18.2	58%	45.3%	Top right
32. Construction Services	1.0	0.8	41%	5.1%	Bottom right
12. Beverage and Tobacco Product Manufacturing	11.1	8.7	-64%	3.9%	Top left
84. Hospitals	0.8	2.5	16%	2.3%	Bottom right
31. Heavy and Civil Engineering Construction	1.8	1.3	-32%	2.1%	Top left
46. Road Transport	1.1	0.9	-2%	1.9%	Top left
5. Agriculture, Forestry and Fishing Support Services	7.6	6.7	123%	1.7%	Top right
30. Building Construction	0.7	0.7	16%	1.7%	Bottom right
69. Professional, Scientific and Technical Services (Except Computer System Design and Related Services)	0.2	0.2	25%	1.3%	Bottom right
45. Food and Beverage Services	0.5	0.4	23%	1.2%	Bottom right

SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

## 2.4 Summary (Level 2 ANZSIC analysis)

Table 2.14 summarises the highest revealed comparative advantage industries (Level 2 ANZSIC) for the LGAs within the Central Highlands, using the Victorian CAI comparison.

The region is characterised as highly concentrated in agricultural production, with Agriculture and the complementary Support Services industries' strong CAIs, growth in the past decade and high proportion of total GVA across rural LGAs. For example, Agriculture in the Pyrenees LGA (14.5 CAI, 58 per cent growth and 45 per cent of GVA), Golden Plains LGA (12.9 CAI, 102 per cent growth and 40 per cent of GVA), Hepburn LGA (7.4 CAI, 114 per cent growth and 23 per cent of GVA) and Ararat LGA (7.2 CAI, 15 per cent growth and 23 per cent GVA) are all the largest industries for their respective LGA and demonstrate significant growth during the past decade. Smaller comparative advantages exist in Moorabool LGA and Ballarat LGA. The strong comparative advantage and growth has been driven by the performance of lamb and wool production, wheat production and strong horticultural sectors such as vegetables, mushrooms and potatoes.

The Agriculture, Forestry and Fisheries Services Support industries also demonstrated strong comparative advantages and growth. This includes the agronomy, nutrition, inputs such as chemical, fertiliser and seed, which are contributors to agricultural growth and vice versa.



While higher comparative advantages are demonstrated in Non-Metallic Mineral Mining and Quarrying in Moorabool LGA (25.5 CAI, 29 per cent growth and 1 per cent GVA) and Golden Plains LGA (17.2 CAI, 8 per cent decline and 1 per cent GVA), these industries represent minor contributors to their LGA's local economies and inherent growth opportunities are less evident.

Beverage and Tobacco Product Manufacturing in the Pyrenees LGA (11.1 CAI, 64 per cent decline and 4 per cent GVA) is the only Manufacturing industry that demonstrates a strong comparative advantage for the Central Highlands. However, it must be noted that while Food Product Manufacturing (section 2.3) demonstrates relatively small comparative advantages, these are small but important industries for Ararat LGA (1.8 CAI, 22 per cent growth and 4.1 per cent GVA), Ballarat LGA (1.9 CAI, 2 per cent growth and 4.2 per cent GVA), Golden Plains LGA (1.8 CAI, 159 per cent growth and 3.9 per cent GVA) and Hepburn LGA (1.6 CAI, 80 per cent growth and 3.5 per cent GVA). These secondary industries source sheep, grain and horticulture and viticulture products locally.

**TABLE 2.14 TOP 20 HIGHEST REVEALED COMPARATIVE ADVANTAGE BY LGA, CENTRAL HIGHLANDS**

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)*	Moorabool (S)**	25.5	6.2	29%	1%	Top right
9. Non-Metallic Mineral Mining and Quarrying (appears: 3 times)	Golden Plains (S)	17.2	4.1	-8%	1%	Top left
5. Agriculture, Forestry and Fishing Support Services (appears: 5 times)	Moorabool (S)	16.9	15.0	290%	4%	Top right
5. Agriculture, Forestry and Fishing Support Services (appears: 5 times)	Hepburn (S)	15.2	13.7	603%	3%	Top right
1. Agriculture (appears: 4 times)	Pyrenees (S)	14.5	18.2	58%	45%	Top right
1. Agriculture (appears: 4 times)	Golden Plains (S)	12.9	16.2	102%	40%	Top right
12. Beverage and Tobacco Product Manufacturing	Pyrenees (S)	11.1	8.7	-64%	4%	Top left
2. Aquaculture (appears: 2 times)	Golden Plains (S)	10.6	3.7	73%	0%	Top right
5. Agriculture, Forestry and Fishing Support Services (appears: 5 times)	Golden Plains (S)	10.3	9.1	139%	2%	Top right
6. Coal Mining (appears: 2 times)	Moorabool (S)	10.0	1.1	266%	3%	Top right
44. Accommodation	Hepburn (S)	8.6	5.8	44%	4%	Top right
60. Library and Other Information Services	Pyrenees (S)	8.4	45.3	-52%	0%	Top left
2. Aquaculture (appears: 2 times)	Pyrenees (S)	7.6	2.7	135%	0%	Top right
5. Agriculture, Forestry and Fishing Support Services (appears: 5 times)	Pyrenees (S)	7.6	6.7	123%	2%	Top right
1. Agriculture (appears: 4 times)	Hepburn (S)	7.4	9.4	114%	23%	Top right
1. Agriculture (appears: 4 times)	Ararat (RC)	7.2	9.0	15%	23%	Top right
6. Coal Mining (appears: 2 times)	Ballarat (C)	7.1	0.8	120305 %	2%	Top right
9. Non-Metallic Mineral Mining and Quarrying (appears: 3 times)	Ararat (RC)	6.5	1.6	150%	0%	Top right
4. Fishing, Hunting and Trapping	Pyrenees (S)	6.4	2.8	1276%	0%	Top right
5. Agriculture, Forestry and Fishing Support Services (appears: 5 times)	Ballarat (C)	6.0	5.5	603%	1%	Top right

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.

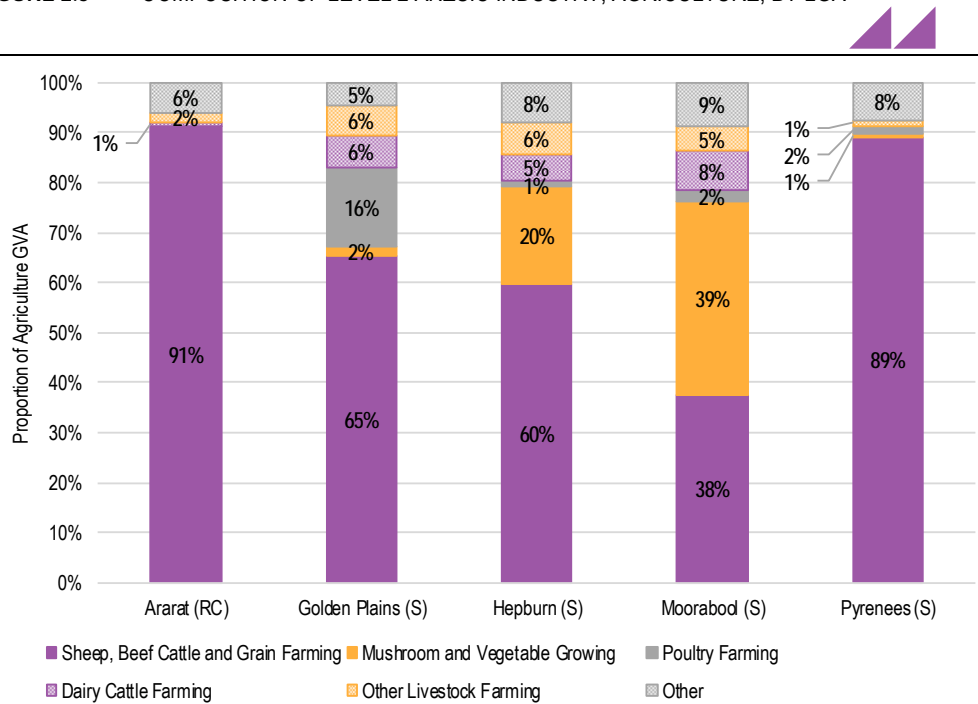
SOURCE: ACIL ALLEN ESTIMATES BASED ON IV DATA

### 2.4.1 Agricultural production by sector

The Level 2 ANZSIC industry, Agriculture, forms a large component of GVA for many of the LGAs within the Central Highlands. Figure 2.8 shows the estimated GVA of each of the sub industries which form Agriculture.

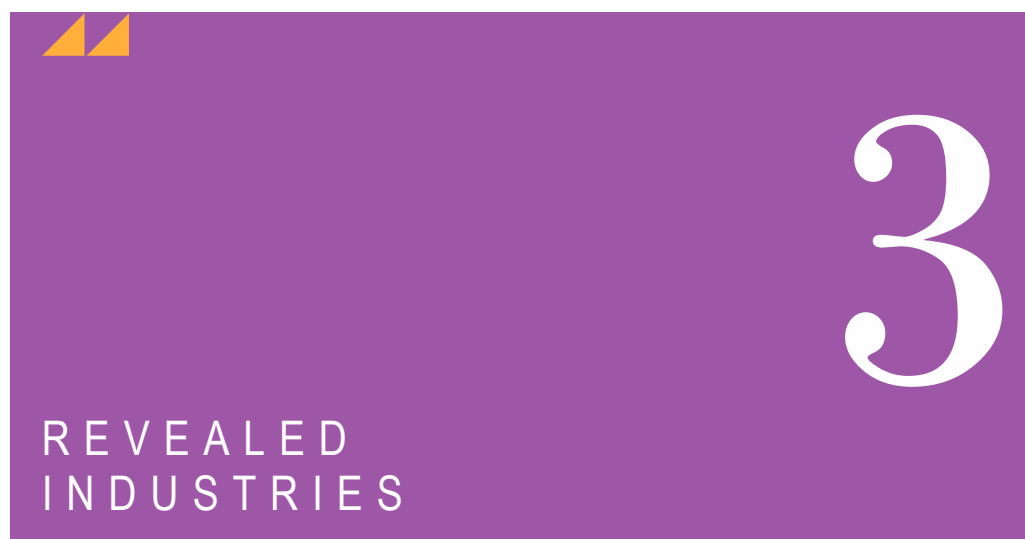
Agriculture in the Central Highlands is primarily Sheep, Beef Cattle and Grain. Agriculture in the Ararat LGA and Pyrenees LGA consists of almost exclusively Sheep, Beef Cattle and Grain Farming. The Hepburn and Moorabool LGAs each have significant Mushroom and Vegetable Growing industries.

FIGURE 2.8 COMPOSITION OF LEVEL 2 ANZSIC INDUSTRY, AGRICULTURE, BY LGA



Note: Other includes: Fruit and Tree Nut Growing; Nursery and Floriculture Production; Other Crop Growing; and Deer Farming. LGAs are classified as follows: (C) Cities, (S) Shires and (RC) Rural Cities.

SOURCE: ACIL ALLEN CONSULTING SHARES OF EMPLOYMENT BY INDUSTRY



This section outlines the SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis and need assessment processes undertaken by ACIL Allen for the Central Highlands. The analysis follows the structure developed in 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 assessment of several factors.

Firstly, revealed industries identified in Table 2.14 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 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 the Central Highland's case, opportunities have been identified in Agriculture, Forestry and Fisheries, Manufacturing, Mining and Energy 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 the region. A further assessment of the priority industries considers service industries that may contribute to the performance of a primary or secondary industry – for Tourism, this may include Accommodation.

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 2.14. Outside of Agriculture, Manufacturing, Mining and Energy and Tourism, 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 economic sectors for the Central Highlands is provided in Table 3.1. 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 CENTRAL HIGHLANDS

Industry	Strengths	Weaknesses	Opportunities	Threats
Cross Industry	<ul style="list-style-type: none"> <li>Region's largest population centre (Ballarat) has close proximity to major markets (i.e. greater metro Melbourne)</li> <li>Eastern end of the region borders metropolitan Melbourne and is well connected to Melbourne's ports and airport. This has been strengthened by the Deer Park Bypass and will be further improved through upgrades to the Western Highway east of Bacchus Marsh</li> <li>Growth in population-based industries such as health services</li> </ul>	<ul style="list-style-type: none"> <li>Ararat and Pyrenees have relatively low internet access with 68% and 66% of dwellings with access respectively</li> <li>Mobile and digital connectivity is inadequate and constrains productivity and business competitiveness</li> <li>Some sectors and locations experience difficulties in attracting suitable workforce (e.g. tourism and manufacturing sectors and Ararat and Pyrenees LGAs which are experiencing significant jobs growth but does not have enough workers to fill positions)</li> </ul>	<ul style="list-style-type: none"> <li>Opportunities exist for complementary land-uses on agricultural land, such as tourism, carbon off-set schemes and renewable energy generation, these could be used to diversify businesses income stream</li> <li>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</li> <li>Leverage Ballarat West Employment Zone is a \$30 million joint initiative between the State Government and the City of Ballarat to support the region's economic growth over the next 20 years</li> <li>Opportunities Pyrenees Ararat Northern Grampians (OPAN) project to increase awareness of employment and lifestyle opportunities in the three LGAs</li> <li>Improve digital connectivity through the Connecting Regional Communities Program and Mobile Blackspots Program</li> </ul>	<ul style="list-style-type: none"> <li>Climate change presents numerous risks to the region, inc. increased incidence of bushfire, severity of storm events and floods and reduced water availability. This can result in: <ul style="list-style-type: none"> <li>reduced yields of key cereal crops</li> <li>negative impact on sheep graziers</li> <li>adapting farming and management practices to a changing climate</li> <li>risk of flooding in urban centres of Bacchus Marsh and Ballan</li> </ul> </li> </ul>
Agriculture, Forestry and Fisheries	<ul style="list-style-type: none"> <li>GWM Water East Grampians Water Pipeline, once completed, will allow existing agricultural enterprises to consolidate and expand knowing they have reliable water supply</li> <li>Intensive agriculture (eggs, poultry and pigs)</li> <li>High value agricultural land, highly productive and versatile soils (Moorabool and Hepburn LGA)</li> <li>Proximity to domestic markets (Melbourne) reduces transport cost and is central to the rest of the state</li> <li>Intensive horticulture supported by Bacchus Marsh Irrigation District</li> <li>Production of premium wine generating tourism activity (Pyrenees LGA)</li> </ul>	<ul style="list-style-type: none"> <li>The regions farms are typically smaller in size, which can make them less resilient to climatic and market shocks</li> <li>Lamb, wool and wheat are commodities destined for domestic and export markets. Each of these industries is vulnerable to commodity price cycles, competition from alternative proteins, fibres and grains</li> <li>Declining employment in agriculture</li> <li>Natural waterways are in poor condition due to land clearing and agriculture</li> <li>Soil erosion in dryland areas</li> <li>Inadequate mobile and digital connectivity (NBN)</li> <li>Poultry</li> <li>Limited water availability which places pressure on intensive agricultural businesses, in areas such as the Bacchus Marsh Irrigation District, this limits expansion of poultry farms in Golden Plains LGA</li> </ul>	<ul style="list-style-type: none"> <li>Proximity to markets will become more valued in future in carbon constrained economy. The value and importance of agricultural land in Melbourne's peri-urban regions will become more important</li> <li>Impacts of climate change present opportunities to diversify production into new crops that suit longer growing seasons</li> <li>Potential to leverage projects that drive innovation in food and agriculture industry such as Institute of Gastronomy and Hub for Premium Produce Program. This takes into account the growth potential of artisanal food production in the region</li> <li>Intensive agriculture (eggs, poultry and pigs)</li> <li>Investment in eggs, poultry and pig production to capture opportunity of domestic and export demand growth (Golden Plains and Pyrenees LGA in particular). This has added advantage of proximity to processors in Geelong and Melbourne</li> <li>Forestry</li> <li>Local forestry industry can evolve from harvesting native hardwood and softwood forests to establishment of forestry plantations (focused around Creswick and Beaufort and Golden Plains)</li> <li>Horticulture</li> <li>Opportunities exist to develop horticulture in the Bacchus Marsh Irrigation District</li> </ul>	<ul style="list-style-type: none"> <li>Land-use conflict in peri-urban areas which may reduce availability of productive agricultural lands</li> <li>Biosecurity risks associated with climate change: changed distribution of pests and diseases</li> <li>Increased bushfire risk from climate change to impact farm businesses</li> <li>Reduction in water security as a potential climate change impact</li> </ul>
Manufacturing	<ul style="list-style-type: none"> <li>Diversification of manufacturing base in Central Highlands (e.g. AME Systems in Ararat, Alstom and Albins in Ballarat)</li> <li>The largest agricultural production sectors (chicken meat, sheep meat and grains) require processing and generate demand for other industries operating in the supply chain (i.e. food processing)</li> </ul>	<ul style="list-style-type: none"> <li>Manufacturing sector in decline, uncompetitive with low cost producers</li> <li>Lack of enabling infrastructure (gas, water, electricity) in some industrial precincts hindering potential transfer of Metro Melbourne manufacturers to the region</li> <li>Workforce shortage issues</li> </ul>	<ul style="list-style-type: none"> <li>Opportunity for 'investment ready' regional manufacturing precincts including the Golden Plains Food Production Precinct, Parwan Employment Precinct, Ararat Manufacturing Precinct and the Ballarat West Employment Zone</li> <li>Food product manufacturing</li> <li>Investment opportunities exist for modernising meat and grain processing and production of convenience products</li> </ul>	<ul style="list-style-type: none"> <li>Competition from lower cost food processors operating overseas</li> </ul>

Industry	Strengths	Weaknesses	Opportunities	Threats
Mining and energy	<ul style="list-style-type: none"> <li>– Wind resources</li> <li>– Approval of Golden Plains Wind Farm (3000GwH per annum)</li> <li>– Gold and copper deposits</li> </ul>	<ul style="list-style-type: none"> <li>– Inadequate transmission infrastructure limiting ability to achieve energy innovation in the region</li> <li>– Transporting large and oversized stock via road and rail for major infrastructure projects such as wind farm builds and mining can be challenging in the region</li> </ul>	<p><b>Renewable Energy</b></p> <ul style="list-style-type: none"> <li>– 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 investments into the future.</li> <li>– AEMO's recommendation of a planned upgrade to the transmission network in Victoria's west (AEMO 2019) will improve transmission network capacity to accommodate growth in new renewable generation in Western Victoria</li> <li>– Release of new planning guidelines for large-scale solar farms</li> <li>– Opportunity to attract high energy user business investment around renewable energy developments in region. These businesses would establish behind the grid power connections directly into the renewable energy development transformer and adopt independent power purchase agreements with the developer/operator.</li> <li>– Construction jobs and potential service industries could emerge in conjunction with Golden Plains Wind Farm</li> <li>– Opportunity to invest in small to medium sized power generation (biomass) located near waste sources in towns such as Ballarat, Lethbridge, and Ararat. As well as near timber production</li> <li>– Grampians New Energy Task Force developing a roadmap to transition the region to a low-carbon economy by 2050</li> <li>– Investment ready projects including the Asia Pacific Renewable Energy Training Centre, Hepburn New Energy pilot and City of Ballarat New Energy Future Projects such as the Ballarat Waste to Energy Facility, Materials and Energy Innovation Centre and All-Waste Interchange Facility</li> </ul> <p><b>Mining</b></p> <ul style="list-style-type: none"> <li>– Opportunities related to mining exploration in the Stavely Arc in the western part of the region (Ararat and Stawell)</li> </ul>	<ul style="list-style-type: none"> <li>– Land use competition with agriculture</li> </ul>
Tourism (services including accommodation)	<ul style="list-style-type: none"> <li>– Proximity to Melbourne for domestic and international tourists</li> <li>– Sovereign Hill (gold mining history)</li> <li>– Daylesford and Hepburn Springs (spa country)</li> <li>– Ballarat (cultural and heritage attractions)</li> <li>– Grampians National Park – natural environment</li> <li>– Tourism expenditure is highest in Ballarat (but low comparative to other regions)</li> <li>– Tourism expenditure is low in the Spa Country and the Central Highlands, but visitor population ratios are much higher comparatively</li> <li>– Cycling tourism – e.g. Creswick Mountain Bike Trail</li> <li>– Indigenous tourism</li> </ul>	<ul style="list-style-type: none"> <li>– Inadequate amenities and infrastructure at National Parks to encourage investment in experiences, food and accommodation services</li> </ul>	<ul style="list-style-type: none"> <li>– Advocacy for World Heritage Listing of the Goldfields Region</li> <li>– Prioritise investment in iconic attractions including the Sovereign Hill Hotel Development, Sovereign Hill Beyond 50, Her Majesty's Theatre Ballarat</li> <li>– Invest in non-nature-based attractions such as the Vic Motor Sport Hub at Fiskville, Grampians Region Cycle Routes and Wine Tourism</li> <li>– Opportunities to invest in private tourism developments around national parks are encouraged</li> <li>– The high proportionate tourist population in the region could increase opportunities for growth service-related industries (food and beverage, accommodation)</li> </ul> <p><b>Agritourism</b></p> <ul style="list-style-type: none"> <li>– Agritourism presents an opportunity to augment the regions natural features and the local agricultural production with the growing demand for farm, meal and winery experiences</li> <li>– On-farm accommodation opportunities exist in proximity to the Grampians National Park (Ararat LGA)</li> </ul> <p><b>Ballarat</b></p> <ul style="list-style-type: none"> <li>– Capitalise on easy access to Melbourne by both road and rail and promote as a base for exploring the region, including bicycle tourism</li> </ul> <p><b>Hepburn</b></p>	<ul style="list-style-type: none"> <li>– Climate change impacts the natural environments of these regions/industries making them less appealing to domestic and international tourist</li> <li>– Environmental protections increased by State and Commonwealth Governments, thereby limiting the ability to further develop facilities and amenities in National Parks and other ecologically significant areas</li> </ul>

Industry	Strengths	Weaknesses	Opportunities	Threats
			<ul style="list-style-type: none"> <li>- Nature-based and rural tourism opportunities consistent with the health and wellbeing theme that this area is well known for</li> </ul> <p>Pyrenees</p> <ul style="list-style-type: none"> <li>- Opportunities to develop food experience tourism that aligns with premium wine production in the area. Specifically encourage tourism focused development in Moonambel and Avoca</li> </ul>	

SOURCE: VARIOUS SOURCES

AITHER REPORT (2019)

VICTORIAN GOVERNMENT (2019) GOLDEN PLAINS WIND FARM GRANTED PLANNING PERMIT. ACCESSED 31 MAY 2019 ([HTTPS://WWW.PREMIER.VIC.GOV.AU/GOLDEN-PLAINS-WIND-FARM-GRANTED-PLANNING-PERMIT/](https://www.premier.vic.gov.au/golden-plains-wind-farm-granted-planning-permit/))

VICTORIAN GOVERNMENT (2014) CENTRAL HIGHLANDS REGIONAL GROWTH PLAN. ACCESSED 31 MAY 2019 ([HTTPS://WWW.PLANNING.VIC.GOV.AU/POLICY-AND-STRATEGY/REGIONAL-GROWTH-PLANS/CENTRAL-HIGHLANDS/](https://www.planning.vic.gov.au/policy-and-strategy/regional-growth-plans/central-highlands/))

VICTORIAN GOVERNMENT (2018) CENTRAL HIGHLANDS: INVEST IN VICTORIAN AGRICULTURE AND FOOD. ACCESSED 31 MAY 2019 ([HTTP://WWW.INVEST.VIC.GOV.AU/\\_DATA/ASSETS/PDF\\_FILE/0006/325608/3-CENTRALHIGHLANDS\\_V18F.PDF](http://www.invest.vic.gov.au/_data/assets/pdf_file/0006/325608/3-CENTRALHIGHLANDS_V18F.PDF))

VICTORIAN GOVERNMENT (ND) ([HTTPS://WWW.PREMIER.VIC.GOV.AU/BALLARAT-WEST-EMPLOYMENT-ZONE-POWERS-AHEAD/](https://www.premier.vic.gov.au/ballarat-west-employment-zone-powers-ahead/)); ([HTTPS://WWW.DEVELOPMENT.VIC.GOV.AU/PROJECTS/BALLARATWEST-EMPLOYMENT-ZONE/](https://www.development.vic.gov.au/projects/ballaratwest-employment-zone/))

RDV (2019) ([HTTPS://WWW.RDV.VIC.GOV.AU/VICTORIAS-REGIONS/GRAMPIANS/CENTRAL-HIGHLANDS/](https://www.rdv.vic.gov.au/victorias-regions/grampians/central-highlands/))

VARIOUS OTHER SROUCES INCLUDING: ([HTTPS://WWW.RDV.VIC.GOV.AU/\\_DATA/ASSETS/PDF\\_FILE/0005/1733252/CENTRAL-HIGHLANDS-OUTCOMES-ROADMAP\\_MAY-19.PDF](https://www.rdv.vic.gov.au/_data/assets/pdf_file/0005/1733252/CENTRAL-HIGHLANDS-OUTCOMES-ROADMAP_MAY-19.PDF)); ([HTTPS://WWW.THECOURIER.COM.AU/STORY/5711489/DETAILS-OF-DAYLESFORDS-WORLD-CLASS-FOOD-EDUCATION-INSTITUTE-REVEALED/](https://www.thecourier.com.au/story/5711489/details-of-daylesfords-world-class-food-education-institute-revealed/)); ([HTTPS://WWW.RDV.VIC.GOV.AU/\\_DATA/ASSETS/PDF\\_FILE/0005/1733252/CENTRAL-HIGHLANDS-OUTCOMES-ROADMAP\\_MAY-19.PDF](https://www.rdv.vic.gov.au/_data/assets/pdf_file/0005/1733252/CENTRAL-HIGHLANDS-OUTCOMES-ROADMAP_MAY-19.PDF)); ([HTTPS://WWW.RDV.VIC.GOV.AU/\\_DATA/ASSETS/PDF\\_FILE/0005/1733252/CENTRAL-HIGHLANDS-OUTCOMES-ROADMAP\\_MAY-19.PDF](https://www.rdv.vic.gov.au/_data/assets/pdf_file/0005/1733252/CENTRAL-HIGHLANDS-OUTCOMES-ROADMAP_MAY-19.PDF)); ([HTTPS://WWW.PREMIER.VIC.GOV.AU/BOOST-FOR-VICTORIAS-RENEWABLE-ENERGY-POWERHOUSE/](https://www.premier.vic.gov.au/boost-for-victorias-renewable-energy-powerhouse/)); ([HTTPS://WWW.CLIMATECHANGE.VIC.GOV.AU/REDUCING-EMISSIONS/EMISSIONS-TARGETS/](https://www.climatechange.vic.gov.au/reducing-emissions/emissions-targets/)); (REGIONAL ADAPTATION SNAPSHOT GRAMPIANS: ([HTTPS://WWW.CLIMATECHANGE.VIC.GOV.AU/\\_DATA/ASSETS/PDF\\_FILE/0028/392923/D18-001.REGCCASNAPSHOTREPORTS\\_GRAMPIANS\\_FALR.PDF](https://www.climatechange.vic.gov.au/_data/assets/pdf_file/0028/392923/D18-001.REGCCASNAPSHOTREPORTS_GRAMPIANS_FALR.PDF)); ([HTTPS://ENERGYLIVE.AEMO.COM.AU/NEWS/WESTERN-VICTORIA-TO-RECEIVE-CRITICAL-NETWORK-INVESTMENT/](https://energylive.aemo.com.au/news/western-victoria-to-receive-critical-network-investment/)); ([HTTPS://WWW.PREMIER.VIC.GOV.AU/NEW-LARGE-SCALE-SOLAR-GUIDELINES-BOOST-SECTOR-CONFIDENCE/](https://www.premier.vic.gov.au/new-large-scale-solar-guidelines-boost-sector-confidence/))) AND ([HTTPS://WWW.GWMWATER.ORG.AU/OUR-WATER-SUPPLY/CURRENT-PROJECTS/EAST-GRAMPIANS-RURAL-PIPELINE-PROJECT](https://www.gwmwater.org.au/our-water-supply/current-projects/east-grampians-rural-pipeline-project))

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 (Lamb, Wool, Wheat and Potatoes)

The region's main strength lies in its availability of productive agricultural land which produces quality lamb and wool, wheat, poultry (chicken meat), horticultural products, including mushrooms, vegetables. Most farm businesses either specialise in lamb and wool production or are diversified, which generally means they have multiple enterprises producing lamb and wool and wheat, or lamb, beef, wheat and canola for example. Farms in the region are situated within close proximity to the Ballarat and Melbourne. In the long-term, the Central Highlands' proximity to Melbourne will be of greater importance and value for accessing domestic markets. For this reason, there are also opportunities for the intensive sectors such as pigs, eggs and chicken meat in the Golden Plains and Pyrenees LGAs. The local food processing sector focused in Ballarat, Ararat and Bacchus Marsh has demonstrated resilience through periods of decline in other manufacturing sectors.

For the region to produce more high-value crops such as horticulture and develop intensive farming such as poultry, the region's water infrastructure needs to be optimised. For example, improvements in the Bacchus Marsh Irrigation District could encourage further developments and in local horticulture production. Improvements in reliability, productivity and potential of local horticulture production due to improvements in water reliability can have significant flow-on benefits for local food processors, the agricultural service providers (agronomy, nutrition, inputs (chemical, fertiliser and seed)) and agritourism opportunities.

#### Mining and Energy (wind power generation)

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.<sup>2</sup>

The Central Highlands has abundant wind resources, which are the source of energy for local wind farms. The industry is encouraged by the government and markets concerted effort to reduce reliance on fossil fuel energy production and transition to renewable technologies. The Golden Plains Wind Farm development is an example of a project which could create significant local jobs in the construction phase and require ongoing operational and technical maintenance. A project of this size could present opportunities for local service sectors also.

The Central Highlands' current and future access to renewable energy will provide agricultural producers, manufacturers and other service-related industries the opportunity to leverage the low-carbon emission status of wind powered electricity. It is conceivable that this could be a marketable feature for local lamb, wool, wheat or beef – that is, these products are produced more sustainably.

There is no revealed comparative advantage for this industry within any of the LGAs in the Central Highlands. However, the potential of new and emerging technologies and industries that are suited to rural and regional Victoria and could create ongoing economic activity are worth considering.

#### Tourism (Accommodation and services sector)

The Ballarat and Victorian Gold Fields region of Central Highlands is a prominent cultural tourist destination. The region benefits from its close proximity to Melbourne and nature-based tourism opportunities. Looking long-term, the region has the potential to establish itself as a food or agritourism destination, with a diverse range of agricultural produce and established tourist networks. Agritourism presents an opportunity to augment the region's natural features and the local agricultural production with the growing demand for farm, meal and winery experiences. This may be organised in food trail type experiences, which are successful in other regions such the Otway Harvest Trail. There

<sup>2</sup> <https://www.climatechange.vic.gov.au/reducing-emissions/emissions-targets>



is also opportunity for farms in close proximity to the Grampians National Park (Ararat LGA) to develop on-farm accommodation to service tourists visiting the park. This could generate a new source of income for farmers and encourage investment in local infrastructure amenities to service the increased tourist population able to visit and stay close to the park.

### 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?*

Agricultural production is a strength of the Central Highlands. Agriculture has a demonstrated comparative advantage and sectoral growth across all rural LGAs. Agricultural businesses (at scale) have developed resilience to climate variability over a long period of time. The impacts of climate change predict increased air temperatures, reduced average rainfall and increased incidence of extreme weather events, which increases the importance of business diversity, resilience and adaptive capacity. The proven method to increase these characteristics is through application of the latest R&D technologies on-farm. Central Highlands producers can typically source information, technology and services through the agricultural advisory community and apply optimal farm inputs to drive business profitability. The region happens to have strong comparative advantage in the Agriculture, Forestry and Fisheries Services Support industry which gives farm businesses access to novel advice and technologies to drive adaptation to climate change.

### 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?*

Employment opportunities in the Manufacturing and Agriculture sectors have been in decline over many years. As markets have opened up, local producers and manufacturers have been exposed to competition and have struggled to be cost competitive. For these industries to manage this decline and remain profitable into the future, investment opportunities exist to modernise meat and grain processing and production of value-added goods such as convenience products.

### 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?*

Limited water availability places pressure on intensive agricultural businesses. In areas such as the Bacchus Marsh Irrigation District, this water availability limits expansion of poultry farms in Golden Plains LGA. It is expected that the impacts of climate change will further constrain the availability of water and increase incidence of drought and extreme weather events, all of which will have a negative impact to agricultural production in the Central Highlands.

A key priority for the region is to continue to improve access to irrigation water, whether that is through improved use of current resources through infrastructure upgrades, licensing arrangements or extending the capacity of the current irrigation infrastructure.

## 3.2 Needs analysis of the region and revealed industries

This section identifies the needs for industry sectors and at Level 2 ANZSIC for the Central Highlands and within the Ararat, Ballarat, Golden Plains, Hepburn, Moorabool and Pyrenees LGAs. These needs have been developed based on the SWOT analytical processes outlined in the assessment framework report.

### 3.2.1 What is important to the Central Highlands?

#### 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:

- Pyrenees LGA (14.5 CAI, 58 per cent growth and 45 per cent of GVA)
- Golden Plains LGA (12.9 CAI, 102 per cent growth and 40 per cent of GVA)
- Hepburn LGA (7.4 CAI, 114 per cent growth and 23 per cent of GVA)
- Ararat LGA (7.2 CAI, 15 per cent growth and 23 per cent GVA).

Lamb and wool, wheat, canola, potatoes, vegetables and mushrooms and poultry 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.

The constant supply of and cost competitiveness agricultural inputs including fertiliser, chemical, seed is dependent on the transport costs.

#### *What needs could be addressed by Government?*

- The sheep, grain, horticulture and intensive farming industries would benefit from improved access to NBN and mobile broadband services.
- The intensive livestock and horticulture industries require access to reliable water supply.
- The sheep, grain, horticulture and intensive farming industries and input suppliers need quality transport routes to markets, storage, processors and direct to customers.

#### **Food Product Manufacturing**

Food Product Manufacturing is an important industry to Central Highlands, with a diverse range of agricultural industries, access to regional centres such as Ballarat for skilled workers, the sector has potential to further develop.

- Ararat LGA (1.8 CAI, 22 per cent growth and 4.1 per cent GVA)
- Ballarat LGA (1.9 CAI, 2 per cent growth and 4.2 per cent GVA)
- Golden Plains LGA (1.8 CAI, 159 per cent growth and 3.9 per cent GVA)
- Hepburn LGA (1.6 CAI, 80 per cent growth and 3.5 per cent GVA).

#### *What needs could be addressed by Government?*

- Meat, grain and horticulture processors need reliable and cost-effective access to water, energy and waste services.
- Meat, grain and horticulture processors need reliable and safe road and rail freight corridors for access to Melbourne, Port of Melbourne and Melbourne Airport.

#### **Energy and Mining**

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.<sup>3</sup>

The renewable energy sector is an emerging industry in the Central Highlands. Wind turbine generators are being developed in the region and further developments are planned. Development of enabling infrastructure such as electricity transmission networks and connecting roads will be important for the industry's development.

#### *What needs could be addressed by Government?*

- Electricity transmission networks connecting the wind turbines with the electricity grid.
- Access roads to the new wind turbines for maintenance workers.

#### **Tourism**

The tourism industry is important to the Central Highlands, including Sovereign Hill (gold mining history), Daylesford and Hepburn Springs (spa country), Ballarat (cultural and heritage attractions) and the Grampians National Park. Opportunities exist to establish a strong agritourism sector in the rural areas of the Central Highlands, to capitalise of the quality local food and fibre produced.

<sup>3</sup> <https://www.climatechange.vic.gov.au/reducing-emissions/emissions-targets>

*What needs could be addressed by Government?*

- Nature based tourism sites including National Parks require basic amenities and infrastructure to encourage investment in experiences, food and accommodation services.
- Appropriate transport infrastructure, including public transport to access tourist destinations where appropriate.
- Safe and reliable country roads that connect tourist accommodation and agritourism locations.
- Ensuring key tourist sites have good internet access.

### 3.2.2 What are the infrastructure investment opportunities and constraints facing the region?

Table 3.2 summarises the opportunities and constraints government must consider in addressing the infrastructure needs of the industries operating in the region which have an RCA.

TABLE 3.2 WHAT ARE THE INFRASTRUCTURE INVESTMENT OPPORTUNITIES AND CONSTRAINTS FOR CENTRAL HIGHLANDS?

Industry	Revealed sectors	Relevant LGAs	Identified needs	Opportunities to address needs	Constraints to economic development of the sector
Agriculture, Forestry and Fisheries	Agriculture (poultry and horticulture)	Golden Plains Moorabool	Reliable irrigation water supply for intensive agriculture, such as poultry farms	Infrastructure investment to achieve greater water security in the LGAs will become critical to ensure the ongoing viability or further development of intensive agriculture in a changing climate	Availability of irrigation water, which is a function of availability and quality of irrigation infrastructure, such as the Bacchus Marsh Irrigation District
	Agriculture (Sheep, Grain, Horticulture, Intensive livestock)	Pyrenees Golden Plains Hepburn Ararat	The sheep, grain, horticulture and intensive farming industries would benefit from improved access to NBN and mobile broadband services	Enhance investment in NBN or telecommunication assets in prime agricultural production areas including for intensive livestock and horticulture production	Limited access to fast and reliable internet services in rural LGAs, compared to metropolitan regions. This constrains farm businesses ability to implement the latest technology on-farm
				The sheep, grain, horticulture and intensive farming industries and input suppliers need quality transport routes to markets, storage, processors and direct to customers	Invest in priority road infrastructure that improves access between agricultural production and domestic and international markets
Manufacturing	Food Product Manufacturing	Ararat Golden Plains Ballarat Hepburn	Meat, grain and horticulture processors need reliable and cost-effective access to water, energy and waste services  Investment in enabling infrastructure in identified precincts to support increasing demand from manufacturers to relocate to regional locations	To encourage investment in new processing facilities, access to reliable and modern utility services for water, energy and waste is essential	Meat, grain and horticulture processing is highly water and energy intensive, without access to such services and resources such businesses are unable to develop or expand

Industry	Revealed sectors	Relevant LGAs	Identified needs	Opportunities to address needs	Constraints to economic development of the sector
Mining and energy	Wind energy power generation (Identified as emerging industry, based on the future opportunities identified in the SWOT however, it does not have a RCA as such)	Hepburn	Access to appropriate transport infrastructure Proximity to the energy source and to parts of the electricity grid with spare capacity The ability to create buffers to sensitive land uses	Development of enabling infrastructure such as connecting roads and transmission network connections is essential to the efficient, cost-effective and safe operation of wind turbine infrastructure	New wind turbine developments are located in remote rural areas on greenfield sites that require access to enabling infrastructure
Tourism	Tourism is not represented as an industry sector within the ANZSIC classifications and therefore has not been identified as having an RCA. However, tourism is embedded in many other industries (i.e. accommodation) and the SWOT analysis has identified that it is potentially important to the region	All	Nature based tourism sites including National Parks require basic amenities and infrastructure to encourage investment in experiences, food and accommodation services  Transport infrastructure, including public transport to access tourist destinations where appropriate  Improved internet /mobile phone access and reliability	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)  Explore possible public transport options for key tourist destinations  Identify priority areas that require mobile phone tower access	Limited public amenities, transport options and internet/mobile access 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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