

LODDON MALLEE NORTH REGIONAL GROWTH PLAN



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EXECUTIVE SUMMARY

This Loddon Mallee North Regional Growth Plan details a regional approach to land use planning across the five municipalities of Buloke, Campaspe, Gannawarra, Mildura and Swan Hill. The plan identifies opportunities to encourage and accommodate growth and address challenges over the next 30 years, building on the directions of the Loddon Mallee Regional Strategic Plan – Northern Region (2010). The plan has been developed to achieve the following vision for the region:

In 2041, Loddon Mallee North has built on its strengths to become a thriving Australian region. It has cultivated its environmental credentials to emerge as a prosperous place of choice for people to live, work, visit and invest. It has become renowned for:

- ***its produce and innovation in areas such as renewable energy***
- ***custodianship of distinctive environmental and cultural heritage assets***
- ***being a key contributor to national pride in a healthy, iconic and celebrated Murray River.***

The economy of Loddon Mallee North has been driven by its competitive advantage in agriculture and strategic location on national road and rail transport routes. The region is facing a period of change. Water policy reform and investment in irrigation renewal will drive change in the irrigation sector. Climate change will provide both risks and opportunities for agriculture and other economic sectors and place pressure on communities to manage increased risk from flood and bushfire. The region's uneven population growth and ageing demographic needs to be accommodated, while increased housing choice, services and infrastructure are required.

This plan addresses these challenges by recognising assets of regional significance and establishing an integrated planning framework to direct and manage growth across the region. It establishes a regional policy to guide the use and protection of these assets and provides a high level of certainty and direction for investors, infrastructure and service providers, and community and decision makers.

With modest projected population growth, regional growth planning in Loddon Mallee North is focusing on providing a land use framework to underpin sustained economic growth, as well as addressing challenges arising from population change. There is a need to grow and diversify the region's economy and take advantage of value-adding opportunities, particularly for the agriculture, mining, alternative energy and tourism sectors. Areas of strategic significance for agriculture will be identified to support the region's aspiration to continue to be a nationally recognised food bowl.

The settlement framework for the region has been structured around five communities of interest: Mallee, Eastern Mallee, Buloke, Campaspe and Gannawarra and builds on existing settlement relationships and networks. These communities of interest acknowledge the strong interrelationships of the region's settlements with those in neighbouring regions and interstate. The projected population increase of 25,000 people by 2041 will be unevenly spread across the region and accommodated mainly in the regional city of Mildura, as well as the regional centres of Echuca and Swan Hill. A network of towns, including Kerang, Kyabram, Rochester, Donald, Birchip and Robinvale, provides affordable housing and employment opportunities. While some towns will experience little growth or population decrease, their importance as service centres for dispersed, remote rural populations will be supported.

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Economic development and future settlement patterns are planned to take advantage of existing infrastructure, servicing investment and capacity. Significant road and rail networks are identified to support the region's growth and facilitate access to markets and services within and beyond the region.

The plan is driven by eight guiding principles:

1. Align population and economic growth
2. Realise opportunities to strengthen and diversify the regional economy
3. Support and manage our rural landscapes
4. Be custodians of our region's environmental and cultural heritage assets and minimise the region's exposure to natural hazards
5. Protect and provide local sense of place
6. Develop a living network of towns
7. Enable healthy lifestyles
8. Strategically retain, renew and build infrastructure to support growth and enable healthy and supportive communities.

The land use planning future directions for addressing regional challenges and opportunities are summarised against four themes as follows:

Regional economy

- Facilitate vibrant and prosperous commercial centres and industrial hubs in the region's major urban centres that respond to changing population and markets
- Further diversify the primary production, service and manufacturing industries to support job creation, investment and value-adding to local products
- Protect key regional assets to ensure future prosperity, including those arising from strategically important rural land uses
- Maximise the local and regional benefits of emerging economic opportunities associated with future growth in mining, food production and energy

Environment and heritage

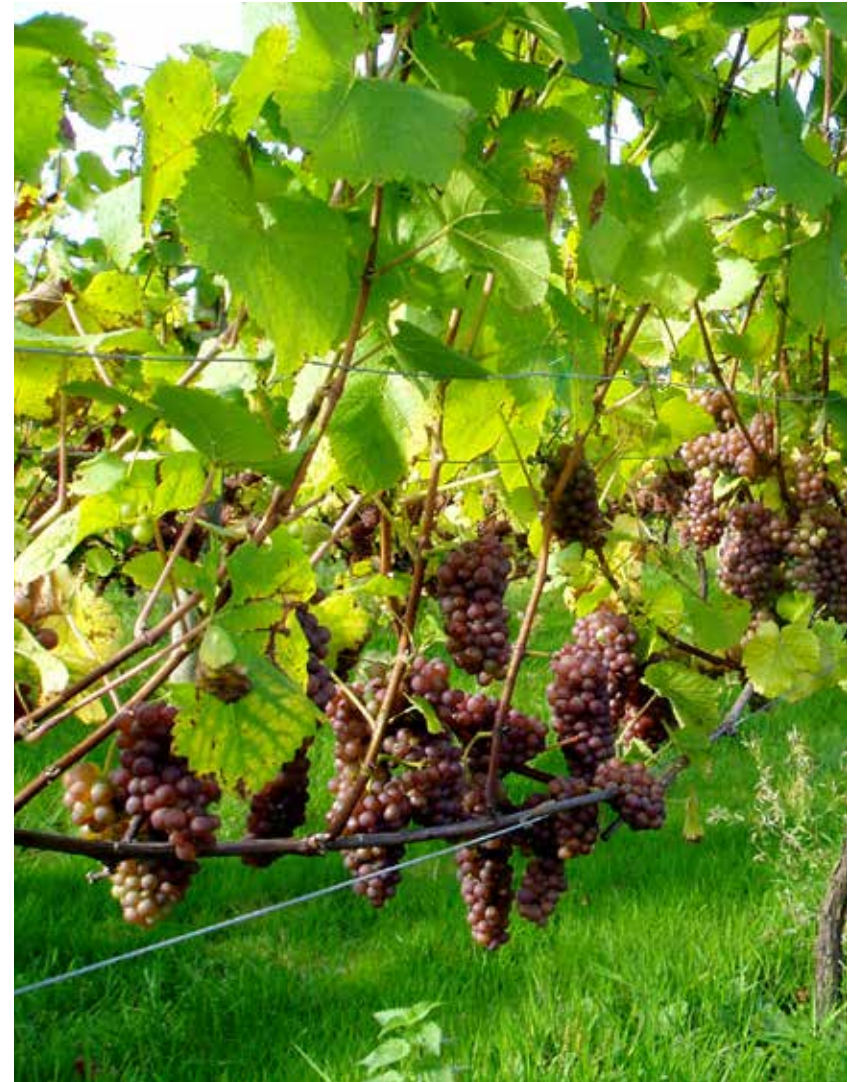
- Manage risks to Loddon Mallee North's community and economy from natural hazards
- Protect and improve the condition of Loddon Mallee North's environmental and cultural heritage assets to achieve the best outcome for the region's environment, economy and community
- Plan for and manage potential risks and opportunities arising from climate change and initiatives that support national and global action to reduce greenhouse gas emissions

Living in the region

- Direct major population and housing growth to existing regional cities and centres where infrastructure and services can be used in the most efficient, cost-effective and sustainable manner
- Improve linkages within and between Loddon Mallee North's five communities of interest
- Anticipate and respond to changing community needs to support growth and demographic change

Regional infrastructure

- Support health, education and sporting facilities to meet local needs and promote social inclusion and community cohesion
- Work with utility and service agencies to optimise access to gas, electricity, drainage, water, waste, sewerage and telecommunications to cater for the population and economic needs of the region
- Support road, rail and logistics upgrades to improve economic growth and accessibility



Vineyard, Robinvale



Langtree Avenue Mildura, image courtesy Mildura City Council

PART A | INTRODUCTION

1. What is a regional growth plan?

Eight regional growth plans have been developed to provide broad direction for land use and development across regional Victoria (refer to Map 1). They also provide more detailed planning frameworks for key regional cities and centres. The Loddon Mallee North Regional Growth Plan is the strategic regional land use plan for the Loddon Mallee North region comprising the following local government areas: Buloke Shire, Campaspe Shire, Gannawarra Shire, Mildura Rural City and Swan Hill Rural City.

Increasing the growth of regional Victoria will help improve the state's competitiveness by strengthening regional labour markets, expanding markets for local goods and services and providing a greater diversity of affordable housing and employment opportunities.

Regional growth plans, together with the new metropolitan planning strategy, *Plan Melbourne*, have been aligned in a way that builds on the interdependence of our urban settlements and facilitates their development as a networked 'state of cities'. Unlocking the growth potential of these cities – so they can accommodate a greater proportion of the state's future growth, with good transport connections between them and Melbourne – will create a state of cities where there are greater choices for people about where to live, work or start a business. It is likely that demand for housing in regional cities and centres would be accelerated in the future with the imposition of a permanent growth boundary around Melbourne.

Regional growth plans respond to directions established in regional strategic plans (originally known as regional plans). These plans were prepared across regional Victoria between 2007 and 2010.

The Loddon Mallee Regional Strategic Plan – Northern Region (2010) identifies the most important issues facing the region and presents a framework for working together. It looks at ways to maximise opportunities and manage future growth and change in a way that strengthens the economy, helps people thrive and protects the region's rich natural and cultural heritage.

The strategic directions identified in the Loddon Mallee Regional Strategic Plan – Northern Region (2010) informed the vision and principles of this plan. The strategic directions include:

- Balance our irrigation, amenity and environmental water needs
- Strengthen our settlements and communities, especially our small towns
- Strengthen and diversify our economy
- Improve our infrastructure
- Improve education and training outcomes
- Protect and enhance our natural environment
- Resolve our cross-border issues.

This plan supports the Loddon Mallee Regional Strategic Plan – Northern Region (2010) by providing a land use planning policy framework that facilitates several strategic directions, priority actions and key initiatives identified in it.

Regional growth plans are the next stage in planning for growth and change in regional Victoria. They have been developed in a partnership between local government and state agencies and authorities. The regional growth plans reflect state and local government objectives.

These plans provide a long-term view of the region to 2041 and beyond, allowing for some short-term actions, and providing long-term strategic land use direction.

Map 1: The eight regional growth plans



Source: Department of Transport, Planning and Local Infrastructure

2. Why we need this plan

The regional growth plans translate and integrate emerging statewide regional land use planning policy. They provide the basis for regional coordination and planning of infrastructure to support regional land use objectives. This plan:

- establishes a framework for strategic land use and settlement planning that can sustainably accommodate growth
- identifies important economic, environmental, social and cultural resources to be preserved, maintained or developed
- provides direction for accommodating growth and change including residential, employment, industrial, commercial, agriculture and other rural activities
- identifies which areas of land can accommodate growth and which are to be maintained
- identifies opportunities for supporting regional level infrastructure, providing an essential contribution to the long-term sustainability of the region.

The plan provides a regional strategic land use framework for growth and change. It is a strategic direction-setting document, which identifies long-term land uses and growth objectives. It is not intended to be at a level where service planning or specific unquantified infrastructure could be committed. The plan will guide infrastructure decisions and provide priority for further investigations of regionally significant infrastructure.

Site-specific development proposals and processes are also outside the scope of this plan. The plan will provide solutions to common issues across the Loddon Mallee North region but will not reduce attention on local issues or replace local planning, for example, identification of future industrial and other employment locations or consistent regional approaches to matters, such as planning for key resources, waste, tourism and heritage.

3. How this plan will be used

The land use planning directions of this plan will be implemented through the state planning system by each council in the region to support decision making at a local level.

Implementation will occur in a number of ways, such as further specific amendments to planning schemes, preparation of infrastructure plans, land supply monitoring and other projects.

The plan will be used to guide and inform future land use planning work across the region, including subsequent reviews of each council's municipal strategic statement.



Citrus growing, image courtesy of Gannawarra Shire Council

4. How the plan was prepared

The plan has been developed through a series of issues papers, regional workshops and analysis of information provided by all partners in the process.

The development of the plan has been guided by a Project Steering Committee and Technical Working Group working in partnership with the five municipalities, and state government departments and agencies, including the Department of Transport, Planning and Local Infrastructure (which has replaced the Department of Planning and Community Development and the Department of Transport), the Department of Environment and Primary Industries, VicRoads, catchment management authorities, and water corporations.

The region and its local government areas are shown in Map 2.

The process for preparing the plan was as follows:

1. Project establishment
2. Prepare background issues paper
3. Establish the plan's strategic directions – public consultation
4. Prepare draft regional growth plan – public consultation
5. Prepare final regional growth plan.

A background report sits as a companion to this plan. The background report contains additional information which was used to inform the development of this plan. The background report is available on the Department of Transport, Planning and Local Infrastructure website: www.dtpli.vic.gov.au/regionalgrowthplans



Sheep shearing, image courtesy of Gannawarra Shire Council

Map 2: *Loddon Mallee North region*



Source: Department of Transport, Planning and Local Infrastructure

5. Components of this plan

This plan is made up of five parts:

A: Introduction

Provides an overview of the context of the plan and how it was prepared.

B: Regional overview

Provides a snapshot of the region, including its strategic assets, current trends affecting economic and population growth, drivers of change and challenges for growth. It sets out a vision for the region and principles for growth to achieve the vision.

C: Towards the regional growth plan — Regional land use framework

Outlines land use planning issues for the Loddon Mallee North region as well as responses or approaches to these in the form of future directions. These are divided into the following topics: regional economy; environment and heritage; living in the region; and regional infrastructure. They explain the logic behind the outcomes in Part D: Regional growth plan.

D: Regional growth plan

Building on the future directions outlined in Part C, the plan provides an integrated strategic land use plan to manage growth and change across the Loddon Mallee North region until 2041.

E: Delivering regional growth

Outlines how the plan will be implemented and progress monitored.

Solar energy, image courtesy of Mildura Development Corporation





PART B | REGIONAL OVERVIEW

This part of the plan provides a broad overview of the Loddon Mallee North region, including drivers of growth and change, land use challenges facing the region and a vision statement outlining a desired future for the region.

6. Snapshot of the region

The regional economy is heavily concentrated around two significant industries, agriculture and manufacturing. The key features of the economy are:

- In 2011, agriculture and manufacturing comprised 34 per cent of the Gross Regional Product.
- Manufacturing in the region is particularly dependent on inputs from the agriculture sector – in 2011, food product manufacturing and beverage manufacturing made up 65 per cent of the manufacturing sector in Loddon Mallee North.
- Population driven sectors, such as construction, healthcare and retail trade, are also significant sectors.
- The finance and insurance services sector and the health care and social assistance sector are among the top five industries in the region.

The region's economy is based on irrigated and dry land farming and is recognised as being part of the Murray Darling food bowl of Victoria. Other industry sectors are strongly linked to agricultural production, including agricultural and transport equipment and advanced services in regional centres¹.

Geographic area and settlements

The Loddon Mallee North region extends to the far north-west corner of Victoria and covers more than 45,000 square kilometres or 17 per cent of the state. It lies north of the Great Dividing Range, where the

Victorian landscape becomes a vast floodplain draining to the nationally significant Murray River (see Map 3).

Loddon Mallee North has a 'Mediterranean' climate that is noticeably warmer and drier than Melbourne and the rest of the state, being both inland and within the 'rain shadow' of the Great Dividing Range. The region comprises the northern most parts of Victoria, with the regional city of Mildura nearly as far north in latitude as Sydney.

Around one-third of the region comprises public land, and along with strong ties to the Murray River, the region contains areas of environmental and cultural heritage significance including: extensive River Red Gum forests and native grasslands on both public and private land; distinctive wetland complexes; significant Aboriginal cultural heritage; and historic heritage places from a legacy of nationally significant river trade and innovative irrigation schemes.

Loddon Mallee North directly borders two other states, New South Wales to the north, with the Murray River forming the state boundary, and South Australia to the west. The region has direct functional, economic and social links with these adjoining states.

In other areas, Loddon Mallee North has strong relationships with adjoining Victorian regions. For example, Buloke Shire, sitting further south and inland of the Murray River, has strong relationships with the Wimmera Southern Mallee region, while Campaspe relates strongly to the Hume region as well as Bendigo. These relationships are recognised both in this plan and in the three adjoining regional growth plans for Loddon Mallee South, Wimmera Southern Mallee and Hume.

¹ Department of Transport, Planning and Local Infrastructure (2014) Loddon Mallee North Regional Growth Plan Background Report.

PART B | REGIONAL OVERVIEW

Map 3: Links to surrounding regions



People and population growth

The three large urban centres on the Murray River, Mildura, Swan Hill and Echuca, are where most people live in the Loddon Mallee North region. This pattern is intensifying with population growth in the regional city of Mildura, which includes the surrounding small settlements of Red Cliffs, Irymple and Merbein, and the regional centres of Swan Hill and Echuca, greatly outstripping any increases in inland towns and rural settlements.

These urban centres also provide higher order services to the wider region within Victoria, as well as parts of New South Wales and South Australia.

Overall population growth in the region has been relatively modest in recent years, increasing by 5000 people from 2006 to reach 134,314 in 2011 (refer to Table 1). This slow but steady growth rate is expected to continue, with the population projected to increase by approximately 25,000 people to around 160,000 people by 2041. Growth will continue to be unevenly distributed across the region with most growth occurring in Mildura, Swan Hill and Echuca.

Some places have experienced population decreases over the past decade. Between 2006 and 2011 Gannawarra Shire, which does not have a large urban centre, experienced Victoria's greatest proportional population decrease, dropping 1.7 per cent².

Table 1: Population projections

Local Government Area	Total population		
	2011	2021	2031
Buloke	6925	6779	6519
Campaspe	38,981	40,305	45,541
Gannawarra	11,467	11,479	11,288
Mildura	54,666	60,325	64,288
Swan Hill	22,275	23,524	24,448
Total population	134,314	143,997	152,085

Source: Department of Planning and Community Development, Victoria in Future 2012

2 and 3 Department of Transport, Planning and Local Infrastructure (2014) Loddon Mallee North Regional Growth Plan Background Report. 4 Throughout this document the term 'Aboriginal' is used to refer to both Aboriginal and Torres Strait Islander people. Use of the terms 'Koori', 'Koorie' and 'Indigenous' are retained in the names of programs and initiatives and, unless noted otherwise, are inclusive of both Aboriginal and Torres Strait Islander peoples. 5 Department of Planning and Community Development (2011) Change and Disadvantage in Loddon Mallee Report.

Outside the region's main urban centres, the average age of the population is increasing at a faster rate than the state average³.

The region has a relatively diverse community profile. There is a strong Aboriginal⁴ community, especially in and around Robinvale. There are also many people from Mediterranean backgrounds who migrated to the region as a result of the expansion of irrigation and fruit growing in the 20th century. More recently, Polynesian and Middle Eastern populations have established in Swan Hill.

The region features clusters of highly mobile groups associated with seasonal and transient workforces in the fruit growing and mining industries, as well as movement within the Aboriginal population, particularly along the Murray River. These groups are not necessarily accurately reflected in Census data, but are considered in this plan nonetheless.

There are areas of significant social disadvantage in Loddon Mallee North when compared to the Victorian average and other regions. Disadvantage includes lower school completion rates, lower rates of tertiary education and lower average income. Disadvantage is further compounded by relative isolation and the challenges prompted by population change and uneven growth⁵.

Growth in Loddon Mallee North

With modest projected population growth, regional growth planning in Loddon Mallee North is focusing on providing a land use framework to underpin sustained economic growth, as well as addressing challenges arising from population change. To enable a more prosperous and liveable future for the Loddon Mallee North community, this plan addresses growth in terms of:

- managing population growth and change
- attracting sustainable investment, industry growth and facilitating long-term job creation
- enabling access to services to support local people into the future.

Communities of interest

A fundamental feature of the existing settlement pattern in Loddon Mallee North region is five distinct communities of interest: Mallee, Eastern Mallee, Gannawarra, Campaspe and Buloke (see Map 7). Planning for growth in Loddon Mallee North needs to acknowledge and respond to variations throughout the region arising from its scale and communities of interest.

The regional city of Mildura supports and services a large catchment that crosses two state boundaries. In the southern parts of the region, settlement patterns are more complex and the regional centres of Swan Hill and Echuca provide higher order functions within a network of smaller towns and more dispersed rural settlements, including Kerang, Cohuna, Rochester and Wycheproof.

Beyond these regional centres, the regional cities of other regions, such as Bendigo, Shepparton, Ballarat and Horsham, provide higher order services. In addition, some settlements in Campaspe Shire function as dormitory towns to regional cities and centres including Echuca, Shepparton and Bendigo. Planning for Loddon Mallee North needs to consider the influence of external centres on the growth and services and housing choice of settlements within the region.

Parts of the region along the Murray River are influenced by settlements on the New South Wales side of the river and in some instances these settlements are part of cross-border twin town settlements such as Echuca-Moama, Robinvale-Euston, Koondrook-Barham, and Mildura-Wentworth-Gol Gol-Buronga-Dareton. These settlements do not function in isolation from each other. They provide services and facilities to communities on both sides of the river.

Both New South Wales and Victoria are undertaking settlement planning to address challenges and opportunities relevant to settlements along

the Murray River corridor. Proposed strategic directions and preliminary strategies, including Victoria's draft Murray River Settlement Strategy (Department of Planning and Community Development 2012) have been considered in the development of this plan.

Economic growth

Loddon Mallee North forms part of a nationally acknowledged food bowl region and is a major producer of fruit, wine, nuts, vegetables, dairy products, cereals, meat and wool. After farming, the main industry sectors are manufacturing, such as food processing, construction and service provision⁶.

Mineral sands and other extractive mining have also developed throughout the region and have become a driver of new freight rail investment and infrastructure. Industry output totalled \$13.8 billion in 2011. Manufacturing accounts for the largest share of total economic output with \$4 billion, followed by the Agriculture, Forestry and Fishing (\$2 billion) and Rental, Hiring and Real Estate Services (\$1 billion) sectors.

As the region's economy is dependent on primary production, it is highly exposed to global economic forces such as fluctuations in export prices. For this reason, the Loddon Mallee North region's economy is one of the most globally linked and affected parts of Victoria.

While agriculture as a proportional share of the region's economy is expected to decrease slightly over time, it will still remain dominant and require a more skilled and flexible workforce. Regional job growth is expected to come from the development of other more labour-intensive economic sectors, such as retail, health, education, manufacturing and construction⁷. This will require a shift in regional labour skills to enable people to capitalise on these new opportunities.

⁶ Regional Development Victoria (2012) Regional Economic Profile, Loddon Mallee North.

⁷ Regional Development Victoria (2010) Loddon Mallee Regional Strategic Plan - Northern Region.

Environmental and cultural heritage assets

The Loddon Mallee North region is host to significant environmental and cultural heritage assets, including areas of public land, as well as many assets on private land. Environmental assets have multiple values beyond supporting natural systems and processes. They also provide high value amenity and liveability, underpin the region's economy and continue to attract people to the region to live, work and visit.

The history of the region can be summarised by events and stories belonging to the continuing culture of Aboriginal people, nationally significant river trade, the evolution of massive irrigation schemes, and a highly transformed landscape. Woven into the region's irrigation story are the influences of closer agricultural settlement and increasing agricultural productivity, combined with growing social and recreational attachment to the lakes and waterways that occur naturally, but may be influenced by irrigation. These assets need to be considered as part of any economic and settlement growth proposed for the region.

The Loddon Mallee North region's cultural heritage is expressed in two contrasting landscapes that reflect land use and settlement patterns:

- The Murray River and associated tributaries, the Campaspe, Loddon and Avoca rivers, floodplains and wetlands, support a diverse and distinctive network of settlements, a highly productive agricultural industry and a rich Aboriginal cultural heritage and historic heritage, including river trade and irrigation development.
- The dispersed settlements and agriculture of the Mallee reflect the sandy dunes and swales of the ancient inland sea and climate. Within this landscape, vast areas of public land contain important environmental and cultural heritage assets and productive agriculture.

Transport access and infrastructure

Transport networks are enablers of the regional economy. These important networks enable transfer of goods and commodities into, from and through the region to domestic and international markets. Road, rail and air transport and Murray River crossings are not only important to the regional community, but also across the broader Murray Darling Basin region. Key transport infrastructure includes the Calder, Mallee, Sunraysia, Northern, Murray Valley and Loddon Valley highways, passenger and freight rail services and Mildura Airport.

Providing water for irrigation and for human consumption is essential. The quality of water resources has a major impact on human health and the production of food. Therefore, the provision of infrastructure in Loddon Mallee North and the protection of assets are critical to maximise growth.

Relationship with other regions

The Loddon Mallee North region has strong links with its neighbouring Victorian regions, particularly Loddon Mallee South, Wimmera Southern Mallee and Hume. There are shared communities of interest, agricultural landscapes and production between these regions, as well as shared movement of people and goods.

Links to the Loddon Mallee South region are through existing rail transport connections from Bendigo to Echuca and Swan Hill. There are also road and freight corridors linking the three regions. Loddon Mallee North settlements have strong relationships with larger centres outside the region, including Bendigo, Horsham and Shepparton, which provide employment and services to settlements in the region.

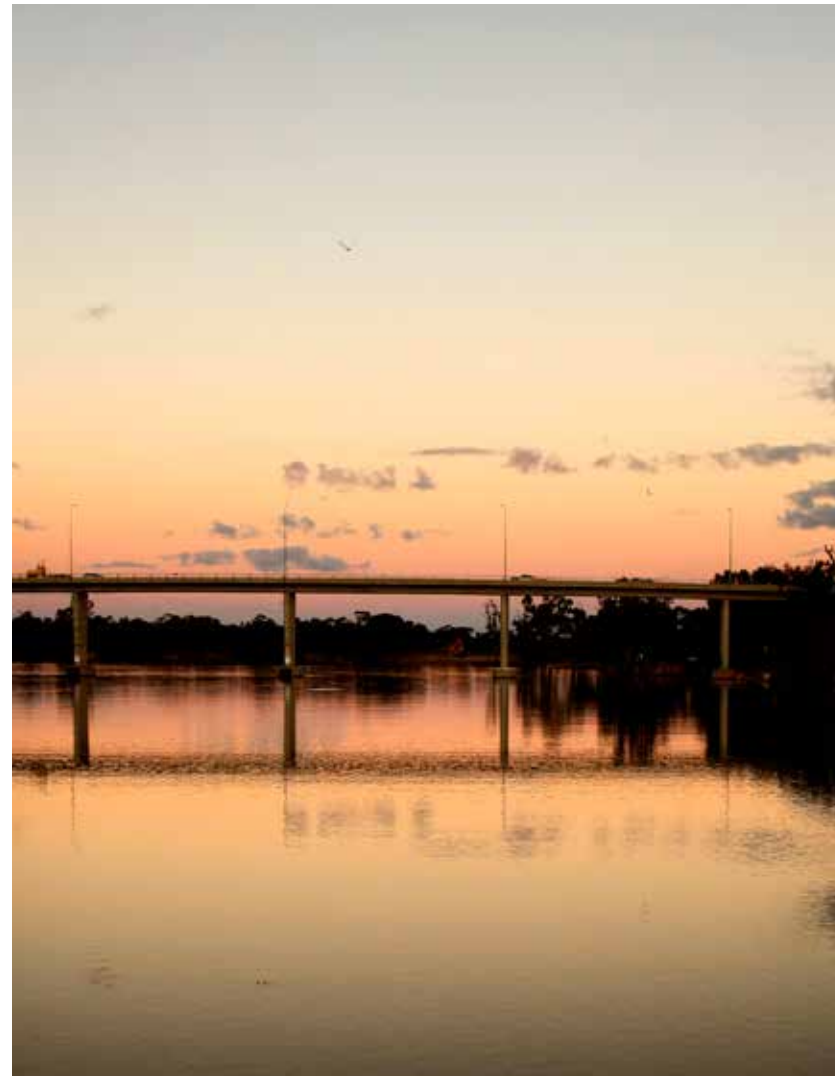
Loddon Mallee North's communities of interest also have strong relationships with settlements and communities in New South Wales and South Australia. The economies and communities of twin towns are interlinked, with many shared services and facilities on both sides of the Murray River.

Mildura Airport is an important entry point and connection from capital cities throughout south-eastern Australia to north-west Victoria, south-west New South Wales and north-east South Australia. The accessibility offered by the airport provides greater opportunities to link the region's economy and employment with that of capital cities.

6.1 Strategic assets

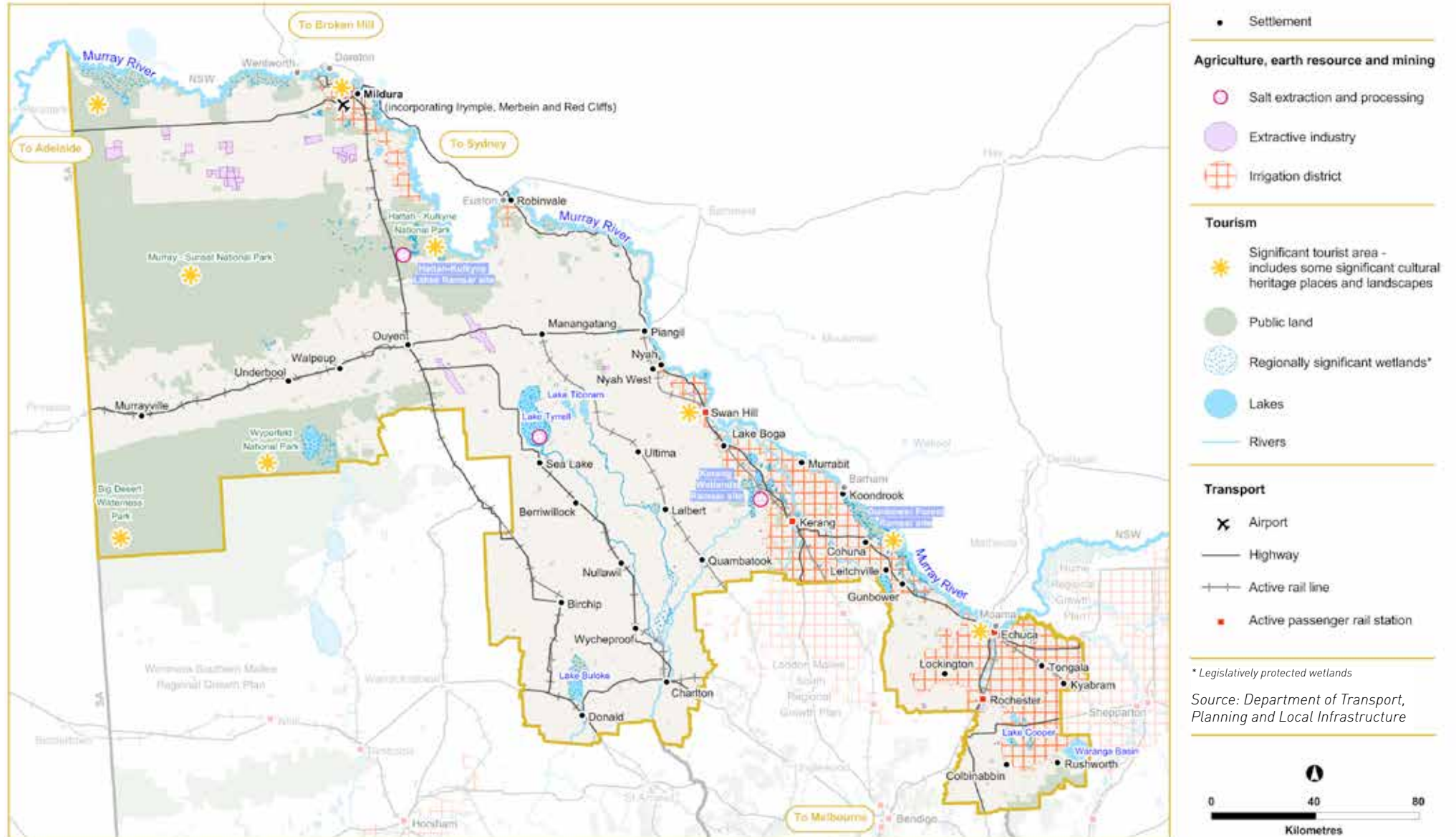
This plan builds on the Loddon Mallee North region's strategic assets, namely environmental, natural resources, cultural, social, infrastructure and economic, to support and manage future growth. Map 4 shows the key strategic assets including:

- the Murray River corridor, for its Aboriginal cultural heritage and historic heritage and environmental assets, and importance to the agricultural industry and communities that it supports
- the regional city of Mildura located at the border of Victoria and New South Wales and the intersection of major transport routes, making it a strategic location for business
- the agricultural industry, including significant irrigation infrastructure, food processing industry and natural resources, such as mineral sands deposits, salt deposits, solar reliability and geothermal resources
- significant national parks, including the Murray-Sunset, Hattah-Kulkyne, Wyperfeld and Gunbower.



Murray River at Mildura, image courtesy of Mildura Development Corporation

Map 4: Strategic assets





Harvest, Buloke Shire, image by James Goldsmith

7. Drivers of change

Loddon Mallee North region is facing a number of challenges and opportunities that will affect the future economy, environment, communities and opportunities for growth. These drivers of change have been identified by research and input from the Loddon Mallee North Regional Growth Plan Technical Working Group and Project Steering Committee, and often have crossover or multiplier effects throughout the region.

Drivers of change range from global economic trends and impacts to more specific state and regional considerations. In summary the key drivers of change in the region include:

- expanding the role of the regional city of Mildura as a hub for higher order services and road, rail and air transport, connecting the region via state capital cities to national and international markets
- the continuing trend towards the concentration of population, employment and services into a few larger urban centres that provide opportunities and access to education, health and transport
- the region becoming an attractive alternative given the relative affordability of housing compared to Melbourne and larger regional centres, combined with the regional lifestyle, amenity and culture
- changes in economic sectors, particularly agriculture and mining, which influence employment and population movement within the region
- the potential impacts of climate change on settlements, including flood and bushfire, in a naturally hazardous landscape
- federal and state government policies are having a significant impact on growth, particularly water reform, with investment in significant infrastructure projects such as the Upper Gunbower Floodplain and Lindsay Island projects
- economic opportunities arising from the increasing viability of renewable and alternative energy including solar, geothermal and biofuels.

8. Challenges for growth

There is a range of challenges for growth in the region that this plan seeks to manage or address in part. These include:

- the uneven distribution of both population and economic growth across the region, and the need to support smaller communities
- ensuring land supply for employment and housing in appropriate locations
- adapting to the potential risks and opportunities associated with climate change
- protecting and enhancing the environmental, cultural heritage, social assets and natural resources of the region to grow the economy
- recognition and protection of the environmental values of Ramsar wetlands
- ensuring growth is supported where appropriate by sustainable reticulated or independent infrastructure services, such as water, power and waste disposal – recognising the historic diversity, transitioning of the economy and uneven growth distribution
- supporting residential and commercial growth in centres throughout the region enabling residents to access employment, education and services, including from dispersed settlements
- encouraging and supporting diversification of the economy, including agriculture and overcoming skills shortages
- supporting the renewal of irrigation infrastructure and responding to the associated restructure and social changes
- supporting cross-border planning in relation to efficient provision of land and infrastructure for settlements and industry
- safeguarding transport routes to support efficient freight and people movement and economic diversification
- maintenance and replacement of ageing infrastructure
- meeting the housing needs of a changing demographic profile in the context of low development demand and poor returns on housing investment, and the needs of a mobile and seasonal workforce
- managing the risks to settlements from natural hazards such as flood and bushfire.



Childcare centre, image courtesy of Department of Transport, Planning and Local Infrastructure

9. Vision for the region

To respond to the drivers of change and challenges for growth, and to build on the region's strengths and strategic assets, a vision for future land use in the Loddon Mallee North region has been established:

In 2041, Loddon Mallee North has built on its strengths to become a thriving Australian region. It has cultivated its environmental credentials to emerge as a prosperous place of choice for people to live, work, visit and invest. It has become renowned for:

- *its produce and innovation in areas such as renewable energy*
- *custodianship of distinctive environmental and cultural heritage assets*
- *being a key contributor to national pride in a healthy, iconic and celebrated Murray River.*

10. Principles to achieve the vision

Achieving the vision will be guided by the following principles:

Theme	Principles for growth	Future directions
Regional economy	1. Align population and economic growth <ul style="list-style-type: none"> Sustainable growth is encouraged to enhance the economic growth and development of the integrated network of settlements 	Facilitate vibrant and prosperous commercial centres and industrial hubs
	2. Realise opportunities to strengthen and diversify the regional economy <ul style="list-style-type: none"> Facilitate strategic opportunities for the growth of the region's economic base, including agricultural diversification, tourism and new industries 	Further diversify the primary production, service, manufacturing and tourism industries
	3. Support and manage our rural landscapes <ul style="list-style-type: none"> Strengthen farming and food production areas and optimise opportunities for economic growth and development of new industries Protect water resources and irrigation infrastructure to sustain growth for urban and rural areas 	Protect key regional assets Maximise the local and regional benefits of emerging economic opportunities
Environment and heritage	4. Be custodians of the region's environmental and cultural heritage assets and minimise its exposure to natural hazards <ul style="list-style-type: none"> Settlement growth and development will occur in sympathy with environmental and cultural heritage assets Celebrate the contribution of the environmental assets to the regional economy, liveability and attraction for visitors Minimise exposure of settlements to natural hazards 	Manage risks to growth from natural hazards Protect and improve the condition of environmental and cultural heritage assets Plan for and manage risks and opportunities arising from climate change and initiatives that support national and global action to reduce greenhouse gas emissions
Living in the region	5. Protect and provide local sense of place <ul style="list-style-type: none"> Enhance localities by retaining distinct urban areas 	Direct major population and housing growth to existing regional cities and centres
	6. Develop a living network of towns <ul style="list-style-type: none"> Strategically focus growth and development to maximise economic benefits and leverage Loddon Mallee North's five communities of interest Support coordinated planning with neighbouring regions and cross-border communities 	Improve linkages within and between Loddon Mallee North's five communities of interest Anticipate and respond to changing community needs
Regional infrastructure	7. Enable healthy lifestyles	Support health, education, cultural and supporting facilities to meet local needs
	8. Strategically retain, renew and build infrastructure to support growth and enable healthy and supportive communities <ul style="list-style-type: none"> Planning for growth is undertaken alongside planning and development of infrastructure to enable economic and settlement growth in strategic locations Plan for rural settlements to address local challenges and opportunities and be adaptable and resilient 	Provide access to gas, electricity, drainage, water, waste, sewerage and telecommunications infrastructure Support road and rail improvements



Langtree Avenue Mildura, image courtesy of Mildura Development Corporation



PART C | TOWARDS THE REGIONAL GROWTH PLAN — REGIONAL LAND USE FRAMEWORK

11. Regional economy

Future directions

- Facilitate vibrant and prosperous commercial centres and industrial hubs in the region's major urban centres that respond to changing population and markets
- Further diversify the primary production, service, manufacturing and tourism industries to support job creation and investment and value add to local products
- Protect key regional assets to ensure future prosperity, including that arising from strategically important rural land uses
- Maximise the local and regional benefits of emerging economic opportunities associated with future growth in mining, food production, energy and tourism

Overview

The Loddon Mallee North region's economy is driven by its competitive advantage in agriculture, the needs of a changing population and its strategic location on the Adelaide-Melbourne-Canberra-Sydney-Brisbane national freight routes, which link the capital cities of south-eastern Australia.

The agricultural industry has demonstrated resilience and capacity to adapt in the face of significant climatic, economic and policy challenges. These include completion of irrigation infrastructure renewal and modernisation, increasing productivity, maintaining and enhancing environmental sustainability, adapting to future climatic conditions, responding to the implementation of the Murray-Darling Basin Plan and remaining competitive in a global market.

As noted within Section 8 of this plan (Challenges for growth), while agriculture continues to be the backbone of the region's economy, labour needs in the sector are decreasing. Local jobs need to come from the growth of more labour-intensive sectors of the regional economy, and economic diversification is needed for this. It will be important for the region to ensure skills are developed in line with economic diversification of the economy to support job creation into the future.

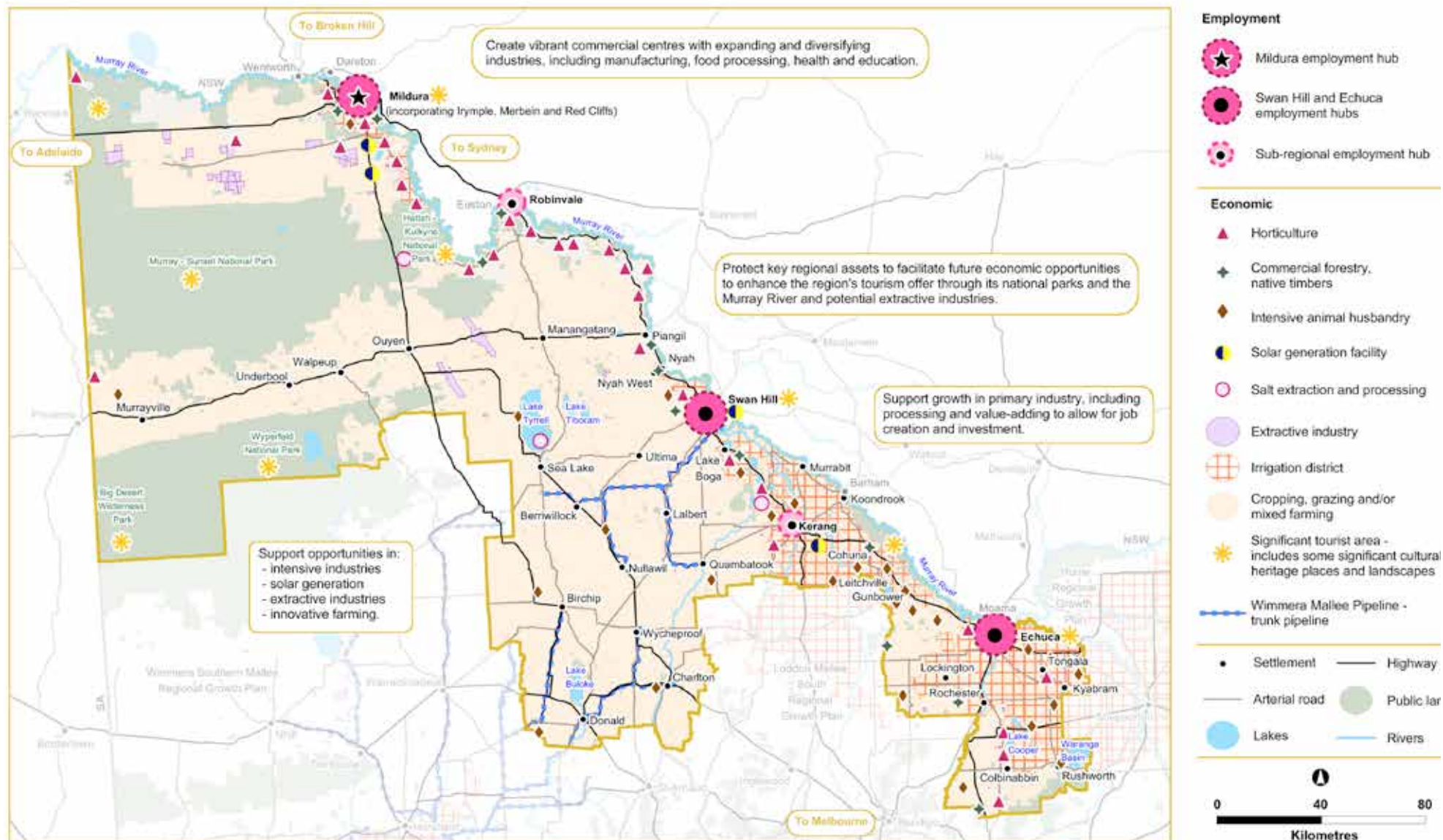
Manufacturing and food processing will continue to be an important contributor to the region's economy. Training or attracting skilled workers and reducing energy costs will be important for retaining and growing the manufacturing sector. Transport logistics, warehousing and an efficient freight transport network are important for agriculture, manufacturing and for freight movement through and within the region. Opportunities in transport logistics and freight are associated with the major Calder, Mallee, Murray Valley and Sturt transport corridors. There are opportunities to align and upgrade freight and transport infrastructure to support and enhance primary production, including agriculture and mining in the region.

The region currently has skills shortages in the health, education, manufacturing, agriculture and construction sectors. An ageing population will see continued and growing demand for health professionals. Access to quality services in attractive settlements that offer a range of housing and lifestyle choices will be important for attracting professionals to the region and reducing outward youth migration.

Key challenges for the region are overcoming skills shortages, increasing economic diversity and developing new employment opportunities. Map 5 shows the key future economic directions for the region.

PART C | TOWARDS THE REGIONAL GROWTH PLAN

Map 5: Future directions for the economy



Source: Department of Transport, Planning and Local Infrastructure. Note that this map is indicative only and is not intended to prescribe the location of diversification opportunities.

11.1 Building on economic strengths

Working in the Loddon Mallee North region

Business, industry and services

Loddon Mallee North's regional city of Mildura, and its regional centres of Swan Hill and Echuca, will continue to provide higher order services. For some settlements within the region, higher order services will also be accessed from the regional cities of Bendigo, in the Loddon Mallee South region, and Shepparton in the Hume region.

Alignment of economic and population growth with the provision of education, health, housing and community facilities will be important for attracting and retaining workers, providing employment opportunities and attracting public and private investment in the region.

Some smaller settlements, due to their relative isolation and long distances to major centres, will continue to provide a wider range of services, such as health and education, than would normally be expected in towns of their population.

To support existing industry and diversify the economy, it will be important to have 'market ready' industrial and commercial land available with access to the necessary infrastructure in the key urban growth areas of Mildura, Swan Hill and Echuca and in other locations consistent with their role and function.

The region will position itself to respond efficiently to new opportunities. Regional towns can be attractive propositions for new industry with access to affordable land, buffering from sensitive uses, such as housing, schools or hospitals, and access to infrastructure. For example, Buloke Shire Council has undertaken a land capability study to identify strategic locations for appropriate industrial development associated with the

Wimmera Mallee Pipeline. This kind of strategic work will be important to facilitate new industrial development outside major centres.

Emerging opportunities for economic diversification include renewable energy generation, aquaculture and ecotourism. Sustainable electricity generation has the potential to provide cheaper electricity for existing industry, business and households within and outside the region and attract new industry and business. Extractive industries such as gypsum mining also offer future economic diversity.

Health and education

In 2012, the economic drivers of population growth in Loddon Mallee North included health and community services (\$538 million), higher education, secondary education and vocational training (\$414 million), specific government services and businesses services (\$410 million) totalling \$1,362 million output⁸.

Infrastructure investment in the education and health sectors is required to reverse population migration out of the region and promote the sustainability of towns. Alignment of education and health services with road and rail networks, particularly public transport, will help address regional disadvantage.

Manufacturing

The region has a history of agriculture-related manufacturing including fruit and vegetables, dairy, meat and grain processing and irrigation development. The manufacturing sector is a significant economic contributor in Campaspe Shire and Mildura Rural City, while agriculture dominates in Buloke Shire, Gannawarra Shire and Swan Hill Rural City. Manufacturing had total output of \$4 billion in 2011, with 65 per cent of this coming from food processing⁹.

8 and 9 Department of Transport, Planning and Local Infrastructure (2014) Loddon Mallee North Regional Growth Plan Background Report (Figure 4).

There are opportunities to further support the manufacturing sector by developing supply chain linkages and processing products from neighbouring regions and across state borders. Attracting significant investment in high value agricultural production, processing and manufacturing is important to growing this sector.

Ensuring efficient infrastructure, particularly freight transport networks and logistics, and adequate industrial zoned land is critical to attracting and maintaining manufacturing businesses and industry in the region. Opportunities exist for strategic location of new manufacturing to align with alternative energy generation and secure supplies of high quality water available in modern water delivery infrastructure.

Tourism and eco-tourism

The Loddon Mallee North region is an attractive tourism destination known for its environmental assets and landscapes, including the Murray River and national parks, as well as Mildura, the Port of Echuca and Swan Hill Pioneer Settlement. Popular activities include camping, boating, recreational fishing and bushwalking. Visitors are drawn to the region for its rich environmental assets, cultural heritage and attractive towns. The region hosts major events, such as the Mildura Jazz Food and Wine Festival, Opera by the Lock, Southern 80 Ski Race, Riverboats Music Festival, Echuca Steam Rally and the Murray Marathon. Visitors support art and recreation, tourism and hospitality services.

Further tourism growth across the region will require promotion and continued investment in existing tourism attractions, as well as strategically located accommodation and facilities to access new attractions. There may be opportunities to attract private investment for appropriate tourism infrastructure on public land, including national parks, to benefit regional tourism. Flexibility is supported for the development of agritourism opportunities, in conjunction with agricultural use.

Natural resources

Energy generation

Innovation in new technologies, farming practices and renewable energy will foster opportunities for carbon sequestration and biomass production. On-farm options for new energy generation include bioenergy/biofuels produced from agricultural wastes through to various future biotechnologies. Many technologies can occur concurrently with the primary agricultural use of the land. Programs and land use controls to allow for such uses are required to facilitate these activities on farms.

Carbon market initiatives and energy generation activities, and their potential effect on the long-term agricultural productivity of high value agricultural land, need to be carefully considered in land use policy. These same carbon initiatives and energy generation activities can coexist and complement agricultural land uses, supporting diversification and growth opportunities for the agricultural sector.

The Loddon Mallee North Utilities Infrastructure Study (2013) considered the viability of alternative energy generation in the region. The study found there were a number of towns with capacity for energy input to the national grid, including Cohuna, Echuca, Kerang, Kyabram, Merbein, Mildura, Ouyen, Red Cliffs, Robinvale and Swan Hill. Swan Hill and Gannawarra municipalities have jointly prepared a prospectus to attract investment in solar energy generation.

Earth resources and mining

The mining of mineral sands, gypsum, sand and stone and gold, and salt extraction are establishing a stronger presence in the Loddon Mallee North region and are bringing economic benefits to the local economy. Further development of these industries will require suitable road and rail infrastructure linking production with processors and ports for export. Consideration is required to provide suitable accommodation for a mobile

workforce that exhibits cyclical housing demand. It will also be important to capture the benefits that mineral sand mining and salt extraction industries can bring in terms of population change and growth.

Mineral sands and sand and stone deposits have significant economic potential and it is recognised that incompatible development and land uses such as residential and industrial developments in proximity to these resources can lead to constraints on extraction. Appropriate buffers to protect existing and new activities need to be recognised.

Extractive industry interest areas occur within the region, which contain areas of known future interest to the extractive minerals industry, for example, sand and stone. Areas are based on suitable geological occurrence and also take into account existing local government planning schemes. They are intended to provide a guide to local government in developing future planning policy. In response to the Economic Development and Infrastructure Committee's *Inquiry into greenfields mineral exploration and project development in Victoria*, the Victorian Government has committed to various activities that will undertake further data gathering and planning to better protect the state's extractive resources for future development. The outcomes of these activities may have implications for future planning provisions. Extractive industry interest areas located in the region are shown in Figure 8 of the Loddon Mallee North Regional Growth Plan Background Report.

Future economic land use strategies and actions

- Recognise in planning schemes the importance of aligning economic and population growth with urban settlement, industry, services and infrastructure
- Ensure there is adequate supply of commercial and industrial land for employment across the region
- Promote and support the regional city, regional centres and towns to provide a suitable range of retail and commercial activities consistent with their role in their community of interest, including cross-border and inter-regional access for economic development
- Support appropriate initiatives, such as investment in infrastructure, freight and logistics and increased availability of natural gas
- Protect major infrastructure, industrial land and mining activities from encroachment by incompatible uses
- Facilitate flexible and streamlined regulatory approval processes for land use to enable economic growth opportunities
- Support and develop emerging and potential growth sectors, such as nature-based tourism, mining and renewable energy generation and protect these activities from urban encroachment
- Identify, manage and facilitate access to locally sourced natural resources where appropriate, including sand and stone, minerals, timber and renewable energy

11.2 Agriculture

Overview

Agriculture and associated manufacturing and processing are the key economic drivers for the Loddon Mallee North region and are its most widespread land use. The region is agriculturally diverse, from irrigated dairy, horticulture and cropping along the Murray River, to large-scale dry land cropping and grazing in the Mallee and the south.

Agriculture provides employment and exports for the region. The continued viability of agriculture is critical to land and environmental management, social wellbeing for rural communities and is an important aspect of the regional landscape. The social and economic impact of changes in water policy, particularly the implementation of the Murray Darling Basin Plan, and completion of irrigation infrastructure renewal will need to be monitored and considered into the future. The ability of the agricultural sector to adapt to changes to the climate and economy will be critical to a sustainable future.

Support is necessary for transitioning the agricultural landscape and associated communities, as the irrigation districts are redefined by policy and infrastructure investment. This support may include diversification of agricultural practices and economies as well as investment in new technologies. This may also deliver opportunities for further investment to increase food production and attract new processing industries.

Productive soils are essential for the continued economic success of this region, particularly for agricultural enterprises. If soils are mismanaged, threats such as soil structure decline and nutrient deficiency can impact on their productive value. Depleted soil health can also lead to threats that cause offsite impacts to public assets, such as sediments from soil erosion threatening the quality and environmental value of downstream waterways.

Strategically significant agricultural land that capitalises on factors, such as high quality soil, industry cluster links to infrastructure, water and transport is an important input to land use planning. The region's soil resource can also be protected by ensuring that land use change does not disturb soils to a level that could result in deterioration of the soil asset, or further contribute to the pollution of waterways.

A consistent regional approach to identifying and protecting strategically important agricultural land is required. Any existing or new rural zones should be applied to protect commercial scale farming and irrigation infrastructure to avoid encroachment from incompatible uses, such as housing.

Irrigated agriculture

Irrigated agriculture includes dairying, horticulture and mixed farming. Further development of these industries, particularly dairying and horticulture, is sought due to links with other sectors in the economy, such as food processing, freight and logistics.

The Goulburn-Murray Water Connections Program, previously known as the Northern Victoria Irrigation Renewal Project, is being rolled out through the Goulburn-Murray Irrigation District including within Campaspe Shire, Gannawarra Shire and Swan Hill Rural City. A business case for the Sunraysia Modernisation Project is being developed to support investment in upgrading of infrastructure in the Sunraysia Irrigation District.

The catchment management authorities are leading the Innovative Farming Program that aims to assist communities to achieve a confident and prosperous region, a healthy, resilient environment, sustainable, profitable farming and regional growth.

These projects will provide efficient, on-demand water services that, along with on-farm modernisation, will enable farmers to implement more efficient irrigation management. Restructuring will result in some land transitioning from irrigated to mixed agriculture, which may still occasionally be irrigated. Planning needs to support transitional land uses to enable such innovative agricultural enterprises to develop throughout the irrigation region.

Intensive agriculture

Intensive agriculture includes poultry, eggs, pork, feedlot beef and sheep production, aquaculture, hydroponics and greenhouses and has high capital inputs in terms of buildings, storage and infrastructure.

This kind of agriculture also requires appropriate separation from sensitive uses for amenity protection and biosecurity. Intensive animal husbandry is currently established throughout the Gannawarra, Buloke and Campaspe shires.

There are other areas within the region that are suited for further development of these industries with access to water and electricity infrastructure and proximity to processing facilities and markets. For example, Buloke Shire has undertaken an assessment of sites suited to intensive land uses associated with the Wimmera Mallee Pipeline. Planning for the establishment and expansion of these industries needs to occur in a manner consistent with proper planning and protection of the environment.

Cropping and grazing

Dry land cropping and grazing includes production of cereals, legumes, pulses and oilseeds, along with sheep and cattle grazing. The size, scale and types of products vary across the region with soil types and climate. Farm sizes over the next 30 years are expected to continue to increase with the mix of commodities expected to remain similar in the face of climate change.

Dry land farmers are making use of heavy freight vehicles to transport grain as a result of the increasing scale of dry land farming and on-farm storage of grains. This has implications for the design and maintenance of local and arterial roads that connect to major road and rail transport routes.

Future agricultural land use strategies and actions

- Encourage growth and adaptation of agriculture
- Encourage emerging agribusinesses and location clusters, including intensive animal industries
- Encourage production and processing that adds value to local agricultural and other primary production products
- Identify and protect areas of strategic significance for agriculture
- Encourage adaptation of the agricultural sector to embrace opportunities and respond to the potential risks arising from climate change
- Facilitate ongoing agricultural productivity and investment in high value agriculture by critically assessing proposals for non-agricultural uses within areas of strategic agricultural significance and preventing encroachment of incompatible uses
- Protect and maintain productive land and irrigation assets necessary to help grow Loddon Mallee North as an important food bowl for domestic and international exports

12. Environment and heritage

Future directions

- Manage risks to the Loddon Mallee North region's community and economy from natural hazards
- Protect and improve the condition of the region's environmental and cultural heritage assets to achieve the best outcome for the region's environment, economy and community
- Plan for and manage potential risks and opportunities arising from climate change and initiatives that support national and global action to reduce greenhouse gas emissions

Overview

The Loddon Mallee North region is well known for its environmental assets and has a rich diversity of cultural heritage assets (refer to Map 6). This plan recognises that the region's environment is critical to its ongoing growth and prosperity, particularly in terms of water. It aims to enhance the environmental and cultural heritage assets of the region, retain healthy waterways and floodplains, achieve sustainable, water efficient farming, and develop a diverse and robust economy broadening its strong agricultural base. The plan recognises that the Murray River is the lifeblood of the region.

The human history of the region can be traced back to the Murray River through the presence, for tens of thousands of years, of Aboriginal people. The recent history of the region is strongly tied to the economic development of Victoria, with nationally significant historic Murray River trade in the 19th century and the evolution of massive irrigation schemes into the 20th century.

Environmental assets underpin the economic strengths of the region and present many opportunities for tourism and other economic diversification,

such as carbon farming and income from ecosystem services. Balancing growth with the protection of the environment and cultural heritage assets is a key challenge for this plan, as is managing the risks from natural hazards associated with some of these areas. More detailed planning is required to address these challenges.

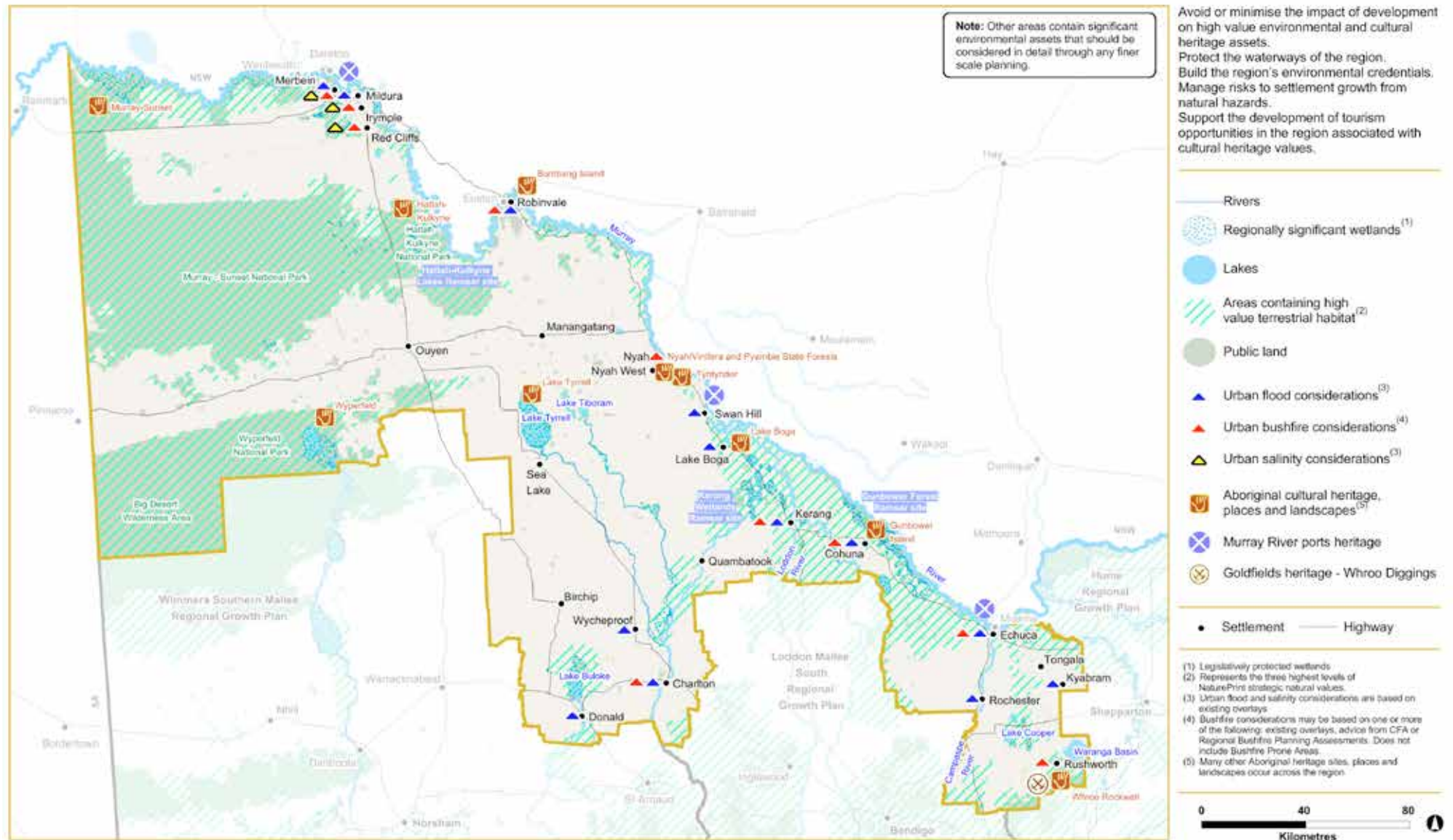
Four catchment management authorities and several public land managers coordinate investment in the protection and enhancement of the environment throughout the region. Regional catchment strategies are the primary integrated regional strategies for achieving improved environmental outcomes in the region. Regionally significant environmental assets and priorities are clearly described in these documents. This plan complements catchment management authority activities and initiatives by encouraging appropriate land use planning mechanisms that recognise and respond to regionally significant environmental assets.

The future climate of the region is likely to be drier and hotter with increased frequency and intensity of extreme events such as droughts and floods. This may impact on the liveability and amenity of the region's settlements and its attractiveness to new residents and businesses. Land use planning should consider the potential risks and opportunities associated with climate change on settlements and incorporate appropriate strategies and actions to assist the community and the region to adapt and build resilience.

Key areas where potential growth or land use change may intersect with environmental and heritage assets have been identified. Natural hazards have been mapped and form part of the considerations for urban growth. This plan provides direction on these issues.

There are many issues that require detailed consideration in planning for growth. Some of these considerations are explored further in Sections 12.1: Environment and heritage assets, and 12.2: Natural hazards and risks.

Map 6: Future directions for environment and heritage



Source: Department of Transport, Planning and Local Infrastructure

12.1 Environmental and heritage assets

Environmental and cultural heritage assets are essential to the Loddon Mallee North region's continued growth, providing the foundations of many industries and attracting people to live in and visit the region. Protecting and enhancing these assets presents many opportunities within the region and should not be seen as a barrier to growth.

Cultural heritage

The environmental and Aboriginal cultural heritage assets of the region are often strongly related and as a result, the Aboriginal cultural heritage of the region is often readily expressed in the broader landscape, as much as individual places. This plan outlines the significance, complexity and scale of the region's historic heritage by recognising the human activities that have shaped the landscape, including areas that are geographically remote. The history of the region can be summarised through the events and stories belonging to three main themes:

- the continuing culture of Aboriginal people
- nationally significant historic river trade
- the evolution of massive irrigation schemes and a significantly transformed landscape.

A priority action of this plan is to diversify the region's economy, including capitalising on the tourism potential of environmental and cultural heritage assets including the goldfields and heritage towns. Consultation during the development of the plan identified that the cultural heritage assets of the region should be protected to enable development of tourism opportunities that support long-term prosperity. Strategies are required for rejuvenation and redevelopment of key tourism assets, such as the Mildura Riverfront, Port of Echuca and Swan Hill Riverfront.

By using the above regional heritage themes, the region could increase awareness and understanding of its cultural heritage assets. This would help promote the region's cultural heritage. It would also assist in attracting investment and guiding planning decisions to recognise and support appropriate, sustainable activities to conserve these assets for the long term.

Map 6 identifies locations where environmental and cultural heritage tourism could be explored, although opportunities are not limited to these locations. It focuses particularly on Aboriginal cultural heritage and Murray River trading history. Planning schemes can help to conserve these heritage assets by minimising land use conflicts and promoting activities that are compatible with those values.

Registered Aboriginal Parties will have an important role in planning place-based activity and development, and there are benefits to engaging with the relevant Aboriginal community organisations early in strategic planning processes. Currently the Barengi Gadjin Land Council Aboriginal Corporation, the Dja Dja Wurrung Clans Aboriginal Corporation, the Taungurung Clans Aboriginal Corporation and the Yorta Yorta Nation Aboriginal Corporation have legislated responsibilities relating to the management of Aboriginal cultural heritage places in the Loddon Mallee North region. This arrangement recognises the key role that Aboriginal people have in the protection and management of significant Aboriginal cultural heritage places.

Native title is also held over Crown land in parts of the region by the Yorta Yorta, the Wotjobaluk, Jaadwa, Jadawadjali, Wergaia and Japagulk Peoples and the Dja Dja Wurrung Peoples. Other aspects of the region's heritage are dealt with indirectly here through actions, such as the identification of regionally significant landscapes.

Native vegetation and terrestrial habitat

The region is well known for its significant river red gum forests, both on public and private land. There are also significant black box woodlands and grassland areas within the region. These assets support nature-based tourism and create opportunities for farmers to earn income by providing ecosystem services¹⁰. This is especially true for using the region's significant grassland areas in native vegetation clearance offset markets, resulting in permanent protection of these sites. Catchment management authority initiatives further promote such activity through programs aimed at improving the quality of remnant vegetation, especially in significant areas as identified in the regional catchment strategies.

Comprehensive strategic planning can be used to integrate planning for the region's terrestrial habitat assets along with other rural land uses, such as agriculture and rural living. This is particularly relevant when considering other aspects of the catchment, such as flood risk to towns.



Murray River at Mildura, image courtesy of Regional Development Victoria

Waterways

The Loddon Mallee North region is located entirely within the Murray-Darling Basin. It contains parts of the Goulburn, Campaspe, Loddon, Avoca, Wimmera-Avon, Mallee and Millicent Coast river basins, and has the Murray River as its northern boundary. There are numerous internationally and nationally important wetlands in the region, including the Ramsar listed Hattah-Kulkyne Lakes, Kerang Lakes and Gunbower Forest. Feedback received during development of this plan strongly emphasised the need to protect the region's waterway assets, especially its wetlands. This in turn will safeguard the region's environmental credentials and support the ongoing export of its agricultural produce.

Rivers and wetlands are highly valued by regional communities for their intrinsic environmental values and for the water they provide to communities, farms, towns and industry. Aboriginal cultural heritage places are closely linked to waterways across the region. Many rivers and lakes within the region are critical for supporting tourism and recreation within smaller settlements, particularly the Murray River, the Kerang Lakes and other expansive salt pans, red gum wetlands, and floodplains throughout the region.

The region is also home to four of the six Icon sites identified for restoration under The Living Murray program, which is one of Australia's most significant river restoration programs. Each Icon site was selected for its environmental, social and cultural values. The Icon sites in the Loddon Mallee North region include the Victorian component of the Gunbower-Koondrook-Perricoota Forest Icon site, the channel of the Murray River, the Hattah Lakes Icon site and the Victorian component of the Chowilla Floodplain-Lindsay Wallpolla Islands (including Mulcra) Icon site.

A significant part of the region is natural floodplain, dotted with shallow wetlands on public and private land. Agriculture is a significant threat to

¹⁰ Providing ecosystem services through market-based approaches, including competitive tenders such as EcoTender and BushTender, can provide farmers with income for undertaking environmental works that conserve and enhance the environment.

these shallow wetlands, particularly in irrigation areas where paddocks are laser graded to assist with efficient water use. Land use planning can help address some of the threats to highly valued rivers, wetlands and lakes from urban and rural land use changes, such as changes to flow regimes and poor water quality. Water supply for urban and agricultural uses is discussed in Section 14: Regional infrastructure.

There is potential future residential development pressure around some lakes. Strategic planning and clear direction are needed to protect the environmental and landscape values of these assets and to promote the continued growth of the region's agricultural export markets.

Multi-million dollar large-scale environmental works are proposed for key sites in the region in an effort to preserve and enhance environmental assets, while using environmental water as effectively and efficiently as possible. This is an important consideration in order to balance current use with future ecotourism opportunities. Environmental infrastructure and associated works are planned for Lindsay Island, Wallpolla Island, Hattah Lakes, Nyah-Vinifera, Belsar-Yungera, Guntram-Benwell and the Upper Gunbower floodplains.

Public land and significant landscapes

The vast public land reserves in the region are highly valued. These reserves contribute to the region's identity and have the potential to contribute to the expansion of the local tourism industry.

Land use planning generally considers significant landscapes containing significant visual and landscape character. In other areas of the state, coordinated assessments have been used to consistently apply planning tools to protect significant landscapes across a region, such as the South West Landscape Assessment Study. No such study has been undertaken for the Loddon Mallee North region. There is a need to identify and protect the most significant landscapes and views to best position the region for the future in terms of its environmental credentials and tourism potential.

12.2 Natural hazards and risks

Natural hazards and risks have been explicitly considered in land use planning to enable appropriate growth and development opportunities across the region and ensure the protection of human life.

Flood

Significant areas of the region are subject to flood. This includes extensive rural areas, but also urban areas, as regional cities and centres expand outside existing levees. The risks presented to land use from flood hazards must be considered in regional and local planning decisions. Land use planning decisions should be based on the best quality information on flood hazards to minimise risk to life, property and community infrastructure, as well as to the environment. Accurate flood mapping is critical.

There are currently inconsistencies across the region in terms of how and where flood-related overlays are applied. Flood provisions in planning schemes should be used consistently across the region to avoid inappropriate development and to require new development to be located and designed to minimise risk.

Mapping of the January 2011 floods, the highest on record, is still being translated into planning scheme overlays and new flood investigations are underway for specific high-risk settlements. Flood considerations have been built into the draft framework plans for Mildura, Swan Hill and Echuca in Section 13: Living in the region, and will be considered in detail in future local strategic and statutory planning.

Bushfire

A challenge arises within the region given that many areas that are bushfire prone intersect with towns and areas that may experience rural residential and tourism expansion. This is particularly relevant for smaller towns. The current Bushfire Management Overlay is being updated with revised mapping to more accurately reflect bushfire hazards across the region. The most up-to-date information on bushfire hazards should be used in land use planning decisions.

When addressing bushfire risks, the following principles apply:

- Community resilience to bushfire will be strengthened by:
 - prioritising the protection of human life over other policy considerations when planning to create or expand a settlement at risk from bushfire
 - applying a precautionary approach to planning and decision making when assessing the risk to life, property and community infrastructure from bushfire
 - taking advantage of existing settlement patterns where new development will not expose the community to increased risk from bushfire.

Regional and local planning need to consider bushfire hazards and risks in detail, with the assistance of planning tools such as the Bushfire Management Overlay, regional bushfire planning assessments and bushfire-prone areas. Input from key stakeholders, such as the Country Fire Authority, is also critical to achieve safe and appropriately located development. The settlement framework plans in Section 13 of this plan have considered these hazards in identifying potential growth areas. Local planning decisions will need to examine these hazards in more detail.

Salinity

Salinity issues are a key consideration of some settlements and rural areas of the region. The history of salinity in the region is a well documented and ongoing planning consideration. The Salinity Management Overlay has been used in some parts of the region to inform local planning decisions. Salinity also affects the broader landscape, while land use planning implications can impact at a local level.

Soil degradation

The soils of the region include sandy dunes, hard setting duplex soils and clays and loams associated with floodplains. These soils are inherently fragile and careful management is required to avoid wind erosion, water erosion, soil structure decline and acidification.

Potential inland acid sulfate soils

There is a high probability that acid sulfate soils exist in association with inland wetlands in the region, with some sites already known. These soils should remain undisturbed to prevent the serious consequences to infrastructure and human health that can result from their mismanagement. Local planning will need to consider this risk in more detail, particularly when planning for rural residential development associated with lakes and wetlands.

Climate

Long-term climate change and short-term climate variability present numerous risks to the region's natural environments and agricultural systems, along with opportunities for economic diversification. The region as a whole has already demonstrated it can generally adapt well to short-term climate variability such as prolonged drought or wet periods.

Possible impacts of climate change include temperature increases, less rainfall and an increase in events requiring emergency response, such as flood and bushfire. Reduced average annual rainfall and stream flow may reduce reliability of water supplies for irrigation and non-irrigated enterprises and for communities. Opportunities arising from climate change include altered growing conditions for alternative agricultural commodities that could create new industries within the region.

More information is needed on the likely impacts of climate change on specific industries across the region and the opportunities that may arise from these changes. This will assist with strategic land use planning, including consideration of any potential increase in risk to settlements from natural hazards and identification of new economic opportunities for the region.

The Victorian Climate Change Adaptation Plan, regional catchment strategies and local government climate change adaptation strategies outline proposals to develop climate change adaptation plans and carbon action plans aimed at better managing climate risks, building community resilience to extreme events, minimising possible costs and harnessing opportunities that may arise from climate change.

Future environment land use strategies and actions

- Direct development away from locations where there is significant risk of flood
- Direct development to locations of lower bushfire risk
- Carefully consider development in locations where there is significant bushfire risk that cannot be avoided
- Avoid development in locations of extreme bushfire risk
- Avoid development in areas where planned bushfire protection measures may be incompatible with other environmental objectives

- Planned development should consider access to water for emergency response and fire fighting
- Consistently incorporate information on environmental and cultural heritage assets and natural hazards (including threats to soil health) into planning schemes by updating the relevant planning overlays to reflect new understanding and to recognise high value assets and priority landscapes identified in regional catchment strategies
- Direct settlement growth and development away from areas of high value environmental and cultural heritage assets, such as significant vegetation, waterways, scenic landscapes, and Aboriginal cultural heritage and historic heritage places
- Undertake strategic planning for areas under pressure for rural residential development, particularly those associated with significant wetlands and the Murray River, to protect nearby environmental assets and values, and to enhance the region's environmental credentials
- Support initiatives to enable the establishment, protection and reconnection of ecosystems through large-scale native vegetation corridor projects
- Identify and protect significant landscapes
- Investigate the development of regional heritage themes and use these to inform local heritage studies
- Encourage projects that improve the management and use of water resources, to minimise risks to the environment and provide for potential growth and liveability
- Ensure regional and local planning respond to opportunities for innovation and industry development arising from climate change and initiatives that support national and global action to reduce greenhouse gas emissions

13. Living in the region

13.1 Loddon Mallee North settlement

Future directions

- Direct major population and housing growth to existing regional cities and centres where infrastructure and services can be used in the most efficient, cost-effective and sustainable manner
- Improve linkages within and between Loddon Mallee North's five communities of interest
- Anticipate and respond to changing community needs to support growth and demographic change

Overview

The Loddon Mallee North region currently accommodates a population of 134,000 people, with the majority living in and around the major centres of Mildura, Echuca and Swan Hill. The region aspires to exceed its population forecast of 160,000 people by 2041.

Growth is uneven across the region with modest growth projected for areas in and around the major centres and throughout the Murray River corridor. Through the dry land areas of the region, population growth is projected to decrease. Settlement patterns have been strongly influenced by agricultural land use, value-adding and transport routes.

Future growth will be promoted in locations that build on existing and potential industry strengths, infrastructure and services that have the capacity for future transport enhancement. The existing network of settlements will be strengthened by better access to employment and services throughout the region, as illustrated in Map 7.

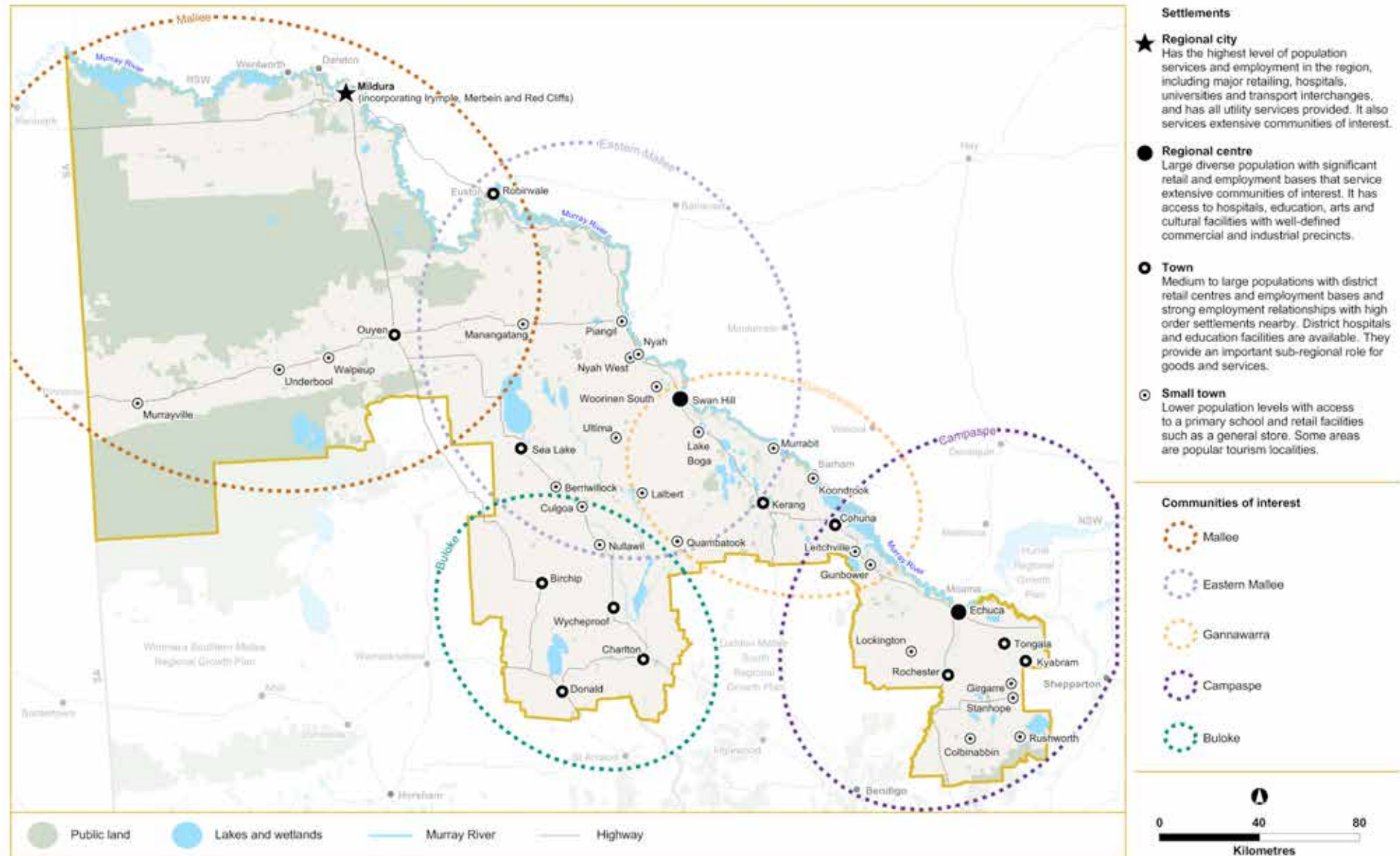
Map 7 identifies the role and function of regional cities, centres and towns. This takes into account the role each town plays, or is capable of playing, in accommodating and servicing future population growth in the region, and the intent of strategic planning for that settlement. The designations are based on an assessment of available and proposed services and facilities, infrastructure capacity, and constraints on growth, including natural hazards, such as bushfire and flood risk and strategic economic, heritage or environmental assets. This also takes into account where the resident population may be small but the town functions as an important service centre to a wider catchment.

Communities of interest have been identified but it is important to note that Bendigo and Shepparton are key regional cities that attract people from the southern part of the Loddon Mallee North region for employment services and facilities. Adelaide and Melbourne are also key centres to which people in the Mallee community of interest travel for higher order services, using air and road transport.

The majority of growth will be accommodated in the regional city of Mildura and the regional centres of Echuca and Swan Hill. Clear settlement boundaries and identifying appropriate locations for rural residential development will avoid land use conflict with agricultural activities that surround these centres. These three larger settlements, having an existing base of higher order services and facilities, support networks of smaller centres in the region and south-western New South Wales.

Throughout the Murray River corridor, towns such as Kerang, Robinvale, Kyabram and Rochester play an important role in providing sub-regional services to surrounding communities with opportunities for social and economic participation. Their sustainability is important and opportunities for growth are supported, leveraged by new investment or employment.

Map 7: Settlement framework



Source: Department of Transport, Planning and Local Infrastructure

Away from the Murray River, in areas such as the Mallee and Buloke Shire, settlements are separated by long distances from the three regional cities or centres, and towns such as Wycheproof, Cohuna, Ouyen, Manangatang and Birchip provide higher level services, including health, education and local government administration than would normally be expected of towns of similar population. Policy to support these smaller settlements to continue to function at this higher level is considered important. This will become increasingly important as rural populations decrease and the viability of service delivery in surrounding smaller settlements is challenged.

It is anticipated that some settlements not nominated for growth may experience an increase in population or housing development based on local drivers such as a high amenity location. These locations offer an alternative lifestyle from more urbanised and larger centres.

Key challenges for settlement planning in the region include managing population growth in a few large towns, population decrease in others, and overall population ageing, while responding to the different land use requirements generated by these population trends. Other challenges include the mismatch between the available housing stock and the needs of residents, and lack of investment in new housing due to low development demand and poor returns on investment. Providing transport connections between towns within communities of interest and coordinating settlement planning with neighbouring regions and interstate will also be challenging.

More detailed discussion and future directions for Loddon Mallee North settlements are outlined for each community of interest in Sections 13.2 to 13.6.

Future population profile

Along with other regions in Victoria, the Loddon Mallee North region has an ageing population. However, Mildura Rural City, Campaspe Shire and Swan Hill Rural City each have a younger than average age structure by regional Victorian standards. This will affect service provision, such as medical and aged care provision. It also has the potential to impact on employment and the economy.

Attracting and retaining younger age groups for education and employment will be critical to maintain a diverse community and a vital economy. The desire for the regional city and centres to grow and sustain a viable population relies on attracting families to the region, which in turn depends on offering a range of employment opportunities and access to social infrastructure.

A key aim of this plan is to attract a diverse population to the region, in particular people of working age. This can be achieved by improving secondary and tertiary education access, providing a range of housing and lifestyle options, along with economic diversification and growth.



Housing development, image courtesy of Mildura Development Corporation

Regional land use strategies and actions

- Plan strategically for the most appropriate locations for rural residential growth in the hinterland areas of Mildura, Swan Hill and Echuca to maintain environmental sustainability and avoid impacts on future agricultural export potential
- Recognise and build on relationships between the Loddon Mallee North region and communities of interest in southern New South Wales, South Australia and adjoining Victorian regions
- Recognise and foster networks between smaller townships and communities to leverage access to regional services and investment
- Recognise and support towns that are well located to provide an ongoing service centre role to maximise access to services for surrounding smaller settlements and rural areas
- Ensure local planning policy frameworks identify regional, cross-border and inter-regional relationships and include measures to manage pressures, opportunities or constraints associated with these relationships and influences
- Support innovative approaches to the provision of housing that respond to the characteristics and requirements of populations
- Encourage community-based planning approaches in conjunction with land use planning policy to support and manage change in areas of population decrease, to capitalise on local opportunities and respond to constraints

13.2 Mallee community of interest

Mildura - regional city

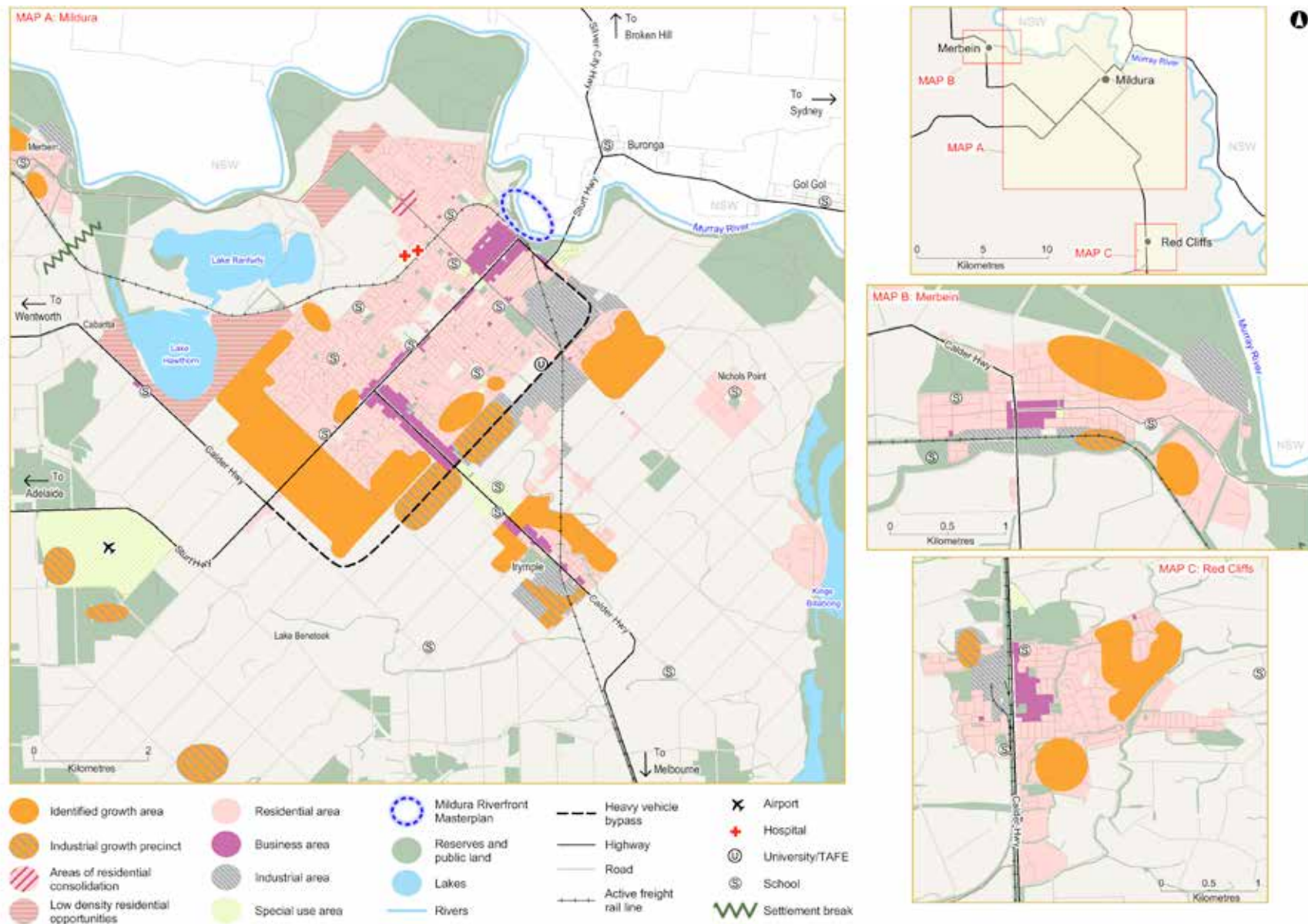
Mildura is a regional city of state significance that commands a substantial hinterland. It is strategically located on the Murray River between Melbourne, Adelaide and Sydney at the junction of the Calder and Sturt highways. It has connections to the rail freight network for Victorian and interstate services and to the ports of Melbourne, Geelong and Portland. It is also the location of a major regional airport.

Mildura's sphere of influence extends to Broken Hill, Robinvale, Ouyen and the South Australian border. The city will remain the primary urban centre in the Mallee community of interest and the Loddon Mallee North region, providing higher order health, education, retail and government services. Smaller centres in close proximity to Mildura such as Red Cliffs, Irymple and Merbein in Victoria and Wentworth, Buronga and Gol Gol in New South Wales will continue to service their local communities while maintaining strong linkages with Mildura.

Mildura Airport is the third busiest airport in the state. The accessibility of Mildura to Melbourne and Adelaide via daily scheduled passenger services enhances relationships with these capital cities and increases opportunities for integration with the economy and workforce of Mildura and the Mallee community of interest. Agriculture and associated industry will continue to be a key economic driver.

In the future, Mildura will have an expanded role as a tourism destination, recreation centre and service provider. Expansion of health and education services should be encouraged and attracting new business and employment will be important. An adequate supply of serviced industrial land has been provided through implementation of the Industrial Land Strategy Update (2006) at Benetook Avenue, in the Mildura Airport Business Park precinct and at the Thurla Industrial Estate in Red Cliffs.

Map 8: Mildura framework plan



Source: Department of Transport, Planning and Local Infrastructure

As part of the Urban Development Program, a regional residential report¹¹ has been prepared documenting the findings of an analysis of supply and demand for residential land in Mildura. Based on Victoria in Future 2012 projections, the Rural City of Mildura currently has in excess of 15 years' supply of zoned residential land stocks across the municipality, although it only has seven years of future or unzoned land stocks.

Major projects recently completed or currently underway include:

- upgrade of the Mildura Base Hospital
- construction of a grid-connected solar power station
- Mildura Airport upgrade.

High growth scenario projections to 2030 indicate Mildura will need an additional 500 dwellings per annum. The majority of this residential growth will be in the existing and expanded urban area in Mildura, Mildura South and Irymple. Irymple, Merbein and Red Cliffs have sufficient zoned land to meet long-term growth projections. Long-term opportunities for population growth will be identified in the Mildura Housing and Settlement Strategy (currently under preparation).

Land use planning that considers these centres as a strongly networked community should be supported. Expansion of the urban area will need to consider the timing and provision of appropriate infrastructure, particularly stormwater drainage, protecting the operations of the Mildura Airport and the needs of an ageing population. It will also need to consider the natural hazards associated with the urban area, in particular flood and salinity.

Map 8 shows future land use directions for Mildura.

Mallee towns and rural settlements

Ouyen is located south of Mildura in the heart of the Mallee and is a service hub for a number of small rural settlements and a widely dispersed farming community. It is also a base for accessing and exploring the nearby Wyperfeld, Hattah-Kulkyne and Murray-Sunset national parks.

Transportation and freight movement play a key role in the economy of Ouyen, which is an important transport node at the confluence of the Mallee Highway between Adelaide and Sydney and the Calder Highway from Melbourne to Mildura. Freight includes agricultural inputs, grain and mineral sands from mines close to Ouyen destined for processing near Hamilton. Maintenance and enhancement of transport and freight infrastructure will be important for the future of these industries.

Ouyen has a more than adequate supply of land to accommodate projected low demand to 2030. A key challenge for Ouyen is a mismatch between the available housing stock and the needs of an ageing population. There is a need to provide affordable, safe and suitable housing, particularly rental stock, for new and current residents. Lack of return on capital investment is a significant barrier to refurbishment of the existing housing stock or investment in housing for the aged.

Murrayville, Underbool and Walpeup are small rural settlements with minimal services between 1.5 and 2.5 hours south-west of Mildura. The populations of these settlements are decreasing and further decrease is inevitable due to their remote locations and the scale of surrounding agricultural enterprises. Community planning is encouraged to support these communities to adapt to future changes.

¹¹ Department of Planning and Community Development (2012) Regional Residential Report, Rural City of Mildura.

Mallee future land use strategies and actions

- Facilitate growth of Mildura as a regional city, through planned development incorporating the nearby settlements of Red Cliffs, Irymple and Merbein
- Encourage urban consolidation, particularly in Mildura's Central Business District
- Ensure growth of Mildura does not compromise the future operation or potential for expansion of Mildura Airport
- Recognise and reinforce Ouyen's role as a town providing services to isolated and dispersed rural settlements and regionally important rural industries
- Enable opportunities for economic growth in Ouyen by supporting infrastructure improvements for the expansion of mineral sands mining, agriculture, tourism and other economic diversification opportunities
- Support walking and cycling in urban areas to enhance accessibility
- Support public transport connections between towns within the Mallee community of interest and Mildura to facilitate access to services

13.3 Campaspe community of interest**Echuca – regional centre**

Echuca is located on the Murray River and forms part of the cross-border twin town of Echuca-Moama. Echuca is the main service provider and together with Moama is currently experiencing significant residential growth. Echuca forms an important industrial, community, health, recreational, transport and tourism hub for northern Victoria and southern New South Wales and is a significant tourist destination. Planning is also underway for a second river crossing for Echuca-Moama to improve accessibility. Major urban, industrial and commercial growth and development in the Campaspe community of interest will be focused on Echuca.

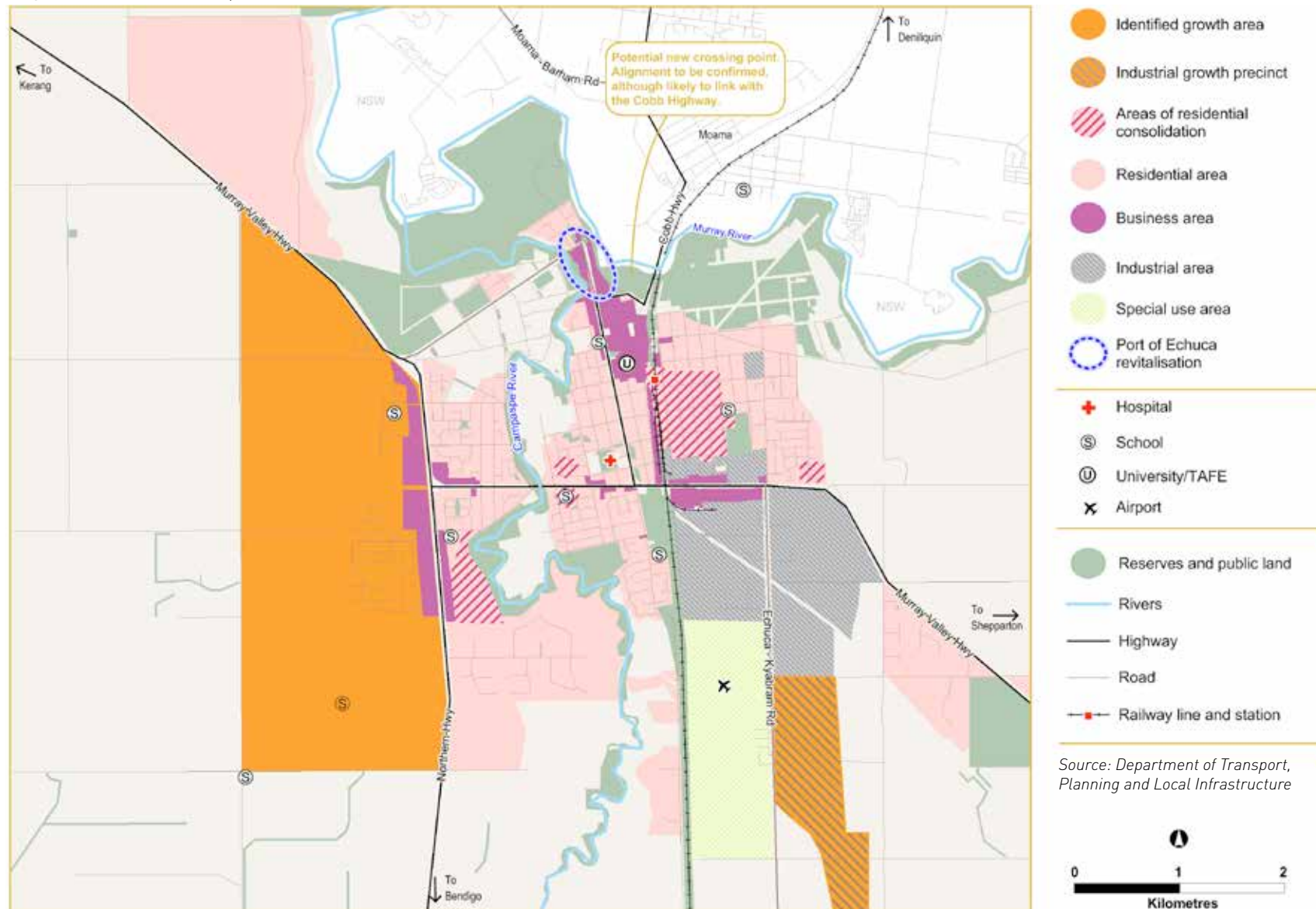
Future population growth in Echuca will be accommodated by a combination of infill housing and regeneration within established areas of Echuca and new residential development through the expansion of Echuca West, to the west of the Northern Highway. The Echuca Housing Strategy (2011) provides a framework to guide the location, sequencing and character of future housing and identifies more than 40 years of residential supply.

Echuca's economy will continue to be largely reliant on agriculture and associated processing, manufacturing and services. However, health services, tourism and transport and logistics will be important sectors for the future.

The Echuca South East Industrial and Commercial Growth Corridor Land Strategy (2011) found there is sufficient zoned land for industrial and commercial purposes until at least 2026. The strategy details a long-term implementation plan for development of the corridor. Future planning for growth will need to take into account natural hazards, in particular flood and bushfire.

The Port of Echuca Revitalisation Project (2010) has seen the refurbishment of the Echuca Wharf and the establishment of additional value-added tourism infrastructure to enhance and secure this regionally significant tourism precinct. Map 9 shows future land use directions for Echuca.

Map 9: Echuca framework plan



Campaspe towns and rural settlements

Other urban localities will continue to accommodate some growth including Kyabram, Tongala, Rushworth and Rochester. These towns will continue to provide services and support to surrounding rural communities and offer affordable housing alternatives for commuters to Bendigo, Echuca and Shepparton. They have sufficient land to meet demand for new housing and industrial uses. The current strategy for new residential development is infill and utilising the existing supply of zoned land.

Girgarre, Stanhope, Lockington and Gunbower are small towns and rural settlements with limited services. These towns are developing as commuter towns, providing affordable housing alternatives for employees in Shepparton and Echuca.

Campaspe future land use strategies and actions

- Facilitate growth of Echuca through planned development while considering population change and settlement planning in Moama
- Reinforce Echuca's role as a regional centre and important tourism destination
- Support the role of other urban localities to provide services and support to surrounding rural communities
- Support the role of rural settlements to act as commuter towns within the wider network of Campaspe community of interest settlements and for neighbouring regions, for example to Bendigo or Shepparton
- Support walking and cycling in urban areas to enhance accessibility
- Support the Echuca Housing Strategy (2011), Echuca South East Industrial and Commercial Growth Corridor Land Strategy (2011) and the Port of Echuca Revitalisation Project (2010)

13.4 Eastern Mallee community of interest

Swan Hill – regional centre

Swan Hill is located on the Murray River and services a hinterland that takes in the New South Wales southern Riverina and northern areas of Buloke Shire. Services include a range of retail, educational, commercial, industrial and community services. The Swan Hill Pioneer Settlement is a long-established tourism venture in the town and is currently undergoing revitalisation works, as is the Riverfront Precinct.

The Swan Hill Residential Development Strategy 2006–2030 outlines a framework for residential development in Swan Hill to 2030 based on population forecasts and development principles that align with this plan. The framework recommends a mix of infill development and staged development of rural land within a 2030 urban growth boundary. It offers housing choice and diversity by providing for increased residential development in commuter towns, including Nyah-Nyah West, Woorinen South and Lake Boga, as well as Murray Downs in New South Wales. Provision of drainage and flood mitigation is a key consideration in future development.

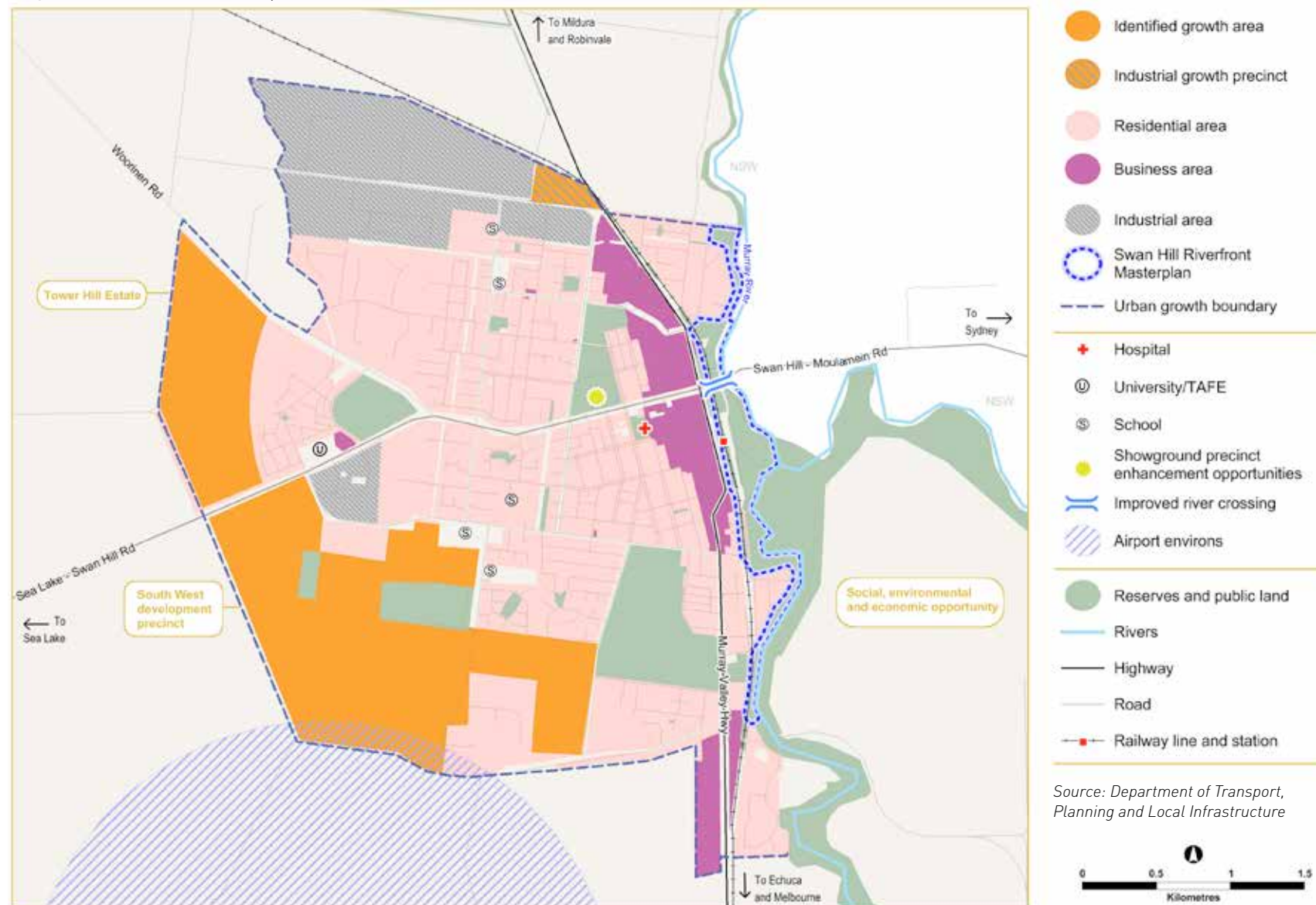
Swan Hill's economy will continue to be largely reliant on agriculture and associated processing, manufacturing and services. However, health services, tourism, transport and logistics, and renewable energy will be important sectors for the future.

Map 10 shows future land use directions for Swan Hill.

Robinvale – town

Robinvale is strategically located on the Murray River between Mildura and Swan Hill. Robinvale has a twin town relationship with Euston across the Murray River in New South Wales, and together they service an extensive catchment in both states.

Map 10: Swan Hill framework plan



Source: Department of Transport, Planning and Local Infrastructure

Robinvale will be the preferred location for growth in the northern part of Swan Hill Rural City and along the Murray River corridor between Mildura and Swan Hill. A range of services, including education, retail, medical and recreation will need to be retained and enhanced to support the role of the town and address high levels of disadvantage within the local community. These services will be important to support the surrounding agricultural district and large-scale horticultural developments.

Future employment opportunities in horticulture, food processing, tourism and renewable energy should be encouraged. This will strengthen the town's ability to support itself and overcome the risk of social exclusion for some of its residents.

Robinvale has multiple and complex housing issues including a lack of suitable housing for professionals and middle management, shortages of appropriately located accommodation for seasonal horticultural workers, a lack of affordable housing and shortfalls in public housing to address overcrowding and emergency accommodation needs.

Eastern Mallee towns and rural settlements

A number of small towns in close proximity to Swan Hill will act as commuter towns offering housing and lifestyle choice. Many towns also provide employment and housing for horticultural workers. Sea Lake provides higher order services than normally expected for a town of its population due to its relative remoteness and distance from major service centres. This role should be supported.

Manangatang, Piangil and Ultima will service local communities and dispersed rural populations. Communities in these settlements should be supported to adapt to population decrease and challenges to the viability of service delivery.

Eastern Mallee future land use strategies and actions

- Facilitate the growth of Swan Hill through planned development, incremental expansion and consideration of population change and settlement planning in New South Wales
- Reinforce Swan Hill's role as a regional centre and important tourism destination
- Support the provision of infrastructure to facilitate the growth of Swan Hill and expand its role as a regional centre, including improvements to transport infrastructure to service regional industries
- Support walking and cycling in urban areas to enhance accessibility
- Recognise and reinforce Robinvale as a town in the Eastern Mallee community of interest and its New South Wales hinterland, providing services to surrounding smaller towns
- Facilitate the growth of Robinvale through planned development, incremental expansion and consideration of population change and settlement planning in New South Wales
- Support public transport connections between towns within the Eastern Mallee community of interest, Swan Hill and Mildura to enable access to services
- Implement the Swan Hill Residential Development Strategy 2006–2030
- Support structure planning for Robinvale

13.5 Gannawarra community of interest

Kerang – town

Kerang is located midway between Echuca and Swan Hill at the junction of the Loddon Valley and Murray Valley highways and on the Bendigo to Swan Hill railway line. It performs an important sub-regional and community role as a centre for shopping, employment, health and business services. Similar to other regional towns, such as Ouyen, Kerang provides higher order services than would be expected for a town of its population. This reflects the relative remoteness of the town and the number of small towns and rural settlements it supports.

The residential growth strategy for Kerang, outlined in the Gannawarra Urban and Rural Strategy (2007), is based on consolidation and expansion of the existing town, with a focus on encouraging smaller housing forms close to existing amenities to respond to an increase in smaller households and an ageing population. There is sufficient land identified for residential and industrial growth until 2017. Gannawarra Shire has investigated appropriate locations for rural residential housing through the Lakes Environs Strategy.

A key challenge in Kerang is a mismatch between the available housing stock, which is largely three bedroom weatherboard family homes, and the needs of an ageing population. This is compounded by a lack of return on investment from new housing for older people or refurbishment of existing housing stock.

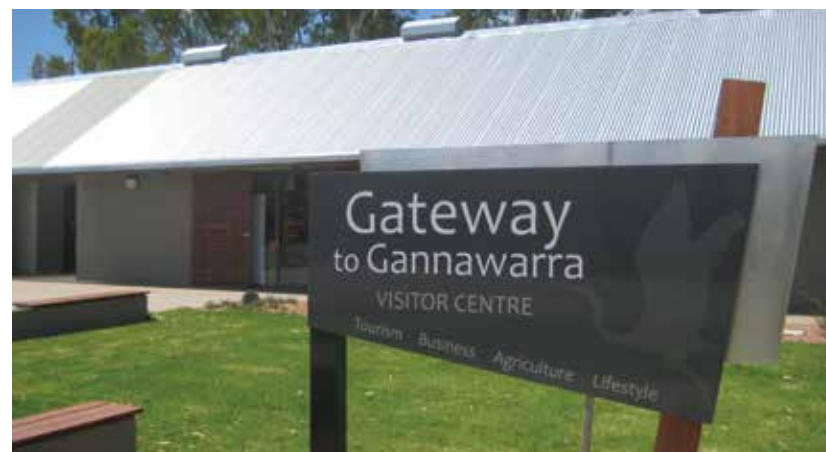
Agriculture and associated processing and servicing will continue to underpin the local economy. Maintaining and upgrading freight and transport networks will be important to support agriculture and economic diversity initiatives. Opportunities for economic diversity that have been identified include nature-based tourism associated with the Ramsar listed Kerang Lakes, and solar power generation. Gannawarra Shire is being proactive in attracting solar powered energy generation.

Cohuna – town

Cohuna, located on the Murray Valley Highway, performs a service centre role providing shopping, employment and business services. The town's location on the Gunbower Creek and its close proximity to the Gunbower Forest and Murray River make it attractive for retirees and those seeking an alternative lifestyle. It is also a gateway to regionally significant tourist attractions.

The strategy for residential development in and around Cohuna outlined in the Gannawarra Urban and Rural Strategy (2007) involves infill development and encouraging a range of housing densities in close proximity to urban services, as well as providing opportunities to live in a high quality environment on the Gunbower Creek, in a semi-rural setting.

Agriculture, associated processing and servicing underpin the economy of the town and this will continue, along with its role as a service centre for surrounding rural settlements.



Visitor centre, Gannawarra Shire

Gannawarra small towns and rural settlements

There are a number of small towns and rural settlements close to the Murray River within commuting distance to Kerang, Cohuna and Echuca. While these towns have limited services, they are attractive to active retirees and commuters. The twin towns of Koondrook and Barham, Murrabit, Leitchville and Gunbower have steady or slightly increasing populations.

By contrast the populations of the dry land towns of Quambatook and Lalbert are expected to decline. However, Quambatook has been identified by Gannawarra Shire as the place for future local government service provision due to its location and potential catchment.

Gannawarra future land use strategies and actions

- Recognise and reinforce Kerang's role as the main service centre for the Gannawarra community of interest
- Support the growth of Kerang through planned development, incremental expansion and infrastructure investment
- Recognise and support Cohuna to continue its role as a town that services its local community and surrounding rural settlements
- Recognise and support the future role of Quambatook to provide services to surrounding rural areas
- Support walking and cycling in urban areas to enhance accessibility
- Support public transport connections between towns within the Gannawarra community of interest, Kerang and Bendigo
- Support the Gannawarra Urban and Rural Strategy (2007)

13.6 Buloke community of interest

The Buloke community of interest comprises a network of towns, small towns and rural settlements. Higher order services are accessed at major centres, primarily outside the Loddon Mallee North region, including Horsham and Bendigo. The four larger towns within this community of interest, Donald, Charlton, Wycheproof and Birchip, are within Buloke Shire. The area has demonstrated innovation and adaptation with an agricultural research group and significant manufacturers based within the community of interest.

The Birchip Cropping Group is a not-for-profit agricultural research and extension organisation led by farmers from across the Wimmera and Mallee. The group undertakes research and extension on agronomic and farming systems, climate research, social research and development and livestock research. A biscuit manufacturer supplying biscuits to supermarket chains and food distributors throughout Australia is based in Donald and an agricultural engineering business with dealerships in three states is based in Birchip.

Buloke Shire Council has undertaken a significant body of strategic work on settlements, industry and community infrastructure. This has a strong focus on addressing population decrease and ageing and improving the viability of service provision in partnership with the community. Donald, Charlton, Wycheproof and Birchip will be the key service centres and the focus of residential, industrial and commercial development. They will service surrounding small settlements and rural areas.

Service provision in small settlements will undergo a process of consolidation and rationalisation. Multi-use facilities will be preferred to maximise use and minimise ongoing maintenance costs. This process will be undertaken following extensive community engagement and is supported by the plan.

Buloke future land use strategies and actions

- Recognise and support the roles of Donald, Charlton, Wycheproof and Birchip as towns providing services to isolated and dispersed rural settlements and regionally important rural industries
- Support settlements to adjust to ongoing population decrease



Canola, Buloke Shire, photographer James Goldsmith

14. Regional infrastructure

Future directions

- Support health, education, cultural and sporting facilities to meet local needs and promote social inclusion and community cohesion
- Work with utility and service agencies to optimise access to gas, electricity, drainage, water, waste, sewerage and telecommunications to cater for the population and economic needs of the region
- Support road, rail and logistics improvements to support economic growth and accessibility

Overview

The transport network and other infrastructure will be critical in catering for projected future growth and population change. Population or settlement growth will place relatively small pressures on the existing transport network in comparison to the movement of freight within and through the region supporting agriculture, particularly grain growing, food processing, mineral sands extraction and other industries.

14.1 Transport networks

The Loddon Mallee North region has freight networks of national significance providing transportation of goods and produce between the Murray Darling Basin and the ports of Melbourne, Geelong, Hastings and Portland. These freight networks need to be adaptable to increasing and changing freight tasks and protected from urban encroachment. This region is planning for an increased freight task, from mining activity as well as increased productivity from existing and planned horticultural and industry development.

Industry needs in the region are for more efficient freight movement. This means that freight vehicles are likely to be larger and more numerous,

with implications for road maintenance and upgrades. For example, road trains may be used in and around Mildura for transporting fruit. There are opportunities to encourage more freight to be transported by rail if this is a competitive and efficient transport option. Land use planning that integrates major logistics and freight precincts in the region in conjunction with the transport network has been considered with a view to the long-term freight demand of the region.

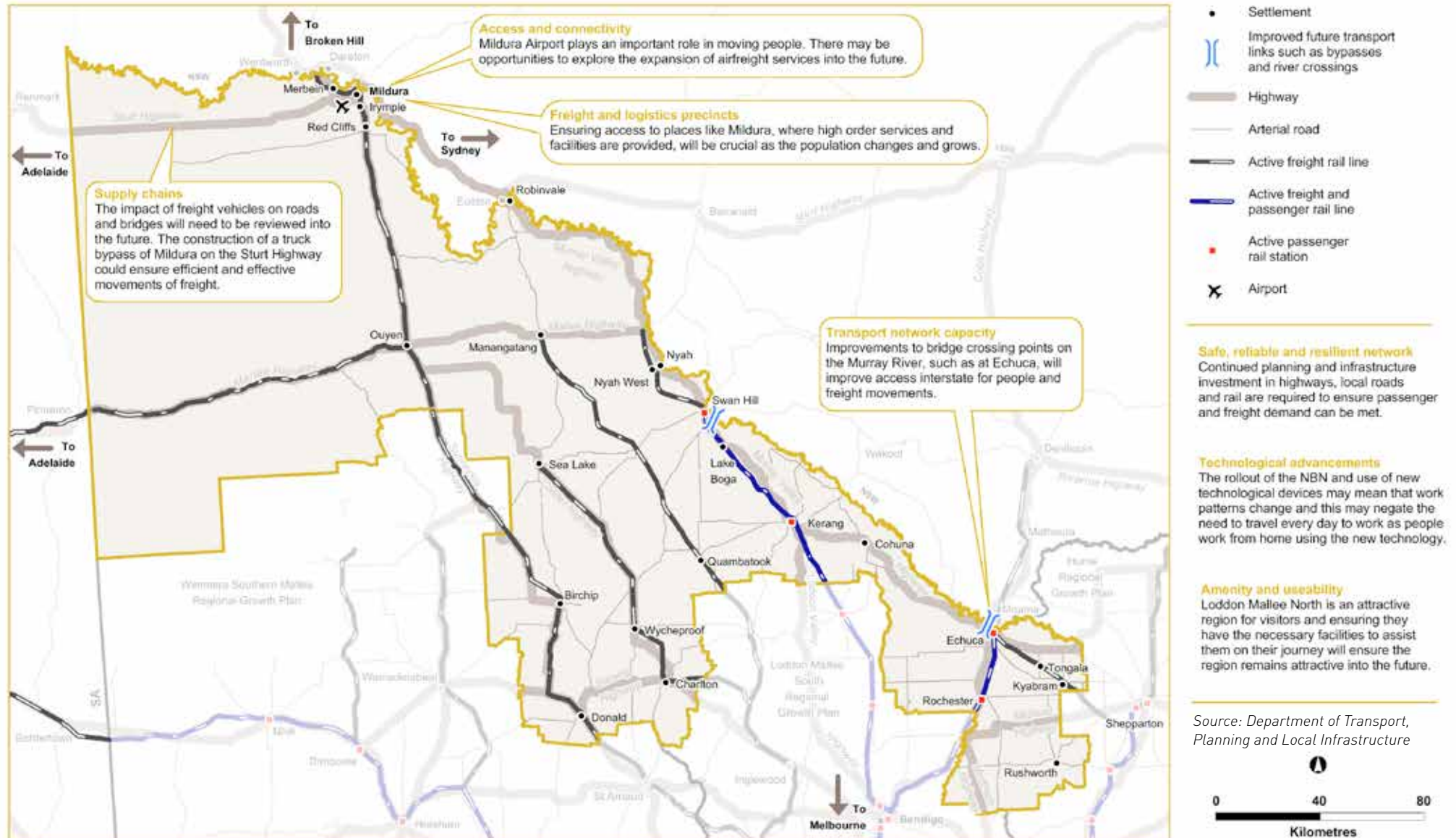
Challenges for the urban transport network are to encourage use of public and active transport in growing urban centres, and to support access to services from smaller, declining populations. Land use planning should support the urban transport network by encouraging housing development that is accessible and of sufficient urban density to support a viable urban public transport system. This plan gives consideration to critical mass needed across the region to support public transport systems and access to services.

Murray River bridge crossings are an essential part of the transport network. There are cross-border communities that rely on access to goods, services, education and employment on the other side of the river. Murray River crossings are also important for supporting the national freight network. Planning is currently underway for upgrades to Murray River crossings, including sequenced construction of new bridges at Echuca, Swan Hill and Yarrawonga, with the initial priority at Echuca. These crossings are a key priority over the medium to long term outlined in Victoria's 2012 submission to Infrastructure Australia.

Mildura Airport is well patronised for passenger and freight movement. The multi-million dollar upgrade of Mildura Airport will support overall growth and development in Mildura and the broader Sunraysia area.

This plan seeks to optimise the region's freight-related activities and support efficient and effective operations. It seeks to achieve efficiencies and apply sustainable practices while achieving economic and social benefits. The use of airports now and over the 30-year planning period has also been considered, along with appropriate land use and buffers around these critical facilities.

Map 11: Future directions for transport



Source: Department of Transport, Planning and Local Infrastructure

The transport network is critical for supporting regional growth. Strategic decisions regarding locations for growth will need to be aware of transport constraints and opportunities. Maximising sustainable transport options has been a central consideration in developing this plan and its future directions.

The following directions provide examples and insight as to how improved transport linkages and infrastructure could be considered. These are illustrated on Map 11.

Improve the capacity and functioning of the transport network

Ensuring connectivity to growth areas such as Mildura and Bendigo will be important. Improvements to bridge crossing points on the Murray River, such as at Echuca and Swan Hill, will improve access interstate for people and freight movements. It will also be important to consider other opportunities to mitigate traffic congestion through to walking, cycling and public transport infrastructure upgrades in key centres.

The following are examples of transport implementation opportunities for improving network capacity:

- improving and modifying the network of public transport services to better meet market needs
- enabling or managing diverse travel choices such as walking and cycling links
- expanding road space through widening, sealed shoulders, duplication, clearways and cycle paths
- enhancing rail services, which potentially could include passing loops and increased track axle loads to enable heavier loads to be transported.

Enable access and connectivity between settlements within and external to the region

The region anticipates an increase in passenger movements within major urban centres and between urban centres. With an ageing population, increased use of public transport to access higher order services is anticipated.

This plan outlines a hierarchy of settlements, with smaller settlements encouraged to plan as a cluster to maintain critical mass and maximise opportunities for public transport and increased access to services.

For example, some transport implementation opportunities for ensuring access and connectivity exist around:

- linking to cities outside the region such as Melbourne, interstate capitals, Bendigo, Shepparton, Horsham and Ballarat
- intra-regional transport such as urban bus networks in the regional city and regional centres, including hinterland and small community links
- cross-border connections including to Adelaide and southern parts of New South Wales
- flexible public transport, such as improvements to existing bus services and intermodal connections to rail at Swan Hill and Echuca
- accessibility, including *Disability Discrimination Act 1992* compliance of public transport facilities and services and cycle access.

Provide for a safe, reliable and resilient network

Continued planning and infrastructure investment in highways, local roads and rail is required to ensure passenger and freight demand can be accommodated. Investing in arterial and local roads is important to support a flexible transport system that enables buses and coaches to service rural and remote settlements and provide access to services and facilities in towns and centres such as Ouyen and Swan Hill, and other services and facilities in major centres like Bendigo and Melbourne. It is also important for the transport network as a whole to be resilient to future disruptions caused by flood and bushfire.

Examples of transport implementation opportunities for providing a reliable and resilient network exist around:

- maintenance and upgrading of rail and road networks including railway crossings and overtaking opportunities
- contingency plans for major disruption such as flood and bushfire
- increased truck capacity to improve reliability and reduce delays.

Consider technological advancements in the transport provision mix

The region has a number of larger and smaller settlements that require access to services and facilities such as health and education. Business opportunities may also be found with the rollout of the National Broadband Network. The rollout and use of new technological devices may mean that work patterns change and the need to travel every day to work is negated as many people work from home. The health and education sectors are leading the way in using this technology for online courses and rehabilitation of patients. In the future there will be opportunities to enhance and make use of new technologies.

Some examples of transport implementation opportunities for considering technological advancements could include:

- the National Broadband Network and its rollout including access and utilisation
- electronic devices such as tablets, smart phones and portable computers
- alternative fuelled vehicles
- new vehicle designs.

Ensure transport network amenity, accessibility and useability

The region's transport network is used by a variety of people for both business and pleasure. Long road transport distances in this region highlight the need for rest stops and fatigue management for both passenger and business drivers. Ensuring the network is maintained in a useable condition will be important for the future. This will be necessary to support a more diverse economy and make best use of tourism products and opportunities. One example might be to expand the use of rail trails by improving connections between them as well as improving access to these trails. It could also involve reviewing freight routes in high amenity tourist areas to reduce conflicts and in so doing provide an improved tourism experience. One example is the proposed truck bypass of Mildura on the Sturt Highway.

The following are some examples of transport implementation opportunities for ensuring amenity and useability:

- tourist routes, including walking and cycling tracks and trails
- facilities including wayside rest areas, signage and information hubs
- marketing such as package tours for day trips.

Develop freight and logistics precincts for collection and distribution of goods

Understanding freight movements and relationships will be important with potential changes to commodities being carried as the economy diversifies. Therefore key transport spines and associated infrastructure, such as freight facilities, will require good connections to other parts of the state and interstate to provide for efficient freight movements to ports, airports and domestic and global markets.

A study is currently underway to understand future freight demand and infrastructure needs for the Murray Basin region. This study will inform locations for new or enhanced freight precincts and new or enhanced road and rail networks.

Mildura Airport plays an important role in moving people and goods in the north west of the region. The airport is the third busiest passenger airport in Victoria, behind Melbourne and Avalon. Connections are provided to Melbourne, Adelaide and Sydney. There may be opportunities in the future to expand airfreight services, particularly for perishable products that need rapid access to markets. Future agricultural products may include fish and pheasants.

Some transport implementation opportunities for developing freight and logistics precincts could include hubs around:

- airports including interstate and regional service growth
- intermodal freight terminals
- activity-specific centres such as distribution warehouses or processing plants.

Understand and provide for an efficient and sustainable freight network for industry to access markets for export commodities

The region is well served by road networks. However, due to its agricultural economic base, the impacts of freight vehicles on local roads and bridges will need to be reviewed into the future, particularly for those that form crossing points over the Murray River. This will be important to assess infrastructure suitability and maintenance as much of the region's agricultural product is collected at the farm gate.

The road network in particular will need to stand up to the freight task, which may see a change in the type of commodities carried or more of the same commodities carried in larger freight vehicles. The construction of a truck bypass of Mildura on the Sturt Highway, for example, could enhance efficient and effective movements of freight.

The region is well serviced by freight rail. However, there is the potential to encourage more freight onto rail, which requires industry demand and a competitive rail network. The Murray Basin Transcontinental Rail Link, which would link Mildura to the Sydney - Perth rail line, would support the anticipated freight task.

Some transport implementation opportunities for efficient commodity supply chains exist around:

- understanding relationships, evidence base, industry need, movements and modes such as farm gate to markets, distribution centres and gateways for various commodities such as minerals and extractive industry and agricultural products
- technological advancements
- investment in the rail network, such as standardisation, as identified through sound business cases
- improvements to the road network to reduce bottlenecks in the supply chain.

Future transport land use strategies and actions

- Encourage flexible and adaptable freight connectivity to the transport network to cater for changes in commodities to be carried, changes to truck weights and volumes and other logistical advances into the future
- Incorporate this plan's future directions into local and regional structure plans and planning schemes to ensure infrastructure keeps pace with changes in demography, land use and with economic and social development
- Set aside land to provide corridors for future strategic road and rail linkages using zoning and overlays
- Maximise the strategic position of the transport network to encourage settlement and economic growth along existing transport routes
- Support infrastructure projects to assist in managing growth
- Support freight and logistics precincts, as part of road and rail freight transport networks, with the capacity to grow and adapt to changing needs
- Encourage and support the capacity and functioning of the transport network

14.2 Social infrastructure

Social infrastructure includes community and cultural facilities, services and networks that help communities to meet their social needs and maximise their potential. Provision of high quality social facilities and living environments that meet education, healthcare and lifestyle needs will support resilient and liveable communities and tourism.

Integrating land use and infrastructure planning is important for building strong, healthy communities and addressing disadvantage. It will be necessary as the region grows to make best use of existing infrastructure capacity and ensure new infrastructure and services are strategically planned and developed in a timely manner.

Community liveability includes a number of interrelated elements, including safety, provision of health services, education services, mobility, accessibility and a 'sense of place'. Community liveability is a concept that relates to the unique combinations of these assets, the provision of services and the ways in which they make a positive contribution to the community's quality of life.

It will be necessary to consider the different growth projections of settlements in the region and the importance of social infrastructure for retaining and attracting workers and new residents. It will also be important to ensure that new infrastructure and services are strategically planned and developed in a timely manner.

Challenges for the provision of social infrastructure include:

- changing demands for facilities and services as a result of population decrease and ageing
- providing an appropriate mix of housing types located close to public transport, commercial centres, community and cultural facilities and entertainment
- long distances to access or deliver services
- enhancing liveability for locals and visitors.

Education and skills

Education and a skilled workforce are key components of the region's future development. The region currently experiences skills shortages in the health, education, construction and manufacturing industries. Equitable access to education services from early childhood through to vocational and tertiary is not available across the region and is compounded by poor public transport.

The region experiences significant youth migration to regional and capital cities for tertiary and vocational education. There are pockets of significant and complex disadvantage in the region and education is critical for improving people's life outcomes.

Increasing educational attainment and skills development within the region will help to address skills shortages, support diversification of the economy and address disadvantage.



Students, Mildura, image courtesy of Mildura Development Corporation

Planning for health

Built form, economic and social infrastructure, and the natural environment can impact on the health of individuals and communities. A particular issue for the region is how to expand health services in the few centres with growing populations, while at the same time maintaining services in the many small or remote settlements and rural areas with steady or decreasing populations and an ageing demographic profile.

Mildura provides high level health services for the Mallee and Eastern Mallee communities. For the communities of Campaspe and Gannawarra the redevelopment of the Echuca Regional Hospital will provide upgraded healthcare facilities. Access to high level services for other settlements is provided in centres outside the region including Ballarat, Bendigo and Shepparton. Health services are dispersed across the region providing a mix of services. However, there is uncertainty about the long-term viability of maintaining some of these services for decreasing populations. Planning to meet the health needs of an ageing demographic in towns and rural settlements with decreasing populations is a significant challenge.

Other challenges impacting on the overall health of the community are the provision of quality affordable housing, the provision of public and emergency housing, access to training and employment opportunities, the lack of public transport and reliance on the car.

Land use planning can improve community health outcomes by:

- recommending infrastructure and services that are appropriately located in Loddon Mallee North
- supporting the creation of safe built environments
- encouraging appropriate locations for residential development and facilities for the aged in proximity to services
- integrating new residential development with public transport and walking and cycling networks to enhance accessibility
- encouraging new residential development to contribute to greater housing affordability, diversity and choice
- planning for residential development to facilitate healthy lifestyles, community connectedness and social cohesion.

Priorities for social infrastructure planning

Social infrastructure planning in the region will centre on encouraging:

- building on the higher order services provided in Mildura
- maintaining services at key locations across the region
- aligning social infrastructure with communities of interest.

Future social infrastructure land use strategies and actions

- Ensure local planning policy frameworks recognise changing population needs, social infrastructure requirements and consider broader climate change impacts on communities
- Work with agencies and government to investigate social infrastructure needs for the region and target facilities to particular settlements where the need is greatest or planning identifies a strategic direction to grow or maintain the town
- Encourage social infrastructure that is well located, multi-purpose, flexible, adaptable and accessible for the Loddon Mallee North communities of interest, public transport services, employment and educational opportunities
- Protect the operation of existing and planned health and education training facilities from conflicting land uses
- Encourage residential development that is designed to facilitate healthy lifestyles, community connectedness and social cohesion, such as walking and cycle routes, open space and community hubs

14.3 Water, energy and utilities

Overview

Growth of the towns and cities of the Loddon Mallee North region will result in demand for additional water, energy and utility infrastructure. This plan has considered efficient use of existing systems, preservation and identification of utility infrastructure corridors as well as urban location. The projected population and settlement pattern takes into account high level planning for committed and anticipated service utilities.

Urban, stock and domestic water supply

A secure water supply is of critical importance for supporting the planned growth of the region. Competing demands for water in drier years will need to be carefully managed, for agricultural, industrial, mining and urban users within and outside the region. The limited availability of water in drier years may impact on economic activities, as was seen through the recent drought. Such conditions present many challenges for economic activities but can also lead to innovation and economic diversification.

Urban, stock and domestic water supply is delivered throughout the region by various means, including:

- rain fed dams
- open channels, including irrigation channels
- pipelines in dry land areas, such as the Wimmera Mallee Pipeline, which services 36 towns and 7000 rural customers.

Existing water supply demand strategies prepared by regional urban water corporations have identified that there should be an adequate water supply to meet demand for the next 30 years or more across the whole region. However, some areas may experience shortages under certain climatic conditions. Two supply districts, Coliban Water's Murray System and Grampians Wimmera Mallee Water's Murray System, are predicted to fall short of likely demand.

In all cases, the water corporations have identified actions necessary to improve efficiency of supply and supplement supplies to meet demand. Such actions include purchasing more water, along with complementary actions to reduce demand and improve system efficiency. Alternative sources of water may also need to be used in the region in the future to meet urban water demands.

Development of integrated water cycle strategies by water supply authorities will need to take into account the growth proposed in this plan to identify any potential capacity and infrastructure planning needs¹². Further consideration will need to be given to the link between the urban and rural water cycle and the implications of reduced water availability when planning for new growth and development.

Irrigation infrastructure

Irrigation infrastructure underpins the success of many agricultural activities in the region, including horticulture and dairying, and is critical to the ongoing success of the region's contribution to Victoria's food bowl.

The region's irrigation infrastructure is undergoing significant modernisation to improve water delivery and efficiency and ultimately save water by reducing significant loss through the ageing system. This involves upgrades to both public and on-farm private infrastructure. These upgrades help provide surety for economic development within the irrigation district. They also provide environmental benefits, social benefits and improve urban water supplies.

Irrigation infrastructure, supported by associated drainage works, is essential for the continued success of the region's economy.

¹² Integrated water cycle strategies will be developed by water corporations by 2017 to replace their current water supply demand strategies, and will consider maintaining demand and supply balances, water supply system resilience, and future water cycle services options, including recycling sewage or trade waste, stormwater capture and reuse, and demand management.

Power

The Loddon Mallee North Utilities Infrastructure Study (2013) found that most settlements have the potential to accommodate increased electricity demand generated by new urban development. All of the investigated zone substations have potential for their capacity to be upgraded, should that be required.

While power capacity for residential development was found to be adequate, power to rural areas is generally single phase and suited mainly to low demand domestic uses. Domestic air conditioning, dairies, cooling and packing sheds, intensive animal facilities and wineries all require three phase power; as does mineral processing and other intensive industries. Connection will require upgrades to the transmission infrastructure.

The power infrastructure and continuity of supply is at risk in some locations, for example:

- Ouyen has a one-way feeder line; if it became inoperable, the town would be without power.
- The Kerang terminal station, which receives a 220 kV transmission line, is in an area at risk of flood. This station delivers power into north-west Victoria and south-west New South Wales, including Broken Hill.

Continuity of power supply is important not only for residents, but is critical for industry. Repair of transmission infrastructure can take time in more remote locations.

Gas

The availability of reliable and cost-effective energy is critical for business, particularly for certain energy intensive types of industry. Economic development in some locations is constrained by a lack of access to reticulated natural gas.

Natural gas to Mildura, Irymple and Red Cliffs comes from South Australia. The system is not meeting demand and plans are underway to increase capacity by delivering gas under pressure using the existing infrastructure. It is estimated this will increase capacity by 50 per cent benefitting residents and industry. Echuca, Rochester, Kyabram and Tongala receive gas from the transmission pipe to Shepparton and there is scope for further industrial development.

The area from Echuca to Red Cliffs is without a natural gas supply. Preliminary investigations to extend the Echuca supply to Swan Hill found the only viable option was the extension of a transmission pipe from Bendigo. A business case is currently being developed for this.

Regional Development Victoria commissioned a study into the provision of natural gas to Murray River communities between Echuca and Mildura. This was essentially to Swan Hill with connections to other towns along the route. The next stage, a feasibility study, is now underway and includes an economic impact study of supplying the region with natural gas and an investigation of alternative energy options for the delivery of natural gas to communities in the study area. These solutions involve the use of compressed natural gas (CNG) or liquefied natural gas (LNG) technologies whereby natural gas is transported by road tanker/trailer to the outskirts of a region or industrial estate, thus avoiding the significant costs involved in the construction of major pipelines.

Telecommunications

The rollout of the National Broadband Network will provide settlements with a range of fibre optic cable and fixed wireless services to meet the demands of a diversifying economy. The extent to which the region will be covered after upgrades is still not well defined.

Land use and infrastructure planning for the region should seek to take advantage of enhanced telecommunications, particularly in larger centres that have fibre optic cable connections. Improved infrastructure that enables better connections in areas with poor reception is supported.

Wastewater management

Urban water corporations plan, provide and manage reticulated sewerage. The responsibility for on-site wastewater outside reticulated areas rests with local government as does preparation of domestic wastewater management plans.

Hinterland areas around the regional city, centres that have experienced significant growth and small isolated towns, make up the bulk of areas that experience problems with onsite wastewater management. Provision of reticulated sewerage is reliant on adequate housing density to generate sufficient sewerage flows. Reticulated sewerage is not always the most effective or cost-efficient solution to wastewater management.

Councils have plans for domestic wastewater management. These plans include processes for upgrading, repairing, managing and levying the on-site systems as compared with options that typically involve implementing a reticulated sewerage scheme. These plans can be measured against growth predictions and provide input to planning policy.

Waste management

As the Loddon Mallee North region's population changes there will be changing demand for waste and resource recovery management across the region. In some areas such as Mildura, this may create a challenge for securing land for future waste management facilities, including for sorting and processing, recycling and reprocessing, export, reuse and disposal of waste. Opportunities to encourage industries in this field and generate energy from waste should be explored and supported.

As towns grow, they often experience pressure to encroach on to land that is nearby to landfills, potentially creating conflict. This plan encourages future strategic land use planning by councils to consider future waste management and resource recovery facilities, including protecting buffer zones around these sites from incompatible development.

There are a number of landfills or transfer stations that serve a regional function as not all municipalities have their own facilities. Large landfills are located in Mildura, Swan Hill and at Patho near Echuca. Not all landfills or transfer stations are run by local municipalities. Some are privately operated, such as the Patho site. There is currently sufficient landfill capacity to manage the region's waste for the next 10 to 20 years.

Future water, energy and utilities land use strategies and actions

- Ensure that local planning schemes recognise the need to direct growth to areas where it will make the most efficient use of existing infrastructure
- Identify key regional priorities and land use requirements for improved utilities, energy and telecommunications infrastructure and support implementation of these priorities
- Ensure infrastructure planning is coordinated with urban development and the key locations for growth identified in this plan
- Strategically upgrade power supply in rural areas to promote economic growth and support industry to adapt to the impacts of climate change
- Support the supply of natural gas to Mildura and other centres and towns to promote economic growth
- Support projects that increase the use of recycled water and reduce demand for potable water so as to improve the resilience of the region to a drier climate
- Support opportunities for industry to develop new waste and resource recovery processes including generating energy from waste
- Collaborate with relevant stakeholders to review planning controls and guidance relating to separation distances for solid waste and resource recovery facilities
- Identify the potential economic, social and environmental benefits of utilities infrastructure investment and prioritise investment where it will achieve multiple benefits



Port of Echuca, photographer Peter Charlesworth 2013



Olive growing, image courtesy of Mildura Development Corporation

PART D | REGIONAL GROWTH PLAN

This part of the Loddon Mallee North Regional Growth Plan brings together all the elements of the regional land use framework (economy, environment and landscape, settlement and regional infrastructure) to identify the plan for growth and change over the next 30 years. It provides direction on where future growth should occur and has been informed by advice, analysis, investigation and community feedback.

15. Future directions for regional growth

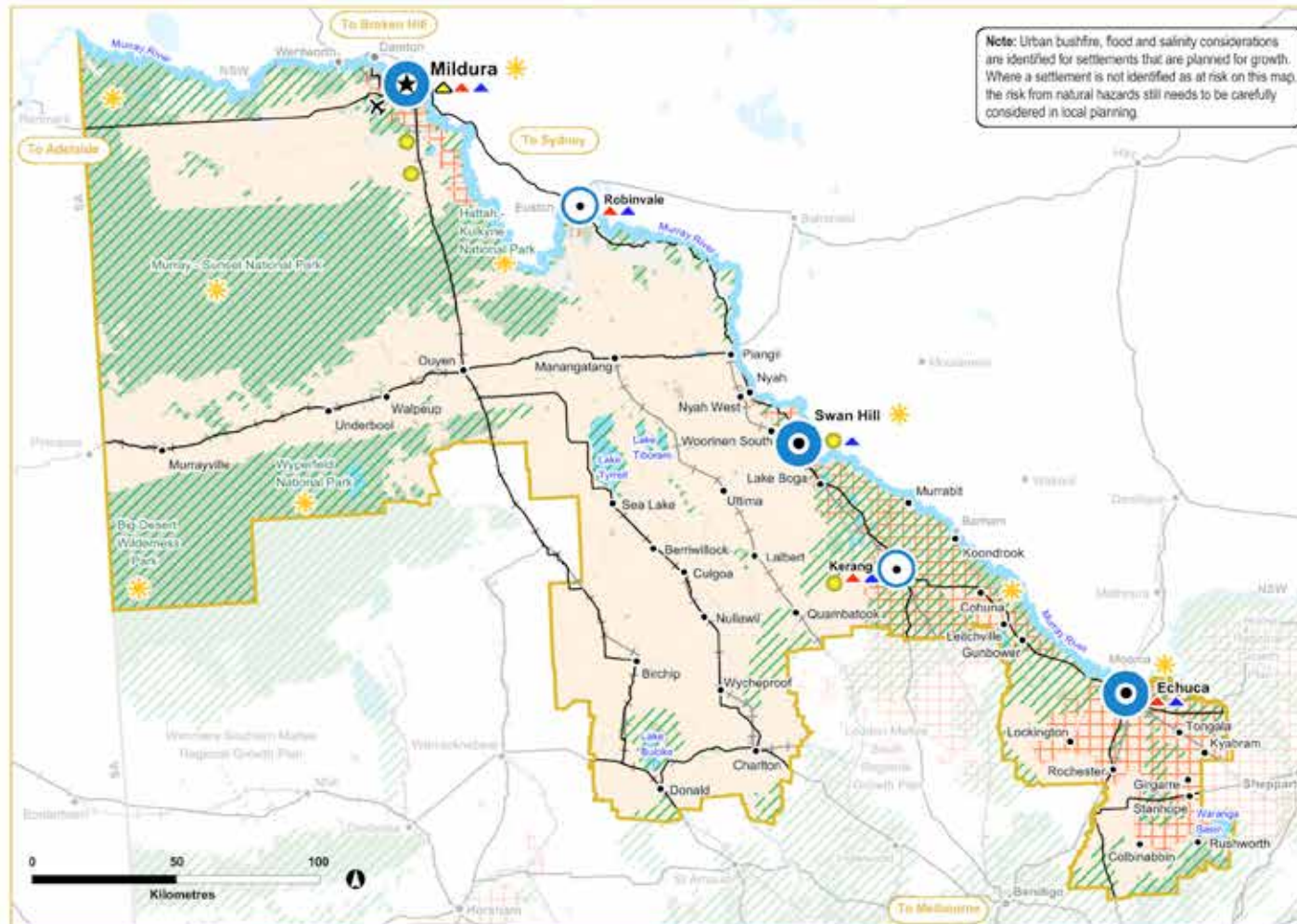
Theme	Principle for growth	Future directions	Strategies (refer to Map 12 for further direction)
Regional economy	1. Align population and economic growth	Facilitate vibrant and prosperous commercial centres and industrial hubs	<ul style="list-style-type: none"> Alignment of population and economic growth is recognised in planning schemes Ensure adequate supply of commercial and industrial land for employment across the region Provide a suitable range of commercial and industrial precincts located within the regional city, regional centres and towns recognising each settlement's role in their community of interest, including cross-border and inter-regional access for economic development
	2. Realise opportunities to strengthen and diversify the regional economy	Further diversify the primary production, service, manufacturing and tourism industries	<ul style="list-style-type: none"> Encourage growth and adaptation of agriculture Encourage emerging agribusinesses and location clusters Encourage production and processing that adds value to local agricultural and other primary production products Support appropriate initiatives such as investment in infrastructure, freight and logistics and increased availability of natural gas
	3. Support and manage our rural landscapes	Protect key regional assets	<ul style="list-style-type: none"> Identify and protect areas of strategic significance for agriculture Encourage adaptation of the agricultural sector to embrace opportunities and respond to the potential risks arising from climate change Protect major infrastructure, industrial land and mining activities from encroachment by incompatible uses Facilitate ongoing agricultural productivity and investment in high value agriculture by critically assessing proposals for non-agricultural uses within areas of strategic agricultural significance and preventing encroachment of incompatible uses Protect and maintain productive land and irrigation assets necessary to help grow Loddon Mallee North as an important food bowl for domestic and international exports
		Maximise the local and regional benefits of emerging economic opportunities	<ul style="list-style-type: none"> Support emerging and potential growth sectors such as nature-based tourism, mining and renewable energy generation and protect these activities from urban encroachment Identify and foster regional, cross-border and inter-regional relationships to harness emerging economic opportunities

Theme	Principle for growth	Future directions	Strategies (refer to Map 12 for further direction)
Environment and heritage	4. Be custodians of our region's environmental and cultural heritage assets and minimise the region's exposure to natural hazards	Manage risks to growth from natural hazards	<ul style="list-style-type: none"> • Direct development away from locations where there is significant risk from flood • Direct development to locations of lower bushfire risk • Carefully consider development in locations where there is significant bushfire risk that cannot be avoided • Avoid development in locations of extreme bushfire risk • Avoid development in areas where planned bushfire protection measures may be incompatible with other environmental objectives • Planned development should consider access to water for emergency response and fire fighting
		Protect and improve the condition of environmental and cultural heritage assets	<ul style="list-style-type: none"> • Consistently incorporate information on environmental and cultural heritage assets and natural hazards into planning schemes • Direct settlement growth and development away from high value environmental and cultural heritage assets • Undertake strategic planning for areas under pressure for rural residential development to protect nearby environmental assets and values and enhance the region's environmental credentials • Support initiatives to enable the establishment, protection and reconnection of ecosystems through large scale native vegetation corridor projects • Identify and protect significant landscapes • Investigate the development of regional heritage themes and use these to inform local heritage studies • Encourage projects that improve the management and use of water resources
		Plan for and manage risks and opportunities arising from climate change and national greenhouse gas emissions reduction actions	<ul style="list-style-type: none"> • Ensure that regional and local planning responds to opportunities for innovation and industry development arising from climate change and initiatives that support national and global action to reduce greenhouse gas emissions

Theme	Principle for growth	Future directions	Strategies (refer to Map 12 for further direction)
Living in the region	5. Protect and provide local sense of place	Direct major population and housing growth to existing regional cities and centres	<ul style="list-style-type: none"> Recognise and consolidate Mildura's role as a regional city and Swan Hill and Echuca as regional centres Plan strategically for the most appropriate locations for rural residential growth in the hinterland areas of Mildura, Swan Hill and Echuca
	6. Develop a living network of towns	Improve linkages within and between Loddon Mallee North's five communities of interest	<ul style="list-style-type: none"> Recognise and build on relationships between the Loddon Mallee North region and communities of interest in southern New South Wales, South Australia and adjoining Victorian regions Recognise and foster networks between smaller townships and communities to leverage access to regional services and investment Recognise and support towns that are well located to provide an ongoing service centre role to maximise access to services for surrounding smaller settlements and rural areas Ensure local planning policy frameworks identify regional, cross-border and inter-regional relationships and include measures to manage pressures, opportunities or constraints associated with these relationships and influences
		Anticipate and respond to changing community needs	<ul style="list-style-type: none"> Encourage innovative approaches to the provision of housing Encourage community-based planning approaches in conjunction with land use planning policy
Regional infrastructure	7. Enable healthy lifestyles	Support health, education, cultural facilities to meet local needs	<ul style="list-style-type: none"> Ensure local planning policy frameworks recognise changing population needs, social infrastructure requirements and consider broader climate change impacts on communities Work with agencies and government to investigate social infrastructure needs for the region and target facilities to particular settlements where the need is greatest or planning identifies a strategic need Encourage social infrastructure that is well located, multi-purpose, flexible, adaptable and accessible Protect the operation of existing and planned health and education facilities from conflicting land uses Encourage residential development that is designed to facilitate healthy lifestyles, community connectedness and social cohesion

Theme	Principle for growth	Future directions	Strategies (refer to Map 12 for further direction)
Regional infrastructure	8. Strategically retain, renew and build infrastructure to support growth and enable healthy and supportive communities	Provide access to gas, electricity, drainage, water, waste facilities, sewerage and telecommunications infrastructure	<ul style="list-style-type: none"> • Ensure local planning schemes recognise the need to direct growth to areas where it will make the most efficient use of existing infrastructure • Identify key regional priorities and land use requirements for improved utilities, energy and telecommunications infrastructure • Ensure infrastructure planning is coordinated with urban development and the key locations for growth identified in this plan • Strategically upgrade power supply in rural areas to promote economic growth • Support the supply of natural gas to Mildura and other centres and towns • Support projects that increase the use of recycled water and reduce demand for potable water • Support opportunities for industry to develop new waste and resource recovery processes • Collaborate with relevant stakeholders to review planning controls and guidance relating to separation distances for solid waste and resource recovery facilities • Identify the potential economic, social and environmental benefits of utilities infrastructure investment and prioritise investment where it will achieve multiple benefits
		Support road and rail improvements	<ul style="list-style-type: none"> • Encourage flexible and adaptable freight connectivity to the transport network • Incorporate this plan's future directions into local and regional structure plans and planning schemes to ensure infrastructure keeps pace with changes • Set aside land in planning schemes to provide corridors for future strategic road and rail linkages • Maximise the strategic position of the transport network to encourage settlement and economic growth along existing transport routes • Support infrastructure projects to assist in managing growth • Support freight and logistics precincts with the capacity to grow and adapt to changing needs • Encourage and support the capacity and functioning of the transport network

Map 12: Regional growth plan



SETTLEMENT NETWORK

These urban locations continue to form the foundation of the urban settlement network. Build and strengthen the existing urban network by focusing growth in Mildura, Swan Hill, Echuca and Kerang. Support smaller localities to make them more resilient and adaptable.

ECONOMIC DEVELOPMENT

Support increasing economic diversity through investigating opportunities in agriculture, alternate energy sources, extractive industries and tourism and support compatible land uses associated with these industries.

ENVIRONMENT AND HERITAGE

Protect and manage environmental and heritage assets (including water assets) for their intrinsic value, cultural values and as key parts of the regional economy - in particular the Murray River corridor.

CONNECTIVITY

Optimise the use of existing transport networks and support new transport infrastructure to provide access across the borders and for passengers and freight.

SETTLEMENT NETWORK

- ★ **Regional city**
Has the highest level of population, services and employment in the region, including major retailing, hospitals, universities and transport interchanges, and has all utility services provided. It also services extensive communities of interest.
- **Regional centre**
Large diverse population with significant retail and employment bases that service extensive communities of interest. It has access to hospitals, education, arts and cultural facilities with well-defined commercial and industrial precincts.
- **Town**
Has access to a variety of services and facilities including schools and retail. The roles and functions of settlements are diverse, but economic and social viability is important to service local communities. Some are also popular tourist locations that can experience seasonal rises in population.

Support growth

- **Promote growth**
Target and proactively encourage and facilitate growth, development and investment.
- **Support growth**
Manage medium scale growth, development and investment.

ECONOMIC

- ★ Significant tourist area - includes some significant cultural heritage places and landscapes
- Solar generation facility
- Irrigation district
- Cropping, grazing and/or mixed farming

CONNECTIVITY

- Highway
- Active railway line
- ✈ Airport

ENVIRONMENT

- Areas containing high value terrestrial habitat
- Public land
- Lakes
- Rivers
- ▲ Urban flood considerations⁽¹⁾
- ▲ Urban bushfire considerations⁽²⁾
- ▲ Urban salinity considerations⁽¹⁾

(1) Urban flood and salinity considerations are based on existing overlays.
(2) Bushfire considerations may be based on one or more of the following: existing overlays, advice from CFA or Regional Bushfire Planning Assessments. Does not include Bushfire Prone Areas.

Source: Department of Transport, Planning and Local Infrastructure



Intermodal facility at Wakefield's Transport, Merbein, image courtesy of Mildura Development Corporation

PART E | DELIVERING REGIONAL GROWTH

16. Implementation

16.1 Planning schemes

The Loddon Mallee North Regional Growth Plan will have status as part of the Victoria Planning Provisions and planning schemes. This will give the plan's strategic directions status in each local government area's planning scheme.

The Loddon Mallee North region councils will work in partnership with state government to facilitate the required planning scheme amendment process and content as an immediate priority.

An Advisory Committee has been appointed to conduct a review of the State Planning Policy Framework in order to deliver regional growth plans and other major planning policies, such as the metropolitan planning strategy, *Plan Melbourne*.

The plan will guide and inform future strategic planning across the Loddon Mallee North region, including future reviews of each council's Municipal Strategic Statement. The plan will help provide justification for future planning scheme amendments that are consistent with the plan.

16.2 Links to Regional Strategic Plan implementation

The plan is closely aligned with the Loddon Mallee Regional Strategic Plan – Northern Region (2010). Implementation of this plan will also be considered in relation to other ongoing work to implement the strategic directions of the Loddon Mallee Regional Strategic Plan – Northern Region (2010). This will strengthen the capacity for achieving shared objectives and targeting efforts to secure endorsement and funding for the highest priorities in the region.

Further, opportunities for implementation of key directions and actions expressed in this plan will be explored with councils, state and federal governments and the Regional Development Australia Loddon Mallee Committee. The Regional Development Australia Committee is a key stakeholder in overseeing the ongoing development and implementation of the Loddon Mallee Regional Strategic Plan – Northern Region (2010). It is appropriate to facilitate and ensure alignment between the regional growth plan and the regional strategic plan in order to promote outcomes that are consistent with common directions expressed in each plan.

This plan is intended to inform any subsequent review of the Loddon Mallee Regional Strategic Plan – Northern Region (2010).

Possible regional governance arrangements that can be harnessed to promote integrated planning and delivery in relation to agreed actions regarding future land use include partnering/integrating with an existing cross-government group that has alignment with the focus of the regional growth plan or establishing a new cross-government stakeholder group that has links to an existing regional planning governance structure.



Research and development in the agricultural industry, image courtesy of Mildura Development Corporation

16.3 A plan for implementation of actions

Implementation of this plan is critical to achieve its strategic directions for growth and change. An implementation plan will ensure that the region is able to respond to key regional challenges and strategic directions of the plan relating to infrastructure provision, key asset protection and management of future growth.

A more detailed implementation plan will be developed by the Loddon Mallee North Regional Growth Plan partners including arrangements for monitoring of delivery. It will set out the land use policies, strategies and actions identified in this plan and provide timelines and responsibilities for each of the items. This will provide greater certainty on infrastructure priorities to inform future decision making about future growth and development. Development of the implementation plan will involve working with councils, state government departments and infrastructure and service delivery agencies.

This plan identifies further work or investigations that are required to improve land use planning policy and outcomes in the region. Opportunities to progress these studies will be identified as part of the implementation plan.

Table 2 sets out actions identified in the development of this plan that will support delivery of the plan's strategic directions.

Table 2: Actions

Action:	Reference to future direction, land use strategy, action or policy (Part C)
Regional economy <ul style="list-style-type: none"> • Recognise in planning schemes the importance of aligning economic and population growth with urban settlement, industry, services and infrastructure • Ensure there is an adequate supply of commercial and industrial land for employment across the region • Protect major infrastructure, industrial land and mining activities from encroachment by incompatible uses • Encourage emerging agribusinesses and location clusters, including intensive animal industries • Identify and protect areas of strategic significance for agriculture 	<p>Section 11.1 Building on economic strengths</p> <p>Section 11.2 Agriculture</p>
Environment and heritage <ul style="list-style-type: none"> • Consistently incorporate information on environmental and cultural heritage assets and natural hazards (including threats to soil health) into planning schemes by updating the relevant planning overlays to reflect new understanding and to recognise high value assets and priority landscapes identified in regional catchment strategies • Direct settlement growth and development away from areas of high value environmental and cultural heritage assets, such as significant vegetation, waterways, scenic landscapes, and Aboriginal cultural heritage and historic heritage places • Undertake strategic planning for areas under pressure for rural residential development, particularly those associated with significant wetlands and the Murray River, to protect nearby environmental assets and values, and to enhance the region's environmental credentials 	<p>Section 12.2 Natural hazards and risks</p>

Action:	Reference to future direction, land use strategy, action or policy (Part C)
<p>Living in the region</p> <ul style="list-style-type: none"> Plan strategically for the most appropriate locations for rural residential growth in the hinterland areas of Mildura, Swan Hill and Echuca to maintain environmental sustainability and avoid impacts on future agricultural export potential Facilitate growth of Mildura as a regional city, through planned development incorporating the nearby settlements of Red Cliffs, Irymple and Merbein Encourage urban consolidation, particularly in the central business district of Mildura Ensure growth of Mildura does not compromise the future operation or potential for expansion of Mildura Airport Facilitate growth of Echuca through planned development while considering population change and settlement planning in Moama Reinforce Echuca's role as a regional centre and important tourism destination Facilitate the growth of Swan Hill through planned development, incremental expansion and consideration of population change and settlement planning in New South Wales Reinforce Swan Hill's role as a regional centre and important tourism destination Facilitate the growth of Robinvale through planned development, incremental expansion and consideration of population change and settlement planning in New South Wales Recognise and reinforce Kerang's role as the main service centre for the Gannawarra community of interest Support growth of Kerang through planned development, incremental expansion and infrastructure investment Recognise and support the roles of Donald, Charlton, Wycheproof and Birchip as towns providing services to isolated and dispersed rural settlements and regionally important rural industries Support settlements to adjust to ongoing population decrease 	<p>Section 13.1 Loddon Mallee North settlement</p> <p>Section 13.2 Mallee community of interest</p> <p>Section 13.3 Campaspe community of interest</p> <p>Section 13.4 Eastern Mallee community of interest</p> <p>Section 13.5 Gannawarra community of interest</p> <p>Section 13.6 Buloke community of interest</p>

Action:	Reference to future direction, land use strategy, action or policy (Part C)
<p>Regional infrastructure</p> <ul style="list-style-type: none"> • Incorporate this plan's future directions into local and regional structure plans and planning schemes to ensure infrastructure keeps pace with changes in demography, land use and with economic and social development • Set aside land to provide corridors for future strategic road and rail linkages using zoning and overlays • Maximise the strategic position of the transport network to encourage settlement and economic growth along existing transport routes • Ensure local planning policy frameworks recognise changing population needs, social infrastructure requirements and consider broader climate change impacts on communities • Encourage social infrastructure that is well located, multi-purpose, flexible, adaptable and accessible for the Loddon Mallee North communities of interest, public transport services, employment and educational opportunities • Protect the operation of existing and planned health and education training facilities from conflicting land uses • Ensure that local planning schemes recognise the need to direct growth to areas where it will make the most efficient use of existing infrastructure • Identify key regional priorities and land use requirements for improved utilities, energy and telecommunications infrastructure and support implementation of these priorities • Ensure infrastructure planning is coordinated with urban development and the key locations for growth identified in this plan 	<p>Section 14.1 Transport networks</p> <p>Section 14.2 Social infrastructure</p> <p>Section 14.3 Water, energy and utilities</p>

16.4 Review and performance

The plan is intended to be a living and adaptable plan, able to respond to new data and information as it arises, including information from state or regional strategies and programs. The plan is to be reviewed on a four- to five-year cycle. Any review process will involve broad community and stakeholder engagement.

Implementation of this plan will be integrated with the overall implementation of the Loddon Mallee Regional Strategic Plan – Northern Region (2010) and included in the performance monitoring framework already established or being established in future, for the implementation of the regional strategic plan. This framework includes an assessment of performance and project progress and sets out performance measures for the key directions of the Loddon Mallee Regional Strategic Plan – Northern Region (2010).

16.5 Implementation summary

The key implementation actions, priorities, partners and responsibilities are summarised below:

Action	Priority	Timing	Lead responsibility	Key partners
1. Planning scheme implementation of regional growth plan	High	2013-2014	Department of Transport, Planning and Local Infrastructure	Loddon Mallee North region councils
2. Implementation plan	High	2014-2015	Loddon Mallee North region lead governance entity	Loddon Mallee North Regional Growth Plan project partners
3. Loddon Mallee North region Municipal Strategic Statement reviews	Medium	To coincide with Municipal Strategic Statement review cycles	Loddon Mallee North region councils	Department of Transport, Planning and Local Infrastructure
4. Review	Medium	2016-2018	Loddon Mallee North region lead governance entity	Loddon Mallee North Regional Growth Plan project partners

GLOSSARY

Aboriginal cultural heritage: means Aboriginal places, Aboriginal objects and Aboriginal human remains. They tell the story of Aboriginal use and occupation of the land. An Aboriginal place can be an area of land or water, a natural feature, formation or landscape, an archaeological site, as well as a building or structure. Aboriginal cultural heritage also includes intangible places where there may be no physical evidence of past cultural activities. These include places of spiritual or ceremonial significance, places where traditional plant or mineral resources occur, or trade and travel routes.

Bioenergy: energy generated from organic matter, such as agricultural waste.

Biofuels: biofuels are liquid or gaseous fuels derived from biomass.

Biomass: biomass includes agricultural residues and waste products, forestry residues, organic wastes, purpose-grown energy crops, woody weeds, algae and biodegradable municipal waste streams.

Carbon farming: a method of allowing farmers and land managers to earn carbon credits by storing carbon or reducing greenhouse gas emissions on the land.

Central Business District (CBD): the area comprising the core commercial, civic and community functions of a town.

Community of interest: a group of settlements that have strong functional social and economic interrelationships and share facilities and services. They are not strictly defined by geography.

Cultural heritage: captures both Aboriginal cultural heritage and historic heritage.

Earth resources: these comprise minerals, petroleum, gas, extractive and geothermal industries.

Environmental asset: a tangible bio-physical element of the environment, such as terrestrial habitat, waterways, significant landscapes and soils.

Environmental value: the attributes of an environmental asset that make it valuable or important based on environmental, social or economic values.

Extractive Industry Interest Area (EIIA): identified areas around major centres in Victoria where it is possible that a quarry could be placed within defined constraints.

Food bowl: the Greater Shepparton, Moira, Swan Hill, Campaspe, Gannawarra, Mildura and Loddon municipalities all form part of Victoria's food bowl, which specialises in irrigation-based industries, including dairy, horticulture and viticulture, as well as dry land farming operations and agriculture-related industries, such as food processing, packaging and transport.

Freight and logistics precincts: places where large volumes of freight are received, stored and dispatched. These precincts may support port, airport or rail and road intermodal terminals and may include manufacturing activity, warehouses and distribution centres within the broader precinct of complementary freight and freight-related activities.

Goulburn-Murray Water Connections Project: formerly known as Northern Victoria Irrigation Renewal Project (NVRP) is a \$2 billion irrigation modernisation project in Victoria's food bowl.

Greenfield land: non-urban land designated for future urban development.

Higher order services: services that are only provided in a limited number of locations and have a large catchment area, such as a university or department store.

Historic heritage: refers to the fabric of our past that we value today and includes archaeological sites, buildings and precincts, structures, gardens, trees, cemeteries, cultural landscapes, shipwrecks and significant objects and artefacts.

Housing diversity: the provision of a range of different housing types to suit different ages, lifestyles and incomes.

Industry or agricultural clusters: geographic concentration of businesses and activities that relate to each other or work together.

Infill development: the development of additional dwellings in established urban areas.

Intensive agriculture: land used to intensively produce agricultural products through ventures such as poultry farms, piggeries, feedlots, aquaculture, hydroponics, greenhouses and glasshouses. This includes 'intensive animal husbandry' and intensive 'crop raising' as defined in planning schemes.

Living Murray Icon sites: the Murray-Darling Basin Ministerial Council's Living Murray program identified six priority Icon sites that will benefit from improved water management regimes. The sites have ecological, economic, cultural and heritage significance to Aboriginal people and to the whole community but have historically been subject to negative impacts from river regulation. Four Icon sites are located in Loddon Mallee North: Gunbower-Koondrook-Perricoota Forest; Hattah Lakes; Chowilla Floodplain and Lindsay-Wallpolla Island; and the River Murray Channel.

National Broadband Network (NBN): high-speed internet network being provided across Australia.

Natural hazard: a naturally occurring source of potential harm or a situation with the potential to cause loss, for example bushfire or flood.

Natural resources: naturally occurring commodities such as oil, gas, sand and stone, minerals, fisheries, timber or places of solar or geothermal energy potential.

Nature-based tourism: any activity that relies on experiences directly related to natural attractions including ecotourism, adventure tourism, wildlife tourism and extractive tourism, for example, fishing or gold panning.

Overlays: planning scheme provisions generally related to a particular issue, such as heritage or flood.

Planning scheme: policies and provisions for the use, development and protection of land, prepared by councils or the Minister for Planning.

Regional catchment strategy: a document setting out the management of natural resources, such as rivers, wetlands, terrestrial habitat and agricultural land.

Regional cities: the 10 largest cities outside metropolitan Melbourne (Ballarat, Bendigo, Geelong, Horsham, Latrobe, Mildura, Shepparton, Warrnambool, Wangaratta and Wodonga). The relevant municipalities are represented by the Regional Cities Victoria group and together advocate a whole-of-government approach to delivering services and infrastructure.

Registered Aboriginal Party: represent Aboriginal people in the management and protection of Aboriginal cultural heritage.

Rural areas: include areas outside urban areas. They can include farming and non-farming land uses, such as rural residential, extractive industry and open space. In some cases rural areas may include very small rural settlements.

Rural land use: a broad term representing the use of land outside urban areas and includes activities such as agriculture, rural living, forestry and extractive industry.

Rural living: land in a rural setting, which is used and developed for dwellings that are not primarily associated with agriculture.

Sensitive uses: land uses that have high amenity expectations such as housing, schools or hospitals.

Social infrastructure: includes community facilities, services, and networks that help communities meet their social needs and maximise their potential wellbeing such as, sports and recreation facilities, schools and hospitals.

Terrestrial habitats: combinations of biological and physical features of the landscape (including native vegetation, fallen timber and litter, soil, rocks, etc) that enable populations of each native plant or animal species (or group of species) to live and reproduce. Features can be considered at the site scale, for example, the food sources used by individuals, and the landscape scale, for example, the linkages used for movement between areas, or the refuges used to cope with disturbance events.

