



Wimmera Southern Mallee Regional Profile

An analysis of regional strengths and challenges

A Report prepared for Infrastructure Victoria

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A I T H E R

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Abbreviations

ABS	Australian Bureau of Statistics
ACSC	Ambulatory Care Sensitive Conditions
CEDA	Committee for Economic Development of Australia
CMA	Catchment Management Authority
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CVM	Chain volume measure
DELWP	Department of Environment, Land, Water and Planning
DOTE	Dropping off the Edge (Jesuit Social Services Report)
EPA	Environmental Protection Agency
FTTC	Fibre to the Curb
FTTN	Fibre to the Node
FTTP	Fibre to the Premises
GRP	Gross Regional Product
GVA	Gross Value Added
IEO	Index of Education and Occupation
IER	Index of Economic Resources
IRSAD	Index of Relative Socio-Economic Advantage and Disadvantage
IRSD	Index of Relative Socio-Economic Disadvantage
LGA	Local Government Area
LQ	Location Quotient
NBN	National Broadband Network
NIEIR	National Institute of Economic and Industry Research
SA1	Statistical Area 1
SEIFA	Social and Economic Indices For Areas
VCMC	Victorian Catchment Management Council

Glossary

ABS SEIFA	Index of socio-economic conditions by geographic area and based upon data available through the national Census. This data is limited to questions which cover income, housing and education, and has comprehensive geographic coverage.
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Access to community services	Residents who could access community services or resources, such as libraries, maternal and child health centres and neighbourhood centres, when needed.
Aged dependency ratio	The aged dependency ratio is the ratio of aged dependents (people older than 64) to the working-age population (those aged 15-64). Data shown is the proportion of dependents per 100 working-age population.
Child protection substantiations	The outcome of an investigation and assessment where it is assessed that the child or young person has suffered significant harm and/or there is unacceptable risk of significant harm and there is no parent able and willing to protect the child.
Declared Water Supply Catchment	Designated catchment areas recognised under the <i>Victorian Catchment and Land Protection Act 1994</i> for the purposes of water supply.
Environmental Water Holdings	Water that is held and managed for the purpose of achieving environmental outcomes.
Gross Value Added	A measure of the value of goods and services produced in an area, industry or sector of an economy.
Gross Regional Product	The market value of all final goods and services produced by all firms in a region.
Homelessness	When a person does not have suitable accommodation alternatives, they are considered homeless if their current living arrangement: <ul style="list-style-type: none"> • is in a dwelling that is inadequate; • has no tenure, or if their initial tenure is short and not extendable; or • does not allow them to have control of, and access to space for social relations.
Hospital separations	The process by which an episode of care for an admitted patient ceases. A separation may be formal or statistical. A statistical separation is the administrative process by which a hospital records the cessation of an episode of care for a patient within the one hospital stay.
Jesuit Social Services DOTE report	The Jesuit Social Services disadvantage indicator is constructed from measures of low family income, internet access, school education, post school qualification, skilled workers, disengaged young adults, disability support, unemployment, long term unemployment, rental assistance, numeracy and reading NAPLAN scores, child maltreatment, criminal convictions, juvenile convictions, domestic violence, prison admissions, psychiatric admissions.
Labour force	The labour force is the sum of employed people and unemployed people.
Labour productivity	Labour productivity measures the amount of goods and services produced by one hour of labour.
Location Quotient	An LQ is a simple ratio used to determine the concentration or dominance of a particular industry in a region (i.e. Local Government area) in comparison to a larger reference or benchmark region (i.e. State or Nation). Suppose X is the amount of some asset in a region (e.g., manufacturing jobs), and Y is the total amount of assets of comparable types in the region (e.g., all jobs). X/Y is then the regional “concentration” of that asset in the region. If X’ and Y’ are similar data points for some larger reference region (like a state or nation), then the LQ or relative concentration of that asset in the region compared to the nation is (X/Y) / (X’/Y’).

Participation rate	The labour force participation rate is calculated as the labour force divided by the total adult population. The adult population refers to people aged over 15.
Ramsar wetland	A 'declared Ramsar wetland' is an area that has been designated under Article 2 of the Ramsar Convention or declared by the Minister to be a declared Ramsar wetland under the EPBC Act. The Convention on Wetlands, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.
Salinity	Salinity refers to the movement and concentration of salt in landscapes. Both soil and natural waters can become saline. Hence salinity can be described as either soil salinity or water salinity. The effects of salinity are broad including: <ul style="list-style-type: none"> • reduction in the productive capacity of affected land (e.g. crop yields) • degradation of the environment and wildlife habitats • loss of water quality for stock and domestic water supplies • production losses causing economic hardship • damage to roads • damage to water-using household equipment.
SA1	SA1s have been designated as the smallest unit for the release of Census data.
Skilled jobs	This report uses Australian Bureau Statistics data on employment and training, including terminology regarding 'skilled' employment. For the purpose of this report, 'low' skilled employment requires no post-school qualifications, 'intermediate' skilled employment means vocational training was obtained, and 'high' skilled employment means higher/tertiary education was obtained.
Social Housing	The social housing stock data includes both public housing provided directly by the Department of Health and Human Services and housing provided by the not-for-profit community housing sector.
Unemployment rate	The unemployment rate is a measure of the prevalence of unemployment and it is calculated as a percentage by dividing the number of unemployed individuals by all individuals currently in the labour force.
Volunteering	The provision of unpaid help willingly undertaken in the form of time, service or skills, to an organisation or group, excluding work done overseas.
Youth Disengagement	Those aged 15 to 19 not engaged at all in work or study.

1. Introduction

1.1. About this project

When Infrastructure Victoria prepared their first 30-year infrastructure strategy in 2016, they committed to undertake further research to develop a stronger evidence base about the need for and impact of infrastructure investment in different parts of regional and rural Victoria. This project informs that evidence base and will assist Infrastructure Victoria to understand regional Victoria's challenges and opportunities in depth across economic, social and environmental domains. An Economic, Social and Environment Profile has been prepared for each of the nine non-metropolitan regions identified by the Victorian Government's Regional Partnerships.

As part of the 30-year strategy Infrastructure Victoria developed a set of ten objectives. These objectives set out what the strategy is aiming to achieve and recognise that good infrastructure is not an end in itself, but an enabler of better social, economic and environmental outcomes.

Therefore, before considering possible infrastructure solutions for regions, Infrastructure Victoria needs to better understand the economic, social and environmental strengths and challenges that infrastructure solutions might seek to address. This project explores economic, social and environmental strengths and challenges in order to support Infrastructure Victoria's understanding and thinking on infrastructure needs, opportunities and solutions. It does not, and is it not intended to, provide insights or recommendations with respect to specific infrastructure needs, opportunities and solutions.

1.2. Approach to this regional assessment

This regional assessment provides an overview of the current economic, social and environmental profile of the Wimmera Southern Mallee region and the potential future risks and challenges it will face. The assessment is based on currently available data with some additional analysis. Where datasets are highly correlated, such as is the case with health indicators, higher level indicators have been used. The approach to this regional assessment was to ensure that all evidence presented here is factual, unbiased and to allow for direct comparisons across all regions and the State as a whole.

This profile also includes an assessment of the key drivers of change facing Victoria and their relevance for the region. To do this, this report identifies a range of attributes, competitive strengths and challenges which have shaped the Wimmera Southern Mallee economy and community. Attributes can be characterised as physical or built infrastructure, natural resources, or environmental amenities. Attributes may be leveraged as regional strengths, or may be under threat and present a challenge to the region. This is particularly relevant when the attribute is important in the context of Victoria and provides benefits to the regional economy. These attributes have been noted more frequently throughout this report on this basis.

The assessment of the Wimmera Southern Mallee region has identified three sub-regions with broadly distinct characteristics. The three areas have been defined by Local Government Areas (LGAs):

- Rural cropping areas (Hindmarsh, Yarriambiack and West Wimmera LGAs)
- Horsham regional hub (Horsham LGA)
- South east areas (Northern Grampians LGA).

1.2.1. Report usage and limitations

Aither worked with Infrastructure Victoria through an extensive pilot reporting process to identify appropriate data sets that best align with the needs of Infrastructure Victoria for the purpose of this report.

The majority of data is available at the LGA level, and data has been generally focussed at this level to maintain consistency. This means that for some LGAs with large population centres, the outcomes for the largest population area drive the outcomes for the whole LGA. This can hide some of the nuances for the wider region, however where appropriate these have been captured anecdotally.

Economic data at the LGA level has been provided by NIEIR through their national model of the Australian economy. For small rural LGAs with an economy highly dependent on agriculture the data is not as reliable on a year to year basis given that employment and output and prices fluctuate significantly more than in other industries. Therefore, strong conclusions should not be drawn on the basis of this data alone. This report uses Australian and New Zealand Standard Industrial Classification (ANZIC) data at the 1 digit level. Investigation of ANZIC data at a more detailed level was outside the scope of this report.

This final report has been written to ensure clarity on the key messages and to a standard sufficient for internal dissemination and consequently some graphics have been left in their original state.

1.3. Overview of the Wimmera Southern Mallee region

The Wimmera Southern Mallee region is 33,900 square kilometres in extent (15 per cent of Victoria) and is characterised by predominantly rural areas. The northern part of the region extends to the Mallee incorporating agricultural towns such as Hopetoun. The south of the region includes the Grampians and Mount Arapiles area, both of which are important tourist destinations. The western reaches of the region border South Australia and primarily consist of agricultural land and national parks. The region has one major regional centre in Horsham.

Wimmera Southern Mallee comprises five Local Government Areas. As shown in Figure 1 these are:

- Horsham
- West Wimmera
- Hindmarsh
- Yarriambiack
- Northern Grampians.

The Wimmera Southern Mallee region is one of Victoria's more remote regions, bordering South Australia. The Wimmera Southern Mallee region does not border metropolitan Melbourne and therefore the region's population and economy are not influenced by the benefits and pressures associated with being adjacent to Melbourne's peri-urban fringe.

The Wimmera Southern Mallee region includes the traditional lands of the Wotjobaluk, Jaadwa, Jadawadjali, Wergaia and Jupagalk peoples and sections of the land of the Dja Dja Warrung people, Taungurong people and the Yorta Yorta people. The Barengi Gadjin Land Council Aboriginal Corporation, the Dja Dja Warrung Clans Aboriginal Corporation, and the Gunditj Mirring Traditional Owners Aboriginal Corporation have legislative responsibilities relating to the management of Aboriginal cultural heritage places in the Wimmera Southern Mallee region (State Government of Victoria 2014a).

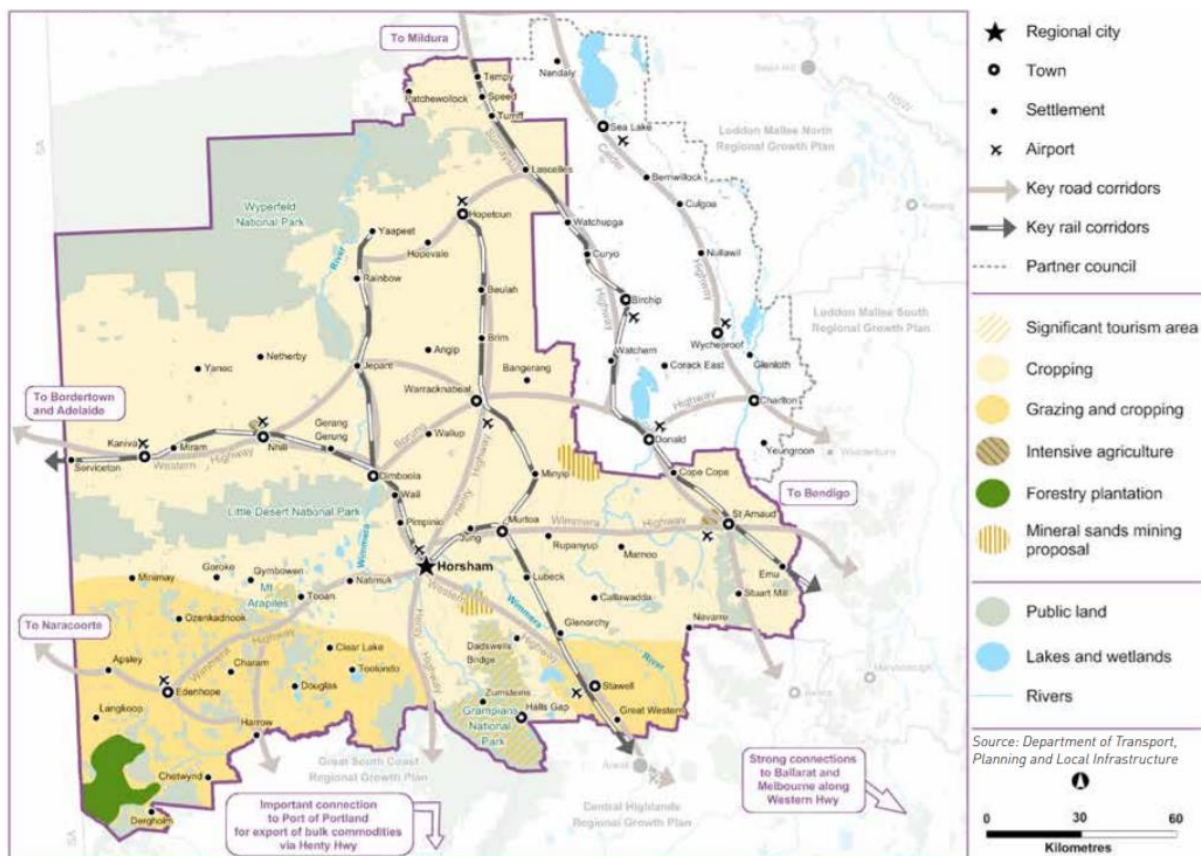
Horsham has its origins in the mid-nineteenth century when the Melbourne merchant George Langlands established a shop and post office on the site of the town to service the regions emerging farming community. Growth accelerated with the arrival of railways in 1879 which linked Horsham to other regional centres and ultimately Melbourne. Horsham's growth was also fuelled by the opening of four flour mills in Horsham during the late-nineteenth century. Horsham's role as a regional service hub would be reinforced throughout the twentieth-century, particularly after the construction of highways linking it to Melbourne, Adelaide and the Port of Portland (SGS Economics and Planning 2016, Victorian Places n.d.).

Growth in the region outside of Horsham was initially underpinned by the emergence of pastoralism in the 1850s. This in turn evolved into cropping which was supported by the expansion of railways into the region in the second half of the nineteenth-century. Agriculture continued to dominate the region throughout the twentieth-century but with a declining emphasis on wheat production (Victorian Places n.d.).



Source: RDV n.d..

Figure 1 Local Government Areas in the Wimmera Southern Mallee region



Source: State Government of Victoria 2014a.

Figure 2 Wimmera Southern Mallee region

1.3.1. Regional centres and towns

The total population of the Wimmera Southern Mallee region is 47,382 (RDV 2016), representing less than 1 per cent of Victoria's population. The Wimmera Southern Mallee is dominated by the regional city Horsham (15,300) with 32 per cent of the population of Wimmera Southern Mallee.

Other regional towns as shown in Figure 2 include:

- Stawell (5,397)
- Warracknabeal (2,252)
- St Arnaud (2,007)
- Nhill (1,752)
- Dimboola (1,392)
- Murtoa (735)
- Edenhope (656)
- Kaniva (579).

The majority of population growth has occurred in the regional city of Horsham. Many of the region's smaller towns have experienced declining rates of population and economic growth.

The Wimmera Southern Mallee region is isolated in comparison to road connectivity in many other regions of Victoria:

- Horsham is over 300 kilometres from both the Melbourne CBD and Mildura
- St Arnaud is approximately 240 kilometres from the Melbourne CBD
- Hopetoun is approximately 390 kilometres from the Melbourne CBD.

Many of the townships within the Wimmera Southern Mallee region are also isolated from regional centres:

- Edenhope is approximately 95 kilometres from Horsham
- Minimay is approximately 90 kilometres from Horsham
- Hopetoun is approximately 120 kilometres from Horsham.

1.3.2. Major regional infrastructure

While relatively remote, the Wimmera Southern Mallee region is well connected via Melbourne, Adelaide and Portland to a number of key economic centres as well as a key airport and port (Figure 3). Key transport infrastructure is consequently centred around the Western Highway, Henty Highway and the North-western rail line that connects Melbourne to Horsham.

The road network through the Wimmera Southern Mallee includes:

- Western Highway – Melbourne-Ballarat-Ararat-Stawell-Horsham-Adelaide link
- Henty Highway – Lascelles-Hopetoun-Horsham-Hamilton-Portland link
- Wimmera Highway – Edenhope-Horsham-St Arnaud-Bendigo link
- Sunraysia Highway – Ouyen-Lascelles-Donald-St Arnaud-Ballarat link.

The rail network includes:

- Freight lines from Yaapet and Hopetoun that can connect with Horsham and with ports in Geelong, Portland and Melbourne
- Interstate freight line between Adelaide and Melbourne via Geelong
- Limited passenger rail connections to Melbourne and Adelaide from Nhill, Dimboola, and Stawell via the twice weekly Overland service.



Source: State Government of Victoria 2014a.

Figure 3 Wimmera Southern Mallee transport links and access to key services in surrounding regions

The region does not have a major airport however it does have several smaller regional airports. The region also does not have a major port being a landlocked region although it does have access to the Port of Melbourne and Port of Geelong via the Western Highway and Port of Portland via the Henty Highway. All three ports are also accessible by rail from Wimmera Southern Mallee region. The region is also connected to interstate resources located in South Australia. The region is linked to South Australia via road infrastructure. The Western Highway, which joins Dukes Highway in South Australia, connects Horsham and Nhill with Bordertown in South Australia, and joins the Princes Highway to connect with Adelaide. It is also connected to Naracoorte via the Wimmera Highway. These trade routes are important for the regions' agricultural and manufacturing sectors.

The Wimmera Southern Mallee region has comparatively little social infrastructure when compared to other Victorian regions. Horsham is home to a mixed university and TAFE Federation University campus, and Longerenong Agricultural College approximately 12 kilometres north east of Horsham is an important tertiary institute. The Wimmera Base Hospital is located in Horsham but due to the size of the region there are a number of public hospitals in the region's hinterland. The city size of 15,300 is much smaller than other regional cities such as Bendigo (91,567) or Ballarat (92,725) which means that while Horsham is an important service centre for the Wimmera Southern Mallee region, it cannot sustain higher order services such as universities and tertiary hospitals comparable in scale with those larger regional cities. Edenhope in particular benefits from services such as health services in Naracoorte, South Australia, which at approximately 50 kilometres distance is closer than Wimmera Southern Mallee service centres such as Horsham (135 kilometres) and Hamilton (145 kilometres).

There are no major water storages within the Wimmera Southern Mallee and no irrigation districts with the Wimmera Mallee Stock and Domestic channel system having been decommissioned (GWMWater 2018). However, the Rocklands Reservoir is a major water storage on the border of the

Wimmera Southern Mallee region and holds environmental water which is split north into the Wimmera River and south into the Glenelg River.

Urban water supply across the Wimmera Southern Mallee region is supplied by Grampians Wimmera Mallee Water (GMMWater). The Wimmera Mallee Pipeline was a considerable infrastructure investment to improve water security and efficiency and connects approximately 7,000 rural customers and 26 towns across the region (GMMWater 2018). However, the Wimmera Southern Mallee region also relies on large groundwater supplies for urban and rural supply to the western parts of the Wimmera Southern Mallee region, which is of varying quality (Wimmera CMA 2013).

Digital infrastructure

Digital infrastructure is a broad category of technologies which together comprise the digital connectivity landscape in a given location. The most significant digital infrastructures for businesses and households include:

- **Fixed broadband access:** for example, National Broadband Network (NBN) fixed-line broadband services including Fibre to the Premises (FTTP), Fibre to the Node (FTTN), Fibre to the Curb (FTTC), Fixed Wireless and Satellite services.
- **Mobile access:** digital mobile networks capable of supporting voice telephony and data applications such as through 4G networks, with emerging Internet of Things capability.

The quality of this infrastructure across the Wimmera Southern Mallee region is highly variable, as are the demand characteristics of different user groups within each location, making it difficult to provide a simple snapshot of the current infrastructure landscape across the whole region. However, general points can be made about the availability of these infrastructures in different place and sector contexts, as summarised in the table below.¹

The general findings below do not consider the adequacy of the infrastructure in meeting the economic and social needs of businesses, households and other users in a given location, rather it provides an outline of what tends to be available. Although mobile coverage availability may be noted below, regional users may still face issues with the quality and reliability of services including accessing data.

¹ These high-level findings are informed by continuing work from the Wimmera Southern Mallee Regional Partnership to assess the current state of digital infrastructure supply and demand in their region, in the form of a Digital Plan. Digital Plans are not yet complete and are subject to further consultation and input which is underway. While the table above focuses on the major infrastructures of fixed broadband and mobile access, these are not the only types of infrastructure relevant to digital connectivity. For instance, Low Powered Wide Area Networks (that can support Internet of Things applications like remote sensors) and WiFi networks are increasingly relevant infrastructures for industry applications, tourism and addressing disadvantage. Also, backhaul fibre networks provide national and global digital connectivity and the quality of these networks in a location affects investment, availability, affordability and quality of all digital services.

Table 1 General findings for the supply of digital infrastructure in regional Victoria

	Fixed broadband access	Mobile access
Cities and large towns, such as Horsham and Stawell	Generally comparable to metropolitan Melbourne with some access to FTTP and widespread provision of FTTN within town centres, but fixed wireless and satellite serving the town fringe and beyond.	Generally comparable to metropolitan Melbourne with multiple carriers operating 4G networks, but quality and reliability of access can fade beyond town centre.
Small towns and localities, such as Murtoa and Rainbow	Generally provisioned with fixed wireless services in the town centre with the fringe and surrounding areas receiving satellite. Some small towns receive higher-speed FTTN or FTTC services.	Less capacity and reliability than in larger towns. Better quality within the town centre than when moving into surrounding areas and between towns.
Primary production areas, such as cropping northeast of Nhill	Lower capacity fixed broadband technologies like fixed wireless and satellite available due to remoteness of these farms / businesses. Fixed wireless more available closer to population centres.	Variable service quality across primary production areas. Better when closer to population centres and unimpeded by local topography.
Tourist locations, such as Grampians National Park	Most relevant to tourist operators and businesses. Higher capacity technologies like FTTN available to operators in town centres, but lower capacity services like fixed wireless and satellite in more remote tourist locations.	Often weak coverage in remote locations such as trail walks and national parks and network limitations in accommodating large influxes of visitors such as periodic events.
Transport corridors, such as major highways	N/A	Stronger and more reliable coverage on large highways with service quality and reliability compromised on smaller roads and in more remote areas.

Source: Infrastructure Victoria 2019.

2. Summary of findings

2.1. Wimmera Southern Mallee region high-level findings

○ Attributes

- Important freight transport infrastructure supports the regional economy including the Western Highway, Henty Highway and the western rail line. Passenger rail infrastructure is more limited.
- Natural resources including solar, geothermal and wind energy; gold and mineral sands (including 75% of Victoria's deposits by area) provide opportunities. Soils support agriculture throughout much of the region.
- Environmental assets include Grampians National Park and Little Desert National Park.

○ Regional Strengths

- Horsham regional hub provides economic diversity, services and employment opportunities to the region.
- Agriculture (28%), health care (11%) and manufacturing (10%) comprise 49% of GRP with agriculture being of regional importance (with LQ of 6.5).
- Projected employment growth in health care and social assistance.
- Relative advantage in the farmlands, outside of the rural towns, except in the south east areas.
- Low to moderate population growth in Horsham, including being the only LGA where the working age population is projected to increase. Unemployment lower than the Victorian average in rural areas.
- Higher levels of self-reported wellbeing than the Victorian average.

○ Key Insights

- Horsham regional hub provides economic diversity, services and employment opportunities to the region.
- Rural cropping areas face ongoing challenges and significant impacts from the drivers of change.
- South east area is one of the most disadvantaged LGAs in Victoria, demonstrating challenging indicators of economic and social outcomes.

○ Regional Challenges

- The agricultural sector (28% of GVA) is becoming more skill and capital-intensive. Employment in agriculture is forecast to continue to decline.
- High relative disadvantage in Horsham, all rural towns and south east areas including Northern Grampians and Yarriambiack, which are the 3rd and 4th most disadvantaged LGAs in Victoria.
- Potential degradation of environmental amenity assets and a reduction in water availability due to climate change impacting agriculture (28% GVA in the region - 62% in West Wimmera LGA, 42% in Yarriambiack and Hindmarsh LGAs).
- Population expected to continue to decline and age in rural areas.
- The impacts of climate change represent a risk to social wellbeing and cohesion, public health from higher temperatures, uncertainty about water resource availability and a potential increase in the frequency and severity of natural hazards such as bushfires, droughts and floods.
- Agglomeration of services to regional hubs.

2.2. Wimmera Southern Mallee economic, social and environmental profile summary

Economic Profile			
<i>Indicator</i>	<i>Rating</i>	<i>Likely impact of drivers of change</i>	<i>Description</i>
Industry structure	N/A	N/A	The Wimmera Southern Mallee region is characterised by a relatively high concentration of agriculture and health care services compared to Victoria. Agriculture is the key export for the region. The strongest employment growth in the region, however, has been in the service sectors with the relative importance of agriculture, due to farm consolidation, and manufacturing as employment industries projected to decline further in the future.
Economic output	Below average	Adverse	The Wimmera Southern Mallee region has a lower GRP per capita than the Victorian average and it has declined in the last 10 years while Victoria has experienced growth in economic output. The low relative output can be attributed to lower labour productivity (see below), lower participation rates and an ageing population. However, this region has experienced growth in the economic output from the agricultural industry in more recent years, albeit with lower employment. This may lead to stronger growth in this region in the future.
Labour productivity	Below average	-	Labour productivity in the Wimmera Southern Mallee region is lower than the average for Victoria. There appears to be divergence from the Victorian average from around 2001, which may be associated with decreased agricultural productivity during the Millennium drought which may have led to permanent closure of some agricultural industry in the region.
Capital investment	Below average	-	Capital investment in the Wimmera Southern Mallee region is below the Victorian average with relatively low rates across all LGAs in this region. The highest rates of investment in residential new construction are in Hindmarsh LGA likely reflecting the growing population concentration in the regional hub. The lowest rates are seen in Hindmarsh and Yarriambiack LGAs, reflecting the projected population decline in these areas.

Participation rate	Average	Adverse	The average participation rate in the Wimmera Southern Mallee is slightly below the average for Victoria which again can be due to a range of contributing factors number of retirees. ² Generally, there are lower participation rates in the rural cropping areas than in Horsham. The working age population is comparatively low in the rural areas of this region and is projected to continue to decline further.
Household income and unemployment	Average	Adverse	Household income is lower than the state average across all LGAs. Horsham has the highest income, potentially due to the greater availability of jobs within the regional centre compared to the rural areas. The lowest household incomes are in the north west rural LGAs of Hindmarsh and Yarriambiack. Unemployment across the region is generally better than the average for Victoria with particularly low levels in the West Wimmera LGA.
Employment and skills	Below average	Adverse	Employment growth in the region has been strongest in the health care and construction sectors with declines in manufacturing and agriculture. These trends are projected to continue with the growth in high skill industries. This presents both a challenge and an opportunity for the region. While growth in high skill jobs offers opportunities for income growth, increasing demand for high skill labour will potentially lead to future skill shortages and increasing income differences between those with higher qualifications and those without. Most employed Horsham residents work in the LGA, and there is relatively low commuting for work across the region.
Social Profile			
<i>Indicator</i>	<i>Rating</i>	<i>Likely impact of drivers of change</i>	<i>Description</i>
Disadvantage	Above average	Adverse	In the Wimmera Southern Mallee region relative disadvantage is demonstrated to be concentrated within towns, including Horsham, rather than in the rural farmlands. In Northern Grampians and Yarriambiack LGAs approximately 55 per cent of the population live in areas that are within the top 20 per cent of relative disadvantage in Australia, demonstrating high disadvantage. In Hindmarsh this is approximately 40 per cent. The difference in advantage between the towns and the farmlands

² ABS calculate the participation rate based on the population aged 15 +, it is therefore affected by retiree numbers.

			that surround these towns is likely a reflection of a longer-term agglomeration trend that has been occurring in the agriculture industry and a gradual economic decoupling of small rural towns and the surrounding farm businesses.
Youth engagement with work or study	Average	Adverse	The proportion of the population aged 15-19 years not engaged in work or study is similar or marginally larger than the Victorian average. The proportion of the population aged 15-19 years engaged in full-time employment is significantly larger than the Victorian average across all LGAs in the region, being more than double the Victorian average in West Wimmera and Hindmarsh LGAs. The proportion of those aged 20-24 years with a Year 12 certificate or higher is similar across all regions and lower than the average across Victoria reflecting that a larger proportion of the population aged 20-24 year move into full-time employment compared to Victoria.
Population health	Below average	Adverse	All LGAs, with the exception of Horsham, have particularly high Ambulatory Care Sensitive Conditions (ACSC) separations. For example, Hindmarsh has double the Victorian average of ACSC separations. Life expectancy for males is lower than the Victorian life expectancy in all LGAs with the greatest divergence in Northern Grampians and West Wimmera LGAs. Reported obesity is higher in the rural cropping areas than both the Victorian average and other LGAs in the Wimmera Southern Mallee region. The percentage of people reporting poor dental health is substantially higher than the Victorian average in Hindmarsh and Yarriambiack (double the Victorian average) and Northern Grampians. Home and Community Care (HACC) service utilisation is substantially higher in all LGAs of the Wimmera Southern Mallee region. In the rural cropping areas and Horsham regional hub the number of HACC clients aged 65 years and over are two to three times the Victorian average. The Horsham, Hindmarsh and Northern Grampians LGAs have a high number of registered mental health client persons per 1,000 population compared to Victoria and other LGAs in the region. The Northern Grampians LGA is more than double the Victorian average. Northern Grampians, along with Horsham, also have more than double the number of persons that receive drug and alcohol treatment services per 1,000 population than the Victorian average.
Early childhood outcomes	Below average	-	The Wimmera Southern Mallee region has mixed results across different early childhood outcome indicators. Horsham consistently demonstrates lower indicators of early childhood outcomes when compared to the Victorian average, with the exception of child immunisation.

Housing stress	Average	-	Housing stress for low income households is generally lower in the Wimmera Southern Mallee region than the Victorian average. However, the proportion of low income households with rental stress in the Horsham and Northern Grampians LGAs are larger and comparable to the Victorian average respectively. The rural cropping areas have lower levels of housing stress compared to other LGAs and the Victorian average. Horsham has a significantly higher rate of social housing than other Wimmera Southern Mallee LGAs and the Victorian average. The percentage of reported homelessness is lower in all LGAs than the Victorian average.
Crime	Above average	-	Reported offences vary significantly across the LGAs. Both Horsham and Northern Grampians LGAs demonstrate far higher reported offences than the Victorian average. West Wimmera, Hindmarsh and Yarriambiack LGAs demonstrate comparatively low rates of reported offences all being below the Victorian average. The correlation between crime and other social indicators in Horsham and Northern Grampians – such as early childhood outcomes, mental health and drug and alcohol treatment – may warrant further investigation.
Wellbeing	Above average	-	A larger proportion of respondents in the Wimmera Southern Mallee report a higher level of wellbeing when compared with the Victorian averages for all indicators assessed. This is consistent with most studies of rural and regional wellbeing which show that the population in rural areas have a greater sense of wellbeing. This is further demonstrated in the rates of volunteering which are significantly higher in all LGAs across the Wimmera Southern Mallee than the Victorian average, being more than double the Victorian average in the rural cropping areas. However, in the rural cropping areas, the young age group (18-34 years of age) reports a similar or lower sense of wellbeing than the middle age group (35-54 years of age) which is inconsistent with the rest of Victoria, as well as other LGAs.

Environmental Profile

<i>Indicator</i>	<i>Rating</i>	<i>Likely impact of drivers of change</i>	<i>Description</i>
Land	Average condition	Adverse	The Wimmera Southern Mallee is highly modified from its natural state and is primarily used for agriculture. There are important environmental assets in the form of mountains, plains, deserts and wetlands, including parks and Ramsar-listed wetlands. The Wimmera Southern Mallee region has a

			higher risk of erosion than other parts of Victoria given land clearing and bare soils in agricultural areas. Naturally saline soils occur throughout the Wimmera Southern Mallee region. While the knowledge of salinity is generally poor in Victoria, broadly speaking, western Victoria is more severely affected by salinity than eastern Victoria, largely because it is flatter and poorly drained, and also because conversion of native vegetation to agriculture has been much more extensive in western Victoria.
Natural resources	N/A	N/A	The main mineral resource used post-European settlement in the Wimmera Southern Mallee region has been gold, with some existing and ongoing mining operations. The Wimmera Southern Mallee region also contains substantial mineral sands deposits concentrated in the western and northern areas, which have been mined since the early 2000s. There are also a number of active quarries which produce a wide range of materials including sand, limestone, scoria, tuff, basalt/bluestone and gypsum. There is considerable potential for solar energy generation, however the Wimmera Southern Mallee region's renewable energy development has been predominantly focussed on wind, bioenergy and hydroelectricity to date. Several potential sites for solar and wind energy installations and potential geothermal resources have been identified.
Biodiversity	Moderate condition	Adverse	Biodiversity across the Mallee region is in neutral condition overall, with areas of higher biodiversity concentrated in protected areas and lower levels in grassland and highly cleared regions. There is low connectivity between natural habitats as native vegetation and environmental assets are often isolated from each other and interspersed by large cleared areas.
Waterway health	Poor condition	Adverse	The Wimmera Southern Mallee region is part of the Murray-Darling Basin and has one main river catchment, the Wimmera River. The catchment areas within the Wimmera Southern Mallee region are used to supply water for agriculture, domestic and other purposes. Construction of the Wimmera Mallee Pipeline has resulted in higher levels of water supply security. More broadly, natural waterways across the Wimmera Southern Mallee region have been heavily impacted by land use (clearing and agriculture), resulting in generally poor waterway condition. The Wimmera Southern Mallee's numerous wetlands have also been similarly threatened by surrounding agricultural activity. The Rocklands Reservoir is a major water storage on the border of the Wimmera Southern Mallee region and holds environmental water which is delivered north into the Wimmera River and south into the Glenelg River.

Natural hazards	Average	Adverse	The Wimmera Southern Mallee region, similar to other rural areas, is characterised by threats of both bushfire and flood including vulnerable areas that intersect with residential areas and important infrastructure, and areas where urban growth is expected.
Contaminated sites and pollution	Average	-	Land use in the Wimmera Southern Mallee region has not resulted in a serious history of pollution and contamination. As of December 2017, there are currently six sites in the Wimmera Southern Mallee region listed on the EPA's Priority Sites Register, all of which are in Stawell.

2.3. Wimmera Southern Mallee sub-regional summary

The Wimmera Southern Mallee region demonstrates some levels of disparity between LGAs however there are also a range of similarities. Three sub-regions have been defined to better summarise the differences demonstrated in the economic, social and environmental profiles. Figure 4 shows the three key areas:

- Rural cropping areas (light green)
- Horsham regional hub (light yellow)
- South east areas (light blue).



Figure 4 Wimmera Southern Mallee region showing the three key areas of regional assessment

Rural cropping areas

The rural cropping areas generally demonstrate poorer economic, social and environmental characteristics than the Victorian average. Agriculture is the largest industry by GVA in these regions, although employment in the agricultural sector has been declining due to the transition towards more capital-intensive modes of production. This has been offset to some extent by growth in service sector

employment. Hindmarsh, West Wimmera and Yarriambiack have generally lower gross regional product (GRP) per capita than the Victorian average. The rural cropping areas also have lower workforce participation rates than the Victorian average which is likely due to an ageing population reducing the available workforce. Household income is lower than the Victorian average and lower than in the Horsham regional hub.

The rural cropping areas are characterised by generally lower social outcome indicators including high relative social disadvantage, high ACSC separations, lower life expectancy, higher reported obesity, poor dental health and high numbers of HACC clients aged 65 years, being two to three times the Victorian average. Hindmarsh also has a high number of registered mental health clients compared to the Victorian average and other parts of the Wimmera Southern Mallee region. The rural cropping areas demonstrate higher levels of social disadvantage that is concentrated in the towns rather than the rural cropping areas themselves. Fifty-five per cent of the population of the rural cropping areas live in SA1s within the highest two deciles of social disadvantage nationally, indicating high disadvantage. The rural cropping areas have a large proportion of both school leavers and population aged 15-19 years engaged in full-time employment as opposed to further study or training.

The difference in advantage between the towns and the farmlands that surround these towns is likely a reflection of a longer-term agglomeration trend that has been occurring in the agriculture industry and a gradual economic decoupling of small rural towns and the surrounding farm businesses. However, consistent with most rural areas, the rural cropping areas have higher indicators of wellbeing (notably volunteering), lower crime and lower housing stress than the other parts of the Wimmera Southern Mallee region and the Victorian average. This may be in-part due to the large proportion of the older age groups, who typically have a higher sense of wellbeing and higher levels of home ownership.

The rural cropping areas of the Wimmera Southern Mallee region have environmental characteristics typical of a region with large areas of land used for agricultural purposes. This dominant land use is interspersed with high value environmental assets including native plains and deserts, Little Desert National Park, Big Desert National Park and the southern extent of Wyperfield National Park as well as part of the Ramsar-listed Lake Albacutya, and Lake Hindmarsh that are both connected through the Wimmera River. There are also substantial mineral sands deposits throughout the rural cropping areas that may be developed in the future. Similarly, the rural cropping areas have considerable solar potential and potential geothermal resources have also been identified. However, the rural cropping areas generally have a low level of biodiversity, poor catchment condition and native vegetation and environmental assets is often isolated and interspersed by large cleared areas.

Climate change will likely place pressure on existing high value environmental assets and farming operations. This could exacerbate the existing higher risk of wind erosion, increase the potential for both droughts and bushfire conditions and present water security challenges. The impacts of climate change on the region may limit economic growth and further exacerbate relative disadvantage.

The rural cropping areas are likely to continue to demonstrate relative strengths in some social indicators, such as wellbeing and low levels of crime, whilst continuing to face a range of existing economic and social challenges. More jobs and services are likely to be focussed in fewer regional centres with continued out-migration of the working age population. Population decline and an ageing population are also likely to suppress economic growth and present a number of specific social service needs. There are also likely to be continuing declines in employment in the key agricultural and manufacturing industries in the region as the shift towards a service-based economy continues to gather momentum.

Horsham regional hub

Horsham is the largest population centre in Wimmera Southern Mallee and acts as the regional hub.³ However, Horsham has a range of poor social and economic outcomes. Horsham has a low GRP per capita compared to the Victorian average, with the largest industry in terms of GVA still being agriculture, although the health care industry is also important and growing as more services are co-located in the regional hub as more remote services are discontinued. The workforce participation rate in Horsham is very close to the average for Victoria, and it is the only LGA in the Wimmera Southern Mallee region where there is projected growth in the working age population to 2030. The economic data shows that for Horsham, household income is lower than the average for Victoria but higher than in the rural cropping areas. Most employed Horsham residents work in the LGA, however there is relatively low commuting from outside the Horsham LGA compared to other regional hubs in Victoria. Horsham also provides services to the surrounding LGAs.

Horsham demonstrates lower levels of social disadvantage than other areas in the Wimmera Southern Mallee region. A larger proportion of the population lives in SA1s within the higher national deciles of relative social advantage when compared to other LGAs in the Wimmera Southern Mallee region. Despite this relative regional advantage, disadvantage is still relatively high in Horsham when compared to Victoria. Horsham also demonstrates lower ACSC separations, self-reported type 2 diabetes and dental health issues than both the Victorian average and other LGAs in the Wimmera Southern Mallee region. Like many rural areas, Horsham demonstrates higher levels of wellbeing than the Victorian average.

Like many major rural towns, Horsham also demonstrates some lower social outcome indicators including population health, crime and housing stress when compared to the other LGAs in the Wimmera Southern Mallee region. Horsham has low population health characteristics including far higher rates of HACC service utilisation, nearly double the Victorian average of registered mental health client persons and persons that receive drug and alcohol treatment services. Horsham also consistently demonstrates poorer indicators of early childhood outcomes, notably child protection substantiations. Horsham has higher levels of housing stress for low income earners that are renting as well as a larger proportion of social housing than the Victorian average. Rates of crime in the Horsham regional hub are more than 50 per cent higher than the Victorian average. Similar to the rest of Wimmera Southern Mallee, Horsham has a large proportion of both school leavers and the population aged 15-19 years engaged in full-time employment as opposed to further study or training. Whilst not tested in the project, there may be correlation between several of these key social indicators and further research may be warranted.

The Wimmera River flows through Horsham and several important environmental assets border the Horsham regional hub, including the Black Range State Park in the south of the Horsham LGA. However, the dominant surrounding land use is dryland agriculture. Mineral sands (Douglas deposits) were previously mined near Horsham between 2006 and 2012 and there is potential for solar energy generation in the areas immediately north of Horsham. Being the major population centre of the Wimmera Southern Mallee region, Horsham has some history of pollution from industrial activities however the vulnerability to the risks of contaminated land and pollution from current and previous industrial activity is lower than other regional centres in regional Victoria. The Horsham regional hub is situated on the Wimmera River floodplain, and more detailed flood mapping is required to understand the risks facing any potential urban growth in this area.

Horsham does not demonstrate a large number of clear social or economic strengths when compared to other LGAs in the Wimmera Southern Mallee region, as might be expected from a regional hub.

³ Regional Victoria has a number of population centres which, for the purposes of this project, have been termed 'regional hubs'. Regional hubs provide services for those within the hub as well as surrounding areas, which characterises them as being 'catchment-serving'. Geelong, Ballarat, Bendigo and Albury-Wodonga are identified as larger and diversified regional hubs.

However, it does offer some relative strengths and Horsham also has the greatest potential for higher skill employment and growth, particularly given its more diverse economy. This is demonstrated for example, by growth in the health care industry. It is also the only part of the Wimmera Southern Mallee region to expect population growth in the future. The Horsham LGA will be affected by the same climatic factors that affect the rural cropping areas which will affect not just local agricultural industry, but also the economic wellbeing of the wider region which Horsham provides services to. Horsham may also benefit from its status as the regional hub, for example, agglomeration would be expected which may provide Horsham with potential positive economic impacts. However, some agglomeration of services is also likely to occur outside the region in Ballarat.

South east areas

The south east areas demonstrate a range of low social and economic outcomes as other parts of the Wimmera Southern Mallee region. However, the economy of the Northern Grampians LGA is much less reliant on agriculture and a large proportion of land in this LGA is covered by the Grampians National Park which consequently has the highest rates of tourism revenue in the region. In many other respects, it has similar economic outcomes to the rural cropping areas with GRP per capita and household income below the Victorian average. It does however have greater labour mobility than other LGAs in the region given its closer proximity to Ararat regional city and the Central Highlands region. This may help support the adaptive capacity of the region, with potentially greater job opportunities outside of local agricultural and manufacturing industries.

A number of the social outcome indicators of the south east areas are lower than other LGAs in the Wimmera Southern Mallee region as well as the Victorian average. The south east areas demonstrate a high level of relative disadvantage which is concentrated in the towns, notably Stawell. Fifty-five per cent of the population live in areas that are within highest two deciles of relative disadvantage in Australia.

Lower indicators of social outcomes also include higher levels of housing stress for low income earners and the second highest rate of crime in the Wimmera Southern Mallee region (only Horsham has higher). Poor population health outcomes are numerous and include higher number of self-reported dental health issues, lower life expectancy, high rates of HACC service utilisation and poor indicators of early childhood outcomes (notably child protection substantiations). The south east areas also have the largest proportion of registered mental health clients in the Wimmera Southern Mallee region and more than double the number of persons that receive drug and alcohol treatment services than the Victorian average. The south east areas also have a large proportion of both school leavers and the population aged 15-19 years engaged in full-time employment as opposed to further study or training. Whilst not tested in the project, there may be correlation between several of these key social indicators and further research may be warranted.

Notwithstanding these challenges, the south east areas demonstrate some relative strengths including lower ACSC separations, self-reported type 2 diabetes and obesity and, similar to other rural areas, high levels of self-reported wellbeing. It is also likely that many of the social indicator outcomes, notably disadvantage, are related to Stawell and St Arnaud as opposed to the farmland areas.

Whilst dryland agriculture remains the dominant land use in the south east areas, the area is characterised by important natural assets. These include the northern extent of the Grampians National Park and Black Range State Park as well as the St Arnaud Range National Park. The main mineral resource in the south east area has been gold, concentrated around the Stawell area, with past and ongoing mining operations. The natural environment and mineral resource assets provide considerable economic activity for regional towns such as Stawell. However, these areas are also more prone to flood and bushfire than the rest of the Wimmera Southern Mallee region. These risks

will need to be considered as the south east areas continue to attract tourism and the impacts of climate change exacerbate the likelihood of these events.

3. Drivers of change

The Wimmera Southern Mallee region, along with many other areas in Victoria and Australia, has experienced substantial changes to its economy, society and environment. Australia continues to shift away from a resource-based to a service-based economy. For example, the share of output from agriculture fell from over a third in the 19th century to just three per cent in the 2000s (Department of Industry 2014).

Partly as a result of the shift away from a distributed, resource-based economy increasing urbanisation has resulted in a greater concentration of people living in Melbourne and regional cities. In the 10 years from 2006 to 2016 the population in Greater Melbourne grew by 26 per cent while the population in the rest of Victoria only grew by 12 per cent (ABS 2016a). Alongside this there is an ageing population with the number of people aged 65 years and over in Victoria projected to almost triple from 2011 to 2051 (DELWP 2016b). A further challenge to be faced is climate change. In Victoria, this means a warmer and drier future, with an increasing likelihood of more extreme events such as heatwaves and bushfires (CSIRO 2016).

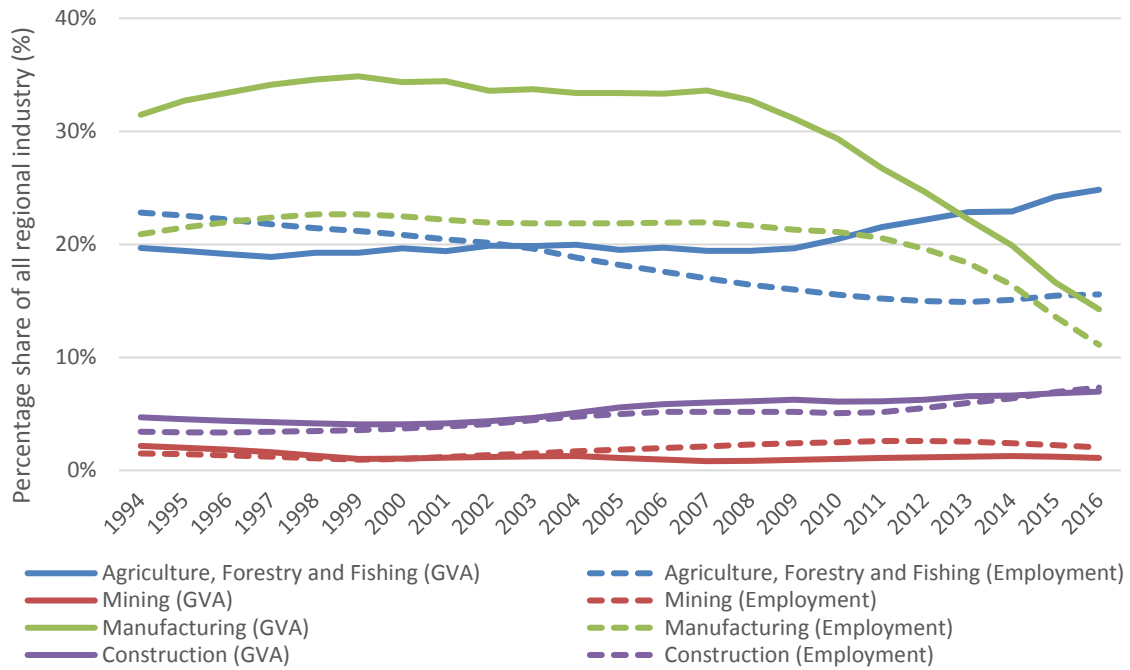
These changes all present challenges and opportunities for improving the health, wellbeing and prosperity of Victorians in the future.

3.1. Deindustrialisation and structural change

Similar to many other Western countries the Australian economy has been shifting over time from a manufacturing to a service-orientated economy and this shift is expected to continue (Department of Industry 2014). This can be seen in Figure 5 which shows the decreasing share of non-service industries in output (GVA) and employment in the Wimmera Southern Mallee. This is happening at a faster rate for employment than output as increasing productivity and capital intensity reduce labour requirements in non-service industries. This can be seen in particular in agriculture in this region where agriculture is actually accounting for an increasing share of output but is providing a decreasing share of local employment. A report by the Committee for Economic Development of Australia (CEDA) found that almost five million Australian jobs – around 40 per cent of the workforce – face the high probability of automation in the next 10 to 15 years (CEDA 2015). Historically, much of the automation of labour has been in the goods-producing industries which has contributed to the changing industrial structure. However, in the future automation is likely to affect jobs in the service industries, such as health care, which have previously been largely unaffected by automation. With service industries projected to provide the greatest growth area in employment in the Wimmera Southern Mallee (Figure 6), there is potentially a high risk of increasing unemployment if there is more rapid uptake of automation in these sectors in future.

A shift towards a service-based economy has implications for the skills and qualifications of the workforce. Many jobs requiring intermediate skill levels exist in manufacturing and production industries. The shift towards service-based industries coupled with automation of the primary industries, such as agriculture and manufacturing, may lead to fewer low-skilled jobs.

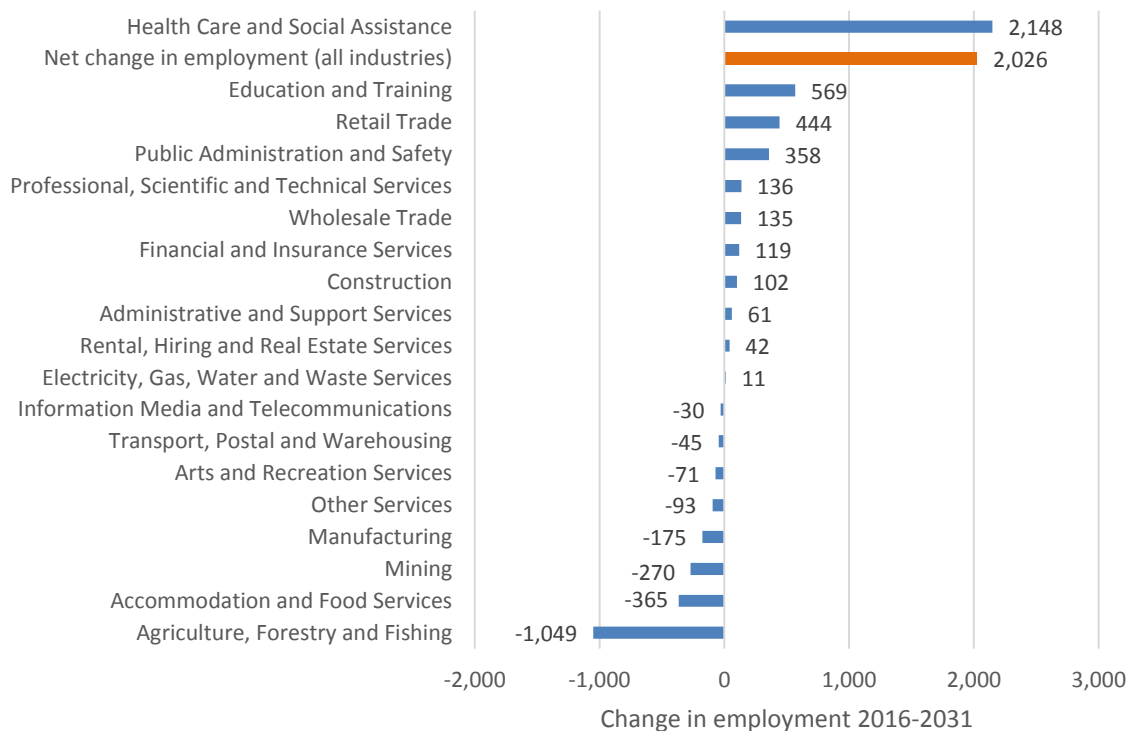
These changes will produce both challenges and opportunities. Further automation can increase productivity and increase wages for those with complementary skills able to leverage those productivity gains. However, it will also mean jobs losses and increased skill requirements, with growth particularly in high skilled industries.



Source: NIEIR 2018.

Note: Only non-service industries have been included.

Figure 5 Size of non-service sector industries in the Wimmera Southern Mallee region, 1994 – 2016



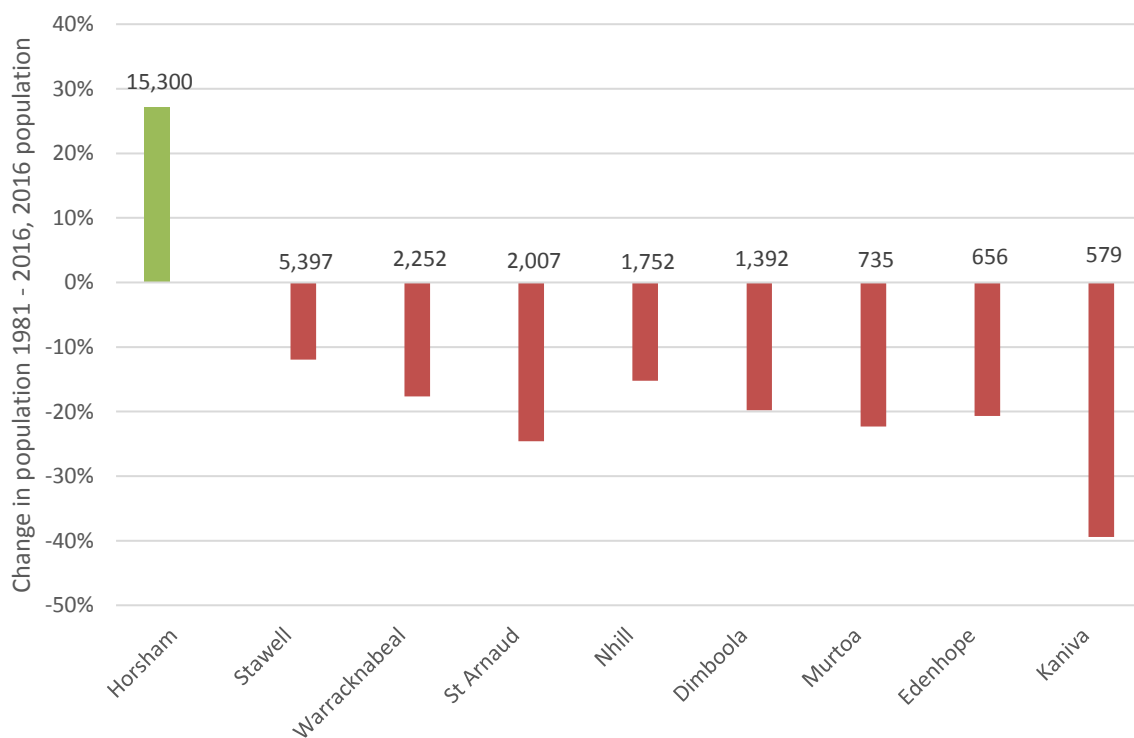
Source: Deloitte Access Economics n.d..

Figure 6 Projected employment growth in industries in the Wimmera Southern Mallee, change from 2016 to 2031

3.2. Demographic changes and urbanisation

Between 1981 and 2016 in the Wimmera Southern Mallee the regional centre of Horsham grew by 3,266 people (27 per cent.⁴) All other towns in the Wimmera Southern Mallee have experienced declining populations, with the smallest per cent decline occurring in the second largest town, Stawell, which experienced a 12 per cent decline between 1981 and 2016. The smallest town, Kaniva, has experienced a decline in population of 39 per cent over the 35 years from 1981 to 2016 (Figure 7).

Lower birth rates and longer life expectancy have led to an ageing of the population, which is expected to continue. The proportion of the population of working age is already declining in the Wimmera Southern Mallee Region (Figure 8). This trend is expected to continue in the future. An ageing population leads to an increasingly dependent population, with fewer working age adults to support those who have retired from the workforce. An ageing population also leads to a decline in household occupancy and is also correlated with declining population.

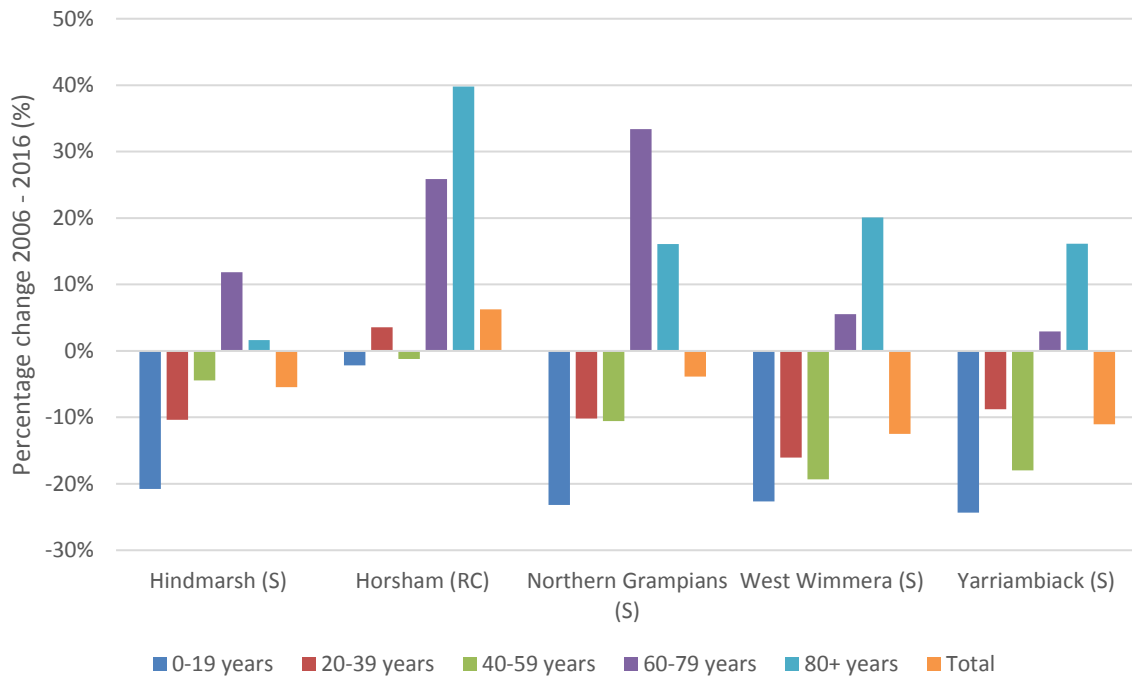


Source: DELWP 2016a, DELWP 2016b.

Note: Number indicates total population in 2016.

Figure 7 Growth in population from 1981 – 2016 and total town size for regional cities, regional centres and regional towns in Wimmera Southern Mallee

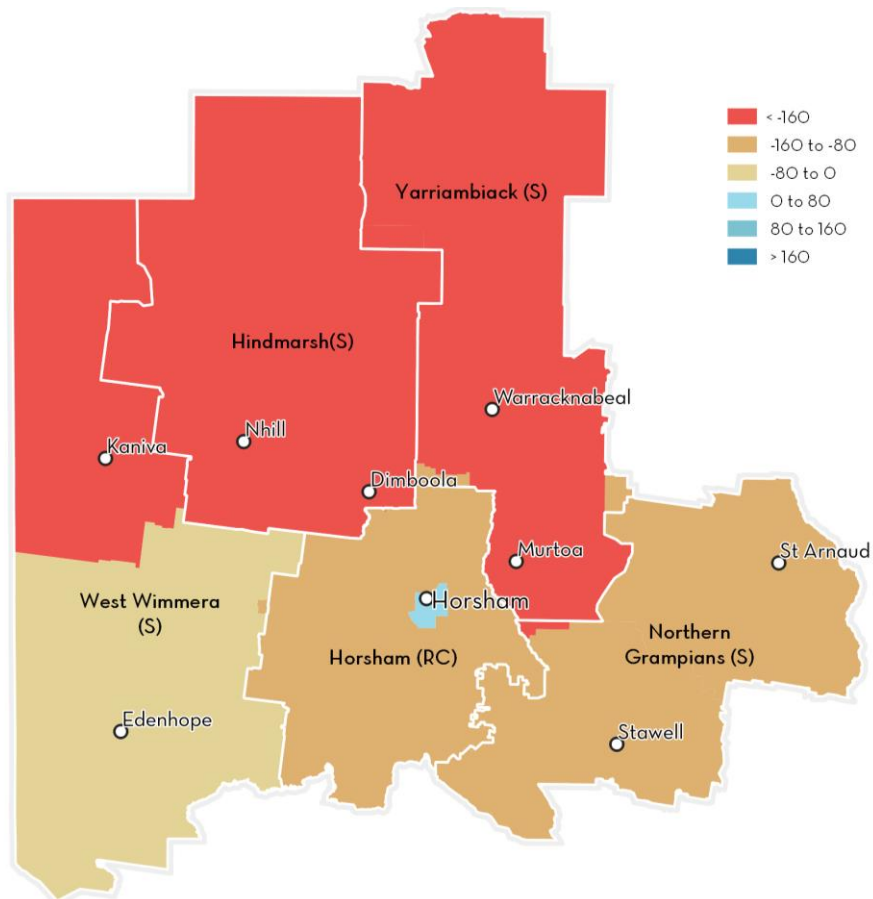
⁴ This report uses unpublished data from DELWP's *Towns in Time* data source (DELWP 2016a) that may differ from population data from the Australian Bureau of Statistics (ABS), which uses different boundary definitions. The *Towns in Time* data also counts population by location on Census date, while ABS uses usual residences, as this definition can be used consistently further into the past. This dataset is therefore able to be used consistently over time.



Source: ABS 2006, ABS 2016a.

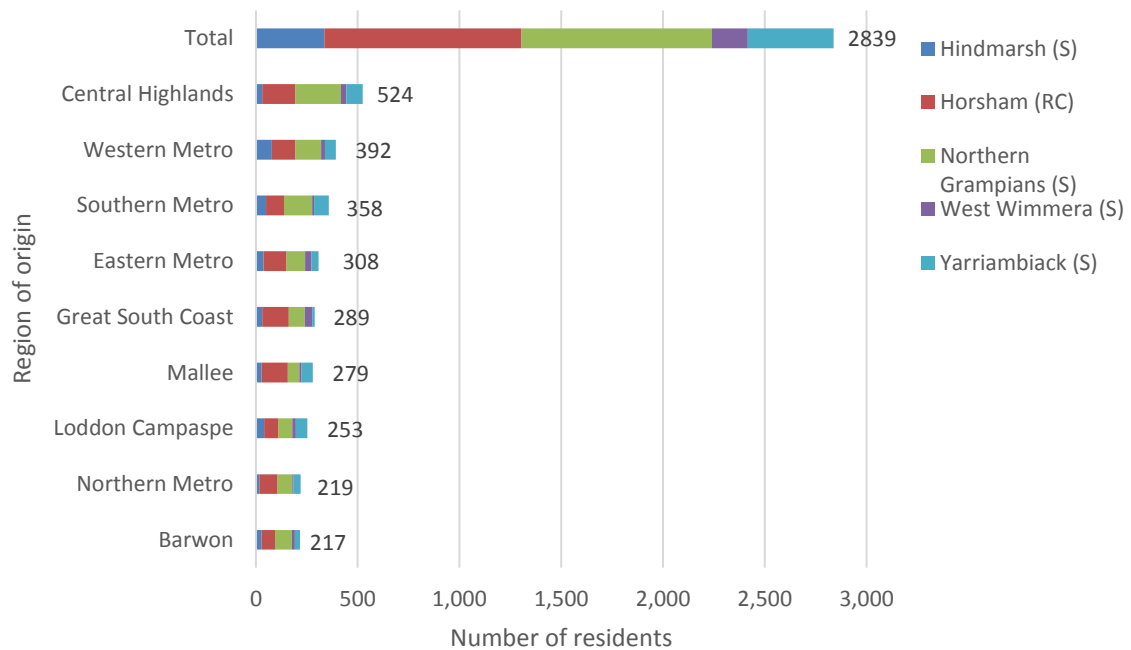
Figure 8 Change in population by 20-year age groups between 2006 and 2016

As well as the changes driven by the ageing population, net migration also has a large impact in this region. Between 2006 and 2016, there has been net out migration across the whole Wimmera Southern Mallee region, excluding Horsham which has seen zero net migration (Figure 9). The total number of people migrating into the Wimmera Southern Mallee from elsewhere in Victoria between 2006 and 2016 is 2839. The majority of these migrants moved either to Horsham LGA or Northern Grampians LGA (Figure 10).



Source: ABS 2016a.

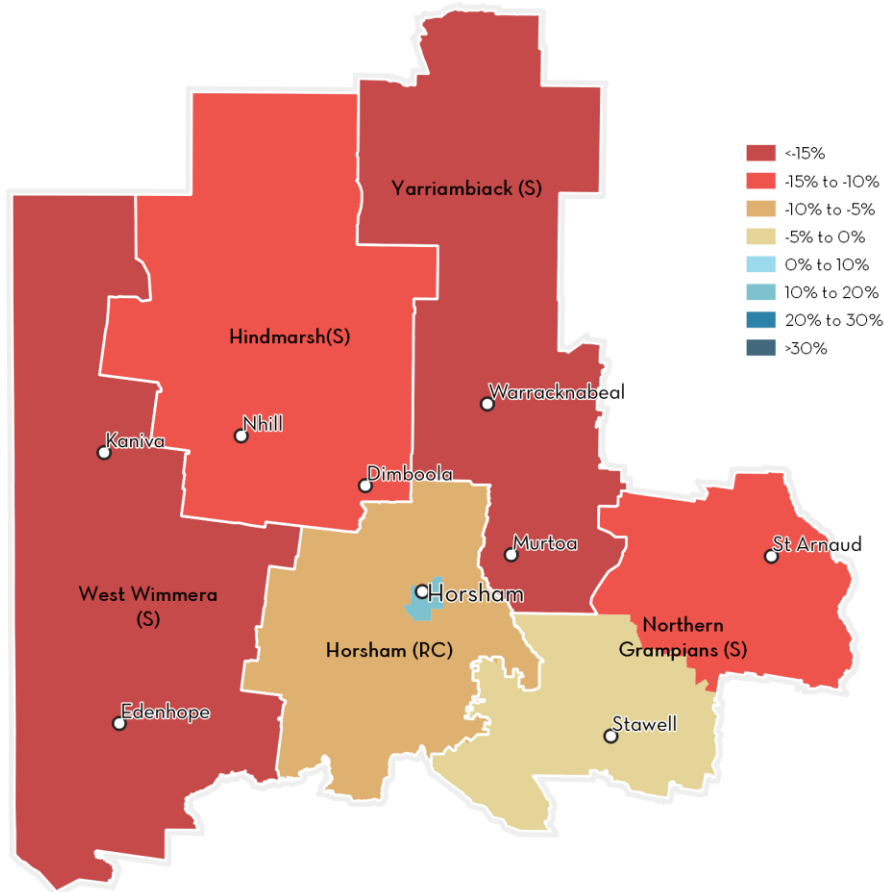
Figure 9 Net migration of Victorian residents within the Wimmera Southern Mallee region, 2011-2016



Source: ABS 2016a.

Figure 10 Region of origin in Victoria and destination LGA for in-migration to Wimmera Southern Mallee, 2011-2016

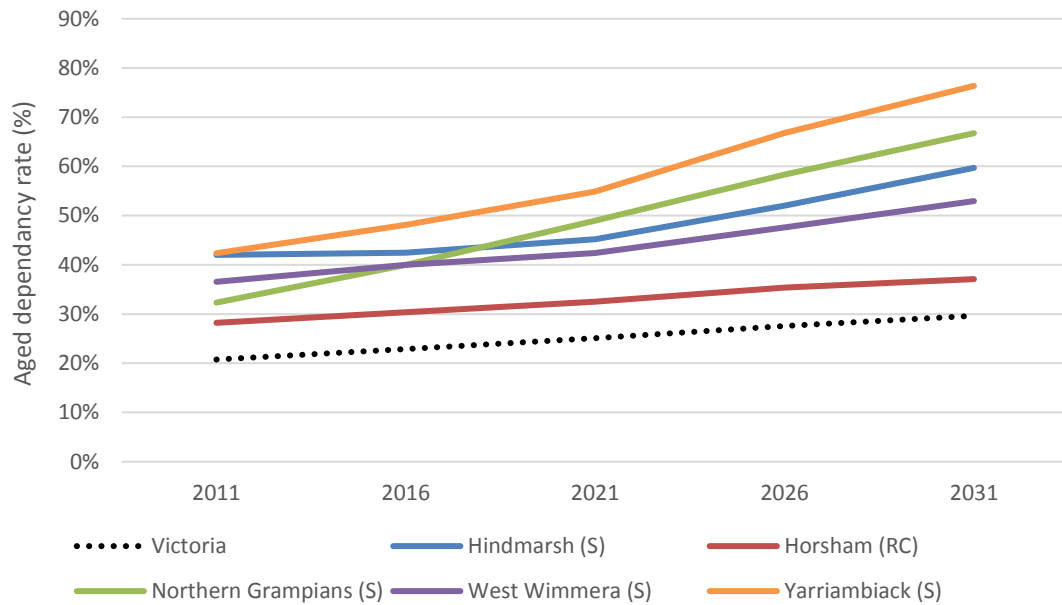
The LGAs of the Wimmera Southern Mallee region can be broadly divided into two groups according to different demographic trajectories. As shown in Figure 11, population growth is projected for Horsham LGA where the regional centre of Horsham is located. The remaining LGAs are all projected to experience continued population declines with the fastest declines occurring in the remote north and west of the region. This is in contrast to strong population growth projected for Victoria as a whole. The higher population growth in urban centres – often at the expense of rural areas – is consistent with broader trends across Victoria and Australia



Source: DELWP 2016b.

Figure 11 Projected population change in the Wimmera Southern Mallee region (%), sub-LGA level, 2016-2031

For Horsham LGA, the aged dependency ratio is expected to increase to 2031 but only to 37 per cent compared to an average of 30 per cent for Victoria as a whole. For the other LGAs the age dependency ratio in these LGAs is projected to increase much more significantly to between 53 and 76 per cent (Figure 12).

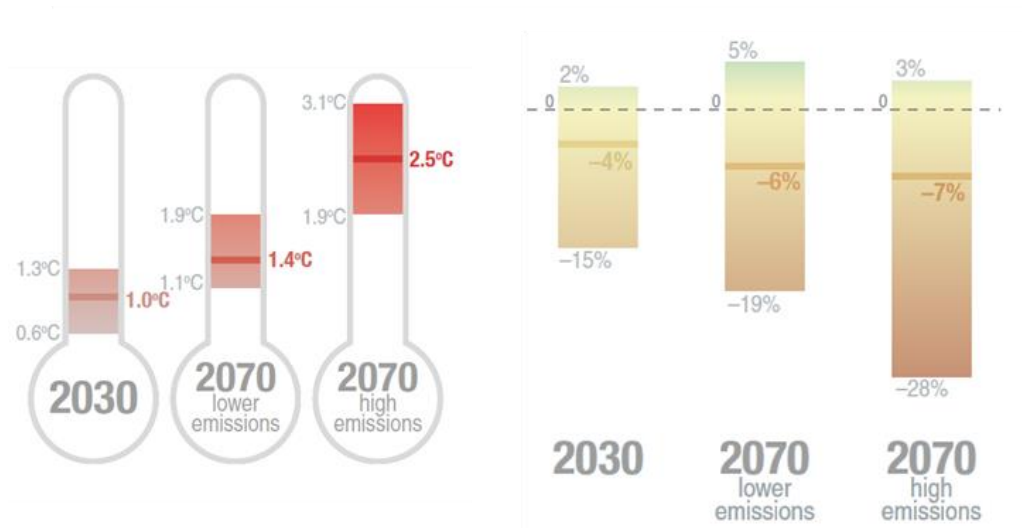


Source: DELWP 2016b.

Figure 12 Aged dependency ratio, current and projected, Wimmera Southern Mallee region and Victorian average (2011-2031)

3.3. Climate change

Climate change is a major future risk to agricultural industries across Australia. Victoria has already experienced decreased rainfall and increased temperatures over the past few decades. For much of Victoria the impacts of climate change are expected to mean higher average temperatures, decreased cool season rainfall and increased fire risk (Figure 13).



Source: CSIRO 2016.

Figure 13 Projected annual average temperature changes (LHS) and percentage changes in average rainfall (RHS) for the Grampians region under different emission scenarios

The potential impacts of climate change are uncertain and dependent in part on future efforts to curb greenhouse gas emissions. The Grampians region of Victoria (encapsulating the Wimmera Southern Mallee) has already become warmer and drier, reflecting a trend expected to continue in the future and includes:

- increasing temperatures year-round
- fewer frosts
- more frequent and more intense rainfall events
- more hot days and warm spells
- less rainfall in autumn, winter and spring
- harsher fire weather and longer fire seasons.

The impact of climate change on agricultural productivity is anticipated to be reduced yields, which is most acute for wheat and sheep. Similarly, the impact of climate change reduces the diversity of crops that can be grown with a drying climate limiting crop rotation to dryland crops such as barley and wheat. The implications for wheat growers is particularly relevant in the Wimmera Southern Mallee region, where wheat contributes 12 per cent of the gross value of agricultural production.

Research suggests that farmers have adapted to the longer-term changes in climate by focusing on technologies and management practices that improve productivity during dry years. Anecdotal information suggests that farmers have made a variety of management practice changes—including adoption of conservation tillage—to better exploit summer soil moisture, as an adaptation to reduced winter rainfall. There is also evidence of shifts in the location of cropping activity over time. Both Australian Bureau of Agricultural and Resource Economics (ABARES) and ABS data shows that the amount of cropping activity in higher-rainfall zones—such as south-western Victoria—has increased in recent decades. At the same time, there is evidence that cropping activity has decreased in some inland areas that have been heavily affected by the deteriorating climate (ABARES 2017). While the full impact of these changes on the agricultural industries across the region is difficult to predict, particularly in the short-term, an increase in the risks to agricultural productivity from the expected impacts of climate change is likely. Shorter growing seasons, more extreme rainfall events, increasing bushfire risks and water scarcity are all potential risks that could significantly reduce the economic output of these regions.

More broadly, the impacts of climate change represent a risk to social wellbeing and cohesion, with health implications from higher temperatures, uncertainty about water resource availability and a potential increase in the frequency and severity of natural hazards such as bushfires and floods.

4. Economic profile

4.1. Summary

Rural cropping areas

The data shows that the rural cropping areas of Hindmarsh, West Wimmera and Yarriambiack have generally lower gross regional product (GRP) per capita than the Victorian average. Agriculture is the largest industry by GVA in these regions, although employment in the agricultural sector has been declining. These areas also have lower workforce participation rates than the Victorian average which is likely due to an ageing population reducing the available workforce. The working age population in these LGAs is expected to decline significantly to 2031. Household income is lower than the Victorian average and lower than in the regional centre of Horsham. Access to both public transport and the internet is particularly low in these LGAs.

Higher temperatures and decreased rainfall as a result of climate variability and change will be a key driver; potentially constraining economic growth in the rural cropping areas. Population decline and an ageing population are also likely to suppress economic growth. Concentration of jobs and services, primarily in the major urban centre of Horsham and outside the Wimmera Southern Mallee in other service centres such as Ballarat and Melbourne, will mean greater need for access to these key destinations for those who reside in the rural cropping areas.

Horsham regional hub

The GRP per capita for the Horsham LGA is below the average for Victoria. The largest industry in terms of GVA in the Horsham LGA is still agriculture, although the health care industry is also important in this LGA. Health care is a growing industry in this LGA as more services are co-located in the regional hub as more remote services are discontinued. The workforce participation rate in Horsham is very close to the average for Victoria, and it is the only LGA in the Wimmera Southern Mallee region where there is projected growth in the working age population to 2030. The economic data shows that for Horsham household income is lower than the average for Victoria but higher than in the rural cropping areas. Horsham also provides services to the surrounding LGAs. Most employed Horsham residents work in the LGA, however there is relatively low commuting from outside the Horsham LGA compared to other regional hubs in Victoria.

The Horsham LGA will be affected by the same climatic factors that affect the rural cropping areas which will affect not just local agricultural industry, but also the economic wellbeing of the wider region which Horsham provides services to. The structure of the economy in Horsham means it is also exposed to other potential future changes. For example, increasing service sector growth, population growth and automation of routine labour will continue to drive agglomeration in Horsham with potential positive impacts on the economic outlook as a result. Agglomeration of services accessible from the Wimmera Southern Mallee region is also likely to occur in service centres outside the region, such as Ballarat and Melbourne.

South east areas

The economy of the Northern Grampians LGA is much less reliant on agriculture compared to the rural cropping areas. A large proportion of land in this LGA is covered by the Grampians National Park and this area is therefore likely to experience the highest rates of tourism revenue in the region. In many other respects, it has similar economic outcomes to the rural cropping areas with GRP per capita and household income below the Victorian average. It does however have greater labour mobility than other LGAs in the region given its closer proximity to Ararat regional city and the Central

Highlands region. This may help support the adaptive capacity of the region, with potentially greater job opportunities outside of local agricultural and manufacturing industries.

4.2. Regional economic data

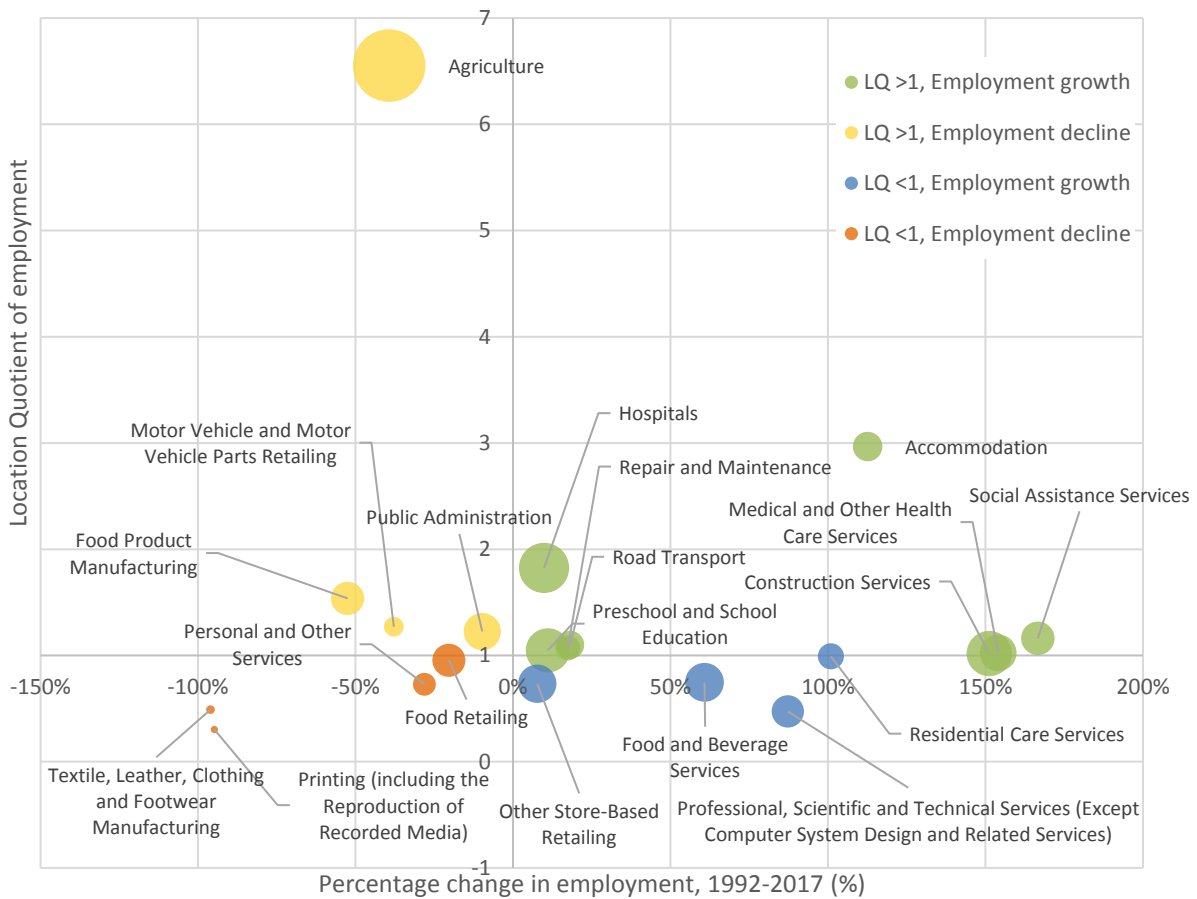
Economic data to inform the regional economic profile has been collected and presented at two spatial scales:

1. At the regional scale, GRP per capita, GVA by industry, changes in the structure (number and size) of firms, labour productivity and participation rates are used to assess the economic performance of the region as a whole.
2. At the household scale, household income, household wealth, unemployment and the location of where income is earned relative to place of residence are used to assess the economic wellbeing of the residents of a region.

4.2.1. Economic performance of regional industry

The economy of the Wimmera Southern Mallee region is highly concentrated within agriculture, as shown by the relatively high rate of employment in agriculture compared to Victoria. Location quotient is a measure of the concentration of industries in a particular region compared to the State. Industries with a location quotient above 1 have a larger proportion of employment in that region compared to Victoria overall.

Figure 14 shows the location quotient and growth in employment over 25 years for industries in the Wimmera Southern Mallee region. The size of the bubbles indicates the percentage contribution to total employment in the region. The location quotient can potentially show which industries are strengths of a region. However, this does not necessarily hold where a high location quotient is combined with a small share of regional employment. The location quotient should be used as a potential indicator of which industries are important in a region, rather than as a definitive analysis of regional strengths.



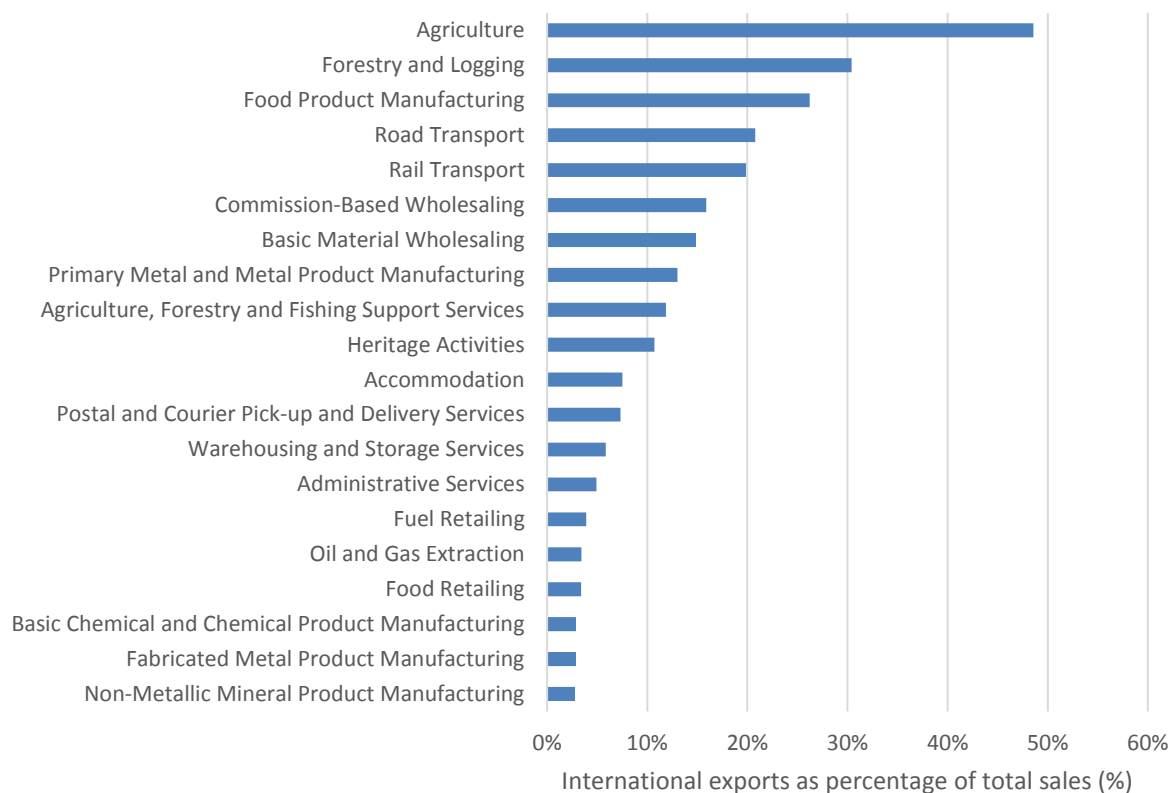
Source: NIEIR 2018.

Note: Bubble size indicates industry employment rates.

Figure 14 Employment concentration of industries in the Wimmera Southern Mallee region, 2017⁵

⁵ This report uses Australian and New Zealand Standard Industrial Classification (ANZIC) data at the 1 digit level. Investigation of ANZIC data at a more detailed level was outside the scope of this report.

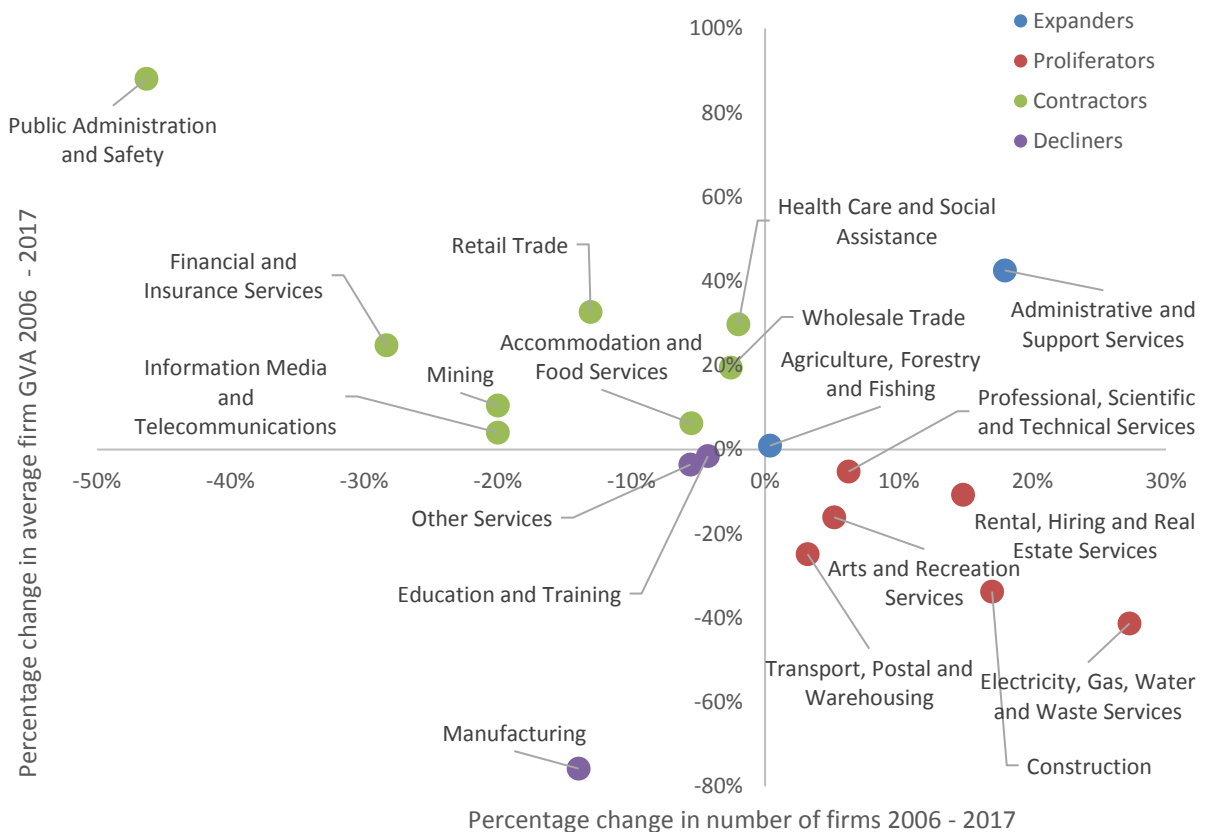
Industries with a location quotient greater than 1.5 and with growing employment are potentially relatively important growth industries for a region. This suggests that accommodation is an important growth industry in the Wimmera Southern Mallee region, which may be related to tourism associated with the Grampians National Park. Employment is growing in other service industries however the concentration of employment not significantly higher than in Victoria as a whole. Industries with a location quotient greater than 1.5 but with declining employment are likely to be historically important industries. However, the agriculture industry in this region is becoming more skill- and capital-intensive and is relying less on employment in general. The growth in output despite the decline in employment is a result of increased capital intensity. The importance of the agricultural industry can also be seen in relation to exports (Figure 15) which shows agriculture is the key export industry in this region.



Source: NIEIR 2018.

Figure 15 Proportion of sales exported from the Wimmera Southern Mallee region, 2017

The industrial structure of the Wimmera Southern Mallee region has been changing over the past 10 years, with movement within sectors occurring in addition to more general shift to service sectors. Figure 16, which shows the change in both average firm size and the number of firms by sector, illustrates a trend towards decline (fewer, smaller firms) in manufacturing. Public administration and safety are experiencing contraction with fewer, larger firms as is accommodation and food services to a lesser extent. Firms in the construction sector have tended to proliferate, with growth in the number of firms but a decline in average size. The number and size of agricultural firms has remained relatively stable which may represent an increase in small scale lifestyle farms in the south east of the region offsetting the more widely seen consolidation of large commercial farms in the north west.

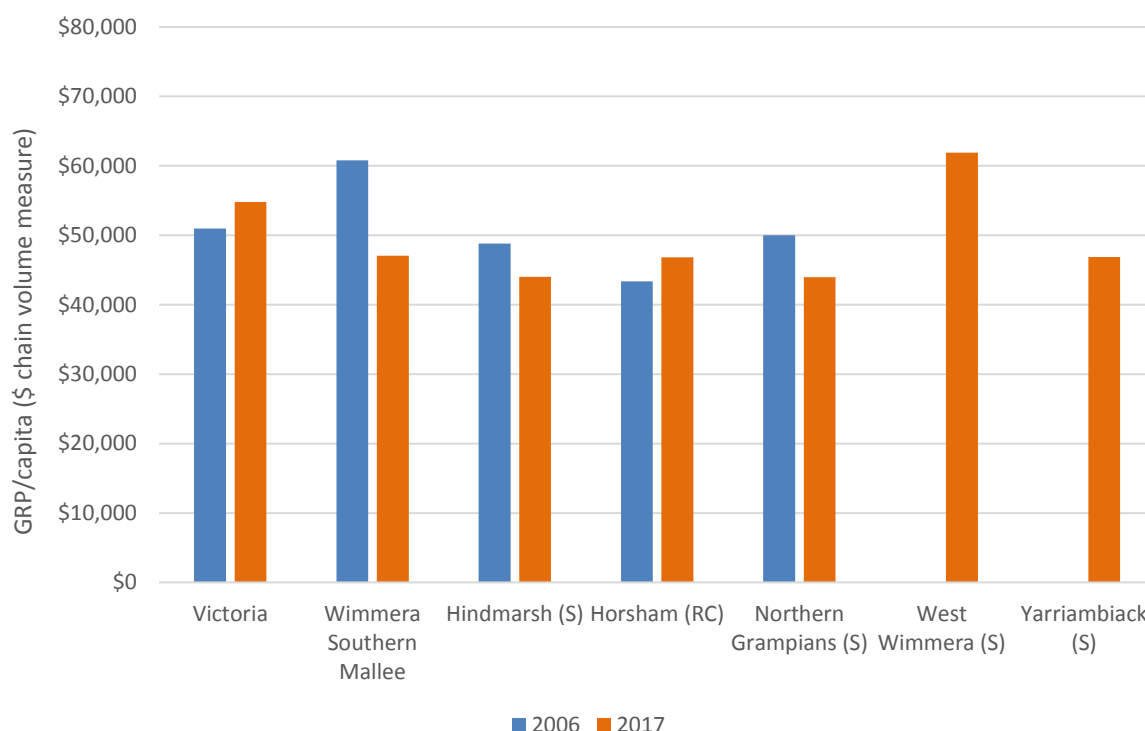


Source: Worksafe n.d., NIEIR 2018.

Note: Consolidators refers to growth in fewer, larger firms. Expanders are experiencing increases in both firm output and number. Proliferators are experiencing an increase in number of smaller firms and decliners are experiencing falls in both the number and output of firms.

Figure 16 Total percentage change in number of firms and average firm GVA, Wimmera Southern Mallee, 2006 to 2017

GRP measures the value of economic production of a region. In order to compare regions, GRP per capita is used. The Wimmera Southern Mallee GRP per capita is below the Victorian average (Figure 17) with relatively consistent numbers across all the LGAs in 2017.



Source: NIEIR 2018.

Note: Due to the unreliability of historical data estimates for very small LGAs, the 2006 values for West Wimmera and Yarriambiack have been excluded.

Figure 17 GRP per capita, 2006 and 2017, Wimmera Southern Mallee and Victoria

GVA by industry

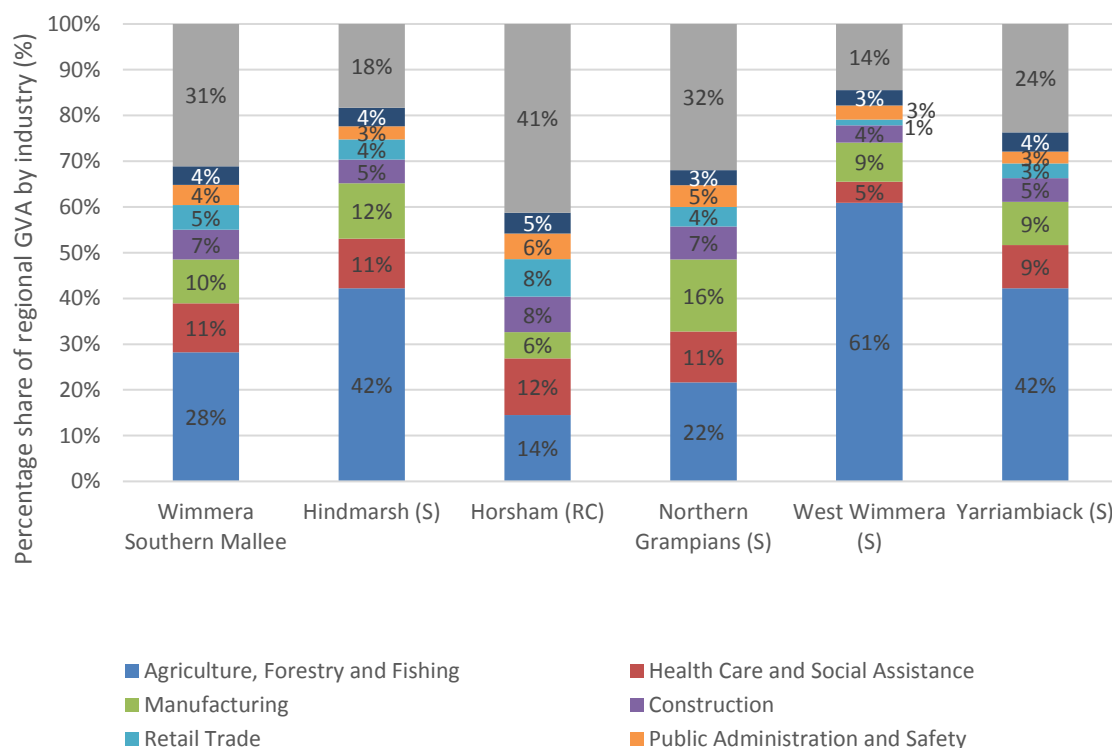
GRP in a region is the sum of industrial GVA. Figure 18 shows the five biggest industries in the Wimmera Southern Mallee region:

- agriculture (28%)
- health (11%)
- manufacturing (10%)
- construction (7%)
- retail trade (5%).

These five industries comprise over 69 per cent of regional employment. Between 2006 and 2017, manufacturing decreased significantly as a share of GVA, which was offset by increased agriculture and health care. This is broadly consistent with trends occurring across Victoria, with a decline in the manufacturing sectors and an increase in service-based industries, particularly health-related services associated with ageing populations. The Wimmera Southern Mallee region has seen a continued growth in agriculture, unlike many other regions in Victoria.

The biggest industries vary across the LGAs with agriculture being more important in West Wimmera, Yarriambiack, and Hindmarsh LGAs than in the region as a whole. Health care is also a large

employer across all the LGAs within the Wimmera Southern Mallee. Horsham LGA has the most diverse industrial structure in the region, associated with the presence of the regional centre of Horsham.



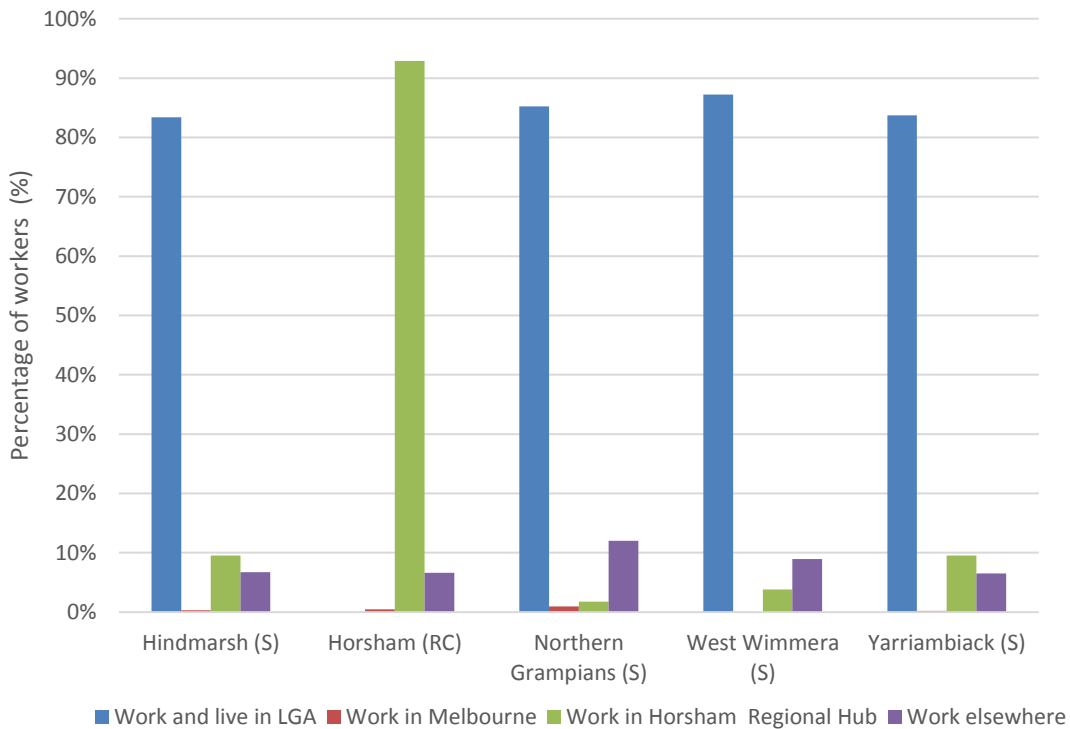
Source: NIEIR 2018.

Figure 18 GVA share of key industries in the Wimmera Southern Mallee region, 2017⁶

Regional employment

The Wimmera Southern Mallee region demonstrates a large proportion of residents who live and work in the same LGA. In the Horsham LGA, 93 per cent of employed residents work in the LGA. Over 80 per cent of employed residents in all other LGAs work in their respective LGAs. Approximately 10 per cent of employed Hindmarsh and Yarriambiack residents commute to Horsham for work. There is almost no commuting to Melbourne (less than one per cent), reflecting the region's distance from Melbourne and its urban fringe (Figure 19).

⁶ Other industries in each region are comparatively small and therefore not included. The full range of industries includes: Agriculture, Forestry and Fishing; Mining; Manufacturing; Electricity, Gas, Water and Waste Services; Construction; Wholesale Trade; Retail Trade; Accommodation and Food Services; Transport, Postal and Warehousing; Information Media and Telecommunications; Financial and Insurance Services; Rental, Hiring and Real Estate Services; Professional, Scientific and Technical Services; Administrative and Support Services; Public Administration and Safety; Education and Training; Health Care and Social Assistance; Arts and Recreation Services; Other Services.

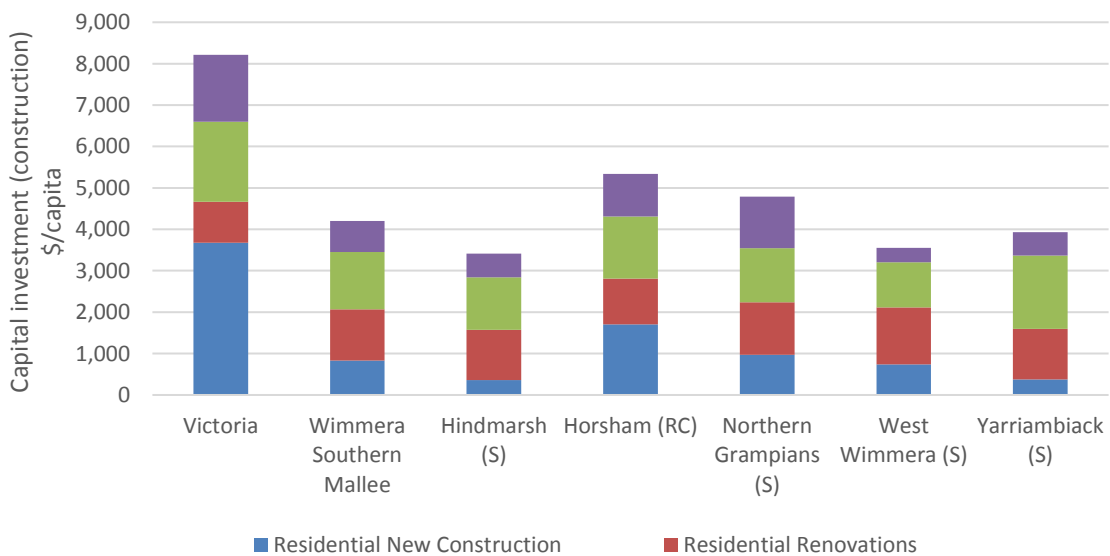


Source: ABS 2016c.

Figure 19 Employment location of Wimmera Southern Mallee residents by LGA, 2016

Capital Investment

Capital investment in the Wimmera Southern Mallee region is below the Victorian average (Figure 20) with relatively low rates across all LGAs in this region. The highest rates of investment in residential new construction are in Hindmarsh LGA likely reflecting the growing population concentration in the regional hub. The lowest rates are seen in Hindmarsh and Yarriambiack LGAs, reflecting the projected population decline in these areas.



Source: NIEIR 2018.

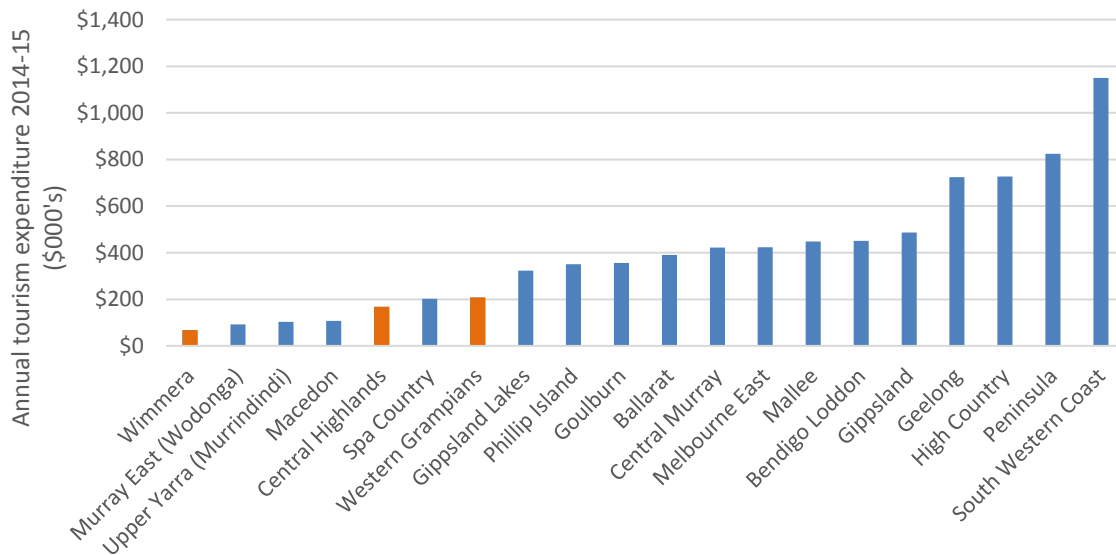
Figure 20 Capital investment in the Wimmera Southern Mallee region, 2017

Tourism

The major tourism asset in the Wimmera Southern Mallee region is the northern section of the Grampians National Park. Other key tourism attractions include Mount Arapiles in the Mount Arapiles-Toosan State Park which is approximately 30 kilometres west of Horsham and an internationally-known rock climbing destination; Pink Lake, which is approximately 10 kilometres north west of Dimboola; and the 200-kilometre Silo Art Trail which spans Rupanyip, Sheep Hills, Brim, Roseberry, Lascelles and Pathewollock in a north-south trail approximately 40 kilometres west of Horsham.

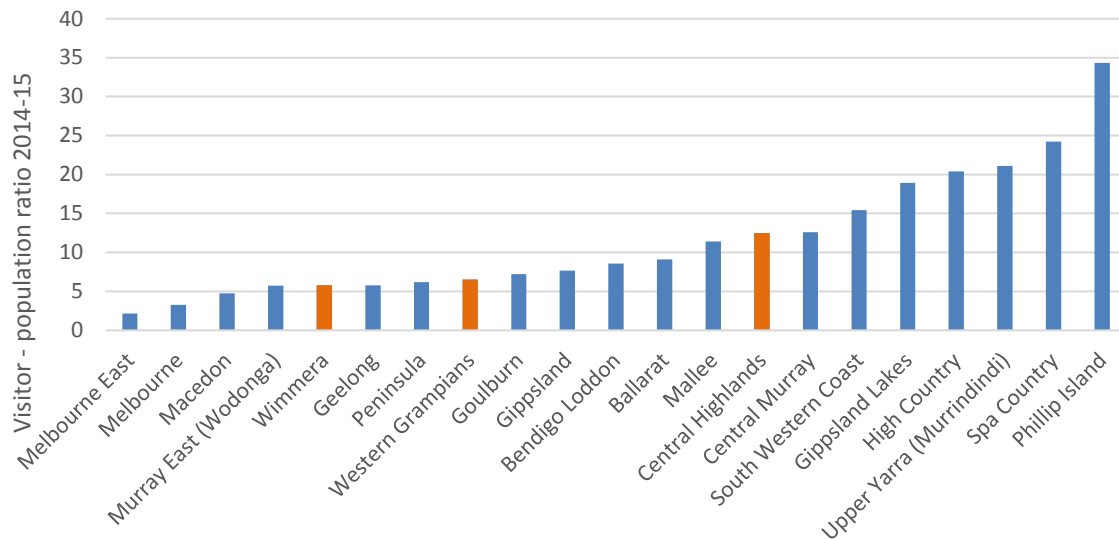
Analysis by Tourism Research Australia (2016) includes three key tourism regions within the Wimmera Southern Mallee: Central Highlands, Western Grampians and Wimmera. Tourism expenditure in these regions is highest in the Western Grampians but still low compared to many other regions in Victoria (Figure 21). However, whilst total tourism expenditure is low in the Central Highlands, the visitor-population ratio is much higher in this region, with 12.5 visitors for every resident in 2014-15 (Figure 22). This suggests that tourism is more important in this region, which includes the key access point to the Grampians National Park at Halls Gap. However, tourism is very seasonal and as a result largely restricted to domestic tourists visiting primarily on weekends and holidays. This contrasts with tourism in other parts of Victoria which attracts regular, year-round visitors. The Grampians region may still experience relatively little in the way of tourism expenditure due to the number of tourists staying within the Grampians National Park.

The number of dwellings not occupied on Census night may indicate the proportion of units which are vacant properties, second homes or holiday rental properties. The 2016 Census reported that all Wimmera Southern Mallee LGAs were occupied at lower rates than the Victorian average of 89 per cent, with the biggest deviation in West Wimmera LGA at 74 per cent occupation which may indicate a large proportion of vacant properties (Figure 23).



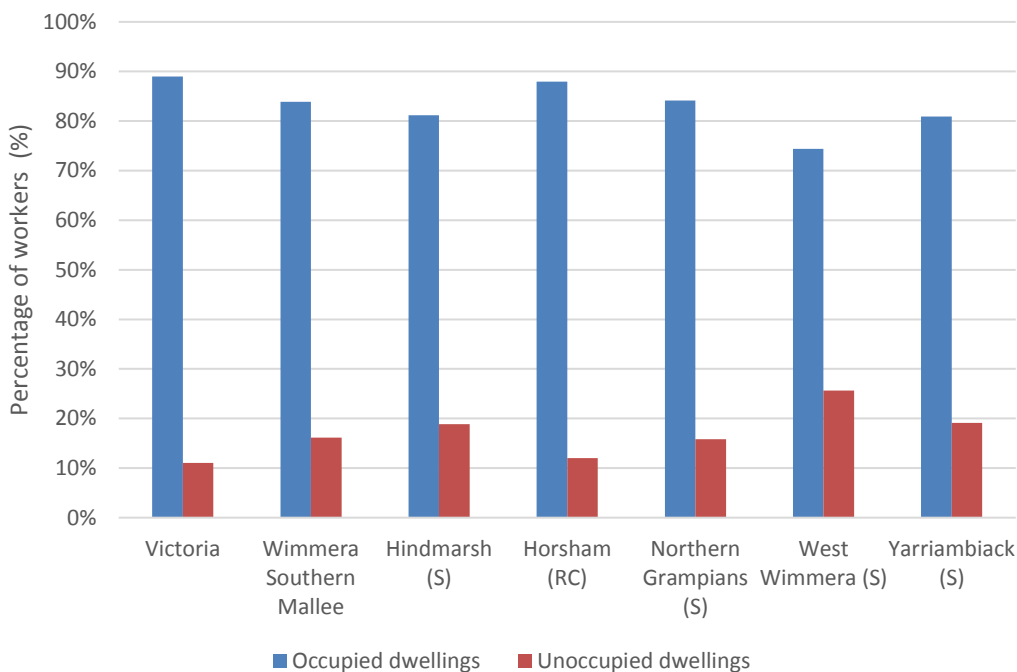
Source: Tourism Research Australia 2016.

Figure 21 Tourism expenditure by tourism region (excluding Central Melbourne), 2014-15



Source: Tourism Research Australia 2016.

Figure 22 Tourism visitor-population ratio by tourism region, 2014-15



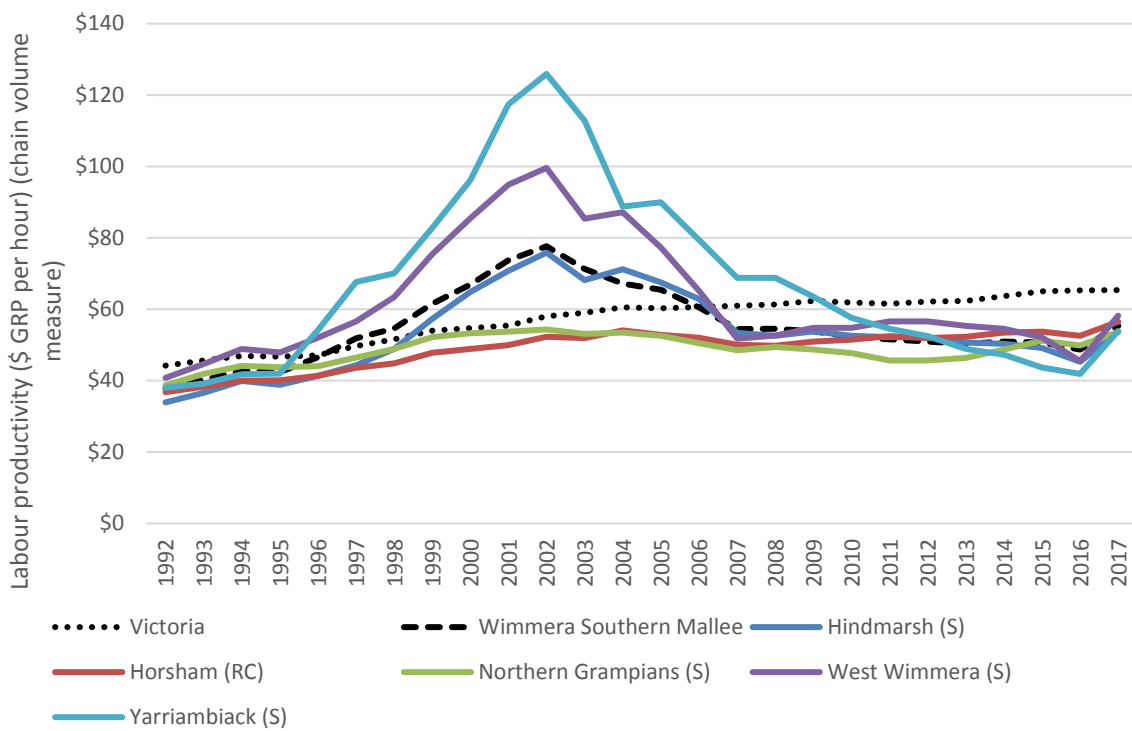
Source: ABS 2016e.

Figure 23 Dwelling occupancy rates, Wimmera Southern Mallee and Victoria, 2016

Labour productivity

Labour productivity in the Wimmera Southern Mallee region is below the level of Victoria as a whole and appears to have fallen relative to Victoria over time (Figure 24). As relatively high productivity industries such as manufacturing continue to decline in importance in the Wimmera Southern Mallee region, this trend is likely to continue. Given that the divergence from the Victorian average began in

around 2001 this may be a consequence of the Millennium Drought affecting agricultural output. Similarly, this may be due to trends in increased labour productivity in agriculture, which has resulted in reduced total employment in the sector as opposed to economic output.



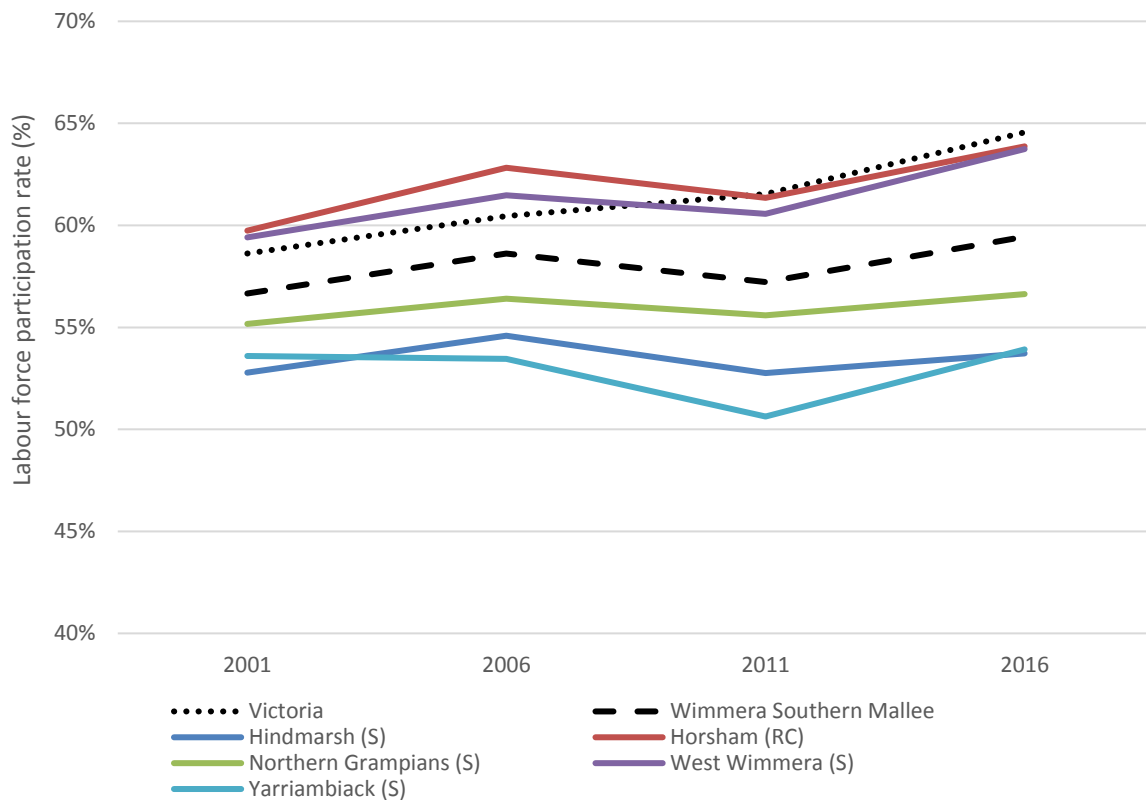
Source: NIEIR 2018, Aither analysis.

Note: Only Horsham and Northern Grampians LGAs have been included due to data issues for the smaller LGAs.

Figure 24 Labour productivity, Wimmera Southern Mallee and Victoria, 1992-2017

Participation rate

The average participation rate for the Wimmera Southern Mallee is below the average for Victoria as shown in Figure 25. The participation rate is particularly low in the LGAs of Hindmarsh and Yarriambiack. This may be due to a combination of economic and social factors in these LGAs such as access to jobs and family structure. These factors may be worth further investigation to understand the key drivers of the difference between LGAs.

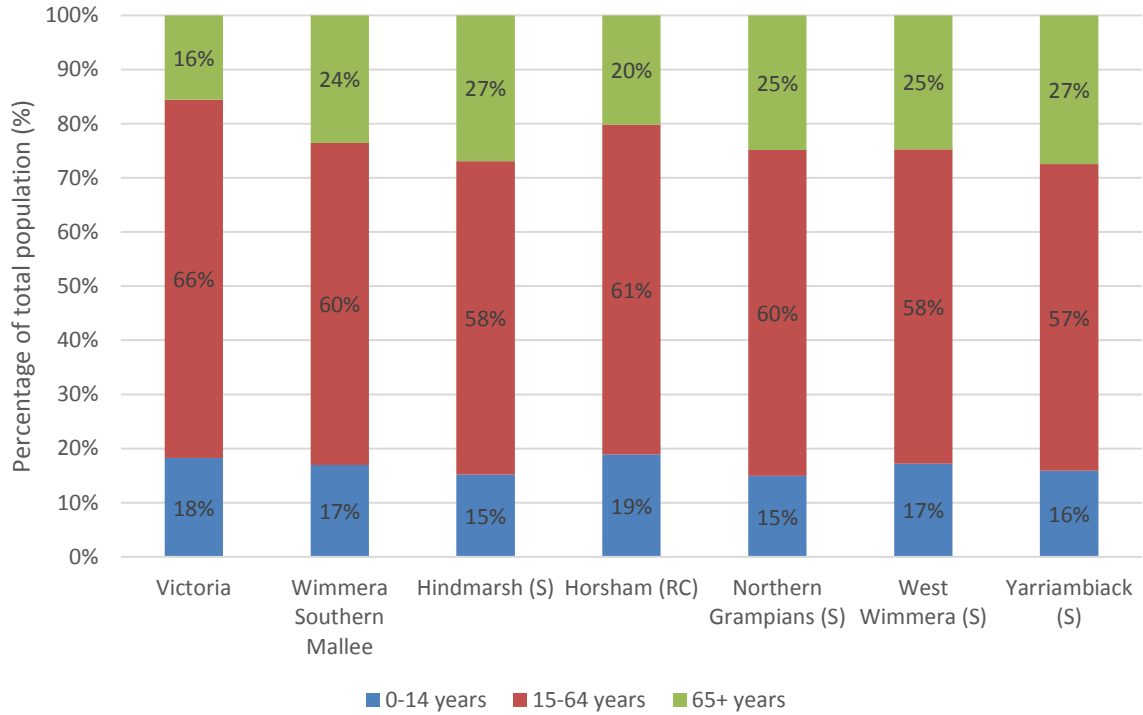


Source: ABS 2016c.

Note: The participation rate is calculated based on the population aged over 15, not working age population (15-64) as used elsewhere in this report.

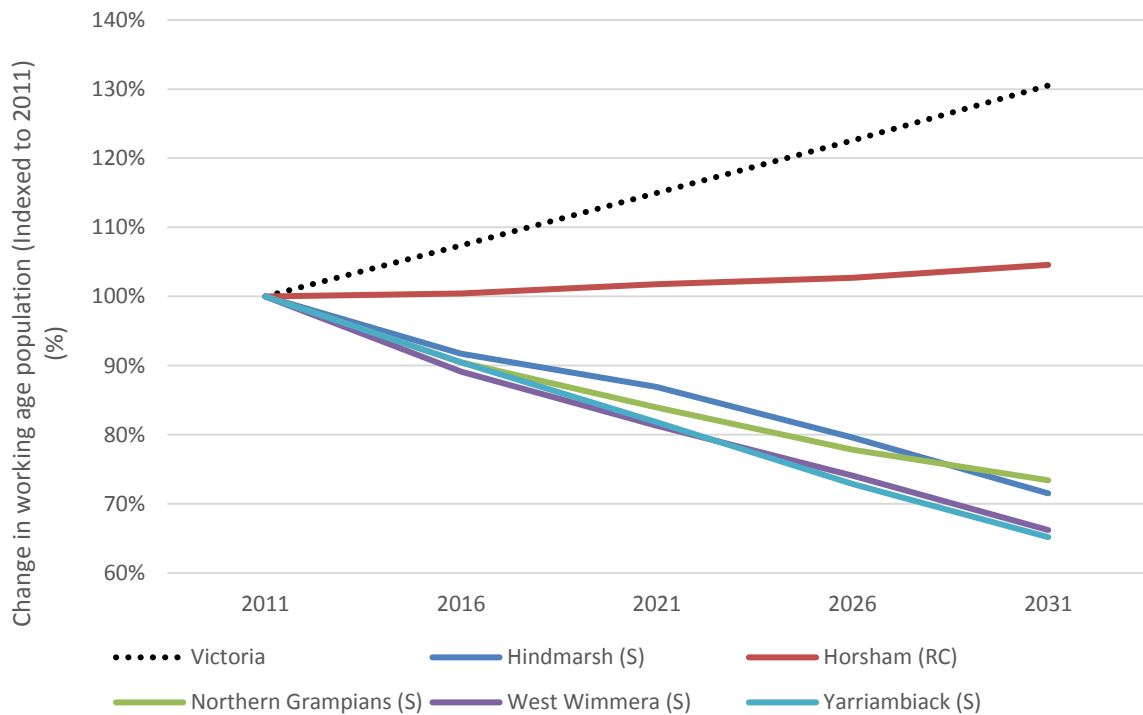
Figure 25 Labour force participation rate, Wimmera Southern Mallee and Victoria, 2001 to 2016

The total proportion of the population employed or seeking work is affected by the demographics of the region. Figure 26 shows that the working age population (population aged 15-64) is a smaller proportion of the total population in West Wimmera, Yarriambiack and Hindmarsh, although all LGAs have a lower working age population than the Victorian average. These LGAs are also projected to have further declines in this age group as shown in Figure 27, with the exception of Horsham. This means that a smaller workforce will be supporting the population as a whole. The projections are drastically different for this region compared to Victoria as a whole which will undergo strong population growth including in working age population.



Source: ABS 2016c.

Figure 26 Population by age group in the Wimmera Southern Mallee region, 2016



Source: DELWP 2016b.

Figure 27 Projected change in working age population, indexed to 2011

Difference between Victorian average and Wimmera Southern Mallee

The factors discussed above account for the difference in GRP per capita between Victoria as a whole and the Wimmera Southern Mallee region. GRP per capita in a region is the sum of the labour productivity in a region (i.e. \$ produced per hour worked) and the hours worked. Figure 28 shows how the differences in labour productivity and hours worked between the Wimmera Southern Mallee and Victoria as a whole affect their relative GRP per capita. This shows that for the Wimmera Southern Mallee region the difference is due to lower labour productivity in the region which accounts for 15 per cent of average Victorian GRP per capita. This gap is potentially being driven by changes in agricultural productivity. This may present large risks to this region given the uncertain future impacts of climate change. The hours worked per capita in the Wimmera Southern Mallee region is actually slightly higher than the Victorian average.



Source: NIEIR 2018.

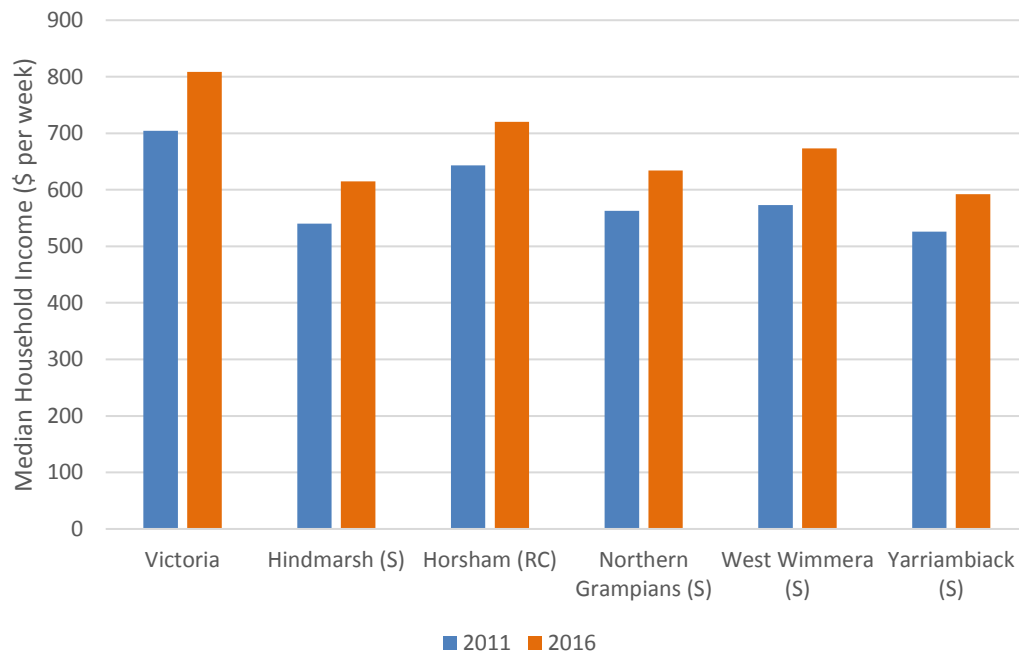
Note: This analysis is based on the accounting principle that GRP is the sum of GVA which is a function of the supply of labour and labour productivity. Labour is shown by hours worked, which is influenced by size of the labour force and the participation rate, as well as the type of work i.e. full time or part time.

Figure 28 Components of the difference in GRP per capita between Victoria and the Wimmera Southern Mallee region

4.2.2. Economic wellbeing of residents

Household Income

As shown by Figure 29, household income is lower than the state average across all LGAs. Horsham has the highest income, potentially due to the greater availability of jobs within the regional centre compared to the rural areas. The lowest household incomes are in the north west rural LGAs of Hindmarsh and Yarriambiack.

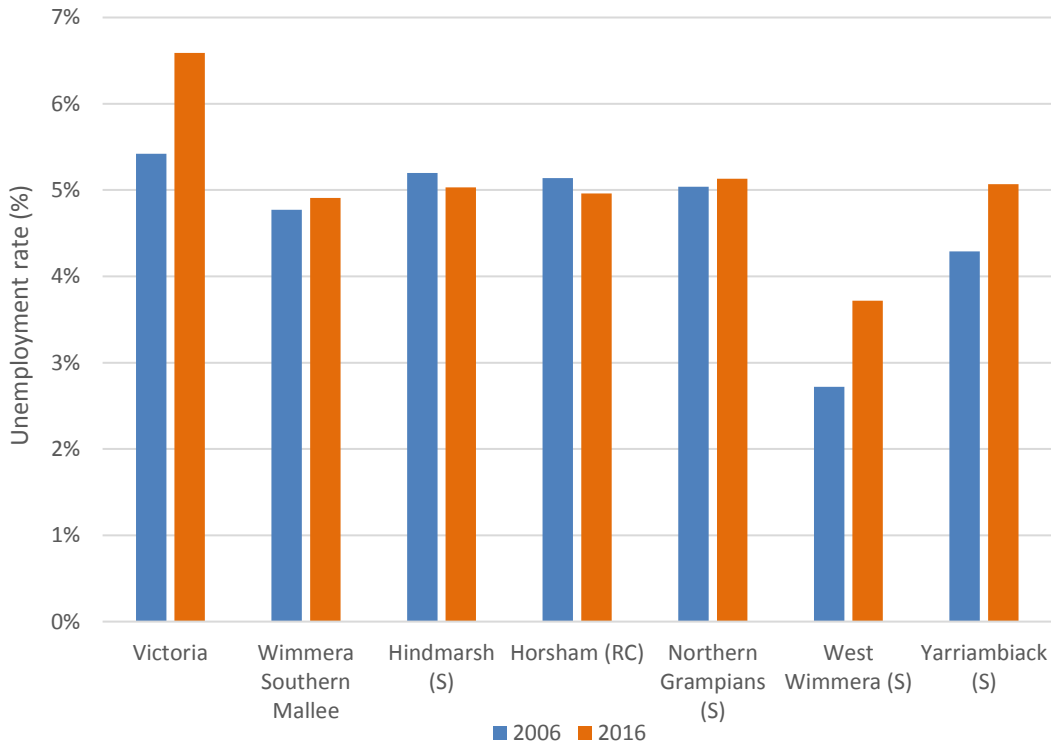


Source: ABS 2016d.

Figure 29 Median weekly equivalised total household income, 2011 and 2016

Unemployment

The unemployment rate is relatively consistent across the region at around 5 per cent for all LGAs except West Wimmera where it is 3.7 per cent. This is significantly below the state average of 6.6 per cent. This is in contrast to the low average income levels seen in the Wimmera Southern Mallee region, and the low participation rates. This may suggest that in this region, there is work available for those participating in the labour market. It may also be that there is a high level of structural unemployment which is therefore being counted in the low participation rate rather than measures of short term unemployment (Figure 30). Similarly, the younger demographic is more likely to leave a region if employment prospects are better elsewhere, which may help to lower the unemployment rate.

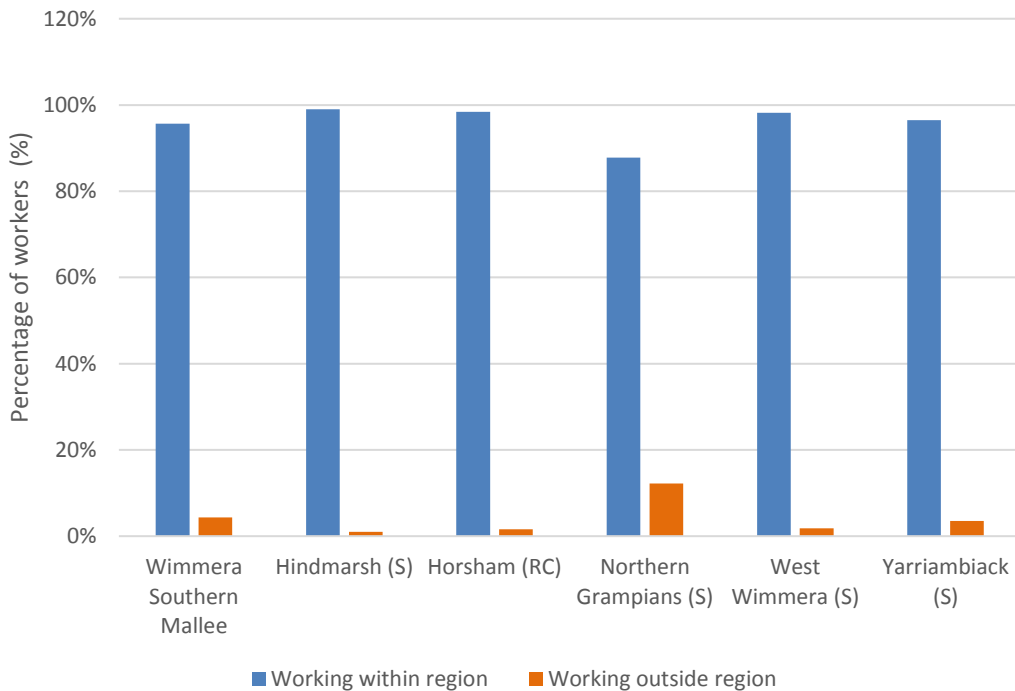


Source: ABS 2016c.

Figure 30 Unemployment rate by LGA, 2006 and 2016

Place of work

Unlike in other regions closer to Melbourne or other regional hubs such as Geelong or Ballarat, the majority of residents in the Wimmera Southern Mallee find work within the region rather than commuting elsewhere (Figure 31). For the Wimmera Southern Mallee as a whole, only 4 per cent of the resident population work outside of the region. This is most likely due to its distance from other regional hubs. This reduces flexibility in the local labour market and reduces adaptive capacity for residents to find work elsewhere in the face of downturns in the local economy. Northern Grampians LGA has the most workers outside the region, likely due to its proximity to Ararat regional city.

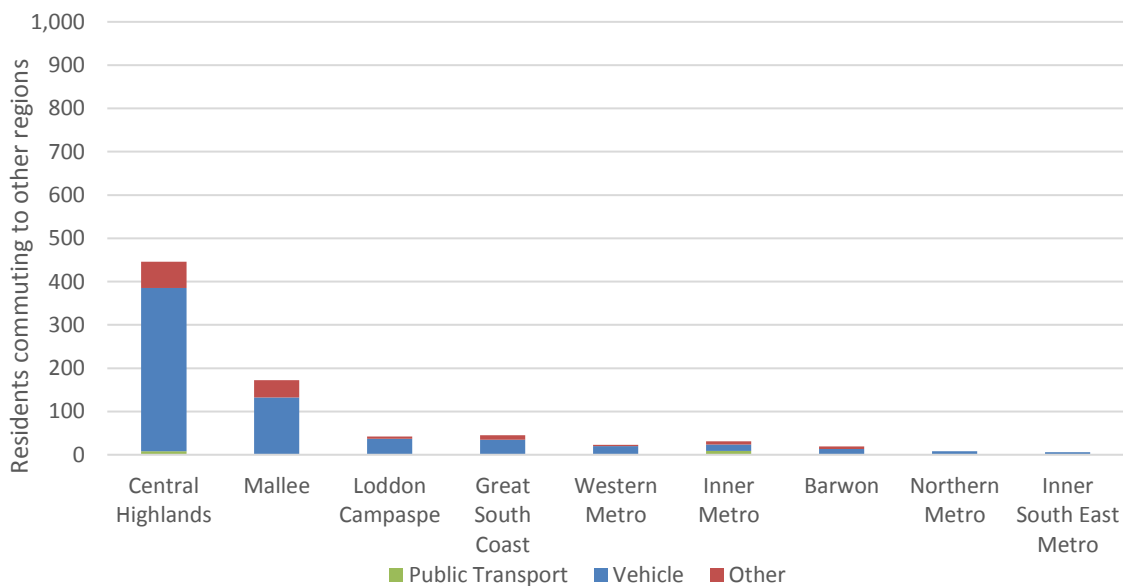


Source: ABS 2016c.

Figure 31 Proportion of resident population employed within or outside the region or LGA, 2016

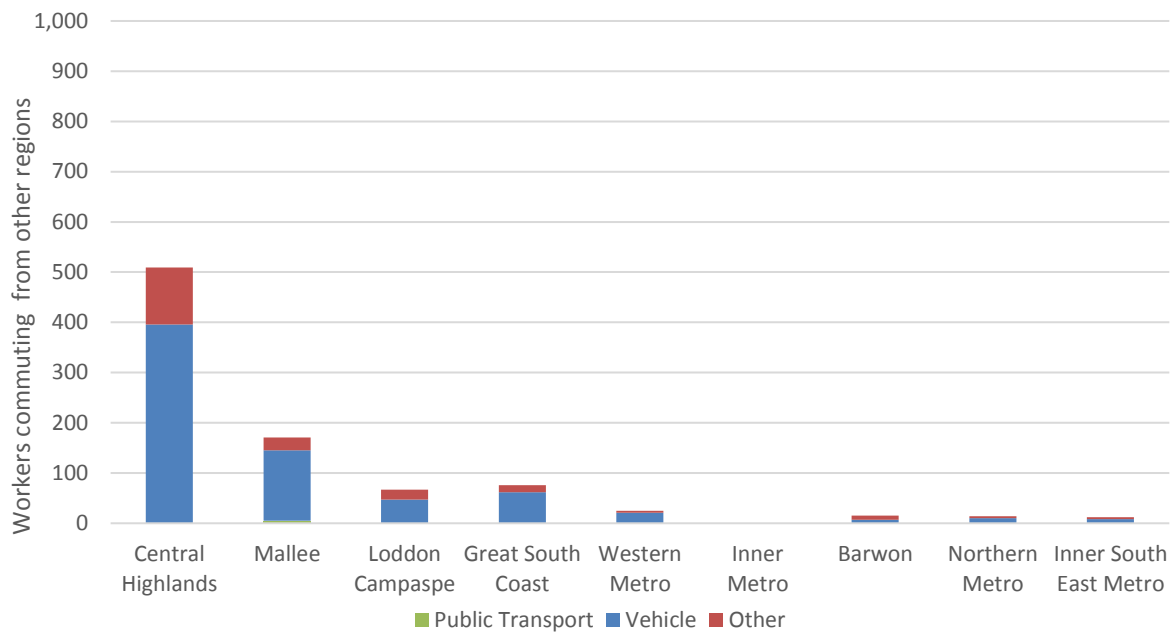
For the small number of residents working outside the Wimmera Southern Mallee region the key regions for work are the Central Highlands and Mallee regions (Figure 32). The majority of those traveling to other regions do so by car, with only 2 per cent travelling by public transport

A similar story can be seen for those travelling into the Wimmera Southern Mallee region for work with the majority travelling in by car from the Central Highlands and Mallee regions (Figure 33).



Source: ABS 2016c.

Figure 32 Place of work of Wimmera Southern Mallee residents outside Wimmera Southern Mallee region and method of transport, 2016



Source: ABS 2016c.

Figure 33 Origin of non-resident workforce and mode of transport, 2016

Access to other regions is potentially a key driver of future economic success for a region, whether through public transport, car or through virtual access. Access to public transport is defined as the percentage of the population that lives within 400 metres of a bus and/or tram stop and/or within 800 metres of a train station.

As shown in Table 2 access to public transport across the region is significantly lower than the state as a whole, particularly in the more rural LGAs of West Wimmera, Hindmarsh and Yarriambiack. Public transport access is greater in the regional centre of Horsham, but still lower than the Victorian average. The access to transport in this area is very localised with a central Horsham bus network and the V/Line coach to Ballarat. It does not therefore help to connect the wider region to the regional centre. By contrast, the proportion of households with a vehicle is larger across the region – and in each LGA – than across Victoria. This is particularly true of those LGAs with less access to public transport.

The number of household dwellings with access to the internet⁷ is lower across the region than the Victorian average. Again, Horsham has the highest level of internet access.

⁷ This variable records whether any member of the household accesses the internet from the dwelling. This variable is applicable to all occupied private dwellings enumerated in the 2016 Census.

Table 2 Percentage population with access to car, public transport, and internet

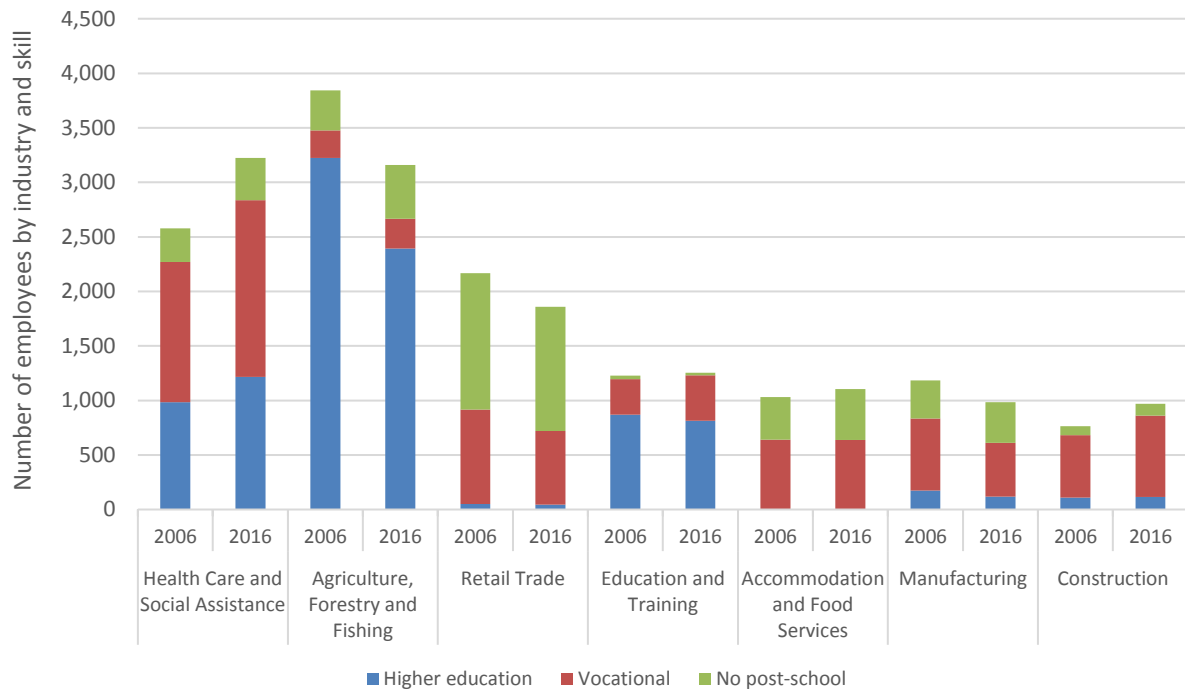
	Percentage households with car *	Dwellings with internet access**	Access to Public Transport† ***
Hindmarsh	96%	67%	21%
Horsham	95%	73%	55%
Northern Grampians	95%	67%	39%
West Wimmera	97%	69%	9%
Yarriambiack	96%	67%	8%
Victoria	93%	80%	74%

Source: *ABS 2016e, **ABS 2016f, ***DHHS 2015.

Note: †The percentage of the population that lives within 400m of a bus and/or tram stop and/or within 800m of a train station (Infrastructure Australia 2013).

4.2.3. Employment and skills

Consistent with state-wide trends, total employment declined in the agricultural and manufacturing industries in the Wimmera Southern Mallee region between 2006 and 2016 (Figure 34). This is consistent with projected employment growth to 2031 shown in section 3.1 which shows manufacturing and agricultural employment declining. The majority of employment growth since 2006 has been in the health care sector. There is growth in high skill employment in the health care and education sectors, growth in low skill jobs in the accommodation and food services sector and growth for middle skill jobs in the construction sector. Projections by Deloitte Access Economics for the Department of Education and Training (Figure 35), show projected growth in the percentage of the population with higher qualifications and a decline in the percentage with no qualifications. Vocational skills and jobs constitute a valuable component of the Wimmera Southern Mallee economy.

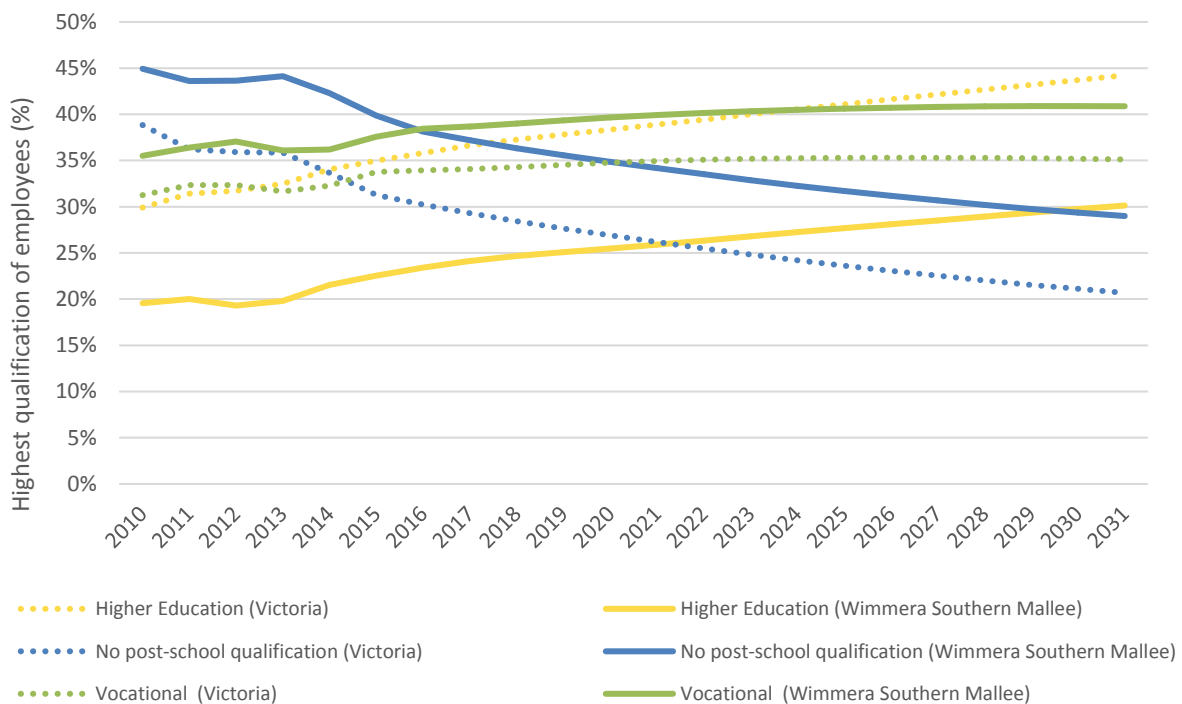


Source: ABS 2016c.

Note: Further information can be accessed here:

<http://www.abs.gov.au/ausstats/abs@.nsf/0/598C2E23628BB8FDCA2575DF002DA6B8?opendocument>

Figure 34 Employee skill level by key industries, 2006 and 2016



Source: Deloitte Access Economics n.d.

Figure 35 Projected change in workforce qualifications in Wimmera Southern Mallee and Victoria, 2010 to 2031

5. Social profile

5.1. Summary

Rural cropping areas

The rural cropping areas are characterised by generally lower social outcome indicators than the Victorian average. However, the rural cropping areas demonstrate higher indicators of wellbeing (notably volunteering), lower crime and lower housing stress than the other parts of the Wimmera Southern Mallee region and the Victorian average. Social disadvantage is concentrated in the towns rather than the rural cropping areas themselves. Fifty-five per cent of the population of the rural cropping areas live in SA1s within the lowest two national deciles of social advantage.

The rural cropping areas demonstrate low population health indicators including particularly high ACSC separations. For example, the Hindmarsh LGA has double the Victorian average of ACSC separations. Life expectancy for males is lower than the Victorian life expectancy in all LGAs with the greatest divergence in West Wimmera LGA. Reported obesity is higher in the rural cropping areas than both the Victorian average and other LGAs in the Wimmera Southern Mallee region. The percentage of people reporting poor dental health is substantially higher than the Victorian average in Hindmarsh (double the Victorian average) and Yarriambiack (double the Victorian average). In the rural cropping areas, the number of HACC clients aged 65 years and over are two to three times the Victorian average. Hindmarsh also has a high number of registered mental health clients compared to the Victorian average and other parts of the Wimmera Southern Mallee region.

The rural cropping areas have a large proportion of population aged 15-19 years engaged in full-time employment, being more than double the Victorian average in West Wimmera and Hindmarsh LGAs. However, the proportion of population aged 15-19 years not engaged in work or study is similar or marginally larger than the Victorian average. The proportion of those aged 20-24 years with a Year 12 certificate or higher is smaller than the Victorian average. Compared to the Victorian average, those with a Year 12 certificate are much more likely to be employed full-time rather than seeking further qualifications.

Sense of wellbeing is high in the rural cropping areas across all indicators when compared with the Victorian average. This may be in-part due to the large proportion of the older age groups, who typically have a higher sense of wellbeing. However, in the rural cropping areas, the young age group (18-34 years of age) reports a similar or lower sense of wellbeing than the middle age group (35-54 years of age) which is inconsistent with the rest of Victoria, as well as other LGAs in the Wimmera Southern Mallee region. This may be due to the relative isolation of the rural cropping areas or perceived lack of opportunity in these areas. Rates of volunteering in the rural cropping areas are more than double the Victorian average and higher than all other LGAs in the Wimmera Southern Mallee region.

The rural cropping areas are likely to continue to demonstrate relative strengths in some social indicators, such as wellbeing and low levels of crime, whilst continuing to face a range of existing social challenges. More jobs and services are likely to be focussed in fewer regional centres with continued out-migration of the working age population. There are also likely to be continuing declines in employment in the key agricultural and manufacturing industries in the region as the shift towards a service-based economy continues to gather momentum. The impacts of climate change on the region may also limit economic growth and further exacerbate relative disadvantage. The projected ageing population may further reduce direct economic activity.

Horsham regional hub

Horsham, like many major rural towns, is characterised by some lower social outcome indicators as well as some relative strengths. Horsham demonstrates lower levels of social disadvantage than other areas in the Wimmera Southern Mallee region. A larger proportion of the population live in SA1s within the higher national deciles of relative social advantage when compared to other LGAs in the Wimmera Southern Mallee region. Despite this relative regional advantage, disadvantage is still relatively high in Horsham when compared to Victoria. Horsham also demonstrates lower ACSC separations, self-reported type 2 diabetes and dental health issues than both the Victorian average and other LGAs in the Wimmera Southern Mallee region. Like many rural areas, Horsham demonstrates higher levels of wellbeing than the Victorian average.

Like many major rural towns, Horsham also demonstrates some lower social outcome indicators including population health, crime and housing stress when compared to the other LGAs in the Wimmera Southern Mallee region. Horsham has low population health characteristics including far higher rates of HACC service utilisation, nearly double the Victorian average of registered mental health client persons and persons that receive drug and alcohol treatment services. Horsham also consistently demonstrates poorer indicators of early childhood outcomes, notably child protection substantiations. Horsham has higher levels of housing stress for low income earners that are renting as well as a larger proportion of social housing than the Victorian average. Rates of crime in the Horsham regional hub are approximately 50 per cent higher than the Victorian average. Similar to the rest of Wimmera Southern Mallee, Horsham has a large proportion of both school leavers and the population aged 15-19 years engaged in full-time employment as opposed to further study or training. Whilst not tested in the project, there may be correlation between several of these key social indicators and further research may be warranted.

Horsham's social profile demonstrates a range of social outcomes indicators that are not unexpected for a regional hub including higher rates of crime than the surrounding rural areas. Horsham is likely to be the only LGA in the Wimmera Southern Mallee region that will experience population growth in the future which may further exacerbate poorer social outcomes.

South east areas

The social outcome indicators of the south east areas are lower than other LGAs in the Wimmera Southern Mallee region as well as the Victorian average. The south east areas include the second largest town in the Wimmera Southern Mallee, Stawell, and many of the social indicator outcomes are likely to be related to Stawell as opposed to the farmland areas.

A number of the social outcome indicators of the south east areas are lower than other LGAs in the Wimmera Southern Mallee region as well as the Victorian average. The south east areas demonstrate a high level of relative disadvantage which is concentrated in the towns, notably Stawell. Fifty-five per cent of the population live in SA1s live in areas that are within highest two deciles of relative disadvantage in Australia.

Lower indicators of social outcomes include also include higher levels of housing stress for low income earners and the second highest rate of crime in the Wimmera Southern Mallee region (only behind Horsham LGA). Poor population health outcomes are numerous and include higher number of self-reported dental health issues, lower life expectancy, high rates of HACC service utilisation and poor indicators of early childhood outcomes (notably child protection substantiations). The south east areas also have the largest proportion of registered mental health clients in the Wimmera Southern Mallee region and more than double the number of persons that receive drug and alcohol treatment services than the Victorian average. The south east areas also have a large proportion of both school leavers and the population aged 15-19 years engaged in full-time employment as opposed to further study or training. Whilst not tested in the project, there may be correlation between several of these key social indicators and further research may be warranted.

Notwithstanding these challenges, the south east areas demonstrate some relative strengths including lower ACSC separations, self-reported type 2 diabetes and obesity and, similar to other rural areas, high levels of self-reported wellbeing. It is also likely that many of the social indicator outcomes, notably disadvantage, are related to Stawell and St Arnaud as opposed to the farmland areas.

Similar to Horsham, the south east areas have higher levels of housing stress for low income earners that are renting compared to other LGAs in the Wimmera Southern Mallee region. Rates of crime in the south east areas are the highest in the Wimmera Southern Mallee region and more than double the Victorian average. Whilst not tested in the project, there may be correlation with several other key social indicators and further research may be warranted.

5.2. Regional social data

5.2.1. Disadvantage

There are a number of indices available which aim to measure social disadvantage. The ABS Social and Economic Indices for Areas (SEIFA) are based upon data available in the census. The SEIFA Relative Index of Social Advantage and Disadvantage (IRSAD) has been chosen for this regional assessment as it assesses both disadvantage and advantage. This data has comprehensive geographic coverage to Statistical Area 1 (SA1)⁸, which is the smallest scale that ABS data is presented. The Jesuit Social Services' "Dropping off the Edge" (DOTE) index has a broader suite of underlying data with a greater focus upon outcomes of disadvantage.⁹ It is presented at a postcode level in order to show the most disadvantaged areas/neighbourhoods within LGAs however it may misrepresent relative disadvantage where there are only a small number of indicators collected for a postcode, which can be the case in small regional LGAs (Jesuit Social Services 2015).

The SEIFA IRSAD indicator of relative advantage and relative disadvantage shows that LGAs within Mallee are some of the more relative disadvantaged LGAs in Victoria:

- Northern Grampians – 3rd most disadvantaged LGA
- Yarriambiack – 4th most disadvantaged LGA
- Hindmarsh – 14th most disadvantaged LGA
- Horsham – 30th most disadvantaged LGA
- West Wimmera – 34th most disadvantaged LGA.

The SEIFA indices show relative disadvantage is concentrated within small rural towns, larger centres such as Stawell as well as the regional centre, Horsham (Figure 34). There is a relatively high level of advantage in the farmlands outside of rural towns and regional cities and most notably in the western parts of the Wimmera Southern Mallee region.

All areas of the Wimmera Southern Mallee region demonstrate a large proportion of the population living within SA1s in the lowest national deciles (Figure 38). In the Wimmera Southern Mallee region

⁸ SA1 is the smallest area of output from the Australian Census of Population and Housing. Victoria is covered by 13,339 SA1s. This compares with 79 LGAs and 667 postcodes.

⁹ The Jesuit Social Services disadvantage indicator is constructed from measures of low family income, internet access, school education, post school qualification, skilled workers, disengaged young adults, disability support, unemployment, long term unemployment, rental assistance, numeracy and reading NAPLAN scores, child maltreatment, criminal convictions, juvenile convictions, domestic violence, prison admissions, psychiatric admissions.

relative disadvantage is demonstrated to be concentrated within towns, including Horsham, rather than in the rural farmlands. In Northern Grampians and Yarriambiack LGAs approximately 55 per cent of the population live in areas that are within lowest two deciles of relative disadvantage in Australia. In Hindmarsh this is approximately 40 per cent. The high level of relative disadvantage found in the rural town and centres, such as Stawell in the south east area, would most likely account for the majority of this population. However, the areas around St Arnaud are also noted to demonstrate higher levels of social disadvantage aligned with the goldfield areas to the east of the Wimmera Southern Mallee region.

Horsham LGA and West Wimmera LGA have a more evenly distributed proportion of the population living in areas of relative social disadvantage. In the case of West Wimmera, this may be due to the fact that this LGA has very few smaller towns where disadvantage is more typically found in rural areas.

The difference in advantage between smaller towns and the farmlands that surround these towns is likely a reflection of a longer-term agglomeration trend that has been occurring in the agriculture industry. The difference in advantage between the towns and the farmlands of the rural cropping areas may be due to the gradual economic decoupling of small rural towns and the surrounding farm businesses. The decoupling of small town economies from the surrounding farms is a pervasive trend across Australia (Frost et al. 2002). This decoupling is partly due to the consolidation of farms to fewer, larger farms as well as the consolidation of farm equipment and service businesses into major regional centres. This decoupling means that the smaller towns no longer benefit from employment and expenditure to the same degree that they might have done in the past.

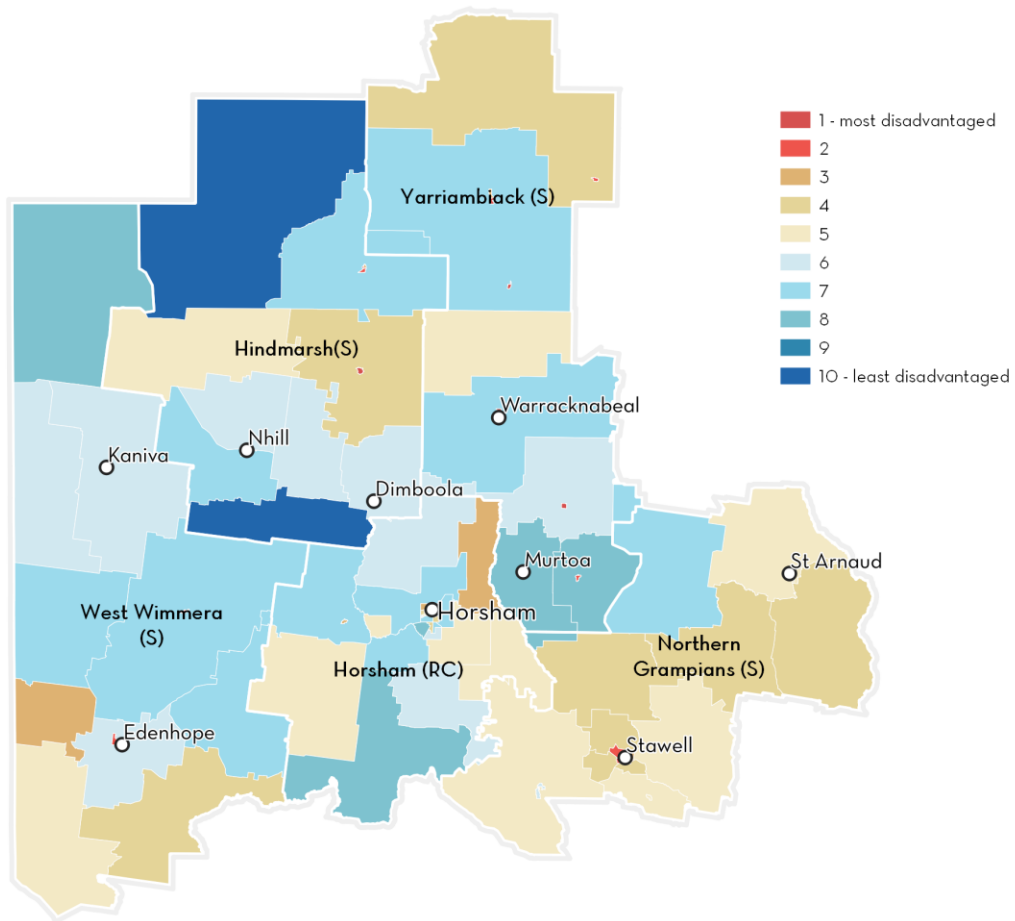
The inexpensive housing, driven by lower economic growth, in many of these small settlements is a feature which may have attracted migrants driven out of major population centres through a combination of low income and high housing costs. Within Horsham the spatial pattern of disadvantage is partly a result of the gradual deindustrialisation of the local economy as it trends towards greater employment in the services sector.

ABS SEIFA

The ABS SEIFA provide socio-economic conditions by geographic area and are based upon data available through the national Census. This data is limited to questions which cover income, housing and education, and has comprehensive geographic coverage. The ABS SEIFA comprises four indexes:

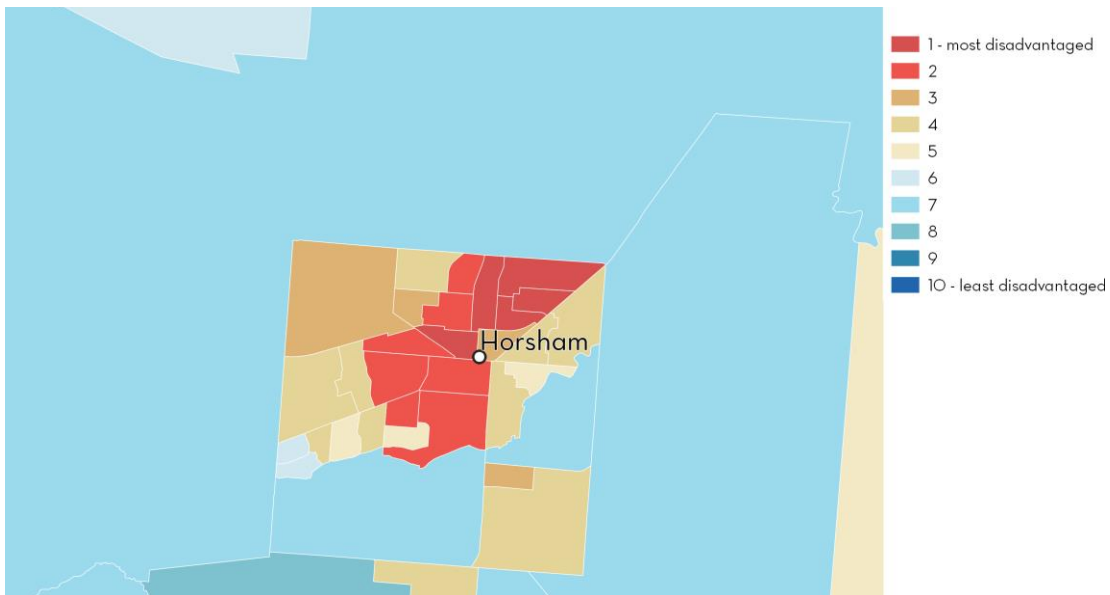
- Index of Relative Socio-Economic Disadvantage (IRSD)
- Index of Relative Socio-Economic Advantage and Disadvantage (IRSAD)
- Index of Education and Occupation (IEO)
- Index of Economic Resources (IER).

At the SA1 level the ABS SEIFA indices reveal a divide between the farmlands and the towns throughout Wimmera Southern Mallee (Figure 36). This is consistent with the Horsham regional hub where relative disadvantage is evident in all suburbs (Figure 37). The rural cropping areas, with the exception of West Wimmera LGA, and south east areas demonstrate a large proportion of the population living within SA1s in the lowest national deciles (Figure 38).



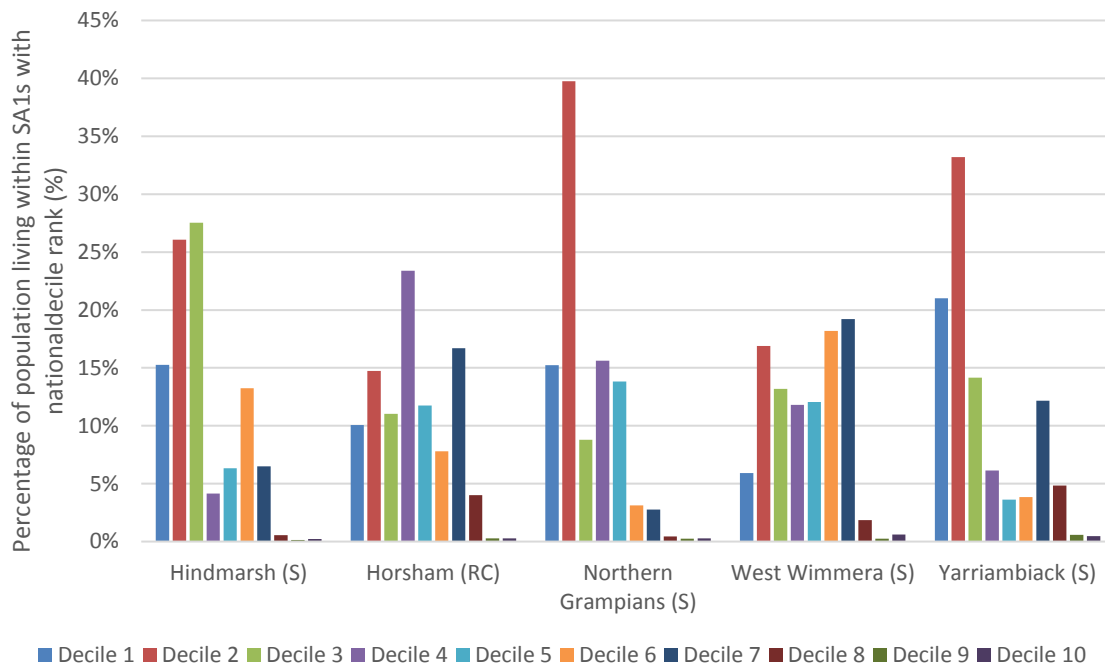
Source: ABS 2016g.

Figure 36 ABS SEIFA – Index of Relative Disadvantage by SA1



Source: ABS 2016g.

Figure 37 Index of Relative Disadvantage by SA1, Horsham



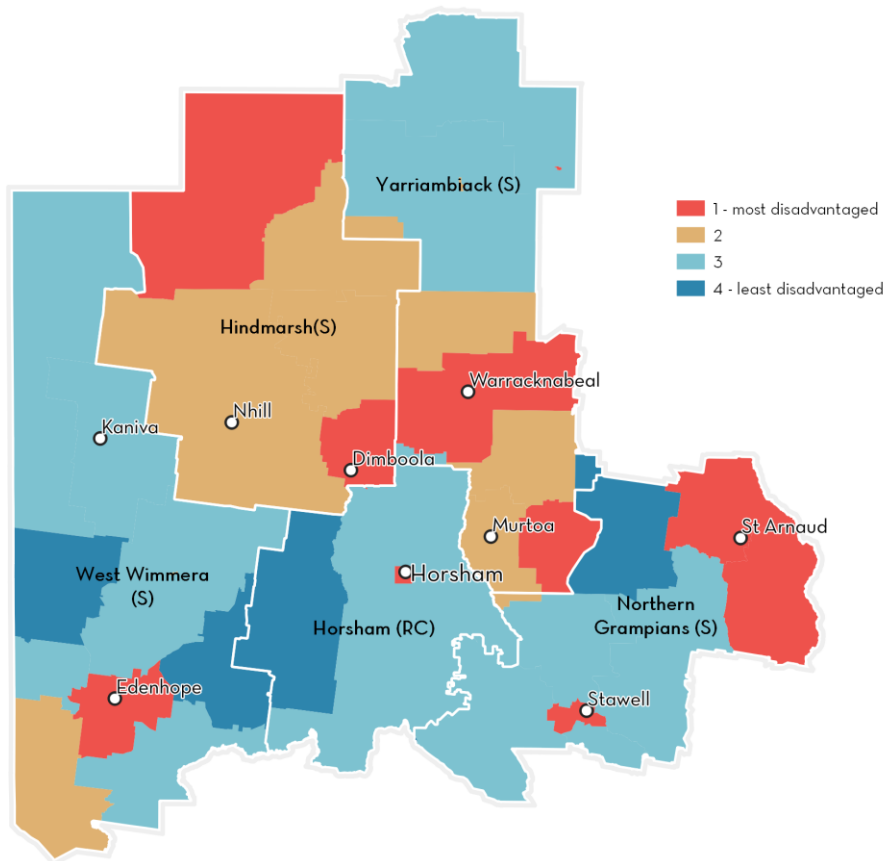
Source: ABS 2016g.

Figure 38 ABS SEIFA – Index of Relative Socio-Economic Advantage and Disadvantage (IRSAD) by LGA

Dropping off the Edge Index

The Dropping off the Edge index (DOTE), developed by Jesuit Social Services and the Catholic Social Services Australia, identifies areas of relative disadvantage across Australia and has a broader suite of underlying data than that used by the ABS SEIFA with a greater focus upon outcomes of relative disadvantage. It is presented at a postcode level in order to show the most disadvantaged areas and neighbourhoods within LGAs. DOTE measures indicators including unemployment, criminal convictions, unemployment and young adults not fully engaged in work or study, as outlined in Section 5.2.1. However, the greater range of indicators combined with the larger spatial areas can mask the finer detailed analysis presented through the SEIFA SA1 level analysis.

Similarly, in smaller LGAs, the DOTE dataset can potentially misrepresent relative disadvantage where there are only a small number of indicators collected for a postcode. Nevertheless, it can provide a useful way to support or contrast the SEIFA analysis. In the Wimmera Southern Mallee region, there appears to be some alignment with the SEIFA analysis however discrepancies are evident in the rural areas with low population (Figure 39).



Source: Jesuit Social Services 2015.

Figure 39 Relative disadvantage by Jesuit DOTE ranking, quartiles, 2015

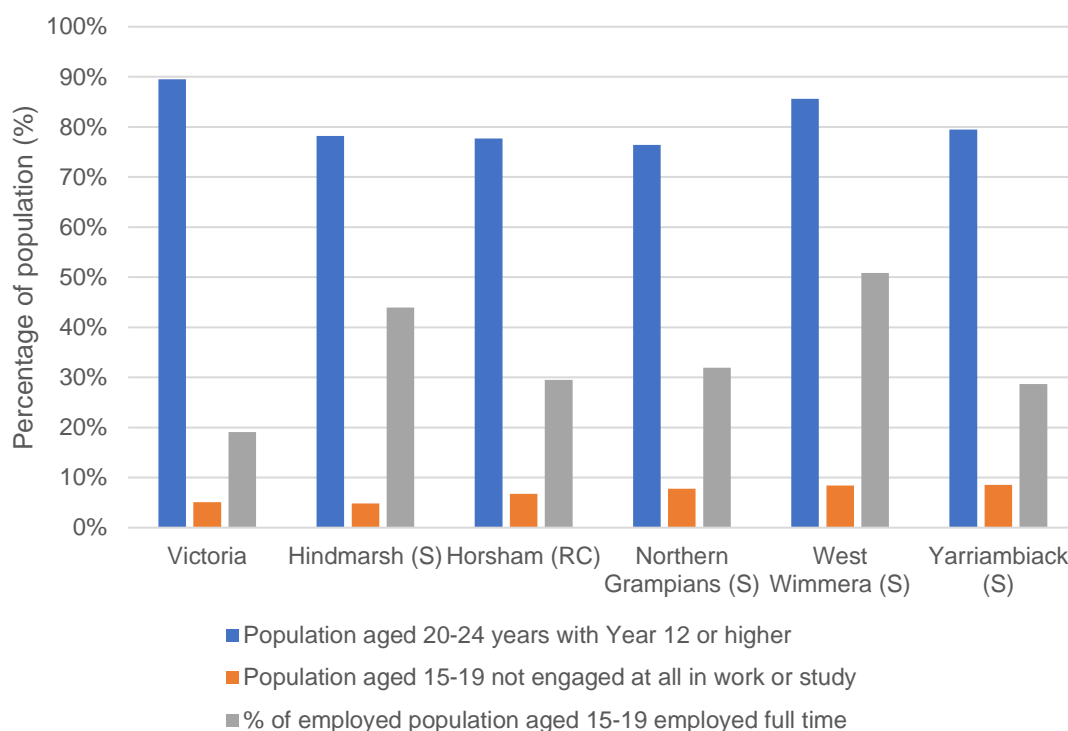
5.2.2. Youth engagement with work or study

Youth disengagement contributes to higher indicators of disadvantage. State-wide, a cohort of young people are not fully engaging with study or employment. Across the Wimmera Southern Mallee region, the proportion of youth not engaged with work or study is fairly varied (Figure 40). The Northern Grampians (7.8 per cent), West Wimmera (8.4 per cent) and Yarriambiack (8.5 per cent) LGAs are higher than the Victorian average (5.1 per cent) however the relatively low population in these LGAs means this should be read with caution. Horsham LGA also has a larger proportion of youth not engaged with work or study (6.8 per cent) which may be statistically more relevant.

Despite this similarity, in all LGAs in the Wimmera Southern Mallee region, there is a larger proportion of 15-19 years old employed full-time compared to the Victorian average. This is particularly prevalent in the Hindmarsh and West Wimmera LGAs where approximately 44 per cent and 51 per cent of those aged 15-19 years are employed full-time. All LGAs have a lower proportion of people aged 20-24 with Year 12 or higher qualifications when compared to the Victorian average (90 per cent). All LGAs with the exception of West Wimmera (86 per cent) have a proportion between 76 and 80 percent.

The high rates of full time employment amongst those aged 15-19 years, and the smaller proportion of the population aged 20-24 with a Year 12 certificate suggests there may be a larger proportion of the workforce with a lower skill-base. This presents a challenge for the future of the region as the economic profile for the region and the drivers change clarified that there will be an increasing demand for higher skill work in the future. The agricultural sector (the main employer for the Wimmera Southern Mallee region) continues to face adverse impacts from climate change and employment will

continue to decline as productivity increase, including as a result of automating low skilled jobs. As this trend will eventuate across Australia, those with lower levels of qualifications are more at risk of being left behind in the workforce regardless of whether they stay within the Wimmera Southern Mallee region or seek to migrate to other regions in Victoria or inter-state.



Source: ABS 2016c.

Figure 40 Youth engagement by LGA, 2016

On Track is a Victorian Government initiative which surveys school leavers who have left school in the last six months to find out if they are on track to a bright future. On Track ensures school leavers are contacted within six months of leaving school to see if they are on a path to further education, training or employment. It also enables young people to seek further advice and assistance via a referral service if required to get back on track. Table 3 shows that across all LGAs in the Wimmera Southern Mallee region, fewer school leavers are in further education or training within six months, than the Victorian average. Hindmarsh (38.7 per cent), Northern Grampians (42.9 per cent) and Horsham (52.1 per cent) are particularly low when compared to the Victorian average of 74.8 per cent.

Across all LGAs, most of those not continuing in further education and training are employed, with a smaller proportion looking for work and very few or none not doing either. This supports the general view that obtaining Year 12 or equivalent qualification enables greater the opportunity for better outcomes when compared to those who do not obtain these qualifications.

Table 3 Destinations of 2016 Year 12 or equivalent completers Wimmera Southern Mallee (%)

	Hindmarsh	Horsham	Northern Grampians	Yarriambiack	Victoria
In further education or training	38.7	52.1	42.9	65.8	74.8
Bachelor degree	19.4	33.3	25.0	31.6	53.8
Certificates/Diplomas	9.7	7.3	7.1	10.5	12.9
Apprentice/Trainee	9.7	11.5	10.7	23.7	8.1
Not continuing in further education or training	61.3	47.9	57.1	34.2	25.1
Employed	45.2	43.8	46.4	28.9	19.5
Looking for work	16.1	3.1	10.7	0.0	4.6
Not in labour force, education, training	0.0	1.0	0.0	5.3	1.0

Source: Department of Education 2018.

Note: There is no report available for West Wimmera.

5.2.3. Population health

Access to health and other community services is one indicator of population health. An inability to easily access health services can lead to poorer outcomes due to failure to seek appropriate care.

Table 4 shows the percentage of residents in each LGA who self-reported that they could access community services or resources, such as libraries, maternal and child health centres and neighbourhood centres, when needed. It also shows the number of GPs per 1,000 population. Finally, it also includes ACSC separations per 1,000 population. ACSCs are those for which hospitalisation is thought to be avoidable with the application of public health interventions and early disease management, usually delivered in ambulatory settings such as primary care. High rates of separations are an indicator of poor health outcomes as hospital admissions for ACSCs may provide indirect evidence of problems with patient access to primary healthcare, inadequate skills and resources, or disconnection with specialist services.

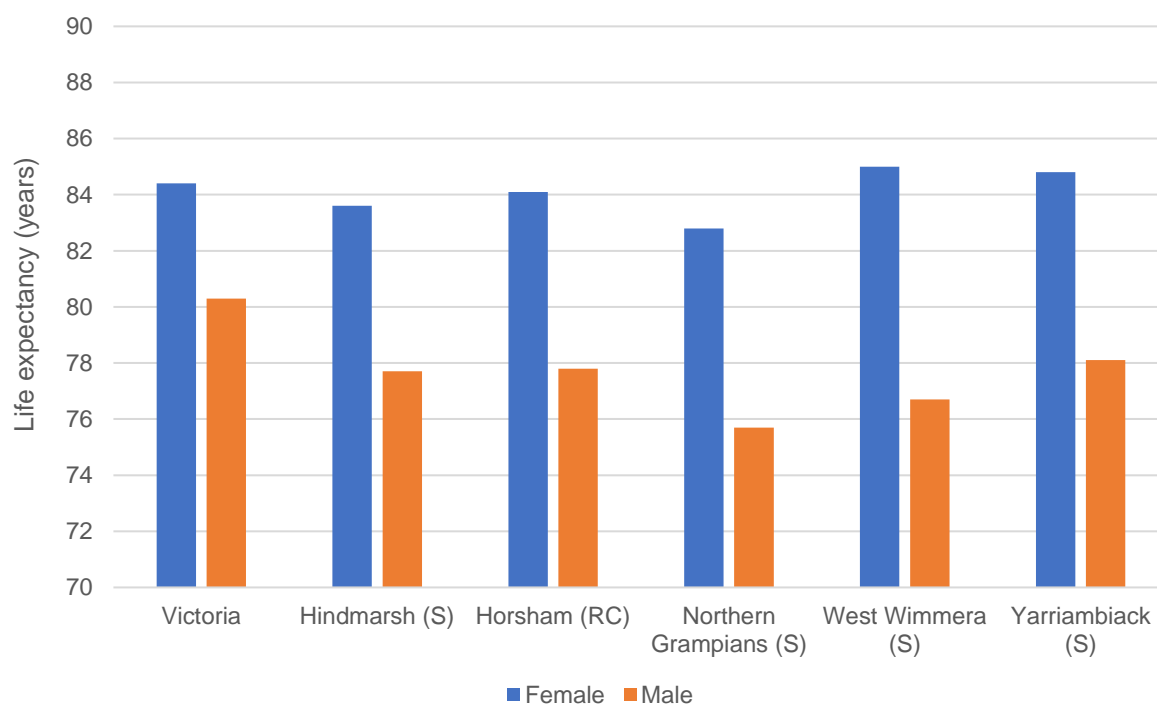
Table 4 shows that there is variation across the region in all three categories with some LGAs below the Victorian average and some above. All LGAs, with the exception of Horsham, have particularly high ACSC separations. For example, Hindmarsh has double the Victorian average of ACSC separations. This may suggest that these areas are in need of greater access to health care services.

Table 4 Community services and health care services

	People who could definitely access community services and resources*	GPs/1000 head*	ACSC (PPH) separations for all conditions per 1,000 population**
Hindmarsh	85.9%	1.1	56.0
Horsham	92.0%	1.2	26.4
Northern Grampians	88.3%	1.2	31.7
West Wimmera	83.3%	1.3	39.7
Yarriambiack	82.0%	0.7	37.1
Victoria	85.2%	1.2	27.7

Source: *DHHS 2015. ** Department of Human Services and State Government of Victoria n.d..

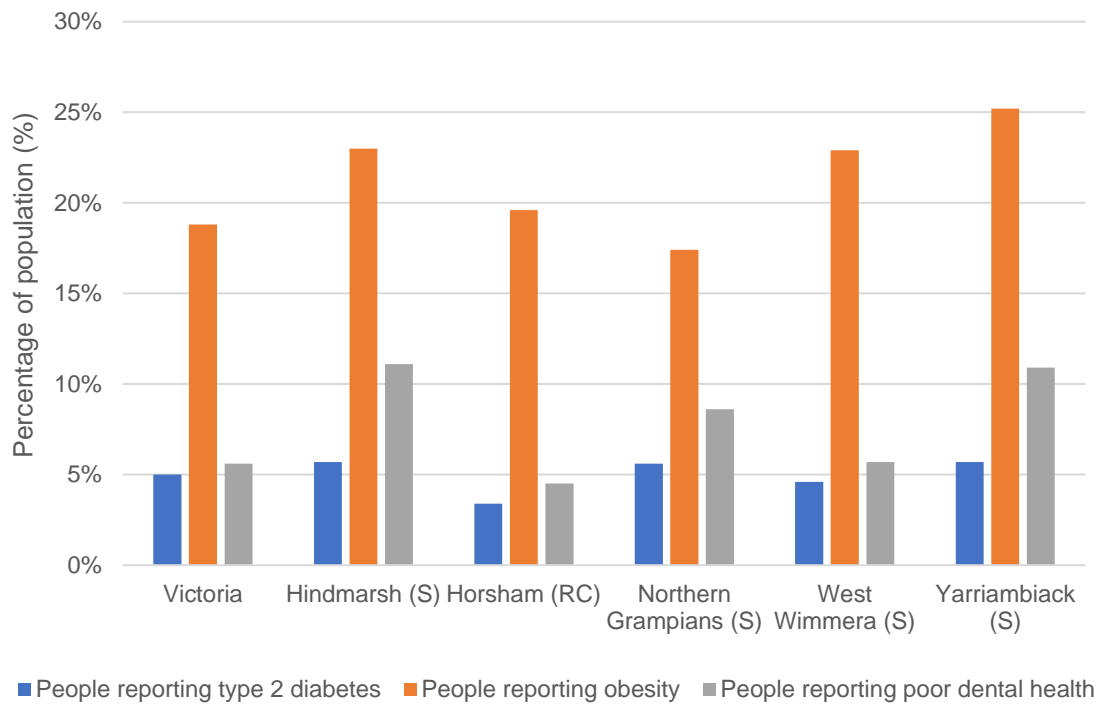
Life expectancy at birth is a good summary indicator of health status. Life expectancy for males is lower than the Victorian life expectancy in all LGAs (Figure 41). The greatest divergence from the Victorian average for males is in the Northern Grampians and West Wimmera LGAs. Life expectancy for females is similar to the Victorian life expectancy. For females, the greatest divergence from the Victorian average is in the Northern Grampians LGA. Lower life expectancy in the Northern Grampians LGA may be due to the poorer economic and social outcomes, notably relative social disadvantage, compared to other LGAs. However, this correlation is not consistent with relative disadvantage in the towns of all LGAs in the Wimmera Southern Mallee region.



Source: DHHS 2015.

Figure 41 Life expectancy at birth for males and females by LGA

Figure 42 shows three preventable health conditions reported in the DHHS health survey. The LGAs within the rural cropping areas demonstrate results higher than the Victorian average on reported obesity. The Northern Grampians LGA is lower than the Victorian average on reported obesity. Reported rates of type 2 diabetes are mostly similar to the Victorian average other than Horsham where it is lower. The percentage of people reporting poor dental health is substantially higher than the Victorian average in Hindmarsh (double the Victorian average), Yarriambiack (double the Victorian average) and Northern Grampians. This may suggest that these areas are in need of greater access to dental care services, particularly when noting the higher ACSC separations in these LGAs.



Source: DHHS 2015.

Figure 42 Self-reported type 2 diabetes, obesity and dental health by LGA

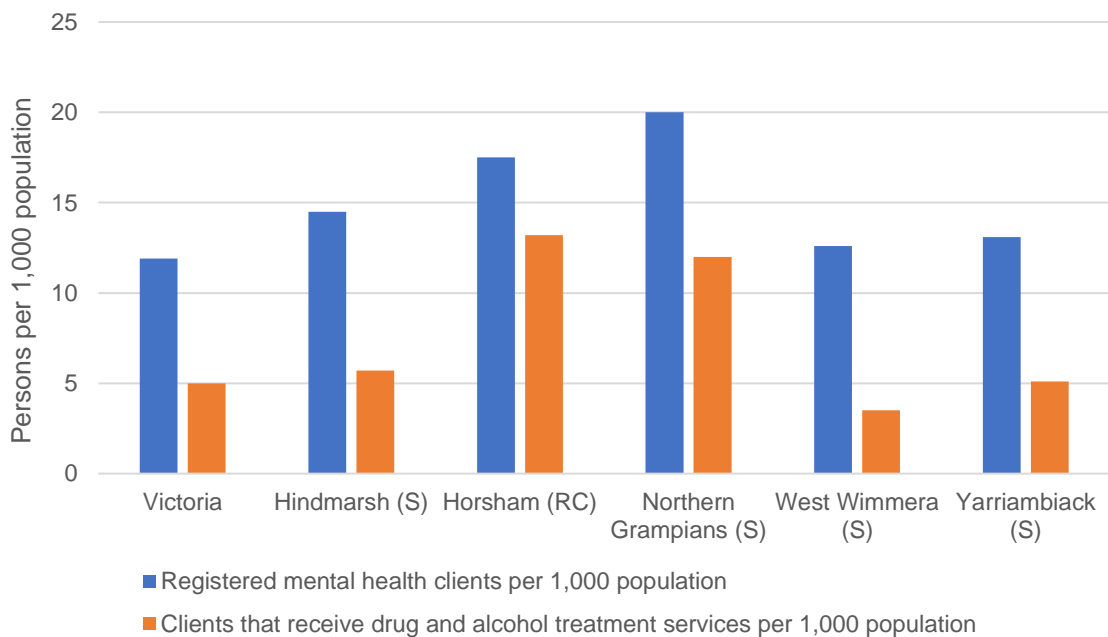
Home and Community Care (HACC) service utilisation is substantially higher in all LGAs of the Wimmera Southern Mallee region (Figure 43). In the rural cropping areas and Horsham regional hub, the number of HACC clients aged 65 years and over are two to three times the Victorian average. Variations in utilisation may reflect service quality and accessibility. Hospital separations are higher in Hindmarsh and Yarriambiack LGAs which is possibly related to the age of the population.



Source: DHHS 2015.

Figure 43 Service utilisation for hospital in-patient services and HACC services

Horsham, Hindmarsh and Northern Grampians LGAs have a high number of registered mental health client persons per 1,000 population compared to Victoria and other LGAs in the region (Figure 44). Northern Grampians has nearly the double the number than the Victorian average. Northern Grampians, along with Horsham, also have double the number of persons that receive drug and alcohol treatment services per 1,000 population than the Victorian average. In contrast, West Wimmera has a lower number of persons that receive drug and alcohol treatment services per 1,000 population than the Victorian average. This may reflect service quality, accessibility and non-resident use, as well as indicate regional health outcomes.



Source: DHHS 2015.

Figure 44 Service utilisation for mental health and drug and alcohol services by LGA

5.2.4. Early childhood outcomes

Indicators have been selected to represent three aspects of early childhood development:

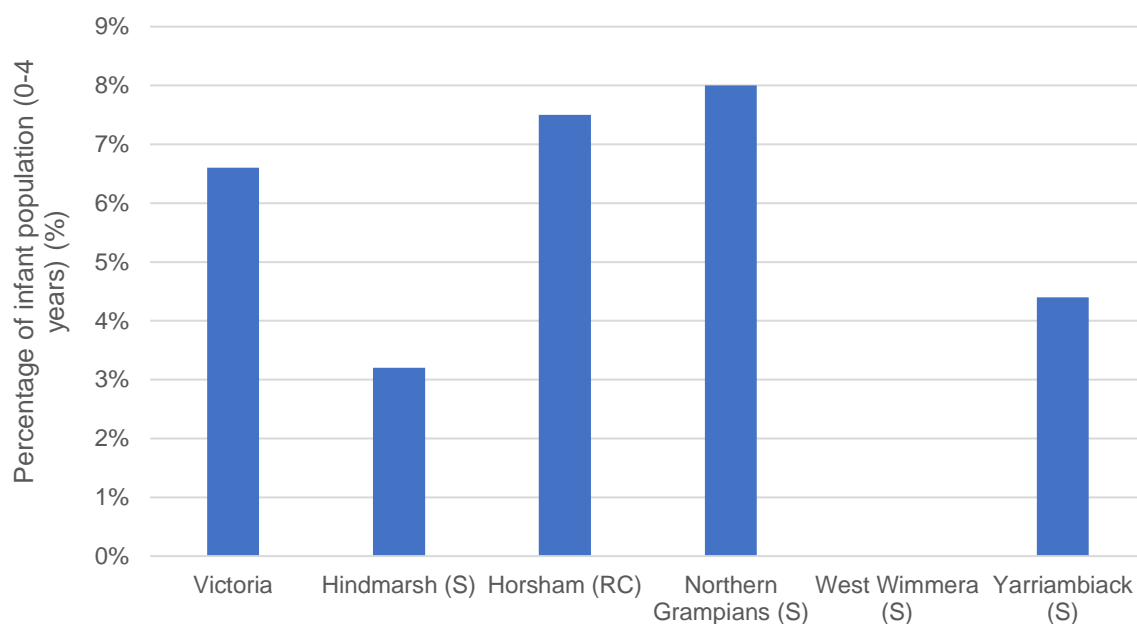
- infant health
- early childhood development
- children at risk of abuse and neglect.

Figure 45 shows the proportion of children born under-weight. Hindmarsh, Yarriambiack and Northern Grampians LGAs show some level of notable deviation from the Victorian average. There is no data available for West Wimmera LGA.

Figure 46 displays the proportion of children who are fully immunised. Only the Northern Grampians LGA demonstrates a lower level than the Victorian average, with all other LGAs being higher.

Figure 47 displays the rate of emotional problems and vulnerability in two or more domains. The Wimmera Southern Mallee region appears to be fairly mixed performing below the state average in the emotional problem domain with Horsham lower and Northern Grampians LGAs higher than the Victorian average. Yarriambiack and Horsham have a significantly higher percentage of children developmentally vulnerable than the Victorian average whilst Northern Grampians LGA is lower. There is no data available for West Wimmera LGA.

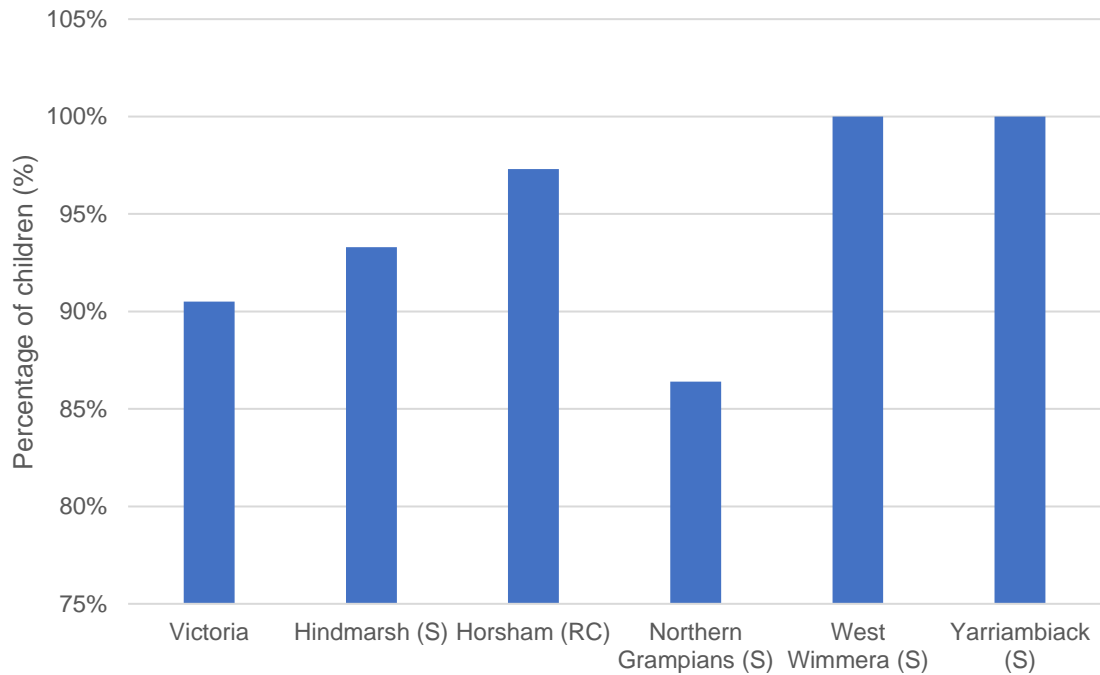
Figure 48 displays rates of child protection substantiations per 1,000 children. Rates are above the state average in the rural cropping areas and Horsham LGA whilst lower in the Northern Grampians LGA. There is no data available for West Wimmera LGA.



Source: DHHS 2015.

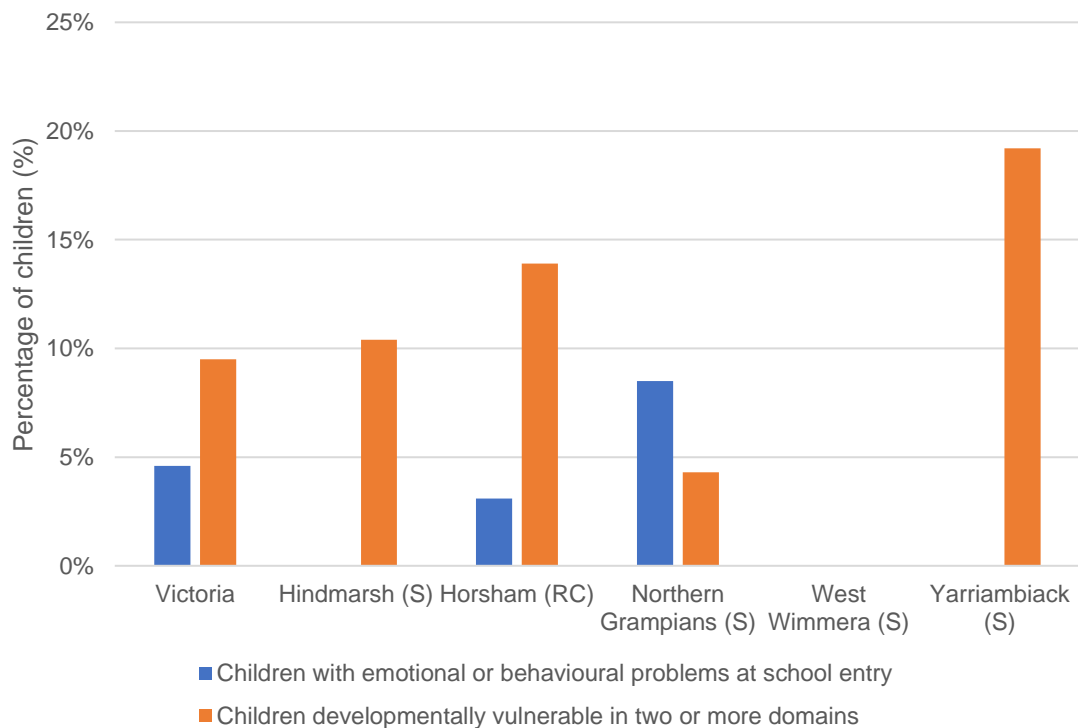
Note: No data available for West Wimmera.

Figure 45 Per cent of babies born with low birth weight by LGA



Source: DHHS 2015.

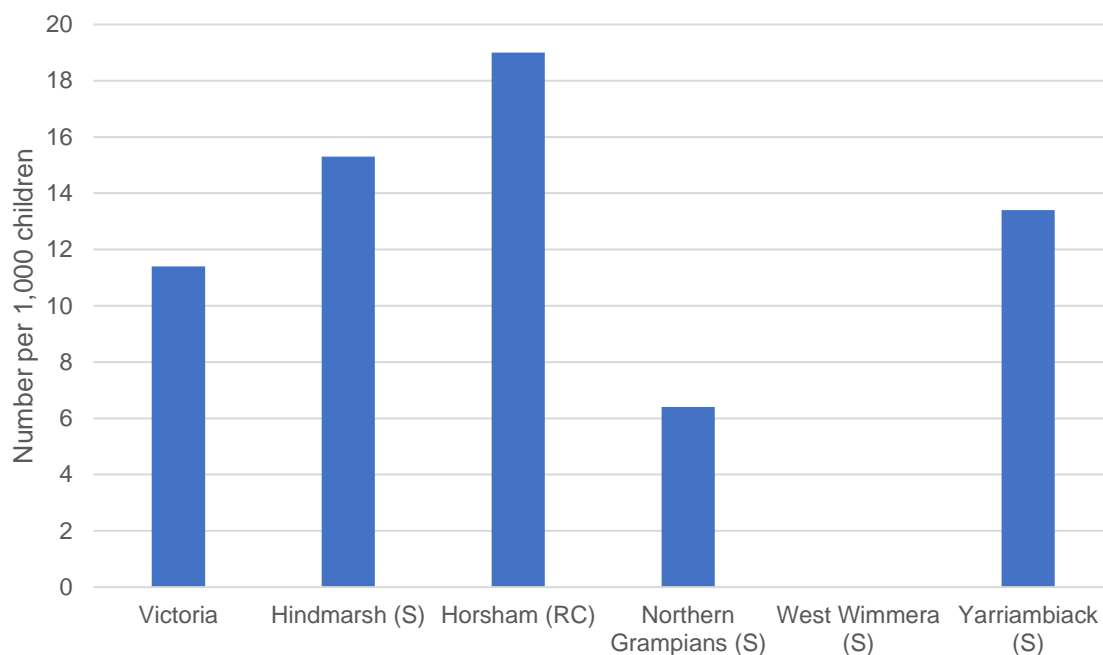
Figure 46 Children fully immunised between 24 and 27 months by LGA



Source: DHHS 2015.

Note: No data available for West Wimmera and limited data available for Hindmarsh and Yarriambiack.

Figure 47 Children with emotional or behavioural problems at school and children developmentally vulnerable in two or more domains by LGA



Source: DHHS 2015.

Note: No data available for West Wimmera.

Figure 48 Child protection substantiations per 1,000 population by LGA

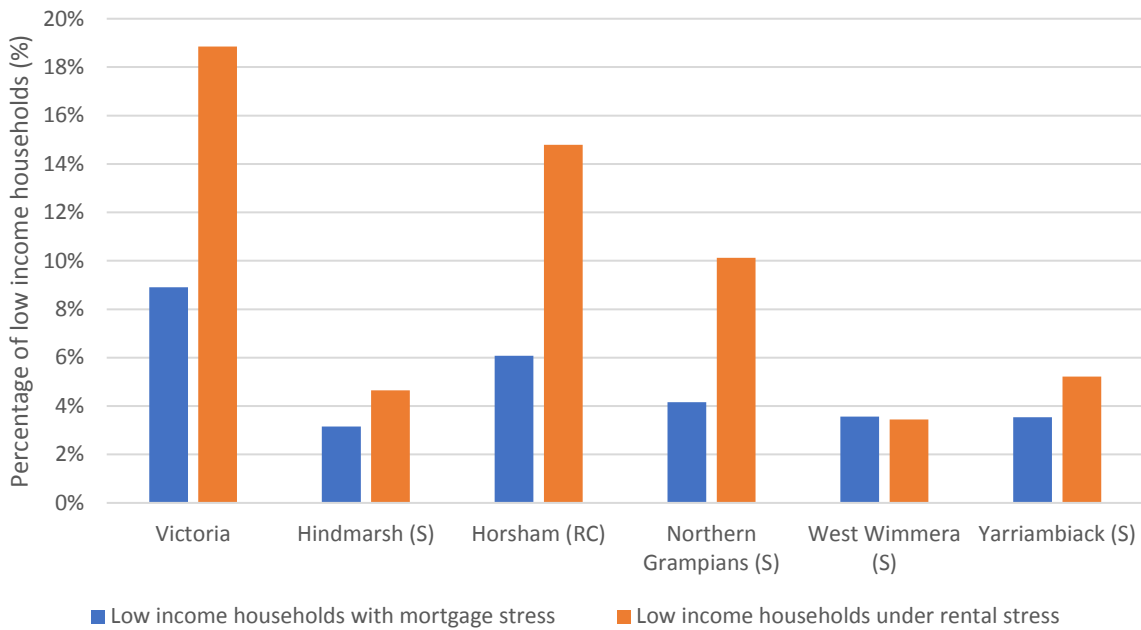
5.2.5. Housing stress

Housing stress can be measured in multiple ways however low income¹⁰ households with more than thirty per cent of household income allocated to housing costs is often used as a benchmark. Housing costs include households that are paying mortgages or rent. Different indicators of housing stress will produce differing results, so the data presented using this indicator as a benchmark should be taken as an indicator of the relative prevalence of housing stress within the Wimmera Southern Mallee region.

The Social Health Atlas (2018) produced by the Public Health Information Development Unit (PHIDU) calculates housing stress using ABS census data. This reveals that the levels of total housing stress are lower across all LGAs than that experienced in Victoria with only Horsham LGA being closer to the Victorian average than other LGAs (Figure 49 and Figure 50). Lower levels of total housing stress for low income households is particularly evident in the rural cropping areas, which is a third of the Victorian average. Levels of mortgage stress are lower than the Victorian average across the Wimmera Southern Mallee region.

Levels of rental stress for low income households are lower across all LGAs except for Horsham LGA, which is marginally higher, and Northern Grampians LGA which is similar to the Victorian average. This demonstrates that while total housing stress in these LGAs is less than the Victorian average due to high levels of home ownership, those low income households who do have to rent face similar levels of housing stress to Victoria and may indicate a shortage of affordable rental properties for low-income earners in these LGAs.

¹⁰ Defined as households in the bottom 40% of the income distribution.



Source: PHIDU 2018.

Figure 49 Low income households with housing costs 30% or more of income by LGA, 2016



Source: PHIDU 2018.

Figure 50 Low income households with housing costs 30% or more of income by LGA, as a per cent of all households, 2016

Homelessness as a percentage of the population in the Wimmera Southern Mallee region is lower than the Victorian average (Table 5), although only marginally lower in West Wimmera LGA. Yarriambiack LGA has little to no reported homelessness.

The percentage of social housing is similar to the Victorian average in Northern Grampians LGA however lower in all other LGAs with the exception of Horsham (Table 5). Horsham LGA has higher numbers of social housing as a percentage of total dwellings than the Victorian average. Higher rates of social housing in regional areas are also partially driven by historic decentralisation policies from the 1940s to 1970s which required 45 per cent of social housing development in Victoria to be in country areas (Ministry of Housing and Construction, 1988).

Table 5 Social Housing and Homelessness in Wimmera Southern Mallee

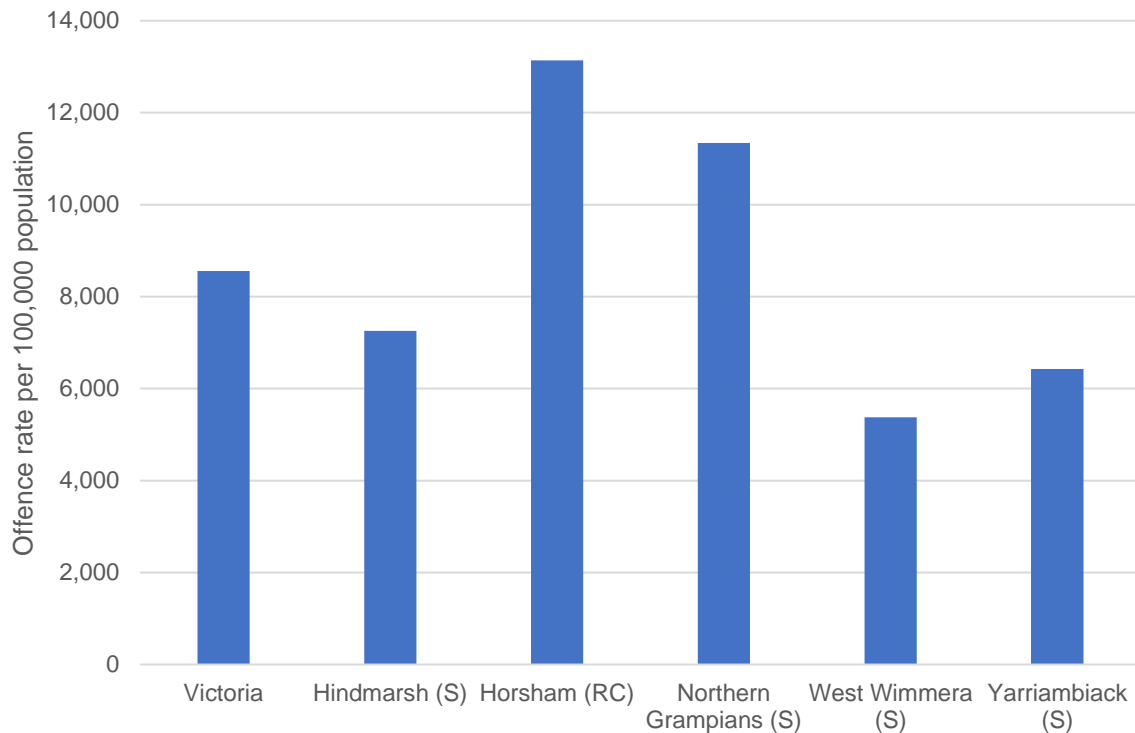
	Social housing (% total dwellings)	Percentage of population homeless
Hindmarsh	1.0%	0.2%
Horsham	5.2%	0.2%
Northern Grampians	3.7%	0.2%
West Wimmera	0.7%	0.3%
Yarriambiack	1.7%	0.0%
Victoria	3.9%	0.4%

Source: DHHS 2015.

5.2.6. Crime

Offence rates vary significantly across the LGAs (Figure 51). Both Horsham and Northern Grampians LGAs demonstrate significantly higher offence rate than the Victorian average. West Wimmera and Yarriambiack LGAs demonstrate comparatively low offence rates.

The higher offence rates in Horsham and Northern Grampians LGAs may be correlated with several other key social indicators and further research may be warranted. For example, Horsham LGA demonstrates poor early childhood outcomes and a higher number of child protection substantiations per 1,000 population than the Victorian average and other LGAs. Research shows that there is a strong correlation between poverty in the first 1,000 days and adverse health and wellbeing outcomes in later life (CCCH 2017). Both Horsham LGA and Northern Grampians LGA also have high number of persons per 1,000 population of registered mental health clients compared to Victoria whilst West Wimmera LGA has a comparatively low number. Northern Grampians LGA is almost double the Victorian average. Horsham and Northern Grampians LGAs also have double the number of persons that receive drug and alcohol treatment services per 1,000 population than the Victorian average whilst West Wimmera LGA has a low number.



Source: State Government of Victoria 2018.

Figure 51 Offence rate per 100,000 population, 2017, Wimmera Southern Mallee and Victoria

5.2.7. Wellbeing index

Wellbeing is a subjective measure of an individual's quality of life (VicHealth 2015). Three key self-reported indicators of wellbeing have been used in this regional assessment:

- sense of wellbeing
- personal safety
- proportion of population who volunteer.

A larger proportion of respondents in all LGAs of the Wimmera Southern Mallee region report a higher level of wellbeing than those from Victoria overall across all three indicators.

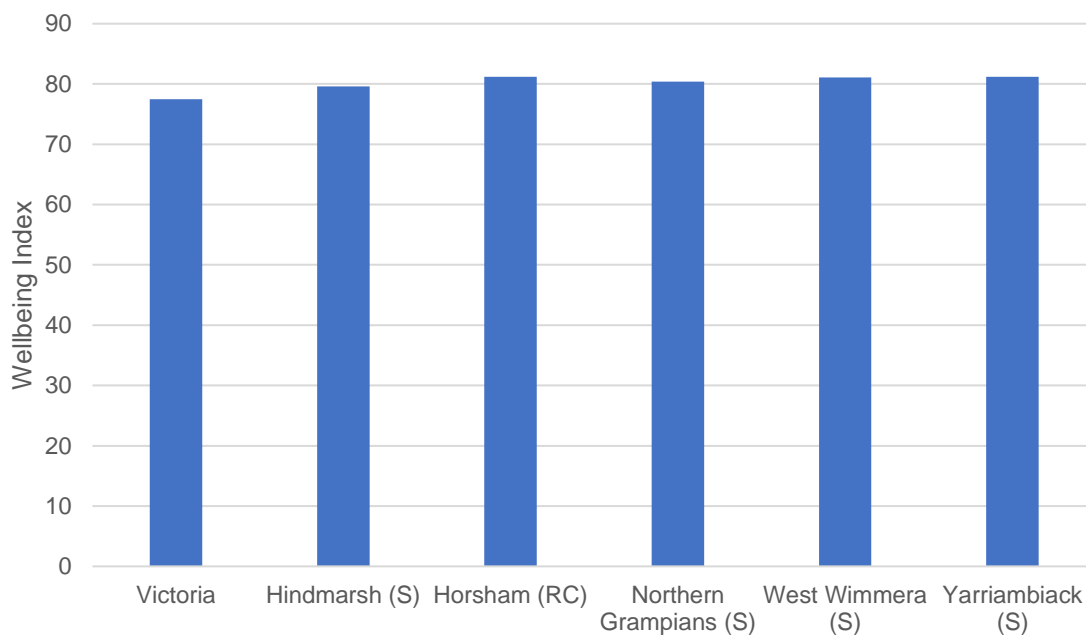
This may appear inconsistent with the information from objective social indicators which show higher levels of relative disadvantage in parts of these rural areas. This result is however, consistent with other studies of subject well-being in rural areas. Part of the explanation may be found in the measures of sense of community involvement and personal safety that contribute to the index. Rural residents demonstrate higher rates on these indicators than their urban counterparts. The most sensitive indicator of the sense of personal security is the number of people who feel safe to walk alone at night in the local area. All LGAs of the Wimmera Southern Mallee region report higher scores than the Victorian average.

There are potentially other objective differences between the Wimmera Southern Mallee region and the Victorian average that may also contribute to the higher rural well-being score. Rural areas have an older population, and sense of subjective well-being has been shown to increase with age. Lower housing costs may be another contributing factor.

Self-reported sense of wellbeing

Sense of wellbeing is recorded through surveys and is self-reported which makes measurement a challenge. Wellbeing is influenced by objective factors such as financial security, family and community support, employment, work life balance and physical safety. However, self-reporting can be influenced by intrinsic factors such as personal outlook, personality, sense of social status and expectations.

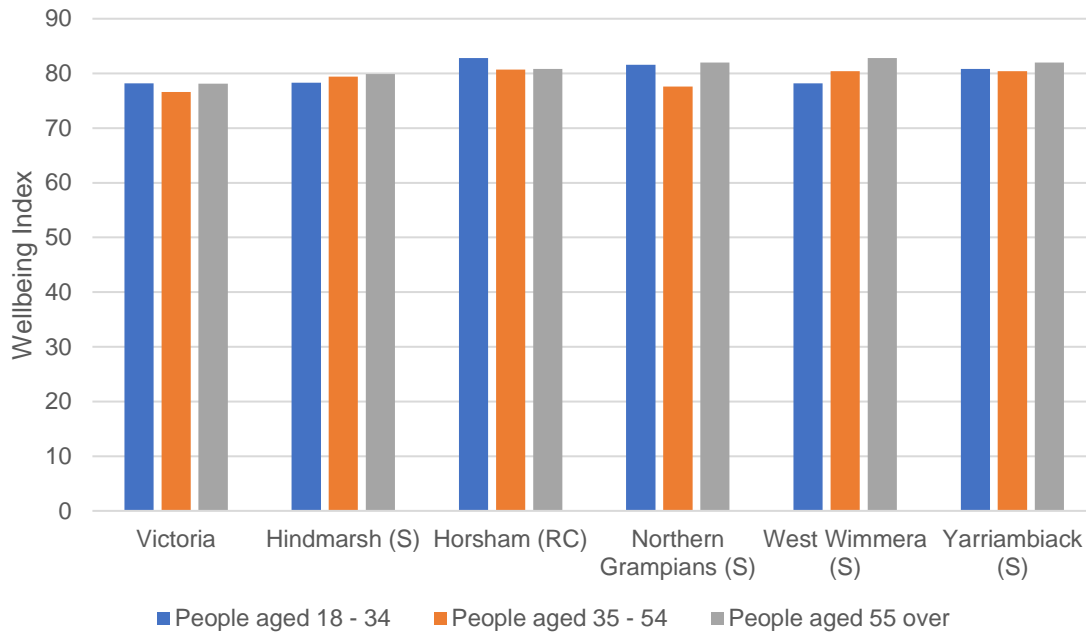
In Victoria, the VicHealth Indicators Survey uses a series of questions across a number of domains of wellbeing (VicHealth 2015) in order to determine a wellbeing index. The mean score of this survey for all the LGAs of the Wimmera Southern Mallee is above the Victorian average (Figure 52). This is consistent with most studies of rural and regional wellbeing which show that the population in more rural areas have a greater sense of wellbeing, most likely due to smaller and more 'close-knit' communities.



Source: VicHealth 2015.

Figure 52 Self-reported Personal Wellbeing Index by LGA

Self-reported sense of wellbeing is higher in each LGA of the Wimmera Southern Mallee region than the Victorian average (Figure 53) across all age groups. The older age group (55 years of age and older) is higher than the middle age group (35-54 years of age) in each LGA, which is consistent with the rest of Victoria. However, in the rural cropping areas the young age group (18-34 years of age) reports a similar or lower sense of wellbeing than the middle age group (35-54 years of age) which is inconsistent with the rest of Victoria, as well as other LGAs, as generally the young age group are more likely to migrate in pursuit of opportunities such as education and work.

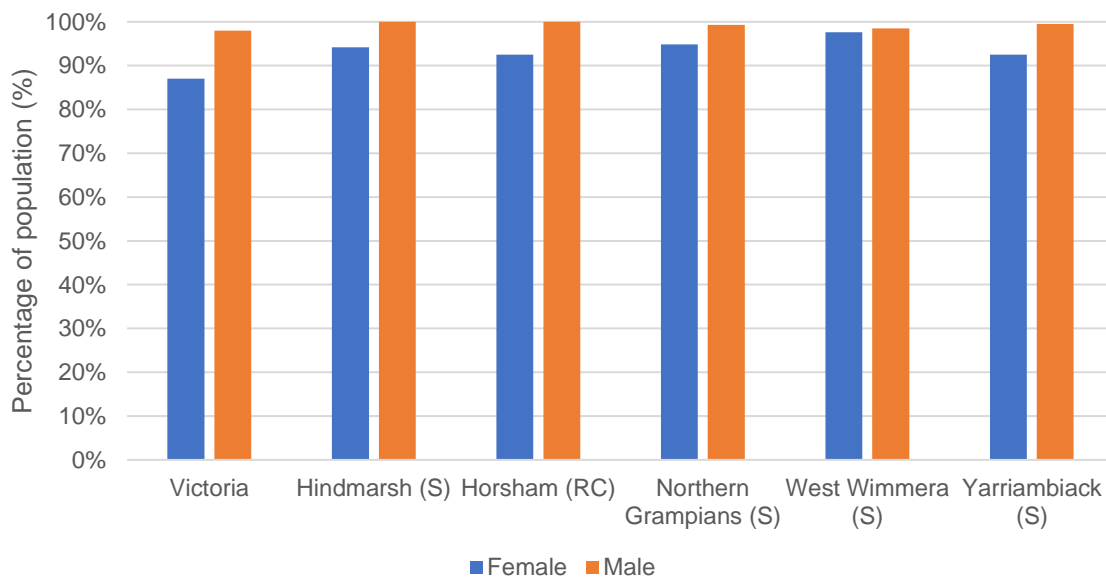


Source: VicHealth 2015.

Figure 53 Self-reported wellbeing index by LGA and age group

Sense of personal safety

Personal safety is a key indicator of wellbeing, with the number of people who feel safe to walk alone at night in the local area the most sensitive component of this indicator. In the Wimmera Southern Mallee region, all LGAs demonstrate a similar or larger proportion of respondents who feel safe to walk alone in their local area at night than those across Victoria (both male and female) (Figure 54). Consistent with observed data across Victoria, the proportion of males who feel safe to walk alone in their local area at night is larger than the proportion of women for the same area. The difference in proportion of females and males who feel safe to walk alone in their local area at night is noticeably negligible in the West Wimmera LGA.

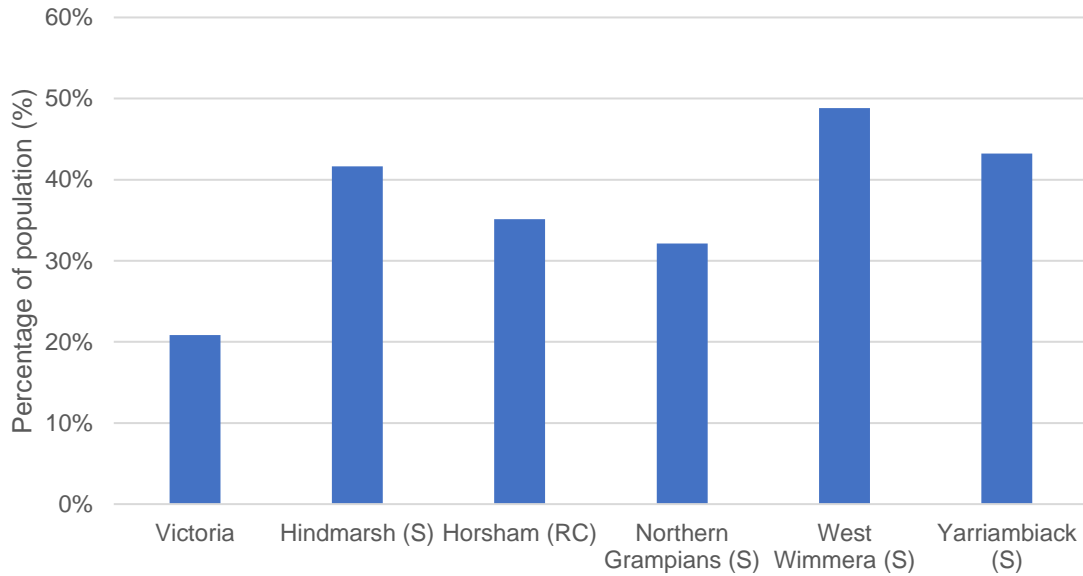


Source: VicHealth 2015.

Figure 54 Sense of safety walking alone at night in local area by LGA and gender

Volunteering

Rates of volunteering are notably higher in all LGAs across the Wimmera Southern Mallee region than the Victorian average (Figure 55) and more than double the Victorian average in the rural cropping areas. This is consistent with general expected relationships between volunteering and other social indicators, such as sense of safety. However, in Horsham and Northern Grampians LGA rates of volunteering are higher than the Victorian average despite far higher levels of crime. Overall, the higher rates of volunteering found in rural areas may be more generally correlated with the need for volunteers to ensure that a range of social activities (such as local sports clubs) are able to be maintained.



Source: ABS 2016c.

Figure 55 Percentage of population who volunteer, 2016

6. Environmental profile

6.1. Summary

Rural cropping areas

The rural cropping areas of the Wimmera Southern Mallee region have characteristics typical of a region with large areas of land used for agricultural purposes. Broad-acre cropping of cereals, pulses and oilseeds is most prevalent in the central and northern regions and livestock grazing is most prevalent in the south.

This dominant land use is interspersed with high value environmental assets including native plains and deserts, Little Desert National Park, Big Desert National Park and the southern extent of Wyperfield National Park. The rural cropping areas also include part of the Ramsar-listed Lake Albacutya, and Lake Hindmarsh that are both connected through the Wimmera River. However, the rural cropping areas generally have a low level of biodiversity, poor catchment condition and native vegetation and environmental assets is often isolated and interspersed by large cleared areas.

The rural cropping areas have a history of gold mining and past and active quarries including sand, limestone, scoria, tuff, basalt/bluestone and gypsum. There are important mineral sands deposits throughout the rural cropping areas that may be developed in the future. Similarly, the rural cropping areas have considerable solar potential under development, and potential geothermal resources have also been identified.

There is a higher risk of wind erosion than other parts of Victoria given the bare soils in dryland production areas. Continuing dry conditions are expected due to climate change that will present ongoing increased likelihood of soil erosion. The rural cropping areas are not predisposed to high levels of natural hazards, though the potential for both droughts and bushfire conditions are increasing with climate change as the area becomes warmer and drier. Similarly, the western parts of the rural cropping areas rely on groundwater reserves for urban and rural supply with climate change continuing to be the key challenge for water security.

While the rural cropping areas are less likely to be exposed to population growth pressures, this largely agricultural landscape is vulnerable to climate change (lower rainfall and higher temperatures) which will likely place pressure on existing farming operations. This may further restrict the already limited economic growth the area is expected to experience.

Horsham regional hub

Horsham LGA contains Horsham, the largest population centre for Wimmera Southern Mallee. The surrounding land use in the is dominated by dryland agriculture. The Wimmera River flows through Horsham, north by west from the Southern Grampians, and several important environmental assets border the Horsham regional hub, including the Black Range State Park in the south of the Horsham LGA.

Mineral sands (Douglas deposits) were previously mined near Horsham between 2006 and 2012. There is potential for solar energy generation in the areas immediately north of Horsham that could use the main electricity line between Mildura and Horsham.

Being the major population centre of the Wimmera Southern Mallee region, Horsham has some history of pollution from industrial activities, including a petroleum storage site that is classified as an

EPA Priority Site. However, the vulnerability to the risks of contaminated land and pollution from current and previous industrial activity is lower than other regional centres in regional Victoria. The Horsham regional hub is situated on the Wimmera River floodplain, and more detailed flood mapping is required to understand the risks facing any potential urban growth in this area, being the only part of the Wimmera Southern Mallee region to expect population growth in the future.

South east areas

The south east areas of the Wimmera Southern Mallee region support a range of land use types and high biodiversity including moist foothill forest, box-ironbark forest and woodlands. The south east areas are characterised by important natural assets including the northern extent of the Grampians National Park and Black Range State Park in the southern and western parts of the south east areas and northern and western extent of St Arnaud Range National Park in the eastern parts of the south east areas.

Whilst dryland agriculture remains the dominant land use in the south east areas, the environmental assets in the south east areas generate considerable economic activity for regional towns such as Stawell. The risk of soil erosion and salinity are not as high in the south east areas as they are in other parts of the Wimmera Southern Mallee region, partially because there is less land clearing and agricultural activity.

The Wimmera River flows north by west through this area from the southern Grampians region and into the rest of the Wimmera Southern Mallee Region. The Glenelg River reaches into part of the Wimmera Southern River. Whilst mostly in very poor to moderate condition, in the northern Grampians National Park, some river reaches are in good or excellent condition. The Rocklands Reservoir is a significant water storage near the border of the Wimmera Southern Mallee region, Central Highlands region and Great South Coast region, which holds environmental water which is delivered north into the Wimmera River and south into the Glenelg River.

The main mineral resource used in post-European settlement in the south east area has been gold, concentrated around the Stawell area and with past and ongoing mining operations. However, there is not a serious history of pollution and contamination and this is centred in towns with historical industrial activity, including the deposits of mine tailings and dumped industrial waste in the Stawell area. There are also some mineral resource deposits in the area and despite the areas of state forest, there is very little harvestable timber.

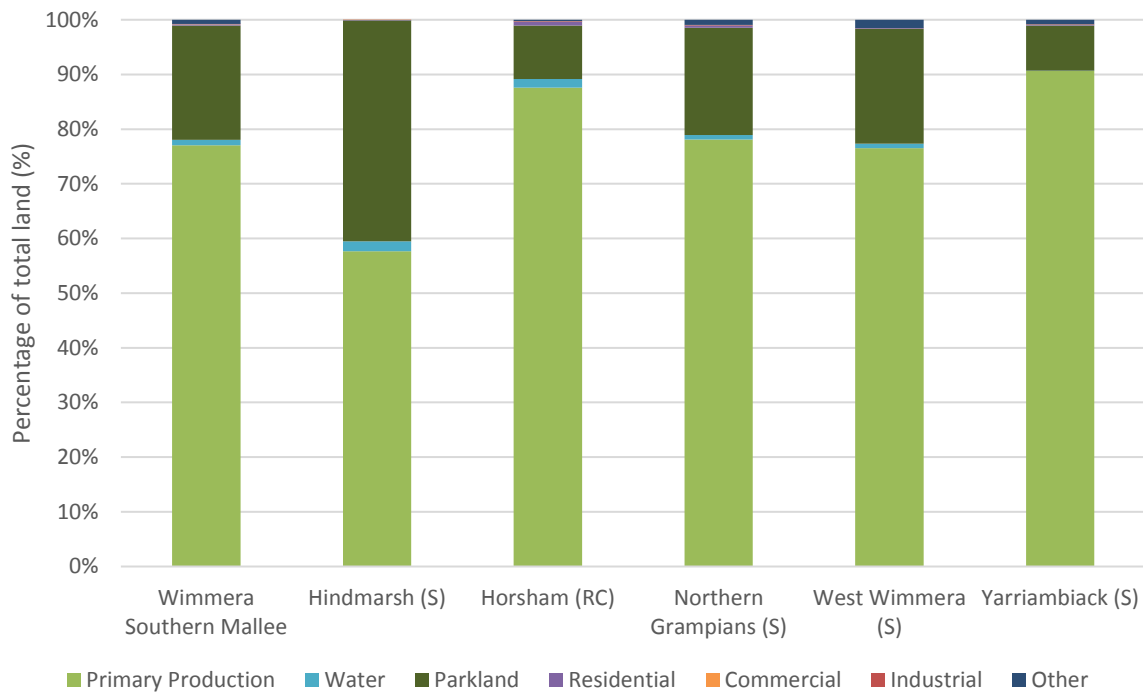
The south east areas are more flood and bushfire prone than the rest of the Wimmera Southern Mallee region, partially because there is more dense, uncleared land with a high fuel load as well as important waterways. The Grampians experienced serious flood damage to important infrastructure in January 2011, and bushfires in the region have also caused substantial damage including sediment build-up in waterways. These risks will need to be considered as the south east areas continue to attract tourism given its natural assets.

6.2. Regional environmental data

6.2.1. Land

The Wimmera Southern Mallee region is highly modified from its pre-European settlement state and is primarily used for agriculture (Figure 56). There are also important environmental assets in the form of mountains, plains, deserts and wetlands, including parks and Ramsar-listed wetlands. There is low connectivity between natural habitats as native vegetation and environmental assets are often isolated from each other by large cleared areas (State Government of Victoria 2014a).

Agricultural land use is primarily made up of broad-acre cropping of cereals, pulses and oilseeds in the central and northern regions and livestock grazing in the south. These land uses are not likely to change significantly as the region is not suited to other types of agricultural activity and no substantial population growth is expected. Increasing drought conditions may lead to changes in agricultural productivity in the Wimmera Southern Mallee (State Government of Victoria 2014b).

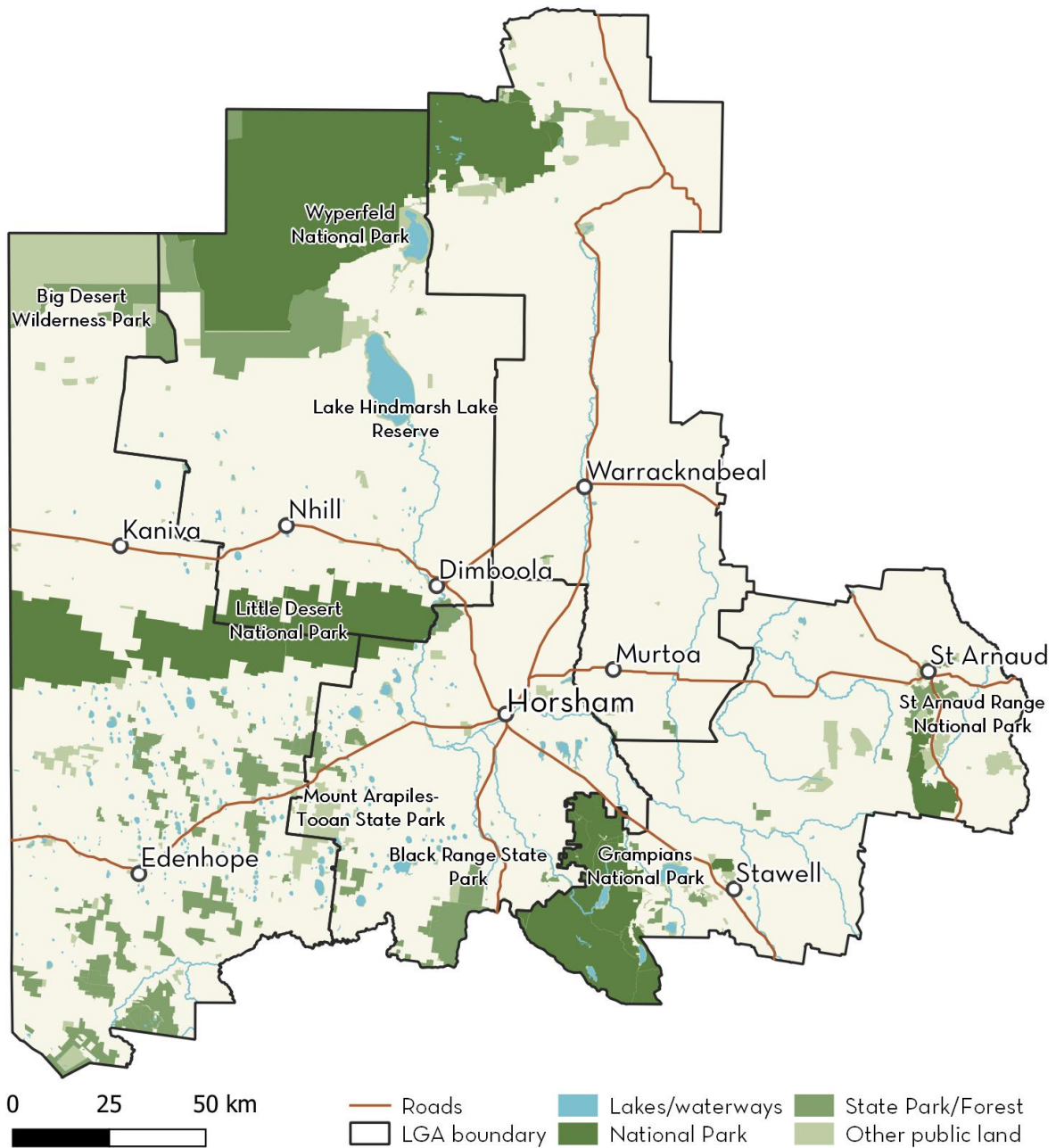


Source: ABS 2016h.

Figure 56 Land use in the Wimmera Southern Mallee, 2016

Terrestrial environmental assets

The Wimmera Southern Mallee region contains a diverse range of terrestrial assets including plains, mountains, wetlands, deserts, moist foothill forest, box ironbark forest and woodlands (DELWP n.d.) (Figure 57). Around 85 per cent of the region’s native vegetation has been cleared, and most of the remaining native vegetation is located on public land in isolated areas broken up by cleared land (State Government of Victoria 2014b).



Source: State Government of Victoria 2014b.

Figure 57 Wimmera Southern Mallee region – key environmental assets

National Parks

- Grampians (Gariwerd) National Park
- Wyperfeld National Park
- Little Desert National Park
- St Arnaud Range National Park (also known as Kara Kara National Park).

State Forest and State Parks

- Mount Arapiles-Toosan State Park
- Black Range State Park.

Other

- Mount Arapiles
- Big Desert Wilderness Park
- Pyrenees Range.

Aboriginal cultural heritage assets

The Wimmera Southern Mallee region includes the traditional lands of the Wotjobaluk, Jaadwa, Jadawadjali, Wergaia and Jupagalk peoples and sections of the land of the Dja Dja Warrung people, Taungurong people and the Yorta Yorta people, and comprises important cultural heritage assets. The land of the Wotjobaluk, Jaadwa, Jadawadjali, Wergaia and Jupagalk people stretches from Ouyen in the Mallee region in the north to skirt the Grampians and includes Stawell and Ararat in the south, and spans from the Victorian-South Australian border to Birchip and the southern tip of Lake Tyrrell in the east. The land of the Dja Dja Warrung people is located in the east of the Wimmera Southern Mallee region near St Arnaud and continues east into the Loddon Campaspe region.

Important sites on the land of the Wotjobaluk, Jaadwa, Jadawadjali, Wergaia and Jupagalk people occur along the Wimmera River, including between the Yarriambiack Creek head through to the northern end of Lake Albacutya. Lake Hindmarsh, or Gurru, and Lake Albacutya, or Ngalpakatia/Ngelpagutya, are important sites. Wirrengan Plain and Lake Buloke are important heritage sites with a history of social and economic activity. There are numerous heritage areas within Little Desert National Park, Big Desert Wilderness Park, and Wyperfield National Park Heritage, where sites such as shell middens, oven mounds, scar trees and artefacts can be found.

This information was gathered using publicly-available information (Aboriginal Victoria n.d., Barengi Gadjin Land Council n.d., Barengi Gadjin Land Council 2017, Dhelkunya Dja Land Management Board n.d., Dja Dja Wurrung Clans Aboriginal Corporation n.d., Taungurung Land and Waters Council n.d., Yorta Yorta Nation Aboriginal Corporation 2012, Yorta Yorta Nation Aboriginal Corporation n.d.).

Soil health

The Wimmera Southern Mallee region features a range of soil types and is used mainly for agricultural production, mostly broad acre cropping. Soil erosion and soil health decline are an issue in the Wimmera Southern Mallee region, caused by a poor match of land use to capability and land class (e.g. slope, soil type) (State Government of Victoria 2014b). Declining soil health may have impacts on agricultural productivity and land use.

The region has a higher risk of erosion than other parts of Victoria given the bare soils in dryland production areas. Dry conditions in recent years have increased the likelihood of soil erosion, with a risk level higher than at the end of the Millennium Drought (VCMC 2017).

Sodic subsoils with high sodium content are widespread throughout the Wimmera catchment, which can cause waterlogging, subsoil erosion, gully erosion and compacting (Wimmera CMA 2013). Wimmera catchment soils are also naturally saline. Soil in the Wimmera Upper Catchment are naturally susceptible to water erosion, while the Northern Plains are susceptible to wind erosion.

The knowledge of the extent and severity of salinity are poor in Victoria (CES 2013). However generally speaking, western Victoria is more severely affected by salinity than eastern Victoria, largely because it is flatter and poorly drained, and also because conversion of native vegetation to agriculture has been much more extensive in western Victoria (CES 2013). The spread of dryland salinity in Victoria slowed or receded in many areas during the Millennium Drought due to lower groundwater tables however, the area impacted by salinity would likely increase in the event of a return of wetter conditions (CES 2013).

6.2.2. Natural resources

Mineral resources and forestry

Post-European settlement, the main mineral resource in the Wimmera Southern Mallee region has been gold, with mining concentrated in the Northern Grampians Shire. The region also contains around 75 per cent of Victoria's mineral sands deposits by area (State Government of Victoria 2016b). Mineral sands are concentrated in the western and northern areas. The Douglas deposits nears Horsham were mined between 2006 and 2012 and mineral sand mining is planned near the northern border with the Mallee region (State Government of Victoria 2014b).

The region also features a number of quarries which produce a wide range of materials including sand, limestone, scoria, tuff, basalt/bluestone and gypsum (State Government of Victoria 2014b).

The Wimmera Southern Mallee region does contain areas of state forest, however, there is very little harvestable timber (State Government of Victoria 2016b).

Renewable energy

The Wimmera Southern Mallee region has a notable potential for solar energy generation. However, the region's renewable energy development has been predominantly focussed on wind, bioenergy and hydroelectricity to date. Murra Warra Wind Farm, located approximately 30 kilometres north of Horsham, is under construction and is Stage 1 is expected to provide a capacity of 226 MW (AusNet Services n.d.). The Wimmera Southern Mallee region to the north of Horsham has high potential for solar energy and several potential sites for solar farms have been identified, though none developed. Potential geothermal resources have also been identified in the western areas of the region which could provide a significant portion of base load energy. However, exploration is costly and little information about Victoria's geothermal resources is available (State Government of Victoria 2014b). Wind monitoring studies indicate that the development of an 80-turbine wind farm aligned with the main electricity line between Mildura and Horsham has potential.

6.2.3. Biodiversity

Tree cover is used as one proxy for biodiversity by the Victorian Catchment Management Council (VCMC) in their 5-yearly Catchment Condition and Management Report. By this measure, biodiversity across the Wimmera Southern Mallee region is generally low with tree cover approximately 17-20 per cent across the region (VCMC 2017). The low levels of tree cover reflect clearing for agriculture and the region's large proportion of grasslands. In recent years, dry conditions have caused a reduction in revegetation rates and native grassland condition, and also in weed invasion (VCMC 2017).

Tree cover is mostly contained in the Grampians (Gariwerd) National Park, Little Desert National Park and other parks. The Wimmera Southern Mallee Regional Growth Plan reports that these parks and public land are highly bio-diverse (State Government of Victoria 2014a).

The Wimmera Catchment Management Authority (Wimmera CMA) manages most of the Wimmera Southern Mallee region. The Wimmera CMA assessed the condition of biodiversity as 'largely neutral'. In its 2015-16 annual condition report, the Wimmera CMA reported limited change in overall biodiversity. Small losses to biodiversity have occurred on private farming land and drought conditions have reduced both native and invasive plant spread (Wimmera CMA 2016).

6.2.4. Water

Hydrology and waterway condition

The Wimmera Southern Mallee region is part of the Murray-Darling Basin and has one main river catchment, the Wimmera River. Major hydrological features include fourteen wetlands as well as waterways in state and national parkland:

- From the south, the Wimmera River flows north by west through the Southern Grampians and through Horsham.
- In the south, the Glenelg River reaches into part of the Wimmera Southern Mallee region.
- The Rocklands Reservoir, which borders the Wimmera Southern Mallee region, is a key storage system and holds environmental water which is split north into the Wimmera River and south into the Glenelg River.
- Throughout the Wimmera Southern Mallee region, a number of ephemeral natural waterways are used for water movement.

The Wimmera Southern Mallee region largely corresponds with the boundaries of the Wimmera CMA. The Wimmera Southern Mallee region also overlaps with the Mallee CMA in the north, a small region of the North Central CMA in the east, and a very small portion of the Glenelg Hopkins CMA in the south (Figure 58).

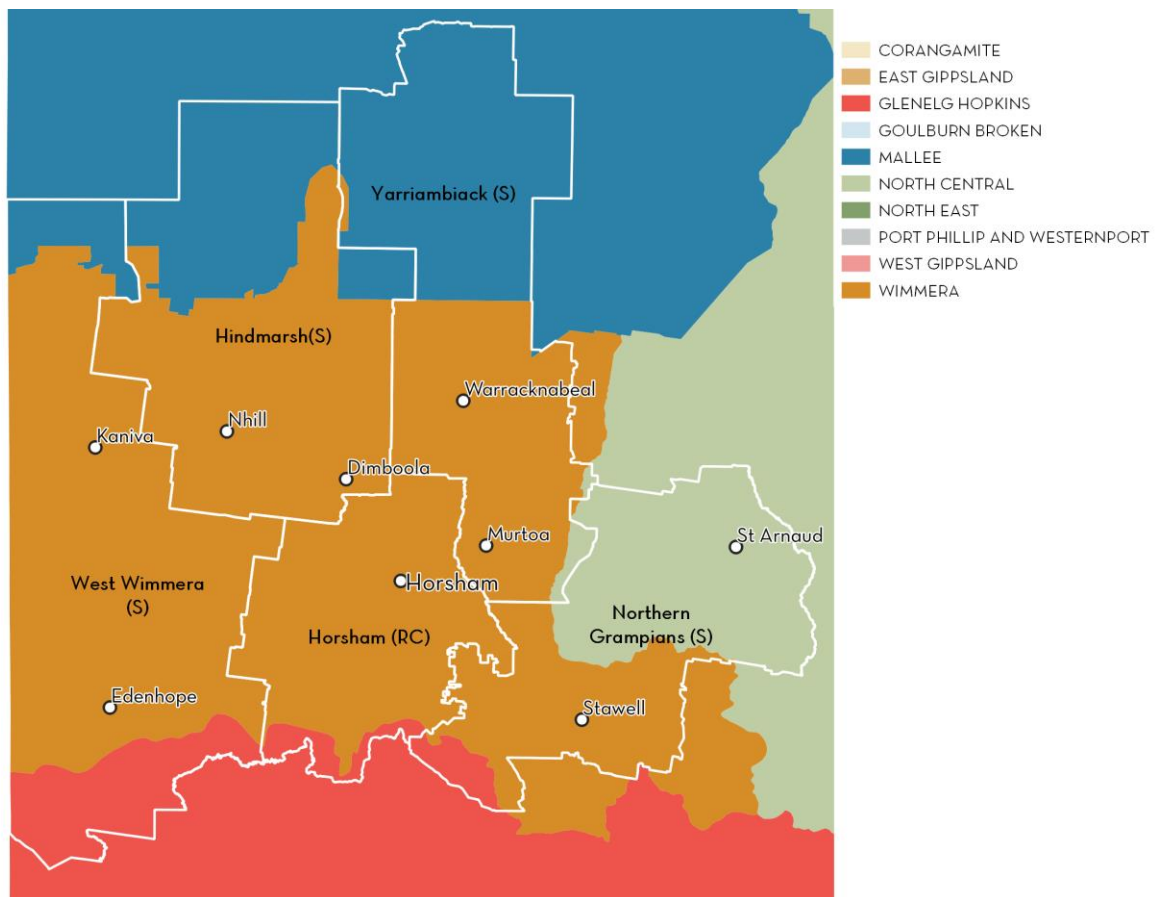
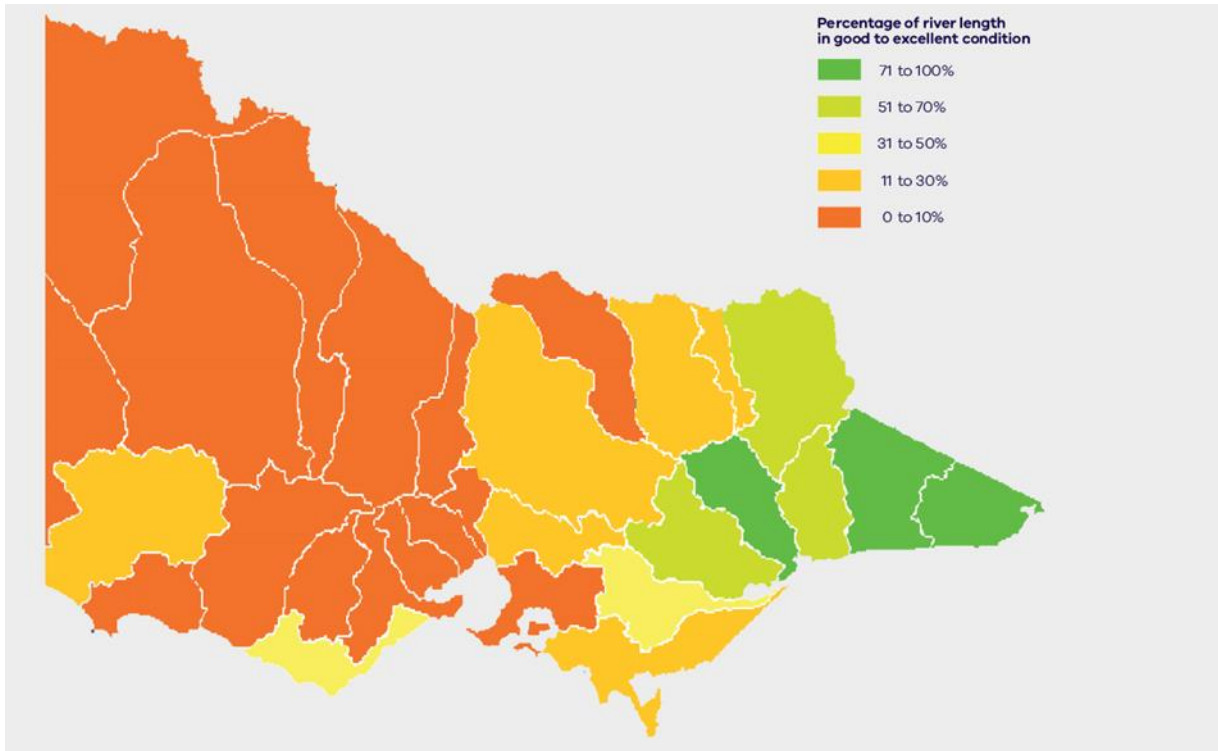


Figure 58 Catchment Management Authority boundaries in Wimmera Southern Mallee region

The catchment areas within the region are used to supply water for agriculture, domestic and other purposes. Domestic supply includes water for Horsham, the main regional centre, and many small towns. Water is sourced from groundwater and surface water in the Wimmera Southern Mallee and neighbouring regions, including supply catchments for South Australia (State Government of Victoria 2014b). Water for urban use is mostly supplied by surface water from within and outside of the region, and the western area relies on groundwater reserves for urban and rural supply.

More broadly, the condition of natural waterways and wetlands across the region have been heavily impacted by past land use (clearing and agriculture), resulting in poor condition, particularly when compared with eastern Victorian waterways (Figure 59).

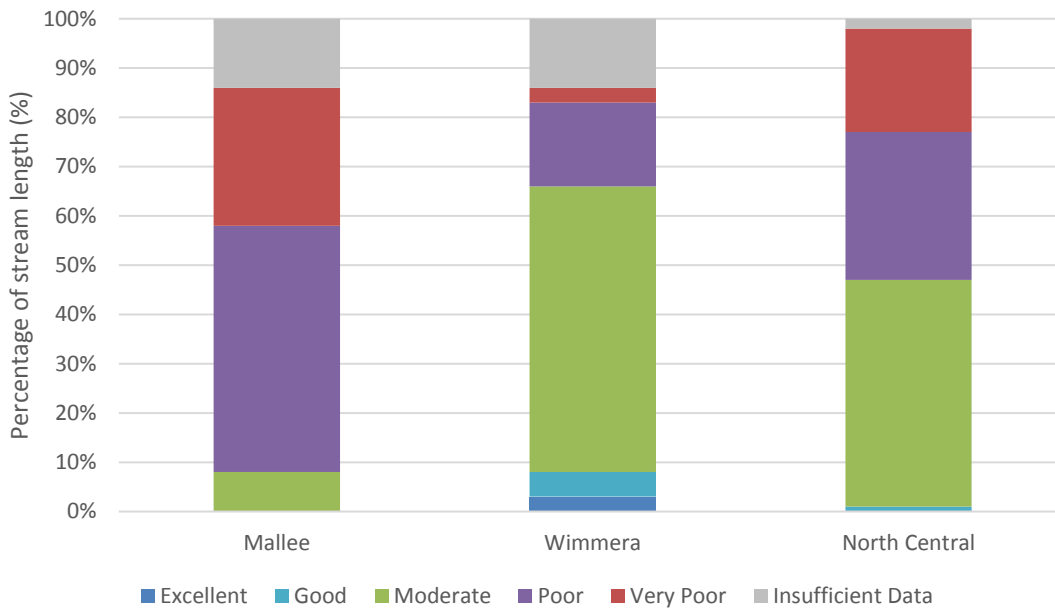


Source: State Government of Victoria 2016a.

Figure 59 Waterway health in Victoria

The last Index of Stream Condition was conducted in 2010 and found that stream reaches in the Wimmera Southern Mallee region are mostly in moderate, poor or very poor condition (Figure 60) (DELWP 2010). In the northern Grampians (Gariwerd) National Park some river reaches are in good or excellent condition. Streamflow for the Wimmera Basin declined significantly from 2010-11 to 2014-15, partially as a result of flooding in 2010-11 (VCMC 2017). Environmental water¹¹ is held for both the Wimmera River and Glenelg River (VEWH n.d.).

¹¹ Water that is held and managed for the purpose of achieving environmental outcomes.



Source: VCMC 2017.

Figure 60 Stream condition of CMA regions in the Wimmera Southern Mallee

The Wimmera Southern Mallee region contains fourteen wetlands that are listed as nationally important under the Commonwealth’s *Environment Protection and Biodiversity Act 1999*. The largest of these are Lake Hindmarsh and the Ramsar-listed Lake Albacutya (Figure 61). While the wetlands are generally in good condition they are highly isolated and surrounded by private land used for agriculture, which is reflected in the poor condition for the wetland catchment.



Source: Victorian Auditor-General 2016.

Figure 61 Ramsar listed sites in Victoria

The Department of Environment, Land water and Planning (DELWP) found that Lake Albacutya and the wetland catchment were in moderate condition overall in 2012 (DSE 2012). The water properties, soils and physical form were in excellent condition. Vegetation and hydrology were found to be in very poor condition, which reflects reduced flooding frequency due to river regulation, extraction for consumptive purposes and drought. The Wimmera Mallee Pipeline has enabled a larger environmental water entitlement for the Wimmera River system. The reduced inflows predicted under climate change may limit the hydrological condition of Lake Albacutya (DSE 2012).

Urban water supply and water security

Urban water supply across the Wimmera Southern Mallee region is supplied by Grampians Wimmera Mallee Water (GMMWater). GMMWater has recently completed the Urban Water Supply Strategy that articulates the outlook for, and actions required to ensure water supply security over a fifty-year horizon. The Wimmera Mallee Pipeline was a substantial infrastructure investment to improve water security and efficiency and connects approximately 7,000 rural customers and 26 towns across the region (GMMWater 2018). Water supplies for urban use in the Wimmera Southern Mallee region are supplied by surface water from within and outside the region (State Government of Victoria 2014b). The Wimmera Southern Mallee region also relies on large groundwater supplies for urban and rural supply to the western parts of the Wimmera Southern Mallee region, which is of varying quality (Wimmera CMA 2013).

Urban water security reflects the balance between demand for water and available supply, each of which is impacted by a number of factors over time. The resulting uncertainty when forecasting future urban water security is addressed through scenario planning. The scenarios – which consider the implications of population and climate change, among other factors – indicate the possible timeframe over which intervention or investment might be required under a range of plausible conditions.

Most water supply systems inherently have some level of vulnerability to infrequent and severe drought conditions that arise from time to time, for which Drought Preparedness Plans are prepared and implemented to ensure water supplies can be maintained over short periods of relative water scarcity. More substantial upgrades to system infrastructure are triggered when forecasts of demand and supply over time suggest that levels of service can no longer be maintained.

The key challenge for water security in the Wimmera Southern Mallee region is climate change. The impacts of climate change are generally forecast to contribute to increasing uncertainty and reduced availability of water resources, which may cause tension between urban and irrigated agriculture demands.

The outlook for key urban water supply systems in the Wimmera Southern Mallee region includes the following:

- Murray System: demand in this system is historically far less than GMMWater's entitlement holdings in the Murray and Goulburn systems, which support the Northern Mallee Pipeline, Wimmera Mallee Pipeline and private pipelines. Population growth and urban demand projections are likely to remain relatively stable for Murray-supplied towns, indicating continued urban water security over the 50-year planning horizon. Future demand from recreation lakes and the South West Loddon pipeline will increase demand on existing entitlement and reduce the current level of security for existing users. Supply security is dependent on the level of carryover to balance supply and demand in dry years when surface water supply varies (GMMWater 2017).
- Grampians Supply System: current levels of demand for water from the Wimmera Mallee Pipeline (urban, rural and industrial) can be met in all years and under all climate scenarios. Future reliability is more uncertain under climate change scenarios, although shortfalls are generally not forecast to arise until 2040 or later, indicating the need to monitor and adapt to the conditions that emerge. Carryover in the Grampians headworks system has been identified as the key tool for

managing multi-year security between dry periods when surface water supply varies (GMMWater 2017).

- Eastern Grampians and Pyrenees Systems: while these systems are not generally resource constrained, infrastructure (storage and pipelines between headworks) limits water moving within the system and therefore water security in dry periods. Options for addressing constraints are currently being investigated (GMMWater 2017).
- Groundwater towns: GMMWater supplies towns within a range of groundwater management areas with various levels of security. Technical assessment of resource lifespan was being undertaken in 2017 to inform augmentation planning and timelines. The groundwater licence for Harrow is insufficient for current needs and is supplemented by water trade (GMMWater 2017).

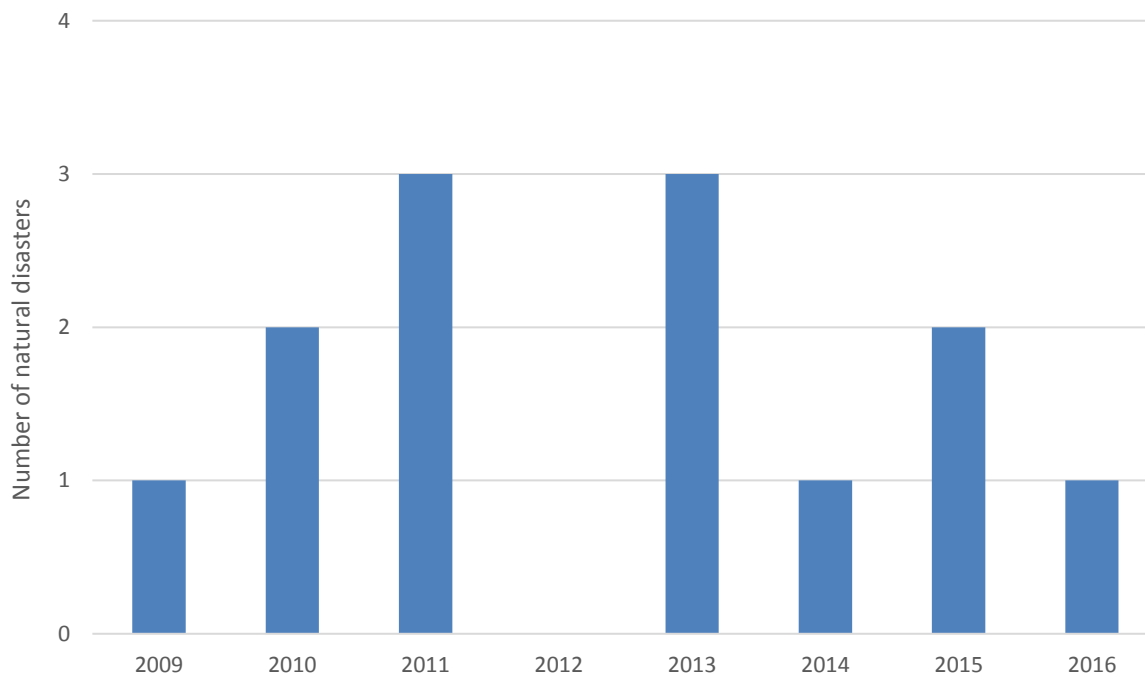
6.2.5. Natural hazards

Like all regions, there is a history of some natural hazards, predominately bushfires, with recent data indicating the occurrence of some form of damage in most years since 2009¹² (Figure 62).

The Wimmera Southern Mallee region is not predisposed to high levels of natural hazards, however the region has been seriously impacted by flooding in the past. For example, the Grampians experienced major damage to important infrastructure in January 2011 (State Government of Victoria 2014b). Climate change forecasts show that high rainfall events may become more severe in the Wimmera Southern Mallee (State Government of Victoria 2014c).

While the region has not historically experienced high bushfire threats, conditions across the region are becoming drier and warmer, with droughts and bushfire events forecast to become more frequent. Fire conditions in warmer weather and reduced water availability in waterways pose a serious challenge for the Wimmera Southern Mallee region (State Government of Victoria 2016b). The region's older housing infrastructure also poses a risk in the event of increased bushfire incidence.

¹² This has been identified as any natural disaster which was eligible for receiving Federal funding for recovery. Eligible disasters are those where more than \$100,000 worth of damage has occurred across the extent of the disaster.



Source: Disaster Assist 2017.

Figure 62 Frequency of natural disasters in the Wimmera Southern Mallee region

The risks presented to land use from flooding and bushfires must continue to be considered in strategic and statutory planning decision making. These decisions should be based on the best quality information on hazards to minimise the risk to life, property, infrastructure and environmental assets. Flood extent mapping has been completed across the whole Wimmera Southern Mallee region, however more detailed modelling is required to understand the risks facing specific locations, such as managing urban growth at the Wimmera River floodplain at Horsham (State Government of Victoria 2014b). Existing flood risk assessments do not address recent climate change predictions that the intensity of storm and flood events will increase (State Government of Victoria 2014b).

6.2.6. Contaminated sites and pollution

The history of land use in the Wimmera Southern Mallee region has not led to a serious history of pollution and contamination in the region.¹³

As of March 2018, there are currently six sites in the Wimmera Southern Mallee region listed on the EPA’s Priority Sites Register, all in Stawell, reflecting its history of gold mining. These sites have been issued a Clean Up Notice pursuant to section 62A, or a Pollution Abatement Notice pursuant to section 31A or 31B of the *Environment Protection Act 1970* (EPA 2017). The current condition of these sites has been identified as incompatible with the current or approved use of the site and poses a risk to human health or the environment. Sites are removed from the Priority Sites Register once all conditions of a Notice have been complied with.

Examples of contamination / pollution issues experienced in the Wimmera Southern Mallee region include:

¹³ Recommendation 14.1 of the Inquiry in to the Environment Protection Authority (available: <http://epa-inquiry.vic.gov.au/epa-inquiry-report>) identifies: *The Department of Environment, Land, Water and Planning develop a comprehensive statewide database of sites that pose a high risk to the community because of their past use, which should link to other relevant government data sources including information held by the EPA.*

- dumped industrial waste in Stawell
- current petroleum storage in Horsham
- historical deposit of mine tailings in Stawell.

A detailed list of current Priority Sites can be found on the EPA Priority Sites Register.

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