Regional Strengths and Infrastructure Gaps

Regional Analysis: New South Wales


Sea Cliff Bridge, Clifton, New South Wales

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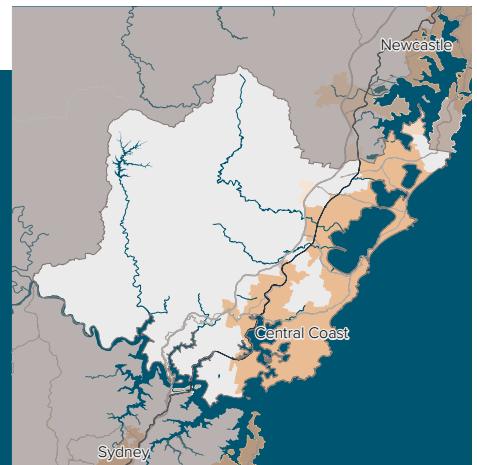
Jindabyne Dam, New South Wales

6.2.1 Central Coast

The Central Coast region is located in the fast-growing corridor between Sydney and Newcastle. The region, with its rich natural assets and proximity to Sydney, is expected to continue to attract both visitors and new residents seeking lifestyle and employment opportunities.

The region has a skilled workforce and a diverse economy, with expertise in healthcare and social assistance, food, advanced manufacturing, logistics, agriculture, and construction. The Central Coast has access to key consumer markets and export opportunities, with road and rail infrastructure as well as strategically located warehousing and freight. Overseas and domestic demand will also support growth in household food manufacturing brands and food production industries. The Central Coast's availability of commercial land and convenient access to major markets makes it an ideal location for both business and industry.

The region is looking to sustainably capitalise on its natural assets to grow the local economy as well as uplifting liveability outcomes for its residents by promoting well-connected communities, improved educational access, diverse housing and better inter-regional and intra-regional connectivity.[1]

Strengths

Key existing assets

Economic	**Strategic location**	The Central Coast is strategically located one hour between Sydney and Newcastle. This enables connectivity for tourists, residents and businesses, as well as freight movements to link to regional, national and international markets.
Natural	**Natural resources**	The region is home to significant mineral and energy resources such as sand, sandstone, gravel, clay, hard rock and coal deposits. Petroleum and gas resources underlie parts of the Central Coast, with the most viable opportunities located in the northern part of the region.[2]
	Natural environments	The region has an extensive coastline and expansive national parks, state forest, bushland, open space, nature reserves and aquatic environments.
Social	**Education and research facilities**	The University of Newcastle has a strong presence with Ourimbah Campus and Gosford Health Precinct. TAFE campuses located in Ourmibah, Wyong, and Gosford, with a new campus announced, offering local higher education and training opportunities.
	Health infrastructure	Health precincts are located both in the north and the south of the Central Coast, with a world class research facility within Gosford Health Precinct providing access to high-quality health services, teaching and research capacity.

Key regional growth industries

Healthcare and social assistance	Manufacturing	Tourism
Stakeholders note the Central Coast has a high density of care, with Gosford and Wyong Hospitals ensuring the stability of healthcare provision for the region. Additionally, University of Newcastle Medical School and Research Institute within Gosford is a drawcard for health professionals and envisioned to support the rapidly growing health sector through innovation, research, training and employment.	Central Coast is home to several global brands,[3] with the food and beverage manufacturing industry contributing $300 million to the local economy as the largest manufacturing sub-sector in the region.[4] The Central Coast Manufacturing Industry are seeking to establish a Food Innovation Hub to revitalise and support regional manufacturing.[5] In addition to food products, advanced manufacturing in the region also includes high tech software, hardware, fabricated metal products, MedTech and other specialised manufacturing industries.[6]	The region has natural assets ranging from kilometres of ocean foreshore, coastal lakes, rivers and estuaries to valleys and mountains. The Central Coast is also home to First Nations cultural sites, connected by walking trails and dreaming tracks. Due to the region's proximity between Sydney and Newcastle, the visitor economy is expected to grow. Around 9% of total tourism expenditure in regional NSW occurs in the Central Coast, which occupies less than 1% of NSW's land mass.[7] This sector is worth around $1.2 billion annually (2019–2020). This figure is expected to grow as the region continues to leverage its proximity to Sydney and natural assets.[8]

Wharf at Point Federick, New South Wales

Infrastructure gaps

Sector:		Social infrastructure
Sub-sector:		Education (tertiary)
Infrastructure gap:		Access to further education and skills training

To further progress the liveability and growth profile of the Central Coast, the region needs to provide education and skills training which can drive local industry innovation and support emerging industries. In 2016, 52.7% of unemployed residents in the region had no post-secondary qualifications.[9] With skills shortages in a variety of industries, including tourism, hospitality and health and aged services, there is a need for the Central Coast to further develop the education and skills base of its workforce to support growth and drive innovation across the region.[10]

The Central Coast is home to the University of Newcastle Ourimbah campus and TAFE NSW campuses in Wyong, Gosford and Ourimbah. The region would benefit from a greater capacity to offer courses which match growth potential.[11] As the population is projected to grow significantly, additional education and skills training infrastructure will be necessary to ensure the quality of existing offerings can be maintained and expanded to provide industry-ready course offerings.[12] It is also recognised that further education and skills training infrastructure is vital in supporting employment, business initiatives and industry collaboration.[13] The Australian Government has invested $18 million towards the development of a Gosford CBD campus with the University of Newcastle, which will establish a health, innovation and entrepreneurship precinct for the region.[14]

Other expected benefits of enhancing the region's tertiary education offering include attracting a greater proportion of international students and reducing unemployment rates. In the June 2021 quarter, the unemployment rate in the region was 6.1%, up from 5.5% in the December 2020 quarter.[15]

Key facts:

By 2040, the Central Coast is expected to increase by

88,000

residents and 72,000 additional jobs.[16]

By 2040, the Central Coast is expected to create

72,000
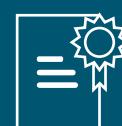
additional jobs.[17]

In 2016,

52.7%
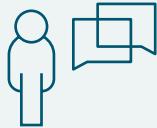
of unemployed residents in the region had no post-secondary qualifications.[18]

Impacts:

- Low rates of further education and skills attainment perpetuate a lower standard of living and increasing levels of disadvantage on the Central Coast.[19]

- By providing more accessible education and skills training infrastructure, the region would have greater capacity to support industry growth through local employment.

- Increasing further education and skills attainment can enhance the employability of local people and help the region become more competitive, particularly in emerging industries.

Consultation feedback:

Consultation with Central Coast stakeholders identified that improved access to further education and training would help to facilitate the region's desired industry growth.

Stakeholders noted that while the Central Coast has an abundance of natural assets that contribute to liveability, the region needs to improve the population's capacity to sustain skilled employment if it is to provide the economic opportunity required to maintain a high quality of life.

Further training and skills was seen as a priority for future planning of the region's growth industries, and essential in retaining young people, growing the region's workforce capability and uplifting liveability. For instance, the Central Coast Clinical School and Research Institute, a joint project between the Australian Government, the NSW Government and the University of Newcastle was identified by stakeholders as a draw card for health professionals, and young people seeking training and employment.

High-speed digital connectivity was also seen by stakeholders as critical to improve education. Universities which anchor the education and skills offerings also need to be supported by housing and transport to maintain populations in the area.

Sector:	Transport
Sub-sector:	Public transport
Infrastructure gap:	Capacity, connectivity and quality of public transport

The Central Coast is strategically located between Sydney and Newcastle. The region is connected to these two major hubs by both rail and road, enabling connectivity for residents and tourists. However, as the population grows, there is increasing pressure to improve transport connections within the region.

Improving ease of access throughout the region via public transport will increase the quality of life of residents, as road congestion is a growing concern. Improvements to existing train stations and intermodal connections will also aid accessibility. Mass transit connectivity to the region with potential to connect communities, including improved access to Sydney and Newcastle, is highlighted as a priority by RDA Central Coast.[20]

Key facts:

In 2016,

8.7%

of people in the Central Coast took public transport to work.[21]

In 2016,

35,287

(25.3%) of working residents travelled outside the region for work.[22]
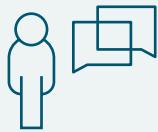
85.4%

of households own at least 1 car as compared to 81.4% in Greater Sydney.[23]

Impact:

- Poor public transport inhibits regional productivity and increases dependency on roads. The region's current public transport system is not reliable, efficient or easily accessible for many residents outside of town centres.[24]

- With new residents increasingly attracted to the lifestyle the Central Coast offers, the population is expected to reach around 415,000 in 2036.[25] Both improved road and public transport infrastructure will be required to support this growth.

Consultation feedback:

Stakeholders noted the impacts of additional demand from new residents from nearby Newcastle and Sydney, who have been able to work remotely during the COVID-19 pandemic and have made a lifestyle choice to relocate to the Central Coast.

Stakeholders identified a need throughout the region for an improved public transport system which is reliable and well connected, particularly as resident expectations have increased with demands for a more accessible and higher quality public transport system.

As the Central Coast diversifies into industries that need to attract skilled workers, populations will increasingly expect higher standards of living. Stakeholders noted capacity concerns with road infrastructure and the importance of the region being supported by an efficient public transport network as both critical to the region's progress.

Stakeholders highlighted challenges in train timetables funnelling into Sydney, with higher levels of congestion returning to the region. Also highlighted was the opportunities in public transport to activie existing investments in education and employment precincts. Challenges in linkages to education facilities, direct bus routes, express services and frequency of services to reduce travel times were also noted.

Sector:	Social infrastructure
Sub-sector:	Housing
Infrastructure gap:	Availability, affordability and diversity of housing

Traditionally, the Central Coast region has been perceived as an affordable area that offers a high quality of life within close proximity to the employment opportunities and services of Newcastle and Sydney.

However, over time housing availability and diversity has decreased, with additional demand from the Sydney market further increasing competition. There are concerns that the entry of more Sydney buyers into the market will make it more challenging for local populations to purchase a home, especially as they are generally on lower incomes.[26]

Housing affordability and accessibility is a key challenge for the region. Rental vacancy rates throughout the Central Coast were at 0.6% in January 2021, in part due to internal migration from larger cities.[27] Urban sprawl and a lack of strategic master planning has also led to a reduced proportion of affordable housing across the region. For several housing types in Gosford and Wyong, waiting lists for some social housings are over 10-years long.[28]

Key facts:

The development rate of medium and high-density dwellings has experienced almost no growth over the past decade.[29]

In 2016, approximately

24,200

households in the region were experiencing rental or mortgage stress.[30]
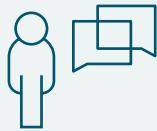
**Between 2011 and 2016 there was a**

35%

increase in homelessness.[31]

Impact:

• The impacts of strained housing availability are being felt most acutely in the rental market. Annual rental demand growth has outpaced that of greater Sydney since 2009.[32]

• Low income renters make up 40% of the rental market, yet they have access to only 2% of rental housing.[33] A sparse supply of housing is contributing to housing stress, marginal housing and homelessness throughout the Central Coast.

• Homelessness is a significant cost to the community, impacting both social and economic wellbeing. In 2014, the average annual cost of homelessness in Australia was between $48,000 and $70,000 per homeless person.[34]
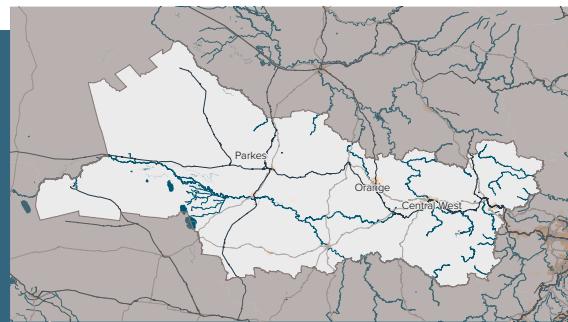
Consultation feedback:

During consultation, stakeholders placed emphasis on the changing nature of the Central Coast region, noting significant population growth and industry diversification with an influx of sea changers and companies from Sydney and Newcastle relocating to the region.

However, workshop attendees noted that the region has been unable to keep up with the increased demand for housing. This was attributed by stakeholders to a lack of coordinated planning, which has pushed lower income households out of the market, as well as an increase in short-term holiday accommodation driving a shortage of long-term rental properties and unlocking of residential land. The lack of housing supply and affordability has also seen residents throughout the region shouldered to the margins of communities, contributing to a growing socioeconomic divide across the Central Coast. Stakeholders expressed a view that there is a strong need to collaborate on housing solutions from both the private and public sectors. Affordable housing solutions in areas that allow key workers to live close to jobs was also highlighted.

6.2.2 Central West

The Central West region stretches from the elevated Central Tablelands to the expansive Central West plains. Unique in its diversity of economy, the region is known for its high-quality food and wine offering and accompanying gastrotourism industry, as well as significant manufacturing and mining sectors.

Over the past two decades, the region has had to adapt and become more resilient as climate change impacts have led to water security issues and an increased number of droughts. This challenge has promoted the diversification of crops and livestock for the agricultural industry and the growth of mining, health and tourism.

Over the next decade, the region's industries will continue to grow, supported by new and upgraded freight infrastructure, with the establishment of the Parkes Special Activation Precinct (SAP) to capitalise on the National Logistics Hub at the junction of the Trans-Australia Railway and Inland Rail. The SAP is also expected to support critical minerals resource recovery in the region and the planned development of the Central West Critical Minerals Hub. The region will also benefit from new energy transmission infrastructure as part of the Central-West Orana Renewable Energy Zone (REZ). The region's economic growth would also benefit from improved water security and a skilled workforce aligned with local industry needs.

Strengths
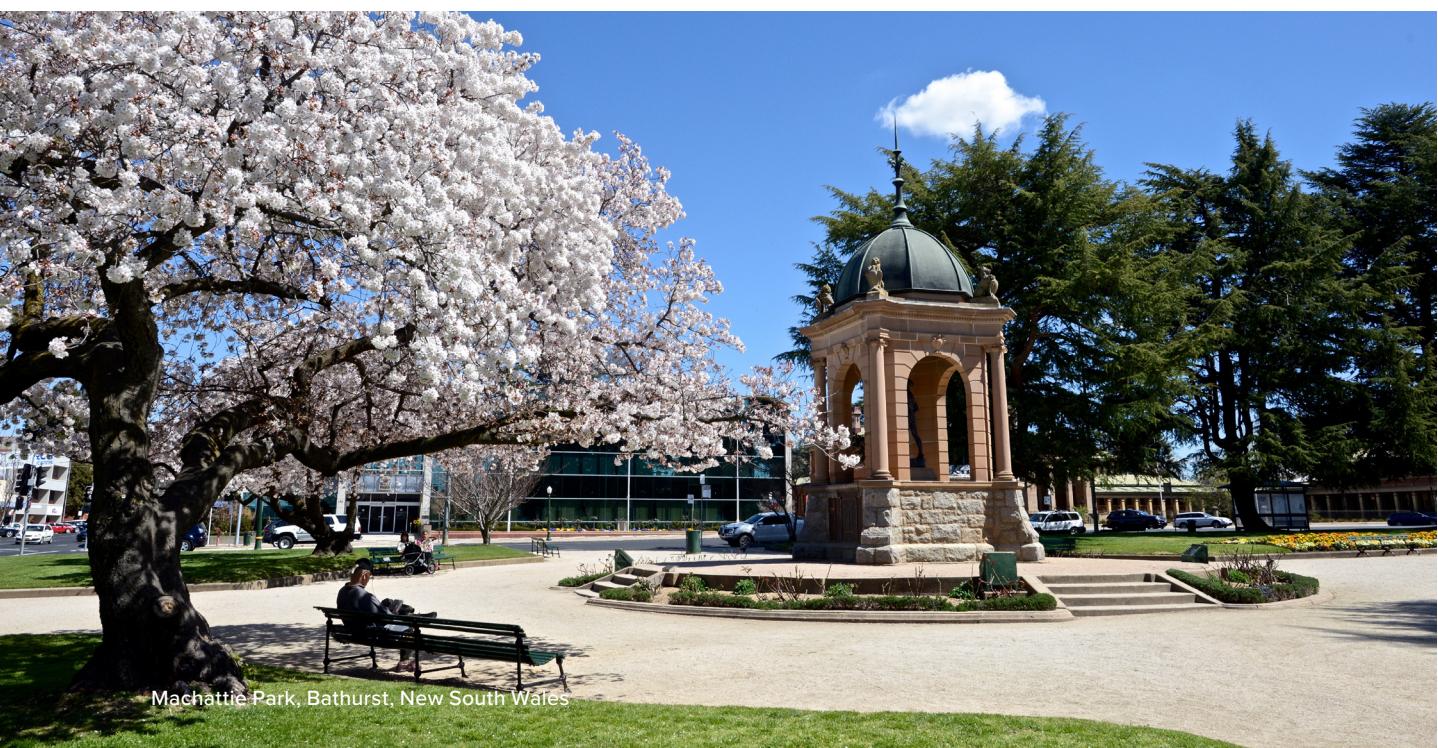
Key existing assets

Economic	**Gateway ports**	Several regional airports, including in Orange, Parkes, Forbes, Cowra and Bathurst, provide air connectivity.
	Water infrastructure	Key assets supporting town and industry water supply include the Lachlan and Macquarie river systems and various storage facilities such as Wyangala Dam, Lake Endeavour Dam, Bergamil Dam, Chifley Dam, Suma Park Dam, Molong Dam, Oberon Dam, Lake Rowlands Dam, Carcoar Dam and Winburndale Dam, and Wyangala Dam are crucial for town and industry water supply.
Natural	**Climate and topography**	The region has a mixture of cool and semi-arid climates which helps to support a diverse and productive agriculture, forestry and wine industry.
	Natural resources	The region is home to abundant natural resources such coal, gold, sand, and various other critical mineral and metal resources, some of which are untapped. Rich soil and mineral deposits support the mining and agriculture industries in the region.
	Natural environments	The Central West has many rivers, such as the Lachlan River, as well as national parks and conservation areas, such as Mount Canobolas. There are also natural stargazing opportunities in the region.

| Social | Cultural heritage | Many sites of significance to First Nations communities and of industrial heritage value exist in the region. |
| | Education and research institutions | Tertiary institutions such as Charles Sturt University and the University of Sydney have campuses or industry collaborations in the region. There is also a Country University facility and several TAFEs in the region. The Orange Agricultural Institute is internationally recognised for its work across a range of agricultural and biosecurity fields, and is home to a number of co-located entities. The region is also served by the University of Sydney's School of Rural Health, and a number of private Registered Training Organisations servicing key locations. |

Key regional growth industries

Healthcare and social assistance	Agriculture, forestry and fishing	Transport
The growing health services sector in the Central West region is driven by greater demand for high quality healthcare and an ageing population.[35] Currently, the sector accounts for the largest proportion of local employment at 14.6%.[36]	The Central West's agriculture, forestry and fishing industry contributes $1 billion of regional value-add,[37] abundant natural resources and varied climatic conditions provide opportunities ranging from dairy, sheep and beef livestock, cool climate product, as well as a variety of irrigation and broad acre crops.[38] Further growth will require investments in agricultural technology and value-adding manufacturing.[39]	The region is key to freight movements across the state, with the transport, freight and logistics industry contributing over $760 million in regional output.[40] The Parkes Special Activation Precinct, which will also accommodate the Parkes National Logistic Hub, will present significant opportunities for growth in freight and logistics to support local industries such as agriculture and mining.[41]

Machattie Park, Bathurst, New South Wales

Infrastructure gaps

Sector:	Transport
Sub-sector:	Freight
Infrastructure gap:	Connectivity, capacity and quality of freight infrastructure

Freight is a significant part of the regional transport task, with more than 43 million tonnes of freight moving to and from the Central West and Orana region in 2016.[42] Key commodities include coal, agricultural commodities, construction materials and forestry.[43] The freight task is anticipated to evolve considerably, with the transportation of coal forecast to decline and other key commodities like grain and quarry materials estimated to increase.[44] Moving forward, the region will require an agile freight network that can easily transition to the needs of new commodities rather than a 'one size fits all' approach.[45, 46]
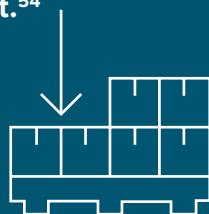
The Central West and Orana region plays a key strategic role in inter-regional connections to major Australian ports and markets including Sydney, Melbourne, Brisbane, Canberra, Adelaide and Perth.[47] Connections to Greater Sydney remain a challenge with network constraints in Sydney as well as topographic constraints across the Blue Mountains.[48]

The Parkes Special Activation Precinct (SAP) positions the region as a strategic location for the distribution of freight between Australia's five largest cities.[49] Under existing operations, the majority of commodities originating from the region are transported east by road and rail bound for destinations in Greater Sydney, the Hunter and Illawarra-Shoalhaven. However, with major infrastructure projects like Inland Rail and the Parkes SAP scheduled to be operational within the next decade, the way commodities are transported both through and beyond the region is expected to change and grow with improved access to new markets.[50, 51]

The *Draft Central West and Orana Regional Transport Plan* notes a number of committed projects across the region and the importance of supporting freight network infrastructure remaining fit-for-purpose, agile to changing demands and future need.[52] It also encourages the greater use of High Productivity Vehicles (HPV) and trains to facilitate 'moving more with less'.[53]

Key facts:

Greater Sydney is currently the primary destination for road freight whereas the Illawarra-Shoalhaven and the Hunter are the primary destinations for rail freight.[54]

The Central West region generates an estimated

$26.55

billion in gross outputs.[55]
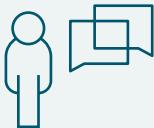
The largest exporter in the region is mining, with exports worth an estimated

$3.4

billion.[56]

Impact:

- Across New South Wales, freight volumes are predicted to at least triple by 2050, with a large portion of that growth expected to come from the region.[57]

- Much of the freight in the region travels on local and regional roads, some of which are failing under the pressure of freight movements, or limit the ability to move freight due to their condition or alignment.[58]

- Under existing conditions, a number of key freight routes within the Central West and Orana cannot currently support the use of HPVs, making the first and last mile access for freight vehicles a challenge for the region.[59,60]

Consultation feedback:

During the consultation workshop, participants noted the past changes to the region's profile. This growth has been underpinned by thriving industries producing historically significant outputs. The region boasts a diverse and vibrant industry profile. However, a lack of investment in freight infrastructure has been a hinderance to the success of the region, with participants highlighting poor connection and access to Sydney, and observing significant transport constraints to the region's east. Some stakeholders noted in particular the value of mass transit infrastructure given constraints with the region's road network. Stakeholders also recognised the role that innovative technologies can play to help overcome the region's transport issues. and access to Sydney. The lack of current safe and efficient routes to Sydney highlights an infrastructure challenge for the region, where improved rail and road connections are expected to enhance opportunities.

Participants noted recent droughts and environmental challenges have shifted focus onto water security at the expense of freight and transport infrastructure needs. Strategically planning and delivering infrastructure to support the movement of freight was highly valued by participants.

Sector:	Water
Sub-sector:	–
Infrastructure gap:	Water security

Although the Central West is a highly productive region, it has been heavily impacted by drought, which has made securing accessible water for both domestic and commercial operations a challenge.

Water security has been at the forefront of challenges that the region has been required to manage, as water infrastructure and demand is fragmented across the region.[61] The impacts of drought and water security for communities throughout the Central West is expected to continue in the coming years. There is a growing need to address the changes occurring in the region and build resilient communities through improved water management.

To support water security, the Australian Government has committed $10 million to deliver three water projects in the Central West, including significant investment in the Central West Industrial Park and the Parkes Water Security Project.[62] The NSW Government is undertaking a business case for the Wyangala Dam Wall raising project, and investing in water security projects in Orange, Bathurst and Condobolin.[63]

The NSW Department of Planning, Industry and Environment is preparing regional water strategies (RWS) across the state to identify current and future water related challenges and opportunities in each region (including challenges from a changing climate) and potential solutions to address these.[64] The Central West RDA region includes RWS regions of Macquaire-Castlereagh, Lachlan and Sydney Metropolitan.

Key facts:

Agriculture is a key industry in the region, with the majority of businesses actively trading in the Central West operating in this sector.[65]

The Lachlan Valley has poor water security and reliability, in terms of regulated and licensed irrigation and urban water supply.[66,67]

The Lachlan River and its floodplains provide a wide range of aquatic habitats. The lower Lachlan floodplain has 9 nationally important wetlands, including Lake Brewster, the Booligal Wetlands and the Great Cumbung Swamp. The latter features one of the most important waterbird-breeding areas in eastern Australia.[68]

Impact:

- Without increased capacity, it is estimated that the region would fail to realise its full agricultural production potential, equating to a loss in economic uplift of $167 million on average each year.[69]

- As the Central West receives a lower volume and more fragmented rainfall than other regions in Australia, the baseline risk for farmers in the region is significantly higher. As new industries emerge, water is increasingly being used for mining, lifestyle and urban development, driving competition for water throughout the Central West.[70]

- The combined impacts of climate change and variability, as well as water regulation, have the potential to dislocate existing infrastructure, communities and sectors.[71]

Consultation feedback:

The Central West has experienced a decade-long drought, which has forced communities to adapt and innovate. During the workshop, participants noted that water security has been a constant and increasing challenge to overcome throughout the region. Efforts to address this have detracted from other priority infrastructure areas such as freight and road infrastructure.

Stakeholders noted that like many inland regions, current town water supply systems are expected to come under increasing pressure from natural disasters and weather events. Investments in water storage and distribution networks are important for improving water security in the region, and in some cases providing additional benefits around flood mitigation. Stakeholder feedback also pointed to the importance of integrated policy and water management settings to increase security and reliability of supply.

As water availability has become less reliable, the growth of the agricultural industry has been constrained, however, the region still produces a significant proportion of New South Wales' agricultural output. Farming practices have had to adapt to become smarter, more resilient and more efficient, and communities have had to effectively manage water usage demand. It is anticipated by stakeholders that improved water security will be vital to providing business confidence and attracting investment for agriculture, manufacturing and mining.

Stakeholders emphasised the importance of sustainable development, inter-generational equity, improving efficiencies in water use and management of environmental impacts.

Sector:	Social infrastructure
Sub-sector:	Education (tertiary)
Infrastructure gap:	Access to further education and skills training

The Central West is home to tertiary education institutions and facilities including Charles Sturt University campuses in Bathurst and Orange, the Country University Parkes facility, the University of Sydney's School of Rural Health in Orange and a number of TAFEs.[72] These institutions provide residents with access to tertiary education opportunities and leverage the expertise of these institutions through industry collaborations.

However, there remains a high proportion of the population within the Central West who remain without post-secondary qualifications in comparison to other regions.[73] There is an opportunity for enhanced tertiary education infrastructure to support emerging growth opportunities in industries such as healthcare, agriculture, and transport and logistics. Seizing these opportunities and developing targeted education offerings will enhance employment prospects in the region and help address existing and future industry skill requirements.[74]

Currently in the region there are notable skills shortage in the health, hospitality and community services sectors, as well as for trades.[75] In order to address these shortages, the focus and capacity of tertiary education infrastructure and training facilities needs to be enhanced to deliver courses aligned to industry needs. This infrastructure will increase the region's potential for growth by developing a skilled and diverse local workforce.

Key facts:

23%
of residents have a vocational qualification.[76]

2.3%
of the population are attending university.[77]
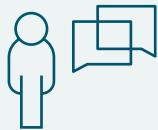
Of 73,999 jobs in the region,
7,424
are in education and training.[78]

Impact:

- Socio-economic disadvantage in the region, driven in part by a lack of skills attainment has flow-on implications for employment and economic opportunity.[79]

- Skills shortages are key impediments to growth. As the region looks to diversify its industry base and foster sustainable economic growth, a diverse and well-matched skills base amongst the local population will be crucial.

- There are significant opportunities for growth that the region can leverage in industries such as transport and logistics and innovation in the agricultural sector, however this growth will be constrained if an appropriate pipeline of skilled workers is not available.

Consultation feedback:

The Central West is a region of high productivity and output, however during consultation, stakeholders noted the gaps in skills and education opportunities, which is playing a factor in growing skills shortages. These challenges were identified as a major obstruction to the region's economic growth. Shortages exist despite the region having a number of universities and TAFEs, suggesting that a lack of opportunities for skilled workers within the region may be another factor. Additional challenges faced by job seekers and employers include difficulties accessing education and training for those who have trouble accessing transport or information technology options in smaller, more remote communities. Consultation also highlighted opportunities for stronger links between industry, educators and training providers to identify and support career pathways in sectors experiencing skills shortages.

Developing targeted skill-sets will also enhance employment prospects in the region and help address existing and future industry skill requirements among stakeholders that in the past some industries have operated with a short-term vision for their activities within the area. Consequently, they believe there is a need to facilitate long-term employment opportunities to support economic growth within the region. The need for a more coordinated approach to train and upskill local workers to support communities undergoing transition, such as Lithgow was also identified.
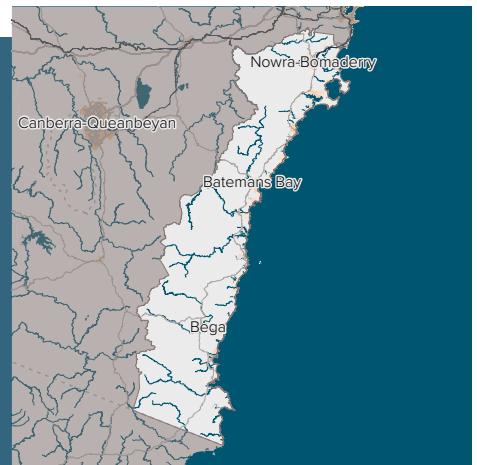
Opportunities to further advance healthcare in the region could be supported by encouraging educational facilities to focus on skills for the health sector, which would result in securing a strong pipeline of skilled labour for this sector.

6.2.3 Far South Coast

The Far South Coast is home to an array of natural assets which attracts both tourists and residents including coastal and marine environments, green landscapes, national parks, rainforests, woodlands and farmland.

The region has experienced significant population growth driven by the rise of remote work, improved connectivity and an attractive coastal lifestyle. The region's economy has also diversified beyond its traditional industries of agriculture, aquaculture, manufacturing, and forestry to tourism-driven growth.

The region is looking to grow its healthcare and social services industry to support its high retiree population, as well as building greater resilience in the face of natural disasters and greater climate variability to preserve its natural assets. Far South Coast residents also prioritise improved digital and physical connectivity.

Strengths

Key existing assets

Economic	**Strategic location**	Transport corridor connections between Melbourne, Sydney, Canberra and Wollongong provide opportunities for freight.	
	Gateway ports	The Port of Eden and Merimbula and Moruya airports support the region's accessibility, providing benefits to industries such as agriculture and tourism.	
	Defence assets	Home to HMAS Creswell and HMAS Albatross, the Far South Coast is a proud navy region.	
Natural	**Natural environments**	The region possesses nearly 400km of coastline, numerous marine parks, 31 national parks, extensive areas of state parks, green spaces, rainforests, woodlands, and productive farmland.[80]	
Social	**Health infrastructure**	The region has major hospitals such as the Shoalhaven District Memorial Hospital and South East Regional Hospital which service the region and surrounds.	
	Cultural heritage	The region is home to a rich First Nations culture, with many sites and landscapes identified as culturally significant, such as the Monaroo Bobberrerr Keeping Place and Gulaga National Park.	

Key regional growth industries

Healthcare and social assistance	Manufacturing	Tourism
The health and social services industry has grown significantly in the region,[81] now accounting for around 10,000 jobs as the largest employing industry.[82,83,84] The region has a diverse range of health facilities, as well educational institutions offering Health and Behavioural Science courses.[85] The University of Wollongong, Shoalhaven campus, also hosts a mental health and wellbeing facility.[86]	Advanced manufacturing activities will continue to grow as the new Shoalhaven Industry 4.0 Hub strengthens regional agribusiness and value-adding manufacturing capabilities.[87] The Far South Coast is already home to a range of manufactured products, including multiple dairy brands such as Bega Cheese, specialty papers and chemicals.[88]	The Far South Coast is the third most popular tourism destination in the state, with abundant coastal and marine environments, national parks, rainforests, woodlands and farmland to support nature-based tourism.[89] Several cultural festivals and events are also held to showcase the region's specialist food offerings, aquaculture sector and creative arts industry.[90]

Wagonga Inlet, Narooma, New South Wales

Infrastructure gaps

Sector:	Telecommunications
Sub-sector:	–
Infrastructure gap:	Broadband and mobile connectivity

The Far South Coast is a region rich in coastal and inland natural assets, making the region an attractive location for sea and tree-changers.[91] This has increased demand for improved telecommunications and broadband infrastructure throughout the region. This need is expected to rise further as employment options and tertiary education delivery increasingly migrate to online platforms.

Improving digital connectivity is a priority for the Far South Coast region.[92] As industries within the region diversify and innovate, the need for further digital connectivity to support business growth and technology will be crucial. Securing and retaining a skilled workforce is a key foundation to the region for fulfilling the potential of its growth profile and achieving high-quality liveability. For this reason, the Far South Coast is seeking to offer employment opportunities and a high degree of amenity supported by reliable and efficient telecommunications infrastructure.

The region's existing strengths in agribusiness and potential growth in advanced manufacturing could be leveraged through the adoption of technology in primary and secondary industries.[93]

Key facts:

The Far South Coast Regional Economic Development Strategy (2018-2022) notes digital connectivity as a priority for the region.[94]
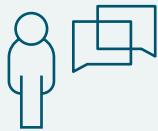
The region's three local government areas of Eurobodalla, Bega Valley and Shoalhaven had a 2021 Australian Digital Inclusion Index score of

64, 65 and 62

respectively.

This was below the New South Wales average of 71.[95]

Impact:

- In 2016, the region had an ageing population and low proportion of young people in comparison to the rest of NSW. Evidence suggests that this is due to young people leaving the region to pursue education and career opportunities that are not available in the Far South Coast.[96] Leveraging high-quality digital connectivity may assist in enabling remote education access or the development of education precincts.

- Increased investment in telecommunications infrastructure has significant potential to increase the operational outputs of businesses, e-commerce ventures and other industries in the region.[97]

Consultation feedback:

Consultation within the Far South Coast has shown that stakeholders place a high priority on improvement in telecommunication and digital infrastructure. It was noted that connectivity is crucial to the success of the region across all aspects of life including business operations. Stakeholders noted that improved telecommunications and digital infrastructure would provide greater potential for the region to attract skilled workers and retain them.

The rise of working from home as a result of COVID-19 and online tertiary education offerings are also key components of the need for improved connectivity in the region. Participants also identified the increase in technology adoption by residents and industry with a need to improve telecommunications.

Sector:	Social infrastructure
Sub-sector:	Housing
Infrastructure gap:	Availability, affordability and diversity of housing

It is anticipated that the Far South Coast region will require an additional 45,600 homes by 2031 to accommodate its growing population.[98] Limited housing supply across the region inhibits economic growth as businesses are unable to attract and retain workers without sufficient provision of accommodation.

Beyond economic impacts, a housing shortage in the region has implications for social inclusion, as those on lower incomes are forced out of the private housing market and face an undersupplied public housing system. As of June 2020, there was a waitlist of 5-10 years for social housing in Shellharbour.[99]

This housing shortage may be further exacerbated by an increase in migration of sea-changers and tree-changers to the regions as a result of the COVID-19 pandemic,[100] a circumstance which may see the migration of young people out of the region as they cannot find appropriate and affordable accommodation. This is particularly problematic in a region with an already ageing population.[101]

Addressing this housing shortage is particularly challenging for the region because of the dispersed nature of the population, making delivery of housing and enabling infrastructure potentially costly and logistically difficult.[102]

Key facts:

Housing is needed to accommodate workers for around

25,000

new jobs based upon projected population growth.[103,104,105]

3.5%

of households were in social housing (2016).[106]

Around

39%

of renters living in rental stress (Kiama, Shoalhaven and northern parts of Eurobodalla).[107]

Impact:

- The rising cost of housing has led to changing demographics with an influx of retirees and sea-changers moving to the Far South Coast and young people and lower-income families moving away from the region. It is projected that 35% of the population will comprise persons aged over 65 by 2031.[108]

- Current housing diversity in the region does not cater for the projected population. Much of the housing that exists caters for bigger households, with 85% of homes being detached.[109]

- As socio-economic factors further marginalise parts of the population, affordable and social housing will come under further strain.[110]

Consultation feedback:

A lack of housing availability was frequently raised during consultations, with an identified need for infrastructure planning and delivery to address housing availability and affordability. Also noted was the importance of managing the release of land for urban development, minimising the impact on the environment and maximising growth around existing well serviced centres and towns.

Stakeholders also expressed the view that adequate housing for skilled workers was key to the economic sustainability of the region. It was also noted that where major housing developments have occurred in the region, these have come about as a result of buying-out existing homes. This was said to have had a particularly negative impact on low-income families in the region, who are unable to find suitable substitute housing in the local private market or in the public housing system.

Sector:	Transport
Sub-sector:	Roads
Infrastructure gap:	Capacity, connectivity and quality of road infrastructure

The Far South Coast has experienced improvements to road infrastructure over the past two decades. However, the region has also seen strong population growth, which is anticipated to continue. The road network in the Far South Coast is the most heavily used transport infrastructure in the region for residents, tourists and freight vehicles.[111] As populations grow and industries expand, the region will need to improve road infrastructure to cope with additional demand.
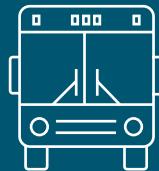
Unemployment is consistently higher in the Far South Coast region compared to other areas in regional New South Wales.[112] A factor in the region's high unemployment rate is a lack of transport infrastructure to facilitate the movement of people throughout the region to access jobs.[113] Private vehicle is currently the most efficient means of travel throughout the region and improving intra-regional road connectivity is critical to the region's economic and social wellbeing.

Key facts

Over

70%

of residents travel to work via car.[114]

Buses

**are the primary method of public transport in the region.[115]**
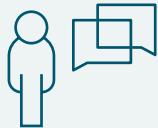
Only

4.6%

of households in Shoalhaven do not have motor vehicles (2016).[116]

Impact:

- Access to reliable and efficient transport is a major issue in the area, impacting education, employment, and liveability. The region relies on limited bus services as its main method of public transport. Presently, efficiency issues surrounding bus services can be linked in part to poor road network conditions.[117]

- Heavy reliance on travel in a private vehicle has further marginalised those who may already be in low socio-economic circumstances.
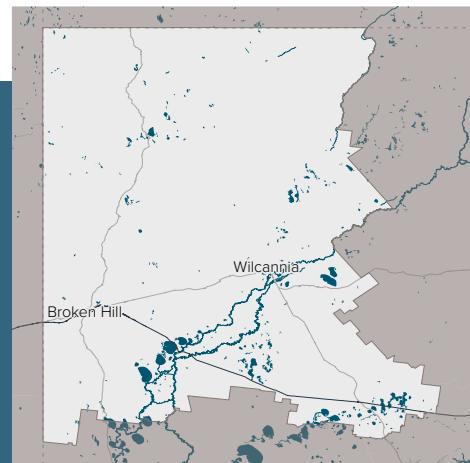
Consultation feedback:

The Far South Coast has experienced an increasing population over the past two decades, however stakeholders noted that there have been limited improvements in transport infrastructure to support this growth. Workshop attendees also emphasised the growing pressure that the region is facing as migration flows from Sydney and Canberra increase.

Many stakeholders expressed the view that road networks in the region are currently inadequate. The importance of the North-South and particularly the East-West Road Connections for road freight movements and emergency access was raised. Community expectations are not being met regarding the provision of safe and reliable road and bridge infrastructure, yet local councils are hard pressed to deliver upgrades to the roads they are responsible for. Participants also noted that improved road infrastructure will be needed to support the movement of freight in and out of the region.

6.2.4 Far West

The Far West region sits in the north-western corner of New South Wales, sharing a border with South Australia and Queensland. The region covers diverse natural landscapes inclusive of wide-open plains, rangelands and swamps, including the Barrier Ranges, Darling River and Bulloo River overflow. The region is home to significant mineral deposits, a rich First Nations culture and resilient communities who have developed and thrived under demanding conditions.

The region has experienced population decline over the past two decades, largely due to changes in the mining industry. These include a transient fly-in-fly-out mining workforce, alongside automation of mining processes. Over the same period, pastoral farming in the region has become less labour intensive and the wool industry has largely moved to rangelands production.

The Far West continues to compete as a destination for film and television production, with its diverse landscapes and open spaces.[118] There are opportunities for the region to grow its renewable energy, mining and tourism sectors. Plans for the development of a Critical Minerals Hub in the Central West is expected to support the growth of the region's critical minerals mining and processing capacity. Growing the tourism sector relies upon improved telecommunications and digital connectivity, as well as better road network quality and efficient and affordable air links. Future facing priorities include physical and digital connectivity, to realise opportunities, enhance liveability and retain current population.

Strengths

Key existing assets

Economic	Gateway ports	Broken Hill and Tibooburra airports provide physical connectivity for residents, workers and visitors. These assets support the mining industry with Broken Hill also a base of operations for the Royal Flying Doctor Service of Australia.
Natural	Natural environments	Large stretches of untouched land, desert landscapes and established agricultural land. The region also boasts National Parks and rivers including the Murray, Barwon-Darling, Murrumbidgee and Barka.
	Climate and topography	A warm climate enables early harvests from vast stretches of rangelands and agricultural land.
	Natural resources	The region is home to significant resource deposits such as gold, lead, zinc, silver, iron and cobalt and other critical mineral resources which support the region's mining and mineral processing industry.
Social	Cultural heritage	The region is home to a rich First Nations heritage, including 30,000-year-old rock carvings. Broken Hill is also the only Regional Centre on Australia's National Heritage List.

Key regional growth industries

Mining	Energy	Tourism
The region's primary economic driver is the mining industry, with silver, lead, zinc, copper, gold and opal extraction.[119] Expansions in mining operations present significant opportunities for regional employment growth in the mining industry, as well as supporting sub-sectors such as manufacturing and services.[120,121]	The Far West's high levels of solar radiation, large open spaces and presence of transmission infrastructure represent significant growth opportunities for the renewable energy sector.[122] This is supported by the development of the Silverton Wind Farm and Broken Hill Solar Plan, which can power up to 20,000 and 137,000 Australian homes respectively.[123,124]	Tourism has become an important sector experiencing an average of 5.7% annual growth in visitor numbers from 2010 to 2019.[125] Complementing existing industries, agritourism offerings such as farm stays and farmers markets will enable the sector to continue maturing, while the region's natural assets support cultural tourism and ecotourism opportunities.[126]

Broken Hill, New South Wales

Infrastructure gaps

Sector:	Telecommunications
Sub-sector:	–
Infrastructure gap:	Broadband and mobile connectivity

Broadband and mobile connectivity has been identified as a key infrastructure gap in the Far West region. The region suffers from poor mobile and internet access in many areas, primarily due to the logistical challenges of delivering sufficient digital and telecommunications infrastructure across the significant distances between Rural Communities and Remote Areas. Industries that would benefit from improved access to telecommunications infrastructure in the region include mining, agriculture, health, tourism, education, and film production.[127] Regional tourism operators observed reluctance by some tourists to travel to areas without mobile coverage due to personal safety concerns, with farmers and graziers facing similar concerns when sourcing labour to work on remote properties.[128]

With over 40 different locations in the region reported in the mobile black spot database, the region has been supported through the Australian Government's Mobile Black Spot Program.[129] Despite these developments, there remains a significant need to improve the mobile and broadband connectivity in many areas of the region.[130]

Key facts

The region's local government areas of Broken Hill and Central Darling Shire, alongside the unincorporated area, received an Australian Digital Inclusion Index (ADII) score of 62, 63 and 67 respectively. This is below the New South Wales average of 71.[131]

There was a

four-day

communications blackout in March 2021 due to a faulty phone tower at Mount Dering, north of Broken Hill.[132]
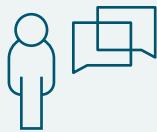
40+

mobile black spot locations have been reported.[133]

Impact:

- The region is a popular film location, with over 50 productions shot in the area. Broken Hill also features in Destination NSW's list of the most recognised film destinations.[134] The Broken Hill City Council identified high-speed internet as being essential to capitalise on this burgeoning identity.

- Rural and remote farms are dependent on quality broadband and mobile connectivity to maximise productivity and enable connection to markets. However, many do not currently have adequate connections to carry out many basic business activities, inhibiting commercial growth.[135]

- The COVID-19 pandemic has highlighted the importance of households having reliable internet access for remote learning opportunities. Remote educational material is increasingly involving videos and interactive content, which disadvantages students without high-speed broadband.[136]

Consultation feedback:

Consultation identified black spots and poor-quality digital connectivity as being significant issues for residents and industries in the Far West region. Stakeholders noted that many students could not access remote schooling during the COVID-19 pandemic due to inadequate bandwidth and unreliable connections. Internet affordability was also an issue, with costly bills for households accessing remote tertiary education.

Local stakeholders also highlighted the importance of reliable digital connections for farming, healthcare access and lifestyle benefits for the region. Workshop attendees expressed the view that better connectivity would encourage population growth.

Sector:	Social infrastructure
Sub-sector:	Education (tertiary)
Infrastructure gap:	Access to further education and skills training

The New South Wales Government has identified education reform as a priority for the Far West region.[137] Currently, further education opportunities in this region are concentrated in the major centres, with two permanent Registered Training Organisations, TAFE campuses in Broken Hill - Menindee and Wilcannia - and Robinson College.[138] Broken Hill is also home to specialised offerings through collaboration with tertiary institutions located outside of the region, including the University of Sydney-aligned University Department of Rural Health which provides high-quality support, education and training for rural and remote health workers.[139]

With education and skills training infrastructure centralised, communities outside of the major centres in this region lack access to opportunities for upskilling and job-ready qualifications. There is potential for additional infrastructure, such as the Country Universities Centre Far West, to help more students access higher education online while remaining in their community.[140]

In addition, there is a need to enhance the capacity of training and education infrastructure to support growth sectors such as renewable energy and tourism.[141] Delivering access to adequate training facilities matching the region's future industry profile will assist in building economic resilience and supporting industry diversification beyond the region's traditional strengths, including in the mining sector.

Key facts:

17.6%
of people aged 15 and over reported Year 10 completion as their highest level of education (2016).[142]

8.6%
hold a bachelor's degree or higher compared to the state average of 23.4% (2016).[143]
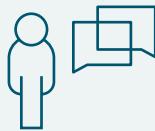
Only
two
Registered Training Organisations are located within 100km of Broken Hill.[144]

Impact:

- There is currently a mismatch between the training available and workforce needs. Collaboration between tertiary education institutions and regional businesses would better align skills education with available employment.[145]

- A workforce development study in 2016 found that 80.8% of businesses in the Far West are planning to grow in the next 10 years, but face skills shortages which negatively impact organisational productivity and credibility and lead to missed opportunities for growth.[146]

- The Far West region offers skilled work regional visas for more than 50 occupations in sectors including healthcare, hospitality and construction. The COVID-19 pandemic has greatly impacted skilled migration in the area, heightening the importance of building the capacity of the local workforce.[147]

Consultation feedback:

Stakeholders recognised the need for an improved and industry-aligned training offering, adding that growth in the education sector would also benefit the community through job creation.

Workshop attendees also raised several infrastructure barriers to improving the region's education and training offering, particularly poor broadband and mobile connectivity. The dispersed nature of the region and the associated costs (both for locals in accessing infrastructure and for government in infrastructure delivery) were noted as barriers. Stakeholders also noted that attracting an external workforce to the region was challenging, making the need for the local workforce to build capacity more pressing. Workshop attendees identified the lack of a skilled workforce as one of the biggest constraining factors in improving the region's overall growth.

Sector:	Water
Sub-sector:	–
Infrastructure gap:	Water security

The majority of the Far West region is located in semi-arid rangelands with unreliable and erratic rainfall. This drier climate has led to development of an agriculture industry which is mainly based on extensive grazing with some irrigated agriculture in areas located near surface water.[148] Ensuring a reliable water supply remains a high priority for the region because of its water-intensive industries of mining and agriculture.

The region's water supply is mostly delivered through its major rivers, which are susceptible to rainfall deficiencies and interruptions upstream.[149] Much of the region has suffered from periods of severe drought in recent decades, with one expanse north of Broken Hill experiencing below average rainfall for three years.[150] The Wentworth to Broken Hill pipeline, completed in 2018, supplies up to 7.4 megalitres of raw water per day via a 270km pipeline from the River Murray near Wentworth to Broken Hill.[151] The pipeline has increased the availability and reliability the supply of water to Broken Hill and surrounding communities.[152]

In established mining areas such as Cobar, potential future water supply deficiencies could impact mining operations as well as the community.[153] Reliable and clean water supplies are critical to maintain liveability, attract new residents and support economic development.[154] Water use needs to be carefully and equitably managed, and consider the welfare of current and future residents, environmental needs and long-term economic prosperity.[155]

The NSW Planning and Environment is preparing regional water strategies (RWS) across the state to identify current and future water related challenges and opportunities in each region (including challenges from a changing climate) and potential solutions to address these.[156] The Far West RDA region includes RWS regions of Western and Lachlan.

Key facts:

Droughts in some areas of the region have lasted up to

four years.[157]

Agriculture employs over

40%

**of the Far West workforce in the Unincorporated Area.[158]**
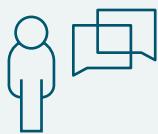
Water allocation is complex due to seasonal fluctuations and is an ongoing concern for some agricultural producers.[159]

Impact:

- Drought has a severe impact on the agricultural sector, often forcing farmers to sell equipment and reduce their workforce.[160]

- Extended periods of drought can result in a 50% decrease in families' abilities to pay for health services.[161]

- The cumulative effects of drought impact rural families in their ability to pay for basic needs such as housing and food. Enhancing water storage capacity and distribution efficiency can help reduce the impact of future droughts.[162]

Consultation feedback:

Stakeholders identified water security as being a key priority for the region, noting the need for water infrastructure, including upgrading the ageing reticulation system and storage to meet future requirements. Despite major improvements following the installation of the Wentworth to Broken Hill pipeline, stakeholders noted ongoing issues with water security and affordability, particularly in the Unincorporated Area.
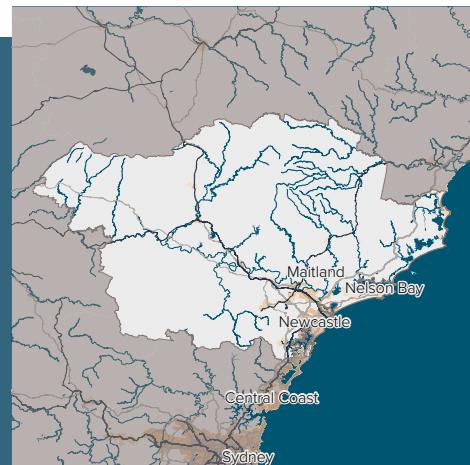
A durable water supply was highlighted by workshop attendees as being of great importance in ensuring the region's resilience against future climate change impacts. This was noted as being most significant for communities in the Unincorporated Area, that do not have access to the same infrastructure funding and delivery mechanisms as local government areas. Stakeholders saw improving water security in the region as being a key enabler of new industry opportunities and investment attraction.

6.2.5 Hunter

The Hunter region is home to a wealth of productive agricultural and viticultural lands, natural resources and coastal assets.

Over the past two decades the region has seen significant industry diversification into sectors such as renewables and technology, whilst also innovating in existing sectors such as agriculture and mining. A significant portion of the region has recently been designated as a Renewable Energy Zone, putting further momentum behind diversification into renewables.

Skill retention for these developing industries has been supported by urban renewal in Newcastle, creating rapid population growth in the Lower Hunter. As a result, the region is emerging as an innovation hub, with renowned industry, education, health and research institutions contributing to Australia's growing knowledge sector.

Strengths

Key existing assets

Economic	**Transport infrastructure**	Integrated rail networks and major road infrastructure connect the region to Newcastle and beyond.
	Strategic location	The region is home to Newcastle, near Sydney and sits along a number of key inland freight routes.
	Defence assets	The RAAF Base Williamtown, Myambat Ammunition Depot and ADF Defence School of Infantry in Singleton are all significant defence assets and facilities located in the region.
	Gateway ports	The Port of Newcastle is a critical freight gateway to the state, whilst Newcastle Airport supports passenger and cargo access.
	Energy infrastructure	Many of the current energy generating assets for NSW are located within the region, with the Hunter generating over 44% of power needs for the State.[163]
Natural	**Natural environments**	The region is home to many beaches, waterways, national parks, state forests, state conservation areas and productive agricultural and viticultural land.
	Natural resources	The region's surface water resources including the Hunter, Macquarie and Tuggerah river basins, are vital to viticultural and horticultural production.
Social	**Education and research institutions**	Further education facilities, such as the University of Newcastle and TAFE NSW campuses, enhance the region's skills base.
	Health infrastructure	The major hospitals for the region include John Hunter Hospital, John Hunter Children's Hospital, Calvary Mater Newcastle, Maitland Hospital and Manning Hospital along with two mental health hospitals: the James Fletcher Hospital and Morisset Hospital. There are also smaller hospitals, district health services and community hospitals throughout the region.[164]

Key regional growth industries

Defence	Tourism	Knowledge sector
The Hunter region has a strong defence presence, with the defence industry contributing over $944 million to the state economy.[165] The region hosts the RAAF Base at Williamtown and various aerospace and defence hubs that support and attract a skilled regional workforce with advanced defence manufacturing capabilities.[166] The region also has leading research capabilities in defence as well as specialised study opportunities for this industry.[167] The planned Williamstown Special Activation Precinct and the Astra Aerolab technology park are expected to enhance the region's capabilities in defence, aerospace and aeronautics.[168]	As a globally recognised food and wine destination, the Hunter region is well positioned to continue expanding its tourism industry.[169] Overnight visitors grew 16.4% from 2013 to 2019, contributing significantly to regional prosperity.[170] The region's gateways, including Newcastle Airport and cruise ship facilities at Port of Newcastle, promote visitation to the region and support future growth.[171]	The region is establishing itself as a major knowledge hub, led by world-class education and research from the University of Newcastle. Regional innovation hubs and technology clusters, the Newcastle Institution for Energy and Resources (part of the University of Newcastle), Hunter Medical Research Institute, and the Hunter Innovation Project provide the necessary environment for growth in knowledge-based businesses. (Keep two existing endnotes here). The University of Newcastle's Integrated Innovation Network (I2N) supports enterprise skill development, new venture creation and scale-ups.[172,173,174] THe CSIRO Energy Centre is home to renewable energy technologies, labs and facilities that are available to industry and government for collaboration.[175]

Energy	Healthcare and social assistance
The Hunter's history, scale, workforce and infrastructure in energy and resources is a continuing core strength of the region. Stakeholders note national and global shifts toward decarbonisation will decrease the demand for traditional energy sources, with challenges identified in the closure of power stations. The region is uniquely placed to serve future energy needs, with the knowledge-based institutions listed above, industry partners and research students focused on bringing solutions to market. The Hunter-Central Coast Renewable Energy Zone (REZ) will ensure the region's growing role in renewable energy by utilising existing power stations, rehabilitated mining land, port and transport infrastructure. This will power existing industries and support economic growth, including in emerging technologies in green hydrogen, ammonia and metal production.[176] There are many emerging opportunities for the sector, including to position Port of Newcastle as a site to establish a hydrogen hub[177] and the Australian Trailblazer Recycling and Clean Energy (ATRaCE) Program, which will see the University of Newcastle partner with UNSW to accelerate new clean energy and recycling technologies from research to market.[178]	Health is already a major industry sector in the region in terms of employment. The establishment of the Hunter Health and Innovation Precinct including upgrading John Hunter Hospital and Children's Hospital will help to facilitate growth. Research and innovation, led by the Hunter Medical Research Institute (HMRI), research expertise at the University of Newcastle and the Hunter's National Centre of Excellence for Health and Education supports role in medical technologies and pharmaceuticals.[179]

Infrastructure gaps

Sector:	Transport
Sub-sector:	Public transport
Infrastructure gap:	Capacity, connectivity and quality of public transport

The Hunter region is home to New South Wales' second largest metropolitan region and offers a range of highly productive industries such as agriculture and viticulture. Over the past two decades, the region has attracted significant population growth enabled by investment in transport infrastructure which has provided better connections to Sydney as well as within the region.[180]

However, public transport infrastructure has not kept pace with growth and development, with most residents and tourists in the region relying upon private vehicles.[181] Improved public transport, including mass transit between Newcastle and Sydney would provide significant improvement for residents in accessing services and employment opportunities, as well as promoting social inclusion. Infrastructure interventions would deliver significant benefits, particularly for rural areas of the region or those living at the suburban fringes of urban centres such as Newcastle.[182] Beyond access benefits, improved public transport infrastructure, which offers a viable alternative to personal vehicle use, may assist in reducing congestion, improving road safety, and enhancing economic productivity in the region.[183]

Key facts:

Over

95%

of journeys to work started and finished in the region.[184]

The

Hunter

region is the most populous in regional NSW.[185]
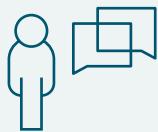
64%

of residents in Greater Newcastle reside within the Lake Macquarie and Newcastle LGAs.[186]

Impact:

- Providing better public transport will be vital to reducing congestion on roads and maintaining efficiencies for the region's freight network to manage future growth.

- Greenfield housing development in the region will significantly expand in coming years, which will bring about new connectivity demands in underserved locations.[187]

- Providing for easy mode-shift and integrated active transport offerings within integrated transport service offerings will be a key element in reducing the region's reliance on personal vehicles.[188]

Consultation feedback:

Stakeholders in the Hunter region identified transport infrastructure as a priority, with participants noting that planning and investment had been more focused on the movement of goods rather than movement of people.

During consultation, stakeholders expressed concern with the current road and transport network, stating that they expected congestion would worsen as the region's population climbs. Improvements to the public transport network, including support for faster rail and connections between major catalyst population areas (in addition to universities, hospitals) and integrated transport planning, were seen as important for connectivity. Connections between the Upper and Lower Hunter were also viewed as insufficient, with suggestions the region would benefit from improved intra-regional travel.

Sector:	Social infrastructure
Sub-sector:	Education (tertiary)
Infrastructure gap:	Access to further education and skills training

The Hunter region is facing a skills shortage in its local workforce, with areas of particular concern including growth sectors such as defence, manufacturing and tourism.[189] The region would benefit from expanding current tertiary education infrastructure and skills service offerings to more fully meet current and future industry needs.[190]

Beyond expanding the physical and service delivery capacity of existing institutions, opportunities may lie in leveraging education infrastructure and industry capacity to offer collaborative approaches to improve outcomes for young people in the region, who are disproportionately disengaged from work and training.[191,192]

Communities outside of major centres lack the same level of access to tertiary education and skills training infrastructure.[193] Providing high quality, enabling infrastructure, such as digital connectivity and better public transport, is also crucial in improving access to education and skills training.[194]
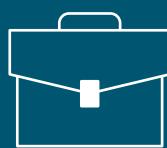
Key facts:

Population growth has been forecasted as high as

17.7%

(2016-2036).[195]

61,500

**new jobs will be created in the region by 2036.[196]**
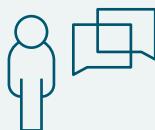
Youth unemployment rate of

15.3%

(June 2021) compared to 11.2% for NSW.[197]

Impact:

- The Hunter region has multiple further education assets and major industry operations which offer potential to support collaboration between industry, education, research and government, and additional investments could further support this.[198]

- Challenges with accessing training has contributed to structurally high unemployment in some regional locations. The unemployment rate for working age First Nations people is over two times higher than the general population.[199]

- The youth unemployment rate has significantly increased from 10.3% (March 2020) to 15.3% (June 2021) in the Hunter region, a rise of 5% compared to NSW decrease of 0.6%.[200] This demonstrated the vulnerability of the region's workforce to external shocks, such as the COVID-19 pandemic, and the need to diversify its skills and industry base to improve economic resilience.

Consultation feedback:

During the workshop, participants noted that the Hunter region has unrealised potential in offering further education and skills training. The region is experiencing significant skills shortages which could be addressed through easier access to TAFE and tertiary education. The growth potential of the region is strong if current skill shortages are addressed.

Stakeholders highlighted the disparity between university attainment rates between the Upper and Lower Hunter, arising out of complex social and workforce factors, significantly the availability of high quality, high paying jobs in the mining sector, which for decades has provided intergenerational employment for Upper Hunter families, as well as the large agricultural sector in many parts of the Upper Hunter. In addition, very poor public transport links from Newcastle to the Hunter compound access to higher education.

Developing collaborative approaches with industry to deliver immediate and longer term skills in the region was supported. Alignment with current and future skills needs is an enduring and evolving challenge, and opportunities were identified through collaboration and regulatory changes, as well as industry-specific infrastructure where required. Training hubs where industry, vocational and university educators work together onsite to create a high-quality offering where students can train and work in one location was raised as an approach which could be ideally suited to the Hunter.

Also noted during the consultation were the varying degrees of digital connectivity across the region, with some areas lacking connectivity and speed. This creates a barrier to engaging with the increasing number of education and training offerings that are online.

Sector:		Social infrastructure
Sub-sector:		Housing
Infrastructure gap:		Availability, affordability and diversity of housing

The Hunter region has seen substantial growth in recent years and is projected to become home to up to 862,750 people by 2036.[201] This growth will increase demand for housing, alongside a greater need for housing diversity, with a growing demand from single or couple-only households.[202] Additional housing must not only meet this new demand, but also provide accommodation for incoming workers employed in a growing infrastructure sector.[203] Without appropriate housing for workers, the delivery of critical projects may be jeopardised.

Beyond these implications, the region's housing shortage is having a significant and detrimental impact on social and community wellbeing. The region is currently facing a significant undersupply of public housing, with waiting lists for general applicants in its two most populous centres, Newcastle and Port Stephens, ranging from 5-10 years and 10+ years, dependent on property size.[204] Applications for emergency housing from those at-risk of harm or living in unstable circumstances, such as homelessness, numbered over 200 in 2020.[205]

Key facts:

The region will need approximately

60,000

dwellings to be built between 2016-36 to accommodate growth.[206]

Social housing expected waiting times for general applicants in the Newcastle and Port Stephens allocation zones ranges from

5-10 years

and 10+ years, depending on property size (as at June 2021).[207]

Impact:

- A significant number of new dwellings will be needed throughout the Hunter region, particularly in Newcastle and Port Stephens and surrounds. With 40% of new housing projected to be delivered in greenfield areas, ensuring enabling infrastructure such as transport and community facilities are in place will be critical to maintaining liveability.[208,209]

- The region's proximity to Sydney and its unique balance of metropolitan and regional lifestyles is likely to bring about an influx of tree and seas-changers.

Consultation feedback:

Stakeholders reflected on the strategic location of Newcastle, with air and rail connections to Sydney, Melbourne and Brisbane, combined with low rental vacancies, creating a shortfall of housing across the region.

Reflecting on recent and forecast population growth and the geographic advantages that exist across the region, during the consultation workshop participants noted that there is a significant gap in the provision of social and affordable housing, leaving a significant proportion of the population marginalised.
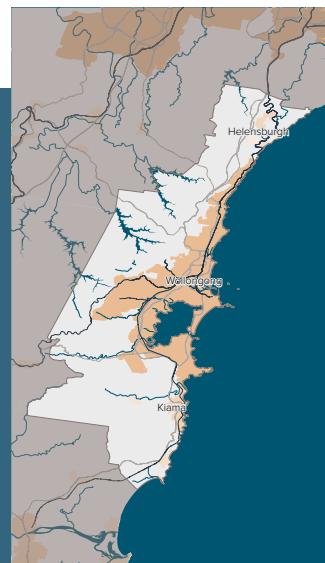
Stakeholder's also highlighted that population growth has been stronger than what has been projected in the past for the region. The impacts of domestic migration from capital cities to regional areas was evident as a result of the COVID-19 pandemic, resulting in a backlog of infrastructure and services to support growth and unlock housing and employment.

6.2.6 Illawarra

The Illawarra region borders the Sydney Metropolitan region and stretches south across the local governments of Wollongong, Shellharbour and Kiama. The region provides residents and visitors with a diversity of landscapes and lifestyle offerings. Alongside this liveability, the region is home to world-class educational institutions, innovative businesses, a well-connected port and significant manufacturing capacity.

The region's population has grown significantly in recent years,[210] largely driven by the changing nature of work and accompanying improvements in connectivity between Illawarra, Sydney and the neighbouring region of Western Sydney.

This growth has brought with it challenges surrounding availability of local employment, housing supply and pressure on transport infrastructure, especially connectivity to Western Sydney. Better transport connectivity, health care to support older people and diversification of the region's industry base towards value added industries such as advanced manufacturing and renewable energy will be important for future prosperity.

Strengths

Key existing assets

Economic	**Strategic location**	The region benefits from Wollongong as its major service centre, as well as its proximity to Sydney and Western Sydney.
	Gateway ports	Port Kembla is a key economic asset and global gateway, providing significant import and export capacity for both the region and the state.
Natural	**Climate and topography**	A combination of rich volcanic soil and relatively reliable rainfall supports the region's agricultural land.
	Natural environments	The region is home to the iconic Illawarra Escarpment, extensive coastline, coves, estuaries, and national parks which attract tourism.
Social	**Education and research facilities**	The University of Wollongong, along with TAFE campuses in Wollongong and Shellharbour provide education and research capacity.
	Health infrastructure	The region is serviced by the Illawarra Shoalhaven Local Health District which has a network of high-quality health infrastructure and teaching hospitals.

Key regional growth industries

Healthcare and social assistance	Knowledge sector	Transport	Manufacturing
The health and social services sector is the largest employer in the Illawarra region.[211,212] Aged care, disability and community services are experiencing rapid demand growth, with 11-13% annual growth predicted in the next 3 to 5 years.[213]	Illawarra is home to the world-class University of Wollongong (UOW), known for its innovation, research and development.[214] The education and training industry has experienced the second fastest growth in the region,[215] with UOW's Innovation Campus presenting opportunities for research and business collaboration.[216]	Port Kembla is one of the State's five deep-water freight ports, facilitating the export of bulk commodities and import of motor vehicles. The Port of Port Kembla directly and indirectly supports more than 3,500 jobs and contributes $543 million to the regional economy each year.[217] A $700 million proposal to upgrade a blast furnace at Port Kembla Steelworks has been declared Critical State Significant Infrastructure.[218]	Manufacturing is a major employer in the region, providing more than 6,700 jobs in Wollongong where research and education activities of the University of Wollongong support a skilled advanced manufacturing labour force.[219,220] As the sector transforms, the nature of employment is changing however partnerships between the University and Facility for Intelligent Fabrication, Steel Research Hub and Institute for Superconducting and Electronic Materials are supporting new manufacturing capabilities.[221]

Wollongong, New South Wales

Infrastructure gaps

Sector:	Transport
Sub-sector:	Public transport
Infrastructure gap:	Capacity, connectivity and quality of public transport

The Illawarra region is expected to undergo significant population growth with at least 83,000 additional residents by 2041 as its satellite city location continues to attract sea changers.[222] The *Illawarra-Shoalhaven Regional Transport Plan* outlines the key connectivity objectives, including increasing the population within a 30-minute public transport trip of a regionally significant centre, improved public transport connectivity between metropolitan Wollongong and Greater Sydney and reliable north-south, east-west transport spines.[223]

Connections with the region and Sydney are well established, with 15% of residents in the Illawarra-Shoalhaven region commuting to Sydney for work purposes.[224] The need for efficient, reliable and safe connectivity between the Illawarra-Shoalhaven and Greater Sydney is expected to continue to grow, with the connection to Western Sydney increasing in importance as the Western Sydney Aerotropolis expands.[225]

Demand for travel within the region is also expected to grow at a similar rate to growth in the region's population, adding up to 25% more trips to the road network by 2041.[226] With parts of the region's transport network already experiencing congestion, accommodating the anticipated growth in travel without behavioural change would require significant investment in additional road infrastructure, which is likely to be cost prohibitive, challenging to deliver and unsustainable over the longer term.[227]

Key facts:

Between

32% – 49%

of Illawarra-Shoalhaven residents (depending on the day and time or travel) are beyond a 30-minute public transport trip to a regionally significant centre.[228]

More than

20%

of workers in the region are employed in the ACT.[229, 230]
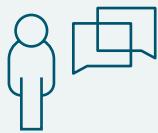
The region of Illawarra is located approximately

70 minutes

south of Sydney.[231]

Impact:

- A multi-modal transport response ensuring travel between the region and Greater Sydney, including each of the three defined CBDs, is safe, efficient and reliable will facilitate a two-way economic exchange.[232]

- Leveraging the region's location and strengths through efficient connections will help to bring residents and visitors closer to jobs, centres, education and the natural environment.[233]

- The impact of growth in the region requires improvements to urban infrastructure to make it safer and easier to experience the region using public and active transport.[234]

Consultation feedback:

Participants considered opportunities to improve interregional and intraregional connectivity to be vital to the liveability and economic success of the region. Connectivity, efficiency, and affordability of public transport was highlighted, alongside enhancing access to Sydney and Western Sydney. Noting the region's commuter population, stakeholders expect that the growth of Western Sydney will see an increased flow of workers into and from the Illawarra region in the future, for work purposes and increasingly for leisure. With an increase in tourism, enhancing these connections could also benefit economic growth in the region.

Stakeholders noted the lack of a fast and direct transport connections continues to compel the use of private vehicles, noting that improved public transport infrastructure important to alleviating the strain on current road infrastructure, support a more sustainable future and assist a growing and ageing population to be better engaged in the community.

Ensuring road and rail infrastructure is appropriately maintained to meet increasing demand with improvements to connections between transport modes and timetabling of services also noted as opportunities. Feedback also included a focus on the protection of the environment and the development of sustainable infrastructure as a primary consideration when planning for economic and population growth.

Sector:	Social infrastructure
Sub-sector:	Housing
Infrastructure gap:	Availability, affordability and diversity of housing

The Illawarra will see changes to its regional demographic including an ageing population, decreasing household size and growing population moving from metropolitan areas such as Greater Sydney.[235] Population growth is projected to create a demand for 58,000 additional houses for the Illawarra-Shoalhaven region by 2041.[236] Growth of the region's tourism industry is also expected to place additional pressures on the region's housing stock with a need for greater accommodation and short-term housing options.[237] Thus, the region will need to provide housing supply in the right locations.[238]

Households in the region have varying needs and budgets and as such they require a range of housing types across the housing continuum.[239] Social housing will also be vital for the region, as the housing on offer does not always match the needs of occupants who would be better served by smaller homes or multi dwelling housing.[240] The *Illawarra Shoalhaven Regional Plan 2041* identifies the need to assess the potential to renew social housing sites to deliver an increase in social housing stock and greater vibrancy in local communities.[241] Current social housing waiting lists are also long, averaging 5–10 years across the region, with access to some properties with an expected waiting time of 10+ years.[242]

Key facts:

Population projections for the Illawarra have been forecast as high as

23%

by 2036.[243]

**By 2036, dwelling demand projections increase by**

28%.[244]
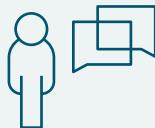
81%

of low and very-low income households experience rental stress in the Illawarra-Shoalhaven region.[245]

Impact:

- The expansion of residential projects in the Illawarra region urgently needs to incorporate housing options for low and very-low income households to enable expected growth. In 2021, the total number of properties deemed affordable and appropriate (up to 30% household income) was 1% for the region.[246]

- In the case of population growth in the region, especially from the recent internal migration from Sydney to regional areas, increased housing supply and demand is crucial to meeting current and future needs.[247,248] More housing choice will meet the needs of the growing population and entice people to relocate to the region to take advantage of the changing nature of work.

- As demand for housing for rental and purchase increases, the market tightens for those on lower incomes, students, people living on their own or seniors, especially when the number of smaller homes is limited.[249]

Consultation feedback:

Stakeholders identified that the region's population growth is dependent on both international migration, notably linked to the university, as well as shifting internal migration, driven by the changing nature of work and the improvements in connectivity between Illawarra and Sydney. Housing supply shortages, affordability and lack of housing diversity has been a key challenge in the region.

A key challenge noted for housing supply in the region was the rising demand placing upward pressures on prices, which has been exacerbated by the relocation of capital city residents during the COVID-19 pandemic. Trends in internal migration to the Illawarra continues, particularly to Wollongong and Shellharbour.

Diversification of housing is also needed to maintain a varied and dynamic community where housing is affordable and accessible, with options including social/affordable housing and private rental housing. Stakeholders stressed the urgent need to address the current housing issues and improve liveability in the region. With more workers needed in the region, needs were raised to consider where they will live affordably.

Sector:		Transport
Sub-sector:		Freight
Infrastructure gap:		Capacity, connectivity and quality of freight infrastructure

With more than 35 million tonnes of freight moved in, out and within the region by road and rail in 2016, freight is a significant part of the regional transport task.[250] Key commodities for the Illawarra-Shoalhaven include coal, grain, flour, steel, motor vehicles, mineral ore, manufactured goods and aggregates.[251] However, as the freight task is expected to rise over the coming decades, infrastructure improvements to increase capacity and efficiency will be vital to future prosperity.

Port Kembla provides the Illawarra region with a natural advantage for domestic and international imports and exports as one of five New South Wales deep-water freight ports.[252] The NSW Ports' 30 Year Master Plan *Navigating the Future* identifies Port Kembla as a home to NSW's second container port to cater for future trade volumes as Port Botany reaches capacity.[253]

Infrastructure Australia notes the improvement of freight rail access to Port Kembla on the *Infrastructure Priority List*.[254] Current challenges to freight expansion include land use conflicts from adjoining residential and commercial developments and surrounding road infrastructure not being up to the standard needed to accommodate for increased freight levels.[255]

Key facts:
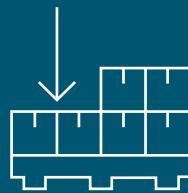
Port Kembla

is the only motor vehicle import terminal in New South Wales.[256]

60%

of goods are transported via road freight in the Illawarra-Shoalhaven region.[257]

Freight activity in the Illawarra-Shoalhaven region will increase by
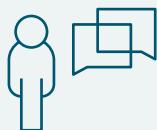
1.4%

per year over 40 years.[258]

Impact:

- Freight activity will compete with passenger transportation for road and rail networks and resources.[259]

- Inadequate freight rail capacity may lead to a substantial increase in road freight, further constraining the Illawarra region's road network.[260]

- Future planning should recognise the increasing importance placed on 24/7 supply chain operations and protect the freight network from potential encroachment.[261]

Consultation feedback:

Freight transport and infrastructure developments were identified as key challenges by stakeholders, as linkages to New South Wales ports such as Port Kembla and major service and employment centres are key enablers of economic growth. Investments to further develop rail, road, sea and air capacity and other supporting infrastructure are needed to improve freight connectivity and export capacity for the region.

Stakeholders noted that a cohesive plan for the Port Kembla industrial precinct is crucial and considers the future use of the area as a Hydrogen Hub, surrounding industrial lands and connectivity to Western Sydney.

6.2.7 Mid North Coast

The Mid North Coast region covers natural landscapes ranging from picturesque beaches and rugged coastline to inland rivers and expansive bushland.

The region has developed itself as a hub for tourism, education, health, and small businesses, and has benefited from an influx of sea changers. However, more recently, the region has experienced housing shortages and the impacts of climate change, with an increase in number of floods and bushfires forcing local industry and infrastructure to adapt.

The region hopes to develop its health sector to better service its residents, to improve sustainability and to strengthen the local workforce. In addition, industry diversification is a priority as the region looks to build local innovation capabilities which will be aided by better digital connectivity.

Norfolk Island and Lord Howe Island:

The Mid North Coast region also includes Norfolk Island and Lord Howe Island. The identification of strengths and Infrastructure Gaps for both islands have been separately included and informed by stakeholder input. Further analysis and engagement would support the identification of priority Infrastructure Gaps.

Strengths

Key existing assets

Economic	**Specialised precincts**	The region's harbour, port and foreshore precincts offer amenity to locals and tourists.
	Transport infrastructure	Significant east-west and north-south freight routes cut across the region, while access to the North Coast rail line provides a link to Newcastle, Brisbane and Sydney.
	Gateway ports	Multiple regional airports provide passenger, cargo and medical services access.
Natural	**Natural environments**	The region is home to beaches, national parks, rural hinterland, rivers, marine parks and wildlife habitats.
Social	**Cultural heritage**	Significant First Nations landscapes exist throughout the region.
	Education and research institutions	Industry partnerships with tertiary institutions such as the Charles Sturt University and the Coffs Harbour Education Campus and Health Campus provide opportunities for education and collaboration.

Key regional growth industries

Healthcare and social assistance	Agriculture, forestry and fishing	Knowledge sector
The healthcare and social services industry has experienced the strongest growth in the Mid North Coast region, with revenue increasing annually by 26% and an 18.9% rise in employment.[262] Various capital works programs are underway, including the Coffs Harbour Health Campus expansion and Macksville Hospital Development and HealthOne projects.[263]	The Mid North Coast has a diverse agricultural industry, ranging from horticulture to livestock products. Dairy accounts for 72% of the region's agricultural output,[264] but there is a growing emphasis on agricultural diversification through value-adding processes and horticulture and aquaculture.[265] The industry's growth will also be supported by growing global demand for food products.[266]	The education and training sector contributes to 9.1% of regional jobs,[267] with the Mid North Coast hosting six high-quality tertiary education facilities.[268] This industry is expected to continue growing as institutions expand international student capacity, including at Charles Sturt University's Port Macquarie International Education Centre.[269]

Coffs Harbour, New South Wales

Infrastructure gaps – Mid North Coast
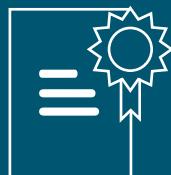
Sector:	Social infrastructure
Sub-sector:	Education (tertiary)
Infrastructure gap:	Access to further education and skills training

The Mid North Coast hosts quality tertiary education facilities including Charles Sturt University Port Macquarie campus and Coffs Harbour Education Campus, which attract domestic and international students. However, the region continues to face significant challenges in matching its industry profile with its available, skilled workforce. Key issues include building a suitably skilled local workforce in growth sectors such as aged care, disability services, tourism, construction and manufacturing, as well as high unemployment in the region and workforce disengagement among young people.[270]
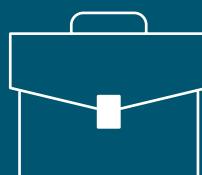
There is an identified need to coordinate the range of training options to directly link to the current labour demand in the region.[271] Improvements through public transport connections for access to employment supporting infrastructure has also been identified.[272]

Key facts:

38%
of residents have post-secondary qualifications.[273]

Average unemployment rate of
6.5%
between 2015-2020.[274]

43.6%
of industries are suffering a skills shortage.[275]

Impact:

- 20% of business and industry stakeholders on the Mid North Coast consider a lack of relevant training in the region to be a key challenge in running their businesses.[276]

- Over 50% of Mid North Coast residents surveyed consider an ability to access relevant and effective training to be a critical factor impacting businesses in the next five years.[277]

Consultation feedback:

Key regional stakeholders noted that workforce and skills shortages were a key issue, which was viewed as a significant impediment to industry diversification, growth and innovation, as well as increasing socioeconomic inequality.

There was a recognised need amongst stakeholders to better match the skills training offerings in the region with its desired industry growth profile. Workshop participants considered the Mid North Coast's existing tertiary education institutions to be key assets which may provide collaborative opportunities to improve access to skills training.

Sector:	Telecommunications
Sub-sector:	–
Infrastructure gap:	Broadband and mobile connectivity

Over recent years, the Mid North Coast region has seen a shift toward a greater reliance on online services, accompanied by a ramp-up in the roll-out of the National Broadband Network.[278,279] However, mobile and digital connectivity gaps still exist in the region. Mobile black spots or lack of broadband connectivity impede critical access to services ranging from online education to emergency response services.[280,281,282] Poor quality digital connectivity outside of service centres impacts upon business productivity, and the capacity to innovate in areas such as AgTech.[283,284]

High-quality digital connectivity is key to innovation in essential services, including in the health and transport sectors. The Mid North Coast Public Health Network acknowledges that digital technology innovations have played a critical role in enhancing the capacity of the local healthcare system, whilst improved mobile communication with patients forms part of an ongoing strategy to improve local health outcomes.[285] Recent innovations such as on-demand public transport trials on the Mid North Coast are also heavily reliant upon widely available and high-quality mobile and digital connectivity.[286]

Key facts:

There are over

200

mobile black spots across the region.[287]

RDA Mid North Coast's submission to the 2021 Regional Telecommunications Review identifies the various digital connectivity challenges in the region. Stakeholders noted that the the lack of telecommunications makes it difficult to attract new businesses. Existing connectivity challenges are also exacerbated in times of natural disasters.[288]
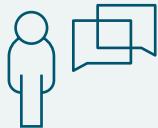
The region's local government areas (Coffs Harbour, Kempsey, Mid-Coast, Bellingen, Nambucca and Port Macquarie) averaged a 2021 Australian Digital Inclusion Index (ADII) score of

63.2.

This is below the national average of 71.1 and the New South Wales average of 71.[289]

Impact:

- The Australian Communications Consumer Action Network identified resilient and robust telecommunications networks to be its leading recommendation in ensuring greater preparedness and responsiveness to future bushfires, similar to those which affected the region in 2019-20.[290]

- Improved digital connectivity can contribute to greater labour and capital productivity, improved access to services and more valuable connections to domestic and international markets for businesses.[291]

- 97% of businesses in the MId North Coast are described as small or micro businesses, which require access to high-speed internet. A growing reliance on data to drive the economy is also noted.[292]

Consultation feedback:

Local consultation revealed that mobile black spots in the region were a key issue for stakeholders, with workshop participants stating that recent bushfires had raised concerns about the impact of poor telecommunications access for emergency services.

High-quality digital infrastructure was also raised as an issue by local stakeholders, with many noting that addressing patchy connections throughout the region would be critical in enabling business development and economic growth. In considering the region's greatest infrastructure challenges, workshop participants expressed a view that addressing digital and telecommunications infrastructure gaps is one of the most pressing issues facing the region over the coming decade.

Sector:	Transport
Sub-sector:	Road infrastructure
Infrastructure gap:	Capacity, connectivity and quality of road infrastructure

A lack of capacity on east-west connections across the Mid North Coast Region inhibits trade and transit efficiency, while increasing congestion and conflicts of use on key north-south routes have significant implications for road safety and freight productivity.[293]

Ageing bridges are also a long-standing challenge in the region, as these assets can inhibit access for both passenger and freight vehicles.[294] Some roads outside of major centres remain unsealed and highly susceptible to damage through regular use, or natural events such as flooding.[295] At times, flooding has closed major highways which provide critical access for the Mid North Coast, highlighting the need for the climate-resilient planning of road infrastructure in the region.[296]

Key facts:

Over

500

road crashes resulting in a fatality or injury in 2019 and 2020.[297]

15

partial or full M1 Highway closures over 12 months in 2019-20 due to natural disasters.[298]
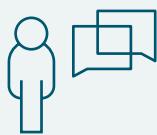
Over

500

timber bridges across the region.[299]

Impact:

- The manufacturing, construction, agriculture and tourism industries, all rely on efficient and safe road network connectivity. These industries contribute over $11.5 billion to the Mid North Coast economy, accounting for approximately 39% of the region's total output.[300]

- Infrastructure Australia's *Infrastructure Priority List* acknowledges safety on roads in regional Australia, noting, noting that the poor quality of parts of Australia's regional road network has contributed to the number of fatalities in regional areas being over four times greater than for major cities over the same period.[301]

Consultation feedback:

Road infrastructure was raised throughout the consultation as being of critical importance to the region, both in terms of changes which had occurred over the past two decades and anticipated developments in the years ahead. Stakeholders noted that whilst duplications, realignment projects and new bypasses have brought about increased capacity for the region's roads, concerns remain over the sustainability of these key routes in the face of projected population growth.

Workshop participants also consistently identified road infrastructure as being one of the key infrastructure challenges facing the region. Many expressed concerns over the safety and climate resilience of east-west road connections, with these issues hindering accessibility and business growth in the region.

Norfolk Island

Norfolk Island is an External Territory administered by the Australian Government. It is situated in the Pacific Ocean approximately 1,600 km northeast of Sydney, with a similar latitude to Byron Bay, and an approximate population of just over 1,700 at the time of the 2016 Census.[302] The Queensland Government delivers services to the community including health support and education, under an agreement with the Australian Government.[303] Other services are delivered by the Australian Government, the Norfolk Island Regional Council, and contracted service providers. In addition to infrastructure considerations, sustainability is a key priority for the community, with emphasis on investment towards self-sufficiency. A snapshot of strengths and Infrastructure Gaps informed by insights from stakeholder surveys is included below.

Strengths

Key existing assets

Economic	Gateway ports	Norfolk Island Airport is the only airport on the island, providing freight facilities and a gateway for residents and visitors.
Natural	Natural environments	The Norfolk Island group (including Norfolk Island, Nepean Island and Philip Island) provides an important link between tropical and temperate oceanic island environments. Isolation and climate make the islands important habitats for breeding areas for migratory seabirds, and refuges for unique endemic animals and plants. Norfolk Island is surrounded by the Norfolk Marine Park and includes Norfolk Island National Park.
Social	Cultural heritage	Cultural heritage sites also include the Kingston and Arthur's Vale Historic Area World Heritage Site, one of 11 historic sites that together form the Australian Convict Sites World Heritage Property. It is recognised for its picturesque character, historic associations, Georgian buildings, townscape and ruins.

Other assets and investment include the phasing out of dumping of waste in the ocean [304] and evolution of waste management practices on Norfolk Island.[305] A commercial composting system for organic waste streams was installed in 2020, in addition to opportunities to reuse and process waste streams on Island, to create products and materials.[306] The 2022-23 Federal Budget included investments in the delivery of education and health support services, upgrades to the sewer system, enabling containerised freight handling on the island, and improvements to the aging electricity network.[307,308]

Key regional growth industry

Tourism

Tourism is the primary economic activity on Norfolk Island. Home to Emily Bay and the UNESCO World Heritage site of the Kingston and Arthur's Vale Historic Area, Norfolk Island attracts around 30,000 visitors per annum generating $33 million for the local economy.[309] Norfolk Island is expected to continue to attract visitors, drawing on its natural environment and local history of Polynesian seafarers, convict settlements and Pitcairn Islander descendants of the Bounty Mutineers.

Infrastructure Gaps

Further analysis and engagement would support the identification of priority Infrastructure Gaps.

Capacity, connectivity and quality of freight infrastructure:

Norfolk Island has traditionally received freight by sea as break bulk, delivered from ship to shore in small lighter craft. Port facilities are relatively rudimentary, and there is no protected harbour. The global shipping industry has transitioned from break bulk cargo to containerised cargo and there are few remaining vessels able to deliver break bulk cargo. There is a significant shortfall in freight deliveries, which is limiting all aspects of the Island's economy. The Australian Government continues to progress planning to support the availability of freight services to Norfolk Island, working with industry and the community.[310]

Water security (including wastewater management):

Residents on Norfolk Island rely on rainwater tanks and groundwater bores. The remoteness of the island, alongside limited natural freshwater sources, present unique challenges in ensuring a self-sufficient water supply.[311] Water availability also impacts on food production on the island for residents and visitors.[312] Whilst contingency plans exist for responding to water emergencies including provision of a small desalination plant for emergency use,[313,314] careful water management is required. Annual rainfall has fallen by 11% over the past 50 years and the number of 'dry' wells and bores tripled in 2019.[315] Climate modelling projects a continued decrease of rainfall and more frequent and intense dry periods.[316] Stakeholder surveys indicated water security as a high priority, particularly relating to mitigation measures in periods of low rainfall.

Wastewater management infrastructure on Norfolk Island is in very poor condition. The reticulated sewage network services only 20% of properties on Norfolk Island.[317] Most properties rely on privately owned onsite wastewater management systems, such as septic tanks and soakage trenches, of variable quality and condition. The local council estimates that one quarter of these systems are failing, with many more beyond their design life and not maintained appropriately.[318] The Australian Government has provided funding for the detailed design of a new wastewater treatment plant.[319]

Stakeholders note that infrastructure upgrades are considered only part of the solution, and that careful water and wastewater management can help reduce water shortages and the impacts of water pollution, and are required to secure a more reliable water supply.

Access to and capacity of health and aged care:

Due to the island's remoteness and population, the health and residential aged care offering for residents is limited to a single service provider and facility. Stakeholders indicated that access to and the capacity of health infrastructure was a priority issue, with a need for more healthcare specialists and the provision of more healthcare options. The attraction and retention of skilled health workers has been an issue,[320] which inhibits both service capacity and the ability to provide continuity of care for residents. Existing infrastructure is ageing and does not meet current Australian Health Facility Guidelines in terms of best practice design, patient flows and the size of rooms.[321] Service level improvements are also needed in community health, drug and alcohol treatment, pharmacy, gastroenterology, general surgery, anaesthesia, and for recovery care.[322] A 200% increase in primary care facilities is needed to meet projected demand.[323]

The proportion of Norfolk Island's population aged over 65 increased from 20% to 40% between 2001 and 2016.[324] There is a limit to the services available for senior residents seeking aged care services on Norfolk Island as the result of limited capacity within the existing facility. As a result, some residents have relocated to mainland Australia in order to access these services. A 170% increase in residential aged care beds is required to meet projected demand.[325]

The Australian Government pays for transport to the mainland for medical emergencies and has engaged the Queensland Government to facilitate clinical pathways for emergency and routine health services in the Queensland public health system. The Department also funds a patient traveller reimbursement

scheme, similar to schemes within New South Wales and Queensland, for Norfolk Island residents accessing secondary or tertiary health infrastructure outside of emergency events. While accessing such services is time consuming, it is not feasible to deliver all services on Norfolk Island. Consultation is underway for a new Norfolk Island Multipurpose Health Services Facility, which if approved may provide opportunities for minor procedures to be performed on the island and reduce travel to mainland Australia.

Broadband and mobile connectivity:

The remote location of the island makes telecommunication and digital connection critical to modern life on Norfolk Island. The island's existing satellite connections offer limited bandwidth and data to consumers, and connection strength can be affected by cloud and weather. Stakeholders noted that mobile coverage is fairly extensive, however as the island is not part of the mainland phone network, businesses and residents pay international call rates. Upgrades to health and education broadband connections are underway.

Capacity, connectivity and quality of road infrastructure:

Norfolk Island's road network is severely degraded in places. A road infrastructure audit undertaken on the island in 2015[326] outlined the challenges in the condition of roads and bridges, with stakeholders noting that the challenges identified in this study largely remain today.

Lord Howe Island

Lord Howe Island has a resident population of approximately 400 persons and attracts over 15,000 tourists per year.[327] The Lord Howe Island Board (LHIB) is a statutory authority charged with the care, control, management, affairs and trade of the island. In addition to infrastructure considerations, sustainability is a key priority for the community, with emphasis on investment towards self-sufficiency. A snapshot of strengths and Infrastructure Gaps informed by insights from stakeholder survey is included below.

Strengths

Key existing assets

Economic	Gateway ports	Lord Howe Island Airport serves as an important gateway port, providing passengers and limited freight services.[328]
Natural	Natural environments	The delivery of the Hybrid Renewable Energy system in 2021 marked a significant step for the island to reduce dependency on diesel generators, with high levels of renewable energy being achieved on a regular basis.[329]
Social	Cultural heritage	Lord Howe Island is a World Heritage listed location. Over 75% of the Island is designated as a permanent park preserve, surrounded by the Lord Howe Island Marine Park which includes the world's southernmost coral reef.[330]

Key regional growth industry

Tourism

Tourism represents the most significant industry of employment for Lord Howe Island.[331] Stakeholders noted that while tourism numbers are capped, there are opportunities to facilitate industry growth with supportive infrastructure, which will offer advantages to the community.

Infrastructure Gaps

Further analysis and engagement would support the identification of priority Infrastructure Gaps.

Water security:

There is no central water supply on Lord Howe Island.[332] The LHIB operates a decentralised potable water system of rainwater tanks of potable water for public areas, non-potable water supply for public areas, its own operations and houses it owns.[333] Businesses and other residences on the island are responsible for their own water supplies.[334] In drought periods, the LHIB supplies rainwater and bore water to those with insufficient supply.[335] In the future, rainfall variability is projected to increase.[336] With bore water not an unlimited resource and the reliance on rainwater, there have been risks to the availability of water supply in previous times of dry conditions.[337]

Broadband and mobile connectivity:

Lord Howe Island does not have mobile phone coverage.[338] Roaming Wi-Fi is available at a number of locations on the island, in addition to public phones and internet café for visitors and locals.[339] Digital connectivity has been identified by some stakeholders as an opportunity to improve accessibility to markets for business, as well as access to services such as telehealth or remote education for residents. Other stakeholders identified the lack of mobile coverage as an asset for the island, noting the preferences of residents and visitors. In March 2022 the LHIB resolved to conduct a high-level feasibility and needs assessment for the provision of mobile phone service, including a survey of island residents and visitors.[340]

Waste management and resource recovery:

The LHIB is responsible for the management and disposal of waste generated on the island. Waste is managed through the LHIB's Waste Management Facility. The LHIB notes that Waste management is a significant cost to the small Lord Howe Island Community.[341]

Capacity, connectivity and quality of air transport:

Stakeholders noted challenges with the length of the current runway limiting the type of commercial aircrafts that can operate on Lord Howe Island. An Airport Runway Extension Feasibility Study was undertaken in 2019.[342]

Capacity, connectivity and quality of freight infrastructure:

Stakeholders noted challenges in biosecurity and in removing vessels from the water to dry storage.

Capacity, connectivity and quality of road infrastructure:

The road network plays an important role in the tourist experience, with bicycle riding and pedestrians representing the major forms of transport for most visitors around the Island. Stakeholders noted that some of the Island's roads are in bad condition and pose safety concerns due to degradation. The high costs of maintaining the road network were also noted, due to the import of heavy plant and road base materials.

Availability, diversity and affordability of housing:
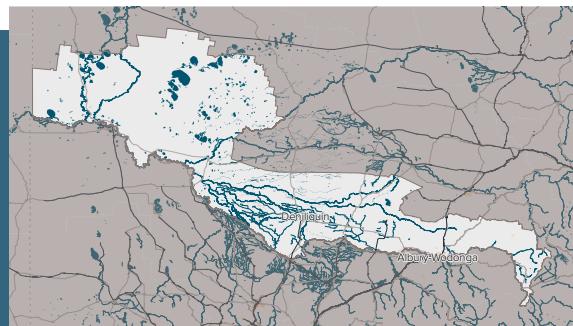
Stakeholders noted accommodation is difficult to obtain on the island, citing challenges in business operation without a core team.

Access to and capacity of health and aged care:

Stakeholders identified accessibility to healthcare services an area of need. Health infrastructure and services are available on the island through the Gower Wilson Memorial Hospital with three inpatient beds.[343]

6.2.8 Murray

The Murray region encompasses most of New South Wales region adjacent to the Victorian border, reaching from the Snowy Mountains in the east to the South Australia border in the west. The region is home to a network of Regional Centres and Small Towns contributing to the agricultural, manufacturing and renewable energy sectors. Its strategic transport connections and geographic position as a connector between states places the region in a strong growth position as a producer and location for both traditional and emerging markets. Planning is underway for the South-West Renewable Energy Zone which is expected to deliver economic benefits and further unlock energy generation capacity in parts of this and surrounding regions.

The region has seen varied population trends at a sub-regional level, but overall has a growing ageing population and declining number of young people. Albury-Wodonga is currently the 20th largest city in Australia and expected to reach 124,000 residents by 2036 at an average annual growth rate of 1.7%.[344] Regional competitiveness and growth will be aided by improvements to digital connectivity, greater technological adoption for industries, better water security, the growth of the skilled workforce and improved housing supply.

Strengths

Key existing assets

Economic	**Energy infrastructure**	Solar and hydro energy generation infrastructure enhance energy security and provide a competitive advantage for emerging industry for the region.
	Transport infrastructure	The Newell, Sturt and Hume Highway, together with the Inland Rail freight corridor, support significant export opportunities for the region.
	Gateway ports	Albury and nearby Mildura airports provide gateway access to the region for passenger and cargo journeys.
	Water infrastructure	Murray Irrigation is Australia's largest private irrigation supplier, supporting agribusiness across southern NSW.[345] Hume Dam, Yarrawonga Weir and Mulwala Canal control flows and supply and manage stored water along the Murray River.
Natural	**Natural environments**	The Murray River is a significant water resource, as well as being an amenity, tourism and First Nations cultural asset for the region. Other environmental assets supporting ecological and cultural values include Lake Mungo, the Barmah-Millewa Forest, the Koondrook-Perricoota Forest and Kosciuszko and Woomargama National Parks.

Key regional growth industries

Agriculture, forestry and fishing	Energy	Tourism
The Murray region has a highly productive agricultural industry stemming from broadacre farming, livestock and horticulture activities.[346,347] Within the region, the Murray Valley is the second largest citrus growing district in Australia and makes up 21% of Australia's citrus production.[348] There are opportunities to intensify agribusiness activities, adopt technology in agriculture and increase value-added commodities through manufacturing.[349]	Renewable energy generation, especially in large-scale solar energy operations, presents a significant opportunity for the Murray region. The Sunraysia Solar Farm and Limondale Solar Project, located in Balranald, are some of the largest solar power projects in the Southern Hemisphere.[350] These are supported by the region's favourable climate and existing transmission infrastructure.[351] Project Energy Connect, a new energy interconnector between the power grids of South Australia and New South Wales, with an added connection to Victoria, has commenced construction. The project will provide economic benefits to the Murray region.[352]	Tourism has been identified as an industry with considerable growth potential. The Murray region is well-known for nature-based tourism attractions, including national parks and major river systems.[353] Additional opportunities for providing food and beverages, recreational water activities and cultural tourism experiences are expected to strengthen the sector and increase visitor numbers and spending.[354]

Infrastructure gaps

Sector:	Telecommunications
Sub-sector:	–
Infrastructure gap:	Broadband and mobile connectivity

Broadband and mobile connectivity in the Murray region has been identified as both a current challenge and an opportunity for growth. The lack of resilience of current infrastructure was highlighted when damage to two fibre optic cables left thousands of square kilometres of the region without mobile connectivity.[355] During the Black Summer bushfires of 2019-2020, disruption to telecommunication networks in the region also had immediate consequences for local industries and communities.[356]

There are 190 locations in the region reported as lacking mobile access. While interventions are underway to address this issue through the funding of nine mobile base stations, the benefits may not accrue to all communities in the region.[357,358]

Beyond issues with mobile connectivity, digital inclusion in the region presents a significant issue. Communities outside major centres lack access to high-quality broadband connections which would otherwise provide access to services and employment and business opportunities.[359]

Key facts:

190

mobile black spot locations reported in the region.[360]

Local governments that fall within the RDA Murray region averaged a 2021 Australian Digital Inclusion Index (ADII) score of 63.8, below the New South Wales average of 71.[361]

An additional
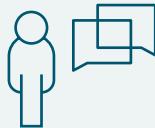
nine

mobile base stations are funded by the Australian Government.[362]

Impact:

- Increased digital connectivity can provide communities with access to services where previously travel or relocation was required. This is likely to assist the region to retain young people.[363]

- Faster and more reliable internet access and improvements to mobile reception may facilitate a greater variety of employment opportunities in the region and enable greater innovation in traditional industries, such as the agriculture and food manufacturing sectors.[364]

- The agricultural sector in the region is increasingly dependent on technology, including through innovations such as virtual fencing and micro-climate management. Improved telecommunications enable businesses to adapt to changing market preferences and seize opportunities to provide high value produce to serve growing overseas markets.[365]

Consultation feedback:

Stakeholders reflected that internet access is becoming increasingly critical to meaningful economic and civil participation and that providing improved connectivity is an important opportunity for the region.

Workshop attendees recognised that significant advances have occurred in internet and technology, resulting in reasonable coverage across most parts of the region. However, areas of low population density suffer from black spots and experience challenges with satellite internet coverage. Many homes have good upload speeds for domestic purposes, but a higher standard of service is required for businesses.

Participants in the workshop also highlighted the importance of digital connectivity in the agriculture sector for business growth, operations and business confidence. They also recognised the positive impact of digital connectivity for access to education services with flow-on employment and economic benefits.

Sector:	Social infrastructure
Sub-sector:	Education (tertiary)
Infrastructure gap:	Access to further education and skills training

The Murray region is well-placed to grow its economy through diversifying into emerging growth industries such as tourism and renewable energy.[366] However, to fully develop these sectors, the skills of the local workforce will need to be developed alongside engagement of young people with industry-ready training.[367] The region's current population has a lower-than-average rate of post-school qualifications.[368] Business owners report struggling to hire workers, suggesting a need to adapt and more closely align skills training with the current job market.[369]

Current further education and skills training infrastructure in the region includes two TAFE campuses and the Charles Sturt University and La Trobe University's Albury–Wodonga campuses. Enhancing infrastructure and facilities to deliver training and education offerings which better align with current and future industry needs, offers significant potential to develop the local skills base.

In addition, improving access to education infrastructure for rural residents, who must currently travel a significant distance to attend classes, is likely to substantially improve engagement rates and diversify workforce skills in parts of the region which are more remote to these facilities.[370]

Key facts:

12.3%

of the region have a Bachelor or Higher degree, compared to 28.3% across Greater Sydney.[371]

51.9%

workforce participation rate compared to 59.2% in NSW (2016).[372]

The closest university main campus is
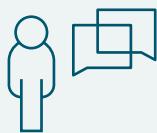
~300km

away from the more remote parts of the region.[373]

Impact:

- Job vacancies for medical practitioners and nurses was the second highest employment gap for the combined Riverina-Murray area in the 2020–21 financial year.[374] Healthcare and Social Assistance industries also have the highest projected employment growth for the five years to May 2024, indicating an urgent need for developing a skilled local workforce in this sector.[375]

- The outward migration of young people seeking training and education outside of the region is one of many drivers of the challenges faced in the region in filling new and existing jobs with appropriately skilled employees.[376]

Consultation feedback:

Stakeholders noted that skill and labour shortages are challenges for the area, with a very low participation rate in tertiary education compared to other regional areas. Among the challenges identified were the vast distances students have to travel to access tertiary education or skills training. Stakeholders noted this was exacerbated by recent closures of state borders as a response to the COVID-19 pandemic, which heightened regional isolation from nearby education and training services. Stakeholders specifically acknowledged shortfalls in meeting the demand for skills in health and aged care. Digital and telecommunication infrastructure improvements were also seen as necessary to improve the region's access to education offerings. Stakeholders observed that existing TAFE infrastructure could be leveraged to support increased online learning and provide better access closer to home.

During consultation, stakeholders identified that despite overall skill level increases, reduced levels of employment indicated a mismatch between the education and training offered and the job market. Some projects being carried out in the region that do not involve local workers were highlighted as missed opportunities. A lack of traineeship, graduate and in-place training programs was also highlighted.

Sector:	Social infrastructure
Sub-sector:	Housing
Infrastructure gap:	Availability, affordability and diversity of housing

Housing in the Murray region has historically been dominated by single detached dwellings, with the 2016 Census finding that 85.6% of homes were separate houses compared to the national average of 72.9%.[377] With a growing and changing population, the housing requirements of the region have also evolved. There is a need for greater housing choice and diversity to accommodate the region's ageing population, a rise in single-person households and accommodation for seasonal workers associated with the tourism, wine, citrus and cotton industries.[378] There is also a need for more housing in growing urban areas, including higher-density developments near town centres which capitalise on existing infrastructure.

Beyond issues with housing diversity, the region faces a shortfall of public housing supply, including both affordable and social housing, with waitlists of 2-5 years in multiple towns across the region.[379] The poor availability of housing to cater for at-risk and low-income households is likely to exacerbate existing socioeconomic inequalities as disadvantaged members of the population are increasingly forced to live in areas that offer lower amenity, services and connectivity.[380]

Key facts:

85.6%
of residents live in free-standing houses (2016).[381]

As of 2016,
7.3%
of households in the region were experiencing rental stress.[382]

Homelessness is projected to increase by
20.8%.[383]

Impact:

- Increasing property prices are driving inequality amongst residents as low-income households are excluded from the housing market and experience rental stress.[384] Increasing rents are also a driver of youth homelessness.[385]

- Investment in social housing has the added benefit of creating jobs. The shorter timeframe of this type of construction is more beneficial than major transport projects, with longer planning and approval phases.[386]

- There is a need for a skilled workface to support economic and industry growth. Improved housing infrastructure would assist in attracting and retaining skilled workers to the region.

Consultation feedback:

Stakeholders highlighted the housing shortage as being a pressing issue for the region. A lack of appropriate housing was specifically identified as a future need in the next 10-15 years. Consultation highlighted an increased need for suitable rental homes, more high-density properties to cope with an increased population and more housing for lower income households.

Greater public investment to improve the diversity, affordability and availability of housing were all identified as current issues faced by residents. Investment in housing construction supplies, such as the production of softwoods was viewed as an industry growth opportunity.

6.2.9 Northern Inland

The Northern Inland region covers a network of diverse sub-regions and natural environments encompassing forests, bushlands, tablelands, rivers, and plains. Local industries reflect collaboration and leverage industry expertise and research supporting growth in industries ranging from agriculture to renewable energy production.

The region has experienced increasingly frequent extreme weather events, including bushfires, droughts, and floods. Accordingly, resilience is a critical consideration for future development. The Northern Inland has also experienced diversification of industry with value-add agricultural products from food manufacturing and renewable energy generation being most prominent.

The region has the potential to enhance agricultural production and through its liveability, attract skilled workers to support further economic growth and diversification. The masterplanning process for the Narrabri Special Activation Precinct (SAP) is underway, and is expected is to leverage key infrastructure such as the Inland Rail and opportunities created by the Narrabri Gas Project.

Strengths

Key existing assets

Economic	**Strategic location**	The region has transport corridor connections to Sydney, Victoria, and the rapidly growing South East Queensland region.
	Gateway ports	Tamworth, Armidale and other airports in the region offer connectivity for passengers and cargo and accessibility for emergency services operations.
Natural	**Climate and topography**	The region offers an ideal climate and relatively reliable rainfall for productive agriculture and renewable energy generation.
	Natural environments	Home to natural hot springs, rivers, state forests and national parks, wetlands, and protected parkland.
	Natural resources	Significant natural resources include hard rock tin and rare earth metals.
Social	**Education and research institutions**	Home to various educational facilities such as the University of New England, as well as a number of industry-research collaborations.
	Cultural heritage	The area is home to many sacred First Nations sites, as well as heritage-listed public and private buildings.

Key regional growth industries

Agriculture, forestry and fishing	Energy	Knowledge sector
Agriculture is the Northern Inland's main driver of regional economic prosperity including livestock, cereal cropping, cotton and wool production.[387] The industry has significant opportunities for value-adding supported by regional research and development facilities in Armidale, Tamworth and Narrabri.[388] The planned Moree Special Activation Precinct (SAP) will leverage the region's existing strengths in agriculture to develop a new business hub focused on agribusiness, logistics and food processing.[389]	The region's climate and location provide a competitive advantage with high wind potential on the tablelands, quality solar resources and significant agricultural residue to support biomass uses.[390] There are multiple existing developments in the region, such as the Moree Solar Farm, Sapphire Wind Farm and Bindaree biodigester.[391] The region is also close to the existing high voltage power lines that connect the New South Wales east coast and Queensland.[392] The NSW Government planned New England Renewable Energy Zone (REZ) is expected to bring significant growth potential by delivering new generation capacity.[393]	The region is home to various research and educational facilities including the University of New England, University of Sydney's Plant Breeding Institute, Australian Cotton Research Institute, Sliding Spring Observatory and CSIRO. These institutions have contributed to research and industry collaboration and supported agricultural innovation and astronomical observations.[394] The region's knowledge sector is well positioned for growth, with existing centre connectivity able to be leveraged to develop education, technology and innovation potential.[395]

Tamworth, New South Wales

Infrastructure gaps

Sector:	Water
Sub-sector:	–
Infrastructure gap:	Water security

The Northern Inland region, located in the northern section of the Murray Darling Basin, enjoys a strong base of natural resources supporting the development of agriculture, mining, forestry and food manufacturing.[396] In the long-term, projected growth will increase competing demands for town water availability, requiring future-proofing and investment in sustainable farming, water use efficiency and improved water storage and recycling infrastructure.

Water use regulations outlined in the *Murray Darling Basin Plan* sets the amount of water that can be taken from the Basin each year, with the aim to secure the region's water supply for farming and other industries, as well as leaving enough for the rivers, lakes, wetlands, plants and animals that depend on them.[397] The NSW Department of Planning and Environment is preparing regional water strategies (RWS) across the state to identify current and future water related challenges and opportunities in each region (including challenges from a changing climate) and potential solutions to address these.[398] The Northern Inland RDA region includes RWS regions of North Coast, Boarder Rivers, Gwydir, Namoi and Greater Hunter.

Modelling the effects of long-term climate change on hydrology in the Gwydir catchment indicates the potential for significant changes to river flows, with associated impacts on riverine and floodplain ecosystems. Similar alterations to the flow regime were predicted in the regulated Gwydir River, the unregulated river system and the Gwydir Wetlands. In general, the modelling shows the total volume of water flowing each year in these sections of the catchment reducing by 26% to 35%, impacting all components of the flow regime under the projected climate change scenario.[399]

Key facts:

Agriculture, forestry and fishing is Northern Inland's largest output generating sector at

14%.[400]

The region experiences considerable

rainfall

**variability across seasons and from year-to-year.**[401]
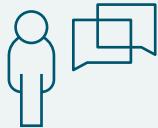
Record

drought

conditions in the northern Murray Darling Basin affected water storages in the region between 2017–2020.[402]

Impact:

- Irrigated agriculture is important to the region and infrastructure is critical to its ongoing viability, particularly with the uncertain, long-term socio-economic effects of the Murray Darling Basin Plan for water diversion.[403]

- The modelling shows the total volume of water flowing each year in the regulated Gwydir River, the unregulated river system and the Gwydir Wetlands sections of the catchment reducing by 26% to 35%, impacting all components of the flow regime under the projected climate change scenario.[404]

- Variability of climate within the region introduces complexity to water management and distribution, particularly during periods of high demand and low supply which may result from the dual effects of population increases and a warmer, dryer climate.[405]

Consultation feedback:

Stakeholders noted the significance of climatic variability in placing pressure on water resources and the impacts of extreme weather events, including recent bushfires, droughts and floods. A critical need for a secure water supply for the region to support agriculture, mining, food processing and manufacturing and to meet the water needs of a growing population was identified. Stakeholders noted the impact of severe water shortages during the record drought conditions between 2017–2020.

Agriculture was identified as being an existing strength as well as an area immense opportunity for the Northern Inland region. The key drivers and developments required to sustain growth in the region's agricultural sector include data-based decision making, climate resilience and more value-adding infrastructure – all of which are linked to water security. Smart water management was identified as a key challenge for the Northern Inland region because of the competing demands from the community and agricultural industries.

Sector:	Social infrastructure
Sub-sector:	Education (tertiary)
Infrastructure gap:	Access to further education and skills training

The Northern Inland has established education facilities, including Australia's oldest regional university and research and development facilities.[406] However, many smaller communities in the region are experiencing out-migration of young people and families, which in turn has a detrimental effect on communities and essential services such as education.[407]
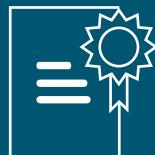
Investment in regional infrastructure, education and skills has been identified as a priority, relating to skills shortages and disengaged youth.[408] Unskilled and skilled labour shortages, centralisation of tertiary education and associated pressures on employers and students has been identified as a challenge.[409,410] Improving infrastructure to deliver more targeted and accessible skills training will support economic growth and the development of a greater pool of skilled workers.

Key facts:

33%

of residents have a diploma qualification or higher.[411]

Certificate level qualifications are the highest level of qualification held by the greatest proportion of those working in the region.[412]
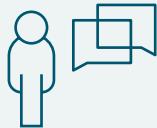
The unemployment rate for young people (aged 15-24) in the region is

11%. [413]

Impact:

- Border restrictions due to the COVID-19 pandemic have reduced skilled migration to the regions, placing greater pressure on developing the skills base of the local workforce.[414]

- Centralisation of tertiary and vocational education in major regional centres, such as Armidale and Tamworth, limits access to education and training opportunities for people outside these areas. This is particularly impactful for prospective students and employers located in Small Towns in the region.[415]

- Whilst major tertiary institutions in the region provide varied opportunities, there is scope to better match the developing skills base with current and emerging labour market needs.[416]

Consultation feedback:

Stakeholders noted that the region is currently suffering from workforce shortages and requires improved local training offerings to help address these challenges. Training and education were identified as crucial to ensuring the future workforce is skilled to fulfil the jobs of tomorrow.

Stakeholders stressed the importance of ensuring the region has the education and training facilities to support a changing workforce. Sustaining and growing the population by fostering a productive and skilled workforce across the region was seen as an important driver of economic growth. The University of Newcastle's Tamwoth Education Centre was noted as a successful rural health clinical place program, a model which could be expanded into other disciplines with investment in accommodation and teaching spaces.

Enabling infrastructure is a key element to enhancing further education offerings in the region, with a focus on improved digital connectivity. High-quality digital infrastructure will also enable improved access to remote learning opportunities for residents living outside of the region's major centres, mitigating the impact of centralising education and training infrastructure.

Sector:	Telecommunications
Sub-sector:	–
Infrastructure gap:	Broadband and mobile connectivity

The Northern Inland region was home to some of the earliest rollouts of the National Broadband Network (NBN), with both Armidale and Tamworth benefiting from early access to this infrastructure.[417] Development of telecommunication infrastructure in these large regional population centres boosted the liveability of the region by improving access to essential services including education, health and employment and, by better supporting business activities and operations. Improved telecommunications underpins economic growth by improving the effectiveness of a whole range of supports including education and skills training.

Parts of the region are still hindered by unreliable telecommunication networks across mobile and landline services. Overall, the region possesses strong foundational infrastructure to build upon and uplift its digital connectivity to a level comparable with the rest of the state.

Key facts:

The region's 12 local government areas averaged a 2021 Australian Digital Inclusion Index (ADII) score of

63.9.

This is below the national average of 71.1 and the New South Wales average of 71.[418]
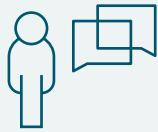
567

community reported communication black spot locations in the region.[419]

Impact:

- The availability of reliable, affordable, high-speed internet access is critical for business operations, health, education, and agribusiness.[420] Businesses and residents in the region recognise the significance of improved telecommunication infrastructure for the regional economy.[421]

- Inadequate telecommunication infrastructure has proven to be detrimental to businesses in rural and remote areas, resulting in productivity losses stemming from communication outages or a lack of sufficient bandwidth and speed for medium or large-scale operations.[422]

- The widening of the 'digital divide' between local Regional Centres and Small Towns and Rural Communities is impacting the region. Improvements to existing infrastructure are required to improve access to opportunities and services, economic growth and social inclusion.[423]

Consultation feedback:

Stakeholders identified improving digital infrastructure as critical in supporting productivity for the region. This related to a desire to support local business operations, a recognised need to cater to an increasingly remote working population – a trend accelerated by COVID-19 pandemic related migration – and enabling the increased adoption of technology in primary and secondary industries. The potential for advancement in uptake of agricultural technology is a valuable opportunity requiring improved digital connectivity in the region.

Respondents further noted the improvements to telecommunications infrastructure outside of major centres would help residents access services such as telehealth, remote education, and emergency services.

6.2.10 Northern Rivers

The Northern Rivers region continues to attract sea and tree changes drawn by the region's diverse natural assets including, rainforests, rivers, coastal environments and a strong creative community and industry.

Population growth has also been a significant trend increasing demand for housing, infrastructure and services. The region has diversified its agricultural produce and leveraged its proximity to South East Queensland and its access to the Pacific Highway, Port of Brisbane and Toowoomba Wellcamp Airport, to build a thriving agricultural industry. Other priorities include the creative and digital content industry, promoting the region as a preferred location for productions.

Looking to the future, the Northern Rivers seeks to continue to leverage its cross-border proximity to South East Queensland to further diversify and grow its industries. However, this will require improvements to land-use planning, water security, digital connectivity and access through to Toowoomba, Bromelton and Brisbane.

Strengths

Key existing assets

Economic	**Strategic location**	The region is well-placed in proximity to South East Queensland, Brisbane (including Port of Brisbane) and the Gold Coast.
	Gateway ports	Ballina Byron Gateway Airport and Lismore Airport, as well as adjacent Gold Coast Airport and smaller regional airports, provide connectivity for passengers and cargo.
Natural	**Natural environments**	Home to the Tweed, Richmond and Clarence river systems, as well as national parks, World Heritage sites, rainforests and an extensive coastline.
Social	**Education and research institutions**	Southern Cross University and the North Coast Institute of TAFE offer education, employment and industry collaboration opportunities.
	Cultural heritage	The region is home to many sites and landscapes of significance to local First Nations communities.

Key regional growth industries

Agriculture, forestry and fishing	Tourism	Knowledge sector
The region's successful agricultural industry is built on horticulture, meat processing, dairy, aquaculture, forestry and the production of nuts, sugar cane, fruits and vegetables.[424],[425],[426] Future growth will be derived from expanding agribusiness activities and collaborations between industry and research institutions.[427]	Much of the 22% growth experienced by the North Coast tourism industry between 2013 and 2019 was attributed to an increase in the popularity of the Byron Bay, Tweed Shire, Clarence Valley and Ballina areas.[428] The Northern Rivers is well placed to leverage nature-based, cultural and agritourism opportunities.[429]	The Northern Rivers education and training sector is responsible for over 10,000 jobs in the region,[430] with the region home to multiple high-quality education institutions.[431] Regional initiatives such as development of innovation and entrepreneurship hubs will support knowledge sector growth and innovation in other, key industries.[432] The NSW Government planned Casino Industries Activation project is expected to drive economic growth in the region through delivering critical infrastructure needed for business development and innovation.[433]

Clarence River, Harwood, New South Wales

Infrastructure gaps

Sector:	Telecommunications
Sub-sector:	–
Infrastructure gap:	Broadband and mobile connectivity

The Northern Rivers identifies digital connectivity as foundational to building a better place to work and live, providing enormous opportunities to realise sustainable, healthy, prosperous and collaborative communities.[434] High speed broadband connection is also a critical input for the content production industry, which is well placed to grow in the Northern Rivers region.[435] However, parts of the region still lack access to reliable, high-quality broadband and mobile coverage.

The COVID-19 pandemic has emphasised the role of digital connectivity and inclusion as being vital to the viability of many businesses and for providing effective access to services. Key priorities for the region include improving the access and affordability of telecommunications services, the digital literacy of its residents and the use of services enabled by telecommunications by businesses.[436]

Key facts:

The region's seven local government areas averaged a 2021 Australian Digital Inclusion Index (ADII) score of

65.1.
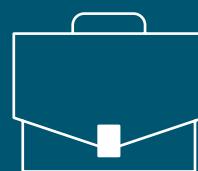
This is below the national average of 71.1 and the New South Wales average of 71.[437]

The region recognises the importance of the digital content industry and predicts that with moderate interventions, employment growth in the industry could increase from 200 to over
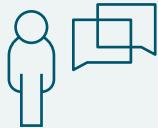
2,000

new jobs by 2027.[438]

Impact:

- Digital connectivity is inhibiting industry growth in healthcare, the retail trade, education and accommodation.[439] These industries contribute 23% of total output for the Northern Rivers region.[440]

- Better digital connectivity through fast broadband has assisted the growth of local miro-businesses (one to four employees) by 4.3% from 2014–2016 for the Richmond–Tweed region, outperforming 3.7% growth for regional New South Wales.[441]

Consultation feedback:

During the Northern Rivers workshop, participants prioritised telecommunications infrastructure and issues with digital connectivity as a key infrastructure gap. Digital connectivity remains variable across the region, with some areas lacking access and other areas lacking reliable and quality mobile and internet connections.

Digital connectivity is also seen as vital for encouraging innovation and entrepreneurship for the region. These factors are key to promoting economic growth with industries predicted to adopt more smart technologies and automation over the next 10–15 years. In addition, participants expect remote working to continue to rise, enabled by digital connectivity.

Sector:	Water
Sub-sector:	–
Infrastructure gap:	Water security

The region is recognised for its high density of rivers, streams and waterbodies encompassing the Tweed, Richmond, Brunswick, and Clarence river systems. However, current water storages are considered relatively small for the population served, with the Richmond catchment being classified as under medium to high hydrologic stress.[442] These issues are partially mitigated by the region's generally reliable rainfall that replenishes water levels. However, strong population growth along coastal areas is putting pressure on town water supplies. It is predicted water demand could exceed supply within the next five to fifteen years.[443]

Many of the water sources in the region also suffer from poor water quality, particularly those in the Richmond and Clarence River catchments.[444] Quality issues are largely a result of poor agricultural or logging practices, sewage overflows and the use and management of on-site septic tanks. The region would benefit from upgrading and diversifying its water infrastructure and promoting sustainable and smart water management.

The NSW Department of Planning and Environment is preparing regional water strategies (RWS) across the state to identify current and future water related challenges and opportunities in each region (including challenges from a changing climate) and potential solutions to address these.[445] The Northern Rivers RDA region includes RWS regions of North Coast and Far North Coast.

Key facts:

Population growth forecasts from Rous County Council indicate potable water demand will increase by

40%

to 2060. In addition, climate change forecasts predict a reduction in available surface water of 20% by 2060.[446]

Water demand could exceed supply within the next
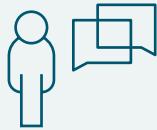
5-15
years.[447]

Impact:

- Most water extraction is occurring during drier seasons when flows are low. This impacts on the biodiversity of the region and further impacts the extraction potential and quality of water used for agricultural purposes.[448]

- Climate change will amplify water security issues, with a decrease in rainfall and greater number of dry days. Climate data and hydrological modelling suggest the region is at risk of both prolonged and more frequent, short and sharp droughts.[449]

- Water is critical to supporting future population growth and opening up land for development. The region also provides habitat to diverse terrestrial and aquatic biodiversity, and nationally significant wetlands, that are vulnerable with prolonged water shortages.

Consultation feedback:

During the Northern Rivers stakeholder workshop, participants prioritised water security as a key infrastructure gap. There are major concerns over population growth and climate change threatening water security. As the region benefits from high rainfall, participants believe there are opportunities to innovatively address this issue in conjunction with flood mitigation.

From an economic growth perspective, water security is paramount for several growth industries including agribusiness and manufacturing. Participants also raised concerns over the lack of water and wastewater infrastructure inhibiting the ability to deliver land suitable for development.

Sector:	Place and economic development
Sub-sector:	–
Infrastructure gap:	Industry-enabling infrastructure to support growth and innovation

The region's economy is driven by agribusiness, with the sub-tropical climate and rich soils providing ideal conditions for a variety of agriculture including, well established beef, sugar cane, bananas, blueberries, macadamias and vegetable production.[450] As demand from South East Queensland and international markets grows, industry requires essential infrastructure to enable growth and innovation. Industries rely upon robust digital infrastructure to adopt technologies that improve internal systems, reduce costs and allow them to more effectively manage these businesses. Precinct-based or regional infrastructure, which supports research and development, has been identified as a key opportunity for increasing agricultural resilience and promoting higher yields.[451]

The Northern Rivers region has been identified as an ideal entrepreneurship destination, with a growing population, thriving cultural sector, attractive climate and substantial private sector workforce.[452] Delivering robust digital infrastructure outside of major centres represents a key opportunity for the region in providing equitable growth opportunities for rural and regional communities.[453] This digital connectivity needs to be accompanied by suitable physical connectivity, including robust road and freight infrastructure, to support the movement of goods to and from businesses throughout the region. Improved interconnectivity between regional, inter-regional and international producers, manufacturers and markets is critical for efficient freight activity in the Northern Rivers, with many different industries relying on these supply chain connections to operate and thrive.[454]

Key facts:

Population is forecast to grow at

1.2%

per annum.[455]

Health and social assistance comprise

17%

of total employment.[456]
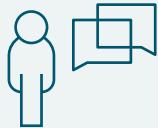
The region comprises

4%

of the state's total agricultural output.[457]

Impact:

• Growth of the local food industry due to higher domestic and international demand needs further infrastructure investment to support this expansion. In addition, research and development to increase yields and improve industry resilience is required to support sustainable growth.

• Conflicting land uses, the encroachment of urban and rural development on undeveloped areas, water security, digital connectivity and biosecurity are all challenges facing the Northern Rivers region and inhibiting the region's ability to sustainably grow and innovate.[458]

• The region's population is rapidly growing. This will require accompanying and sustainable employment growth. Population growth is expected to boost the retail, building and construction, tourism, and hospitality sectors, generating demands that will require infrastructure upgrades and expansion.
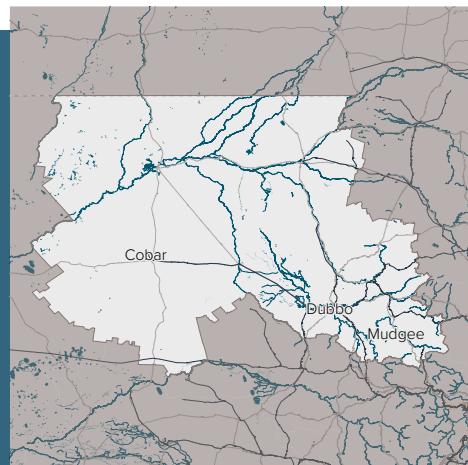
Consultation feedback:

The lack of infrastructure to support growth and innovation was a common concern raised by workshop participants. Participants believe the region is well placed for growth due to its proximity to South East Queensland, abundant natural resources, landscapes, and climate. However, the region's future growth and diversification is being constrained by a lack of high-capacity essential services infrastructure, land for development, high-quality digital connectivity, and constrained transport networks. Sectors such as agribusiness, health and tourism were identified as major industries for growth. Agribusiness is expected to benefit from the uptake of technology and tourism is likely to be enhanced by expanding niche offerings in areas such as green, food, wellbeing and cultural tourism.

6.2.11 Orana

As the largest region in New South Wales, Orana covers 25% of the state and is endowed with mineral deposits, sites of significant First Nations heritage, and a rich cultural history.

Centrally located between Brisbane, Melbourne and Sydney, the region's growing mining industry is supported by a transient fly-in-fly-out and drive-in-drive-out workforces. The region has experienced patchy population growth, with increases in the regional centre of Dubbo but decline in many Rural Communities and Remote Areas.

With existing mines and projects in development, along with the Central West Renewable Energy Zone (REZ), the prospects for energy generation in the region are strong. Industry growth will be greater supported by improving water security and up-skilling the local workforce. There are also ambitions to grow the region's local population by improving infrastructure to enhance liveability and attract and retain a diverse and skilled population.

Strengths

Key existing assets

Economic	Strategic location	The region's central location means it is strategically located between Sydney, Melbourne, Brisbane and Adelaide.
	Major attractions	The Taronga Western Plains Zoo acts as a major tourist attraction and supports conservation.
Natural	Natural environments	The region is home to the Darling River Basin, Macquarie River, Macquarie Marshes, Barwon River and national parks. Warrumbungle National Park, near Coonabarabran, is the first Dark Sky Park in the Southern Hemisphere.
	Natural resources	The region has significant deposits of coal, opals and metal ore such as copper, zinc and lead.
Social	Cultural heritage	The region has First Nations significant sites and landscapes as well as historical mining towns.

Key regional growth industries

Energy	Agriculture, forestry and fishing	Mining
The region covers 25% of NSW's land mass with substantial solar, wind and biomass potential.[459] In addition, the NSW Government has identified the Central West Orana as a Renewable Energy Zone (REZ) which will unlock up to 3,000 megawatts of new electricity capacity and attract up to $5.2 billion in private investment by 2030.[460] New transmission infrastructure will strengthen and grow the region's renewable energy potential and help lower wholesale electricity costs, improve reliability, provide jobs and reduce emissions.	The region's land mass, well-developed local supply chains and access to rail provide opportunities for agribusiness growth. The agriculture, forestry and fishing industry is the region's largest employer, contributing 6,711 jobs as well as being the second largest output sector at $2.11 billion annually.[461] The region's agricultural produce is extremely diverse, ranging from dryland cropping, irrigated horticulture and viticulture to crops and livestock.[462] The growth of the agricultural industry is also expected to have flow-on benefits such as an uplift in value-add manufacturing.	The amount of strategic minerals being prospected and mined in the region is significant, with the industry currently contributing $4.25 billion annually to output.[463] The region's mineral assets remain a competitive advantage, with globally significant quantities of zirconium, niobium, hafnium and other rare earth metals which are in high demand for existing and new technologies.[464] Supporting this future growth in resources is a strong commitment to transition to low emissions mining.

Macquarie River Railway Bridge, Dubbo, New South Wales

Infrastructure gaps

Sector:	Social infrastructure
Sub-sector:	Education (tertiary)
Infrastructure gap:	Access to further education and skills training

The Orana region's access to further education and skills training opportunities is mostly centralised within the regional centre of Dubbo. Further education and skills training opportunities include TAFE Western, Western College, Charles Sturt University and University of Sydney School of Rural Health.[465] In addition, the Royal Flying Doctor service, based in Dubbo, offers a multimillion-dollar flight simulator training facility. However, the centralisation of services means many young people and workers are required to travel to Dubbo or outside of the region to access further education and skills training. Whilst this offering is beneficial to communities in proximity to providers, there is a need to improve access to further education and training for those living in Rural Communities and Remote Areas.

The region has also identified a number of specific skills shortages, with effective workforce development strategies identified as a key priority.[466] The region recognises the importance of delivering the infrastructure required to support innovation, education and skills training required by businesses to prosper and grow.[467] Supporting existing and potential providers in this way will enable them to support a more diverse and robust workforce to better address shortages and underpin future growth.

Key facts:

32%

of residents have a post-secondary qualification (2016).[468]

Average unemployment rate of

3.0%

between 2018–2020.[469]
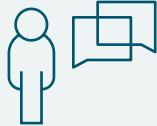
199,000km^2

to service (25% of NSW's geographic area).[470]

Impact:

- The centralisation of further education and skills training in Dubbo translates to limited access for over 57% of the region's population.[471] This encourages the younger population of the region to migrate to find education and employment opportunities, which further exacerbates existing skills shortages.

- The region's slow population growth, ageing workforce and low participation rates have translated to severe skills shortages for businesses who are experiencing growth.[472] The low level of training and professional development opportunities are also a major impediment to economic growth.[473]

- The region is set to undertake $7.9 billion in major project development over the next five years. However, local skills shortage issues may hinder the ability of residents and businesses to fully participate.[474]

Consultation feedback:

Participants identified workforce shortages as the region's highest priority gap and the biggest inhibitor to economic growth. The region requires further education and skills training opportunities aligned with the region's industries.

Stakeholders also expressed the view that in addition to a need for improved access to upskilling, there must be infrastructure interventions in the region which build more resilient communities and places to retain a productive population. There is also recognition that addressing the skills shortage issues, will require upskilling the existing workforce through education and training and by attracting skilled migrants.

Sector:		Social infrastructure
Sub-sector:		Green, blue and recreation
Infrastructure gap:		Provision, quality and protection of green, blue and recreation infrastructure

To deliver the region's economic vision, Central West and Orana Regional Plan 2036 has identified key strategic goals including diverse regional economy, healthier environment, quality infrastructure and healthy communities.[475] The region's strategic centre, Dubbo, is forecast to grow strongly. However, the region also wants to revitalise local centres to stimulate further and more broadly distributed population growth throughout the region.

According to the *2020 Ipsos Regional Liveability Study*, the statistical area of Orana scored below average for regional liveability.[476] In particular metrics such as access to natural environmental, sense of community, sports and recreation and cultural activities, all rated below average. Developing the amenity of communities through good urban design will be critical in delivering safe, healthy, and socially inclusive places which foster cultural, economic and physical wellbeing.

In developing the next regional plan for Central West and Orana, the state government has identified strategic priorities for green and blue infrastructure in the region to support walkable, liveable streets, healthy connected communities and opportunities for tourism, recreation and public open space.[477]

Key facts:

Average population growth rate of

0.23%

(2010–2020).[478]

Regional Liveability Index is

65.0

for the region (average for regional Australia is 66.2).[479]
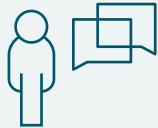
**Natural environments encompass**

7%

of the Far West and Orana.[480]

Impact:

- The lack of essential and recreational facilities in communities across the Western Plains of Orana is making it more difficult to attract skilled resident workers, with a heavy reliance on external labour markets for the mining industry.[481]

- Town beautification strategies, such as cleaning and maintaining public parks and squares, in addition to providing cultural centres, museum and art assets, are expected to enhance the region's amenity.[482]

- The region has a number of natural assets which have limited infrastructure to enable the community and tourists to access and use them. These include the Macquarie Marshes, Narran Lake Nature Reserve, Culgoa National Park, and Toorale and Gundabooka National Parks.[483]

Consultation feedback:

Stakeholders identified expansion of social infrastructure, to support the region's cultural and art sector, and providing more recreational opportunities, as ways to improve the region's attractiveness for young professionals. Stakeholders reflected on the value of art facilities, music conservatoriums, cultural hubs, and sporting facilities for their community. The expected benefits of these types of facilities included a focus on delivering improved liveability, social connectivity and support for innovation and creativity within the region.

In addition, participants believe improvements to the region's liveability will have positive flow-on effects for attracting and retaining a larger population, which is vital to tackling the region's major skills shortages.

Sector:	Water	
Sub-sector:	–	
Infrastructure gap:	Water security	

The region has always had a highly variable climate, with severe droughts occurring on average every 20 years and below average rainfall leading to very low inflows for dams.[484] This has meant the region's industries have had to adapt to a lack of water security and obtain water entitlements to mitigate supply side risks. Adaptive practices have resulted in industries which are generally more resilient against annual and seasonal variations in water availability. However, high-capacity water storage and distribution infrastructure is a priority for providing ongoing water security. In addition, ageing water infrastructure in the region's towns is not sufficient to mitigate the impacts of water shortages during severe droughts.

Despite the region's multiple water supply sources (including a network of water storage infrastructure such as dams, bores, stormwater harvesting and interconnected pipelines) record low inflows have highlighted the vulnerability of the region's town water supplies.[485] The region's Macquarie River system also faces topographical impediments to delivering water to towns, industries and environmental assets along its length during periods of extreme drought.
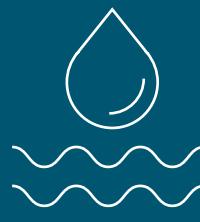
The NSW Department of Planning and Environment is preparing regional water strategies (RWS) across the state to identify current and future water related challenges and opportunities in each region (including challenges from a changing climate) and potential solutions to address these.[486] The Orana RDA region includes RWS regions of Greater Hunter, Namoi, Macquarie-Castlereagh, Gwydir and Western.

Key facts:

Frequency of 10-year droughts is estimated to increase by

22%.[487]

Burrendong Dam water levels have previously dropped to

3%.[488]
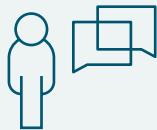
By 2070, dam inflows could decrease by

50%[489]

in the Macquarie-Castlereagh region.

Impact:

- Droughts and lack of water for environmental assets have led to the degradation of the region's natural habitats and aquatic biodiversity. For example, the Macquarie Marshes and in situ aquatic animals are in poor health due to changes in water flow, loss of lateral connectivity with floodplain habitats, and the impact of pumps extracting water.[490]

- Across the region, securing water supplies is a challenge for all regional communities due to climate variability. This issue is further pronounced for Small Towns where water quality is also sub-standard due to a reliance on unregulated rivers and creeks.

- Water security will be critical to attracting people, businesses and jobs to the region, supporting economic growth and capitalising on the opportunities offered by recent significant investment, such as Inland Rail.

Consultation feedback:

Stakeholders involved in consultation identified water security as being a vital requirement in supporting economic and population growth. Participants believe the region relies heavily on its dam infrastructure which provides much of the region's water supply for industries and residents.
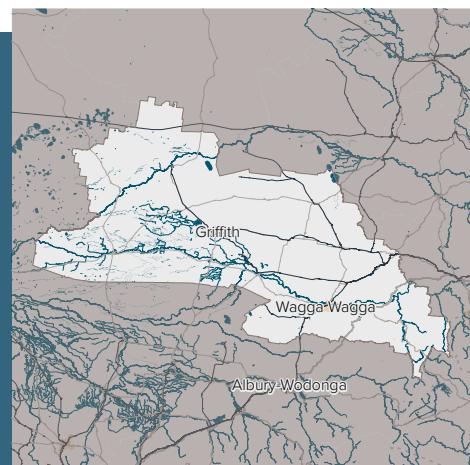
Workshop participants also expressed concerns over competing water usage between agriculture, other industries and residents, suggesting the need for better collaboration to sustainably manage the region's water resources. The region also needs to invest in improved climate resilience for existing and new water infrastructure.

6.2.12 Riverina

From the Murrumbidgee River to the inland plains of Hay and Carrathool, the Riverina region is well-known for its highly diverse natural landscapes. The region is also home to significant education and research institutions set amongst a network of major service and employment centres, including Wagga Wagga and Griffith.

The Riverina has experienced significant population and economic growth supported by an improved transport network and industry diversification, with the growth of value-added manufacturing and renewable energy. However, this has been accompanied by greater demand for services and social infrastructure, concerns over water security and the need for more housing.

Looking forward, the Riverina wants to raise the quality of services, attract and retain more skilled workers and address housing and water security concerns. The region is looking to sustainably diversify and grow its economy into the future. The diversity of the natural environment in the region, many of which have close links to the Australian Alps offer opportunities to grow the tourism sector and diversify the region's economy.

Strengths

Key existing assets

Economic	**Strategic location**	The region is located along strategic transport routes between Sydney, Melbourne, Canberra and Adelaide.
	Water infrastructure	The region hosts a number of water storage assets supporting the Snowy Mountains Hydro Electric Scheme, including Blowering Dam, Talbingo Reservoir, Tumut Pondage Reservoir, Khancoban Pondage, Geehi Reservoir and Jounama Dam.
	Transport infrastructure	The Riverina is serviced by the National Land Transport Network including the Newell, Hume and Sturt as well as the National Railway Network, including the future Inland Rail.
	Defence assets	The RAAF Base Wagga and the Army Recruit Training Centre Kapooka deliver military training and flow-on benefits for contractors, service providers and workers in the region.
	Energy infrastructure	The region's abundant water resources from the Australian Alps support the Snowy Mountains Hydro Electric Scheme, which is currently Australia's largest renewable electricity generator and supports the region's highly productive agricultural lands.
Natural	**Natural environments**	The region is host to many natural assets such as parts of the Kosciuszko National Park and Murrumbidgee River. Besides providing natural amenity, these assets support active and passive recreational uses and offer tourism opportunities for the region.
Social	**Education and research institutions**	Charles Stuart University and TAFE NSW offer education, research and collaboration opportunities in the region.

Key regional growth industries

Agriculture, forestry and fishing	Energy	Transport
The Riverina's agricultural, forestry and fishing sector is the largest employing industry, accounting for 13.3% of regional jobs.[491] Parts of the region have an abundance of softwood plantations that form the basis of the local forestry and timber product industry. It is also home to the largest citrus growing region in Australia, accounting for 30% of national citrus production.[492,493] There are significant diversification opportunities through high-value food production, particularly with the support of agricultural innovations from the Wagga Wagga AgTech Cluster and the future freight connections of the Inland Rail.[494]	Riverina has considerable opportunities in the renewable energy sector, with the region already being home to multiple, large-scale solar farms.[495] Existing transmission infrastructure in the region and an abundance of solar resources makes Riverina an ideal location for renewable energy investment and industry growth.[496] Project Energy Connect, a new energy interconnector between the power grids of South Australia and New South Wales, with an added connection to Victoria, has commenced construction. The project will provide economic benefits to the Riverina region.[497] A recent partnership with Transgrid and Charles Sturt (Wagga Wagga) also seeks to provide training, education and employment pipelines for students and First Nations people, as the region delivers major energy projects.[498]	The region's strategic location presents opportunities for the development of transport and logistics hubs.[499] A majority of the 6 million tonnes of freight movement between South Australia and New South Wales travel through Wagga Wagga.[500] The development of the Wagga Wagga Special Activation Precinct is expected to create up to 6,000 new jobs across a range of industries, with a focus on freight and logistics, agribusiness and advanced manufacturing. The precinct will incorporate the Riverina Intermodal Freight and Logistics Hub, to improve access to markets for regional producers.[501]

Murrumbidgee River, Wagga Wagga, NSW

Infrastructure gaps

Sector:	Social infrastructure
Sub-sector:	Education (tertiary)
Infrastructure gap:	Access to further education and skills training

The Riverina region is home to multiple higher education and vocational training institutions, including Charles Sturt University and TAFE NSW. The region is also home to specialised military training facilities including RAAF Base Wagga and the Army Recruit Training Centre Kapooka. However, local and regional businesses and industries currently suffer from skills shortages. A study into this issue found that as of 2021, 78 per of Riverina employers had difficulties filling positions in the past 12 months. Reasons included a lack of qualified, experienced candidates, or candidates with appropriate technical abilities.[502]

Diversified training focused on growth industries will help to sustain and grow the region's economy. Opportunities to strengthen current training infrastructure to respond to current and emerging skills shortages will help meet evolving industry requirements. Investments in infrastructure that support education and training will need to respond to these current and emerging needs.

The region is also seeking to alleviate the skilled worker shortage through efforts to attract and retain workers. However, growth will require the expansion of existing skills training infrastructure to match workforce capabilities with the expected demand.

Key facts:

27%

of the workforce in the region is classed as skilled labour.[503]

33%

of residents have completed post-secondary qualifications.[504]

The labour force participation rate for the Riverina is estimated at
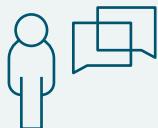
68.94%

as of March 2020 with an unemployment rate of 3.82%.[505]

Impact:

- There are 14 higher education and vocation training institutions across the region, offering potential for collaborative training for in-demand industries.[506]

- The region anticipates a shortage of over 7,700 skilled workers by 2024, with particular need for qualified tradespeople and workers with higher education qualifications.[507]

- A lack of training opportunities has been identified as one of the key reasons why the region may be facing a skilled worker shortage.[508] Expansion of TAFE and university services in the region to provide expanded education and training opportunities could' assist in alleviating this skills shortage.[509]

Consultation feedback:

Many respondents in the Riverina stakeholder workshop stated that the nature of work in the region will continue to change in coming decades, with higher levels of remote working and more frequent career changes becoming more prevalent. Skills and workforce shortages were identified by stakeholders as an ongoing challenge across all industries. Stakeholders noted that this issue was likely to worsen if local training opportunities are not aligned with future job opportunities, however also noting that training and education alone cannot address this challenge.

Workshop attendees identified opportunities for the region to up-skill and diversify their workforce, grow the number of apprenticeships and trade positions and attract new residents to ensure economic diversity is maintained. The provision of more skilled employment opportunities was also expected to be beneficial in ensuring sustainable population growth.

Sector:	Social infrastructure
Sub-sector:	Housing
Infrastructure gap:	Availability, affordability and diversity of housing

The population of the Riverina region is forecast to grow by 14.5% between 2018 to 2036, with the need for accompanying housing development to ensure availability and affordability is not compromised.[510] To respond to the anticipated shortage of workers, a number of solutions to attract and retain workers has also been identified, including leveraging the increased level of travel and visitation to regional Australia to promote the region as a great place to live and work.[511]

Meeting population growth expectations requires an improved diversity of housing and accommodation options. Currently less than 7% of housing in the region is considered to be medium or high density and over one third of dwellings cater to 3-4 person households.[512] Housing planning and development needs to ensure accommodation options meet demand across the housing spectrum, from single-person households to multi-generational family units.

The region also has a high proportion of households considered low-income. Growth can lead to heightened demand for a limited supply of public housing. As at June 2020, over 600 applicants were waitlisted for social housing in the centres of Wagga Wagga and Griffith.[513] Meeting the housing needs of this segment of the population, who are unable to access an increasingly unaffordable and competitive private housing market, is a key priority for local governments such as Griffith.[514]

Key facts:

606

applicants on the social housing waitlist for Wagga Wagga and Griffith as at June 2020.[515]

Residential vacancy rate in December 2021 was

0.6%[516]

Vacancy
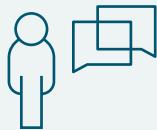
38%

of households in the region are considered low-income.[517]

Impact:

- Within the Riverina region, measures in Wagga Wagga and Griffith are expected to be pivotal in tackling the housing challenges of the future. Key factors for growth and demand for housing in the area are likely to stem from tourism, an ageing population, and seasonal and temporary workers.[518]

- Affordability, availability, and diversity of accommodation are key drivers for attracting people into the local property market. Regional demographic changes are steadily stressing housing supply as the regional population grows and household sizes, on average, fall.[519]

- Major centres such as Griffith must attract more skilled workers to support industry growth. However, the further migration into the area is expected to exacerbate housing shortages and potentially increase prices due to lack of supply.[520]

Consultation feedback:

Stakeholders viewed housing availability and affordability as a critical factor in supporting further population growth and minimising the population drift that is occurring as residents leave the region due to a lack of affordable and appropriate housing. This issue has also affected local industries. Citrus growers have reported challenges with hiring seasonal workers due to a shortage affordable housing in the region, and issues such as overcrowding. During peak harvest periods in 2021, growers in the Riverina could not hire the pickers they needed and had to leave fruit to drop on the ground.

Housing demand in the region's centres is expected to rise as the economy expands and construction on large projects commences, bringing an influx of skilled workers requiring accommodation. This will place pressure on the existing supply, reducing affordability and availability.

Stakeholders attending the Riverina regional workshop highlighted severe workforce shortages across the region as being a critical issue that cannot be resolved by training and education alone. There is a need to attract and retain additional skilled workers to the region. However, the region's ability to do so is currently constrained by a lack of available housing for workers.

Sector:	Water
Sub-sector:	–
Infrastructure gap:	Water security

The Murray and Murrumbidgee Rivers provide water to major food producing areas, including the Murrumbidgee Irrigation Area and Coleambally Irrigation Area. These irrigation areas provide over one-quarter of all the fruit and vegetable production in New South Wales and are also one of Australia's largest exporters of bulk wines.[521] Alongside irrigation, the Murray and Murrumbidgee Rivers is also used to supply a large portion of water for both domestic and industrial use in the region – including fast-growing areas such as Wagga Wagga.[522] Other sources of the Riverina's water supply include regional bores.[523] To meet competing demands, there is a need to develop and maintain critical water infrastructure to meet current and projected demand.

The Riverina region is projected to experience considerable rainfall variability and increased temperatures.[524] Water infrastructure assets which incorporate climate resilience into their design, delivery and maintenance will help to ensure the future viability of industry and enable sustainable population growth.

The NSW Department of Planning and Environment is preparing regional water strategies (RWS) across the state to identify current and future water related challenges and opportunities in each region (including challenges from a changing climate) and potential solutions to address these.[525] The RDA Riverina region includes RWS regions of Murrumbidgee and Lachlan.

Key facts:

Agriculture and manufacturing are major economic drivers for the region.[526,] These water-intensive industries will need future ready infrastructure to enable growth.

Riverina Water notes there is high demand for water from commercial, industrial, and rural customers in the region.[527]
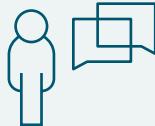
By 2030, rainfall is expected to decrease in spring and increase in autumn, in addition to a higher frequency of hot days,[528] which are likely to have considerable impacts on bushfire danger.[529]

Impact:

- Rainfall changes are also associated with changes in the extremes, such as floods and droughts, as well as secondary impacts such as water quality and soil erosion that occur as a result of changes to rainfall intensity.[530]

- There are likely to be significant challenges in maintaining water security, particularly from the Murray Darling Basin.[531]

- The *NSW Water Strategy* notes that local water utilities across the state face challenging conditions, particularly where there is variability in the geographic coverage and population trends in the areas covered by local water utilities.[532]

Consultation feedback:

Water security was identified as a major challenge by stakeholders for the region. Participants noted that the issue requires balancing environmental sustainability and the needs of agriculture, other industries and residents. Stakeholders expressed the view that water security concerns have been exacerbated over the years by a greater demand for water resources, and challenges to water policy and pricing effectiveness to protect the region's supplies.
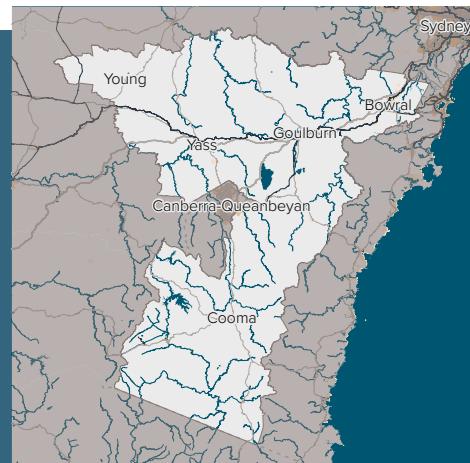
Workshop attendees also noted that water security is crucial to support population growth and the development of key industries such as agribusiness. Concerns were expressed by stakeholders that current water policy is not effectively responding to competing demands across the region.

# 6.2.13 Southern Inland

The Southern Inland region encompasses diverse landscapes including mountains, lakes, vineyards, and pastures. The region also has significant arts and culture, agriculture, forestry, advanced manufacturing and renewable energy sectors.

There has been significant population growth in the region as it accommodates residents from the neighbouring Australian Capital Territory, who relocate for lifestyle and affordability reasons. Increased visitation has been beneficial for tourism but has led to greater congestion on roads. Both of these trends have contributed to significant housing and accommodation pressures.

Alongside housing challenges, water security, waste management and better physical connectivity with Canberra and Sydney are key priorities. The region is also looking to expand its year-round tourism potential and local amenities to attract and retain a diverse workforce. The planned South Jerrabomberra Regional Job Precinct aims to deliver improved planning pathways to support industry growth and job creation and to facilitate cross-border planning. Opportunities leveraged by the precinct could include defence, space, cyber security, information technology and scientific research sectors.[533]

Strengths

Key existing assets

Economic	**Strategic location**	The region's proximity to Sydney, Canberra and the Illawarra region provides opportunity for social and economic activity.
	Energy infrastructure	The region is home to a large network of renewable energy stakeholders due to the abundance of renewable energy projects ranging from hydro, solar, wind and biomass.
Natural	**Natural environments**	Prominent natural areas, such as the Kosciuszko National Park, provide amenity for locals and are key tourism assets.
	Climate and topography	The region benefits from a temperate climate, with rich soils and reliable rainfall, providing ideal conditions for agriculture.
Social	**Education and research institutions**	Tertiary and skills training institutions in the region, alongside ease of access to Canberra's many institutions, provide education, research, and collaboration opportunities.

Key regional growth industries

Healthcare and social assistance	Energy	Tourism
The health and social services industry accounts for 11% of the regional workforce, making it the second largest employer in the Southern Inland region.[534] Extensive and diverse health infrastructure across the region enables Southern Inland to service its growing population and increasing demands for services.[535]	Renewable energy already has a large presence in the Southern Inland region through established clusters of wind farms and the Snowy Hydro Electric Scheme.[536] The ongoing development of Snowy 2.0 further supports the region's renewable energy capacity, while creating employment and economic growth opportunities.[537]	The Snowy Mountains contributes $429 million to the regional industry, making it the primary driver for tourism activity in the Southern Inland region.[538] While peak seasons are during the winter months, year-round tourism offerings and nature-based activities could leverage further visitor and economic growth.[539]

Kosciuszko National Park, New South Wales

Infrastructure gaps

Sector:	Social infrastructure
Sub-sector:	Housing
Infrastructure gap:	Availability, affordability and diversity of housing

The Southern Inland region's proximity to both Canberra and Sydney brings the benefits of employment opportunities for commuters, and also access to a pool of skilled labour. As housing and land costs in Canberra rise, there is greater demand for residential development in surrounding regions including the Southern Inland region.[540]

This creates growth potential but also a challenge to provide sufficient and appropriate housing for a growing and changing population.[541] Some of these changes include an ageing population and shrinking average household size.[542] Creating greater choice of accommodation through diverse (private and public) and affordable housing, together with the capacity to accommodate tourism growth will support overall economic development. The development of social housing in the region is particularly important in providing support to vulnerable people in the community, and in turn, boosting the local economy.[543]

Key facts:

The region's population is projected to grow by

18%

to 2036.[544]

56%

of residents in the region commute to Canberra for work.[545]
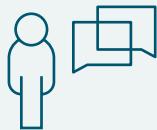
12%

increase in demand for dwellings is projected to 2036.[546]

Impact:

- New housing development will require improved supporting infrastructure (including water, waste, energy) to support increasingly urbanised centres, and maintain standards of liveability that meet community expectations.

- Housing strategies and planning will need to account for agricultural industries to manage growth. Balancing land holdings that support food production with the effective allocation and management of land uses to enable new residential developments is a key challenge to be considered alongside the impacts of climate change and the long-term resilience of the region.[547]

- For young people and households with low incomes, the inaccessibility of private rental markets and lack of public housing has contributed to lengthy waiting lists and created pressure on the limited public housing stock.[548]

Consultation feedback:

Workshop participants highlighted the expected rise in internal migration, other sources of population growth and tourism in the region. These were identified as presenting significant accommodation challenge for the region due to a current critical shortage of affordable housing and rental properties.

Stakeholders noted that housing challenges can be exacerbated by major infrastructure projects, such as the Snowy Mountain Special Activation Precinct which attracts incoming skilled workers who require accommodation. This results in upward pressure on prices, reducing the availability and affordability of housing for long term residents.

There has also been an observed shift in demographics, with an ageing population and emigration of young people away from the region.

Sector:	Waste
Sub-sector:	–
Infrastructure gap:	Waste management and resource recovery

The region's annual rate of waste generation is expected to increase by at least 9% over the next 10 years.[549] This will increase pressure on existing waste processing and management infrastructure, particularly council-operated landfills.[550] Two of the region's waste objectives include increasing recycling rates and managing problem waste more effectively. The regional waste strategy identifies the need for waste sorting and processing infrastructure that can more effectively recycle waste and process problem waste, for example e-waste.[551]

New waste management and resource recovery infrastructure is also necessary to ensure the region is able can meet the state's waste strategy objectives. Large population centres in the region, such as Goulburn-Mulwaree, need to expand and improve waste management facilities and resources as this enabling infrastructure to improve liveability.[552] Services and waste management strategies of the future also need to be environmentally sustainable and economically viable.

Key facts:

Average recycling rate of the Southern Inland LGAs was

38%
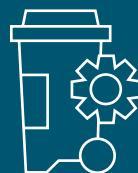
in 2019 (NSW 47%).[553]

Queanbeyan-Palerang, one of the largest population centres in the region is estimated to

double

the amount of waste generated by 2050.[554]
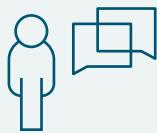
57%

of residual waste in the Southern Inland region was sent to landfill in 2019.[555]

Impact:

- New residential developments in rural areas, including for essential supportive infrastructure such as waste, recycling and sewage management systems, can present conflicts with surrounding agricultural land uses or natural resources and the environmental zones.[556]

- The NSW Government's target for recycled domestic waste is 70%.[557] The viability of recycling in the region depends on achieving conditions that outweigh the advantages of sending waste to landfill. Primarily, this will involve reducing the attractiveness of sending waste to landfill and improving market demand for recycled materials and the supply of high-quality products.[558]

Consultation feedback:

Workshop participants indicated that improvements to waste infrastructure including sewerage, waste capacity and waste management capabilities are required to support a growing population, as waste generation in the region is increasing drastically. More recently, COVID-19 pandemic has led to people from metropolitan areas moving to the regions, increasing the pressure on local roads, waste, sewage, and water infrastructure. Improved local amenities and infrastructure is required to support liveability and to meet the expectations of a growing resident population.

Sector:	Water	
Sub-sector:	–	
Infrastructure gap:	Water security	

The Southern Inland region has a large base of agriculture and agribusiness industries. Notable contributions to the region's productivity include wool and livestock, accounting for 57% of the region's output. At a state level, 34% of New South Wales' cherry production is sourced from the region.[559] For the region's projected population and level of economic activity, water security and availability are critical concerns, as reflected by local government areas including Yass, Upper Lachlan, and Hilltops.[560,561,562]

New housing developments and agricultural expansion will consume additional water. As the climate becomes warmer and drier for the region, a lack of access to reliable and quality water sources could have adverse impacts on the region's productivity and residential population.[563] Challenges exist for the region to expand existing water supply and treatment infrastructure to meet the anticipated demand.

The NSW Department of Planning and Environment is preparing regional water strategies (RWS) across the state to identify current and future water related challenges and opportunities in each region (including challenges from a changing climate) and potential solutions to address these.[564] The RDA Southern Inland region includes areas within the RWS regions of Murrumbidgee, Sydney Metropolitan, Lachlan and Murray.

Key facts:

Rainfall has declined by

12%

in the region during the autumn-spring period in the past 20 years.[565]
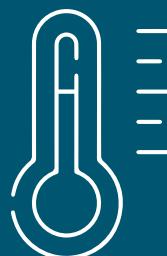
The region is expected to have diminishing rates of recharge to groundwater to at least

2036.[566]
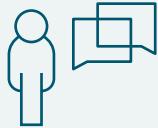
Temperature rises and more hot days per year are projected for the region.[567]

Impact:

- The anticipated propagation of residential developments in the Southern Inland region is likely to cause additional demand on the region's water catchments and supplies.[568]

- Regions such as Goulburn-Mulwaree and Wingecarribee currently secure additional water to support ongoing population and economic growth.[344] Other parts of the Southern Inland fall in the Murray-Darling Basin, with growing concerns on the sustainability of extraction levels and climate change.[569]

- Water supply issues remain one of the chief inhibitors to regional development for the Yass Valley and Palerang, and the potential impacts of with climate change are a major concern as it strains supply in future years.[570]

Consultation feedback:

Participants from the Southern Inland workshop see long-term water security as crucial to realising future growth of population, businesses and tourism. Better water management and improved storage are considered essential to support a growing population and maintain the liveability of local communities. Additionally, the workshop indicated that greater infrastructure resilience is required to adapt to climate change and the increasing number of natural disasters affecting the region. Climate change was also identified as likely to place further pressures on winter tourism assets.

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