

An aerial photograph of a coastal town and agricultural fields. The town is built on a peninsula, with a river flowing through it. The surrounding area is filled with agricultural fields, some of which are brown, suggesting they are fallow or harvested. The sky is blue with scattered white clouds.

nbn™  
BUSINESS



# Business growth opportunities

.....  
Mackay Region QLD





**REGIONAL  
AUSTRALIA  
INSTITUTE**

The Regional Australia Institute (RAI) is a think tank devoted to issues concerning regional Australia.

We gather and analyse the best information available on regions and make this readily accessible to people around the country;

We work with regional leaders around the nation to understand their challenges and help them identify opportunities for future development that they can implement; and

We talk to governments at all levels providing them with independent, evidence based advice about the options they have to make regions even greater.

The RAI is a not-for-profit organisation established as a public company limited by guarantee and we are an Approved Research Institute for tax purposes.

The Institute was founded in 2012 with seed funding from the Australian Government. Our current operations reflect partnerships bringing together the Australian Government, all state governments and the Northern Territory in supporting an Inquiry Program of national significance. We also have active partnerships with a range of companies, and projects working directly with regions.

In 2017 the RAI joined a distinguished group of international experts to receive the Regional Studies Institutional Ambassador Award for sustained excellence in the field of regional studies.

Past winners include the OECD (France), University of Warsaw (Poland) and the Lincoln Institute (USA).

For more information about the RAI:  
[www.regionalaustralia.org.au](http://www.regionalaustralia.org.au)



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# Executive summary

The Mackay region has an opportunity to beat its historic 'boom or bust' economic cycle by continuing the pursuit of a more diversified economy and strengthening its traditional areas of specialisation - nurturing new industries and becoming more globally competitive.

Uptake of services over the nbn™ broadband access network in the Mackay region can support these objectives by enabling an even greater focus on business innovation, particularly in the Mining Equipment, Technology and Services (METS) and agriculture sectors, as well as tourism and small to medium enterprise (SMEs).

Fast broadband allows economic diversification by opening up new and larger markets to Mackay's

industries, allowing them to compete on a level playing field.

New fast broadband technologies can all be game changing for business performance and growth, enabling innovation in the development of new products and services, efficiency gains and new ways to reach, engage and stay connected with customers. But a proactive approach is critical.

**Connecting to available digital technologies demonstrates a growth mindset from business and drives entrepreneurial and innovation behaviour, which grows a skilled and future focused technologically capable workforce.**

Mackay's high concentration of technicians and trades workers (18% of workforce), and comparatively higher technical qualifications (26.2%) is a strong position for the reskilling and learning required to embrace and fully utilise digital technologies.

Also performing strongly in innovation when compared to regional Queensland (ranking 23 out of 73 LGAs), suggests Mackay is well poised to see business growth, and digital technologies will play a role.

With improved access and capacity to compete in national and global markets via fast broadband technologies, businesses in the Mackay region can capture new opportunities and further improve what is already considered to be an enviable regional lifestyle.

Those who act early will be best positioned for growth, and better prepared for and insulated from new competitors outside the region.

**Access to fast broadband is a critical success factor in this environment. It's necessary for regional leaders, businesses and the workforce to engage with digital technology in ways which**

**build on existing strengths, capture new growth opportunities and transition people to less vulnerable jobs.**

While 28 per cent of jobs have been assessed by the Regional Australia Institute (RAI) as highly vulnerable to automation, the largest proportion of jobs in Mackay (37%) are only moderately vulnerable to automation or digital disruption. Reducing this vulnerability requires a more technologically engaged and skilled workforce.

Now, the immediate imperative for businesses in the Mackay region is to get connected, build the technological knowledge and skilled workforce required to fuel business innovation, and take action applying digital technologies to drive revenue growth, operational efficiencies and grow market share.



## Strengths and deficiencies in the Mackay economy based on comparison areas

The Mackay Regional Local Government Area (LGA) is one of the fastest-growing in Queensland, with a population of over 117,000.

The region provides rural and coastal living opportunities across the broader Mackay-Isaac-Whitsunday area.

There are over 40 different nationalities represented in the region. The economy is fuelled by the resources and agriculture sectors with growth in construction logistics and tourism.

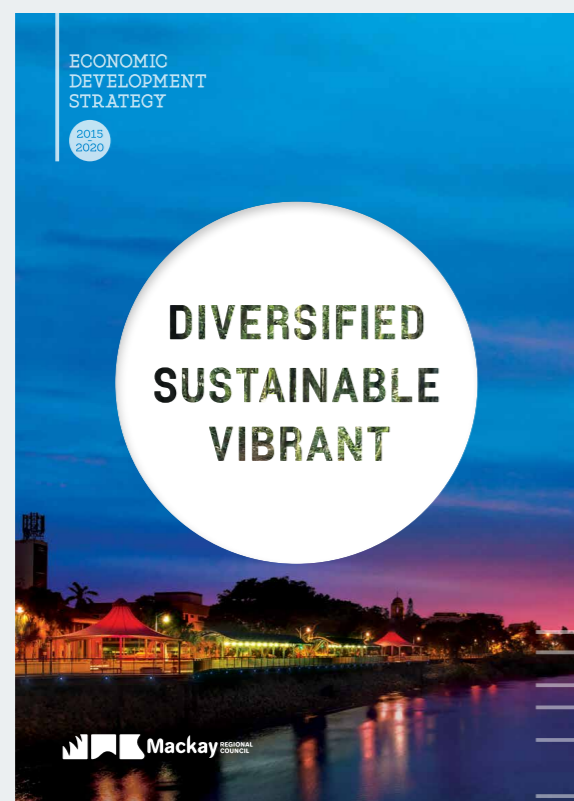
The Mackay region ranks eighth highest for registered patents per capita in Australia.

There is more than \$1 billion worth of projects currently approved or under development.

Diversification has been an identified and intentional regional pursuit since 2014. The level of dependence on mining and agriculture was identified by the community consultation and leadership to be disproportionate and an economic risk.

## The Mackay Region Economic Development Strategy 2015-2020 reflects this regional aspiration

Within the strategy it is identified that diversification will increase demand for skilled labour which is linked to the increase in automation and technology<sup>1</sup>.

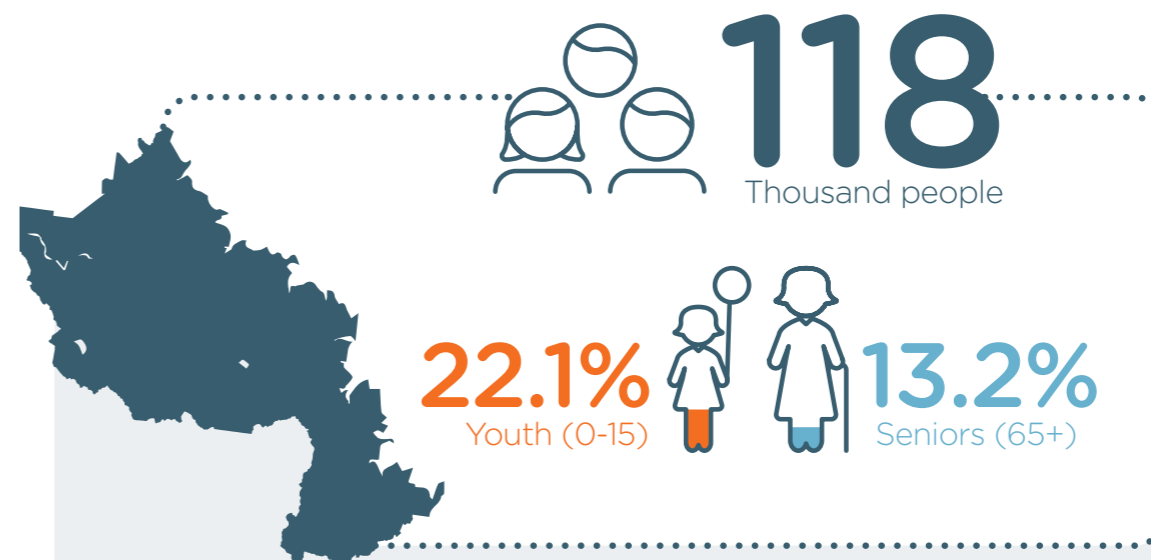


Mackay Region Economic Development Strategy 2015-2020 p. 18

“Improved internet technology will also enable further attraction of businesses to the Mackay region given increased connectivity.

Technology has the potential to further stimulate industries that are already established in the Mackay region, while also lowering barriers and costs for the establishment of new and emerging industries.”

## Mackay community profile



### Employment and education



### Housing

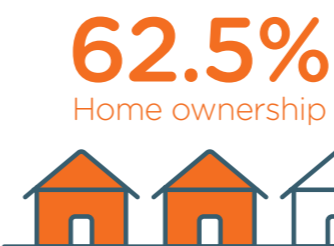


Figure 1 | Source: REMPLAN Community Data <http://www.communityprofile.com.au/mackay>



# Strengths

Diversification is desired by the Mackay region communities and the RAI research shows that innovation is an existing strength which can be further developed.

Converging these elements can potentially reframe the diversification strategy from a focus on moving away from dependence on mining and agriculture, to innovating further within mining and agriculture and leveraging existing strengths.

Being able to more readily compete nationally and around the world, via fast broadband, allows for more innovation and new products and services to be developed and offered, lifting the constraint of reliance on local industry.



“ Having access to fast broadband gives businesses in the METS the ability to act commercially competitive beyond the region, and can attract a professional workforce who desire the most advanced work places for career development. ”

**Adrienne Rourke,**  
General Manager  
Mackay Resource Industry Network

Innovating and removing barriers to competitiveness within the METS sector could be a business development/attraction focus for Mackay. This approach to diversification, with the capacity of high speed broadband, could strengthen mining's contribution to Mackay's economy and by broadening its market and reach, decrease the current 'boom and bust' impact the industry carries on the region.

Mackay's strong Innovation performance (ranking 23 out of 73 LGAs within regional Queensland) has a relatively high level of science and tech qualified people (12.2%) when compared to regional Queensland (8.6%).

This bodes well for expanding innovation in METS as an appropriately skilled workforce, as a foundation, is present in the region.

Providing staff with access to state of the art technologies and global markets allows businesses to be able to compete in attracting and retaining staff by eliminating career disadvantage and constraints.

Knowledge intensive business services (KIBS)<sup>2</sup> is another measure which Mackay was comparatively strong within regional Queensland. This supports the resident skilled workforce finding and reflects that knowledge produced by KIBS contributes to innovation.

**Mackay ranks 12 out of the 73 LGAs within regional QLD for human capital, which positions it well for an economic transition towards more technology, knowledge and services products.**

The relatively high level of new businesses in the Mackay region reflects a supportive business environment which can be further focused on stimulating entrepreneurial capacity. Innovation does not need to be limited to diversifying the existing resources and agriculture sectors and entrepreneurship will likely broaden and further strengthen the business ecosystem of Mackay.

Advancing and increasing innovation and entrepreneurial activity within the Mackay region is impacted by the availability of fast broadband and the uptake by the local community.

Garry Scanlan, CEO of the Greater Whitsunday Alliance, says that digital connectivity, specifically fast broadband, is a business attraction imperative and viewed as a critical element to project success by businesses/industries considering locating to the region.

Mackay is on par with regional Queensland in technical qualifications but falls below in high school completion, university qualifications and adult learning.

These human capital indicators compromise the 'diversification by innovation' approach as education is an aspect of developing a skilled workforce.

High school completion in Mackay (42.4%) is lower than regional Queensland (46.5%) as are

primary (442.3) and secondary (540.1) literacy and numeracy rates (regional QLD: 444 and 546.1), which are associated with completion of secondary education.

Also, as Mackay has a level of jobs vulnerability due to increasing automation and digital technology, education is a key element of workers learning new skills to adapt to change.

Improving these human capital indicators is considered an important outcome for the Mackay region and their flow on effects have a direct bearing on innovation.

## Mackay versus regional Queensland

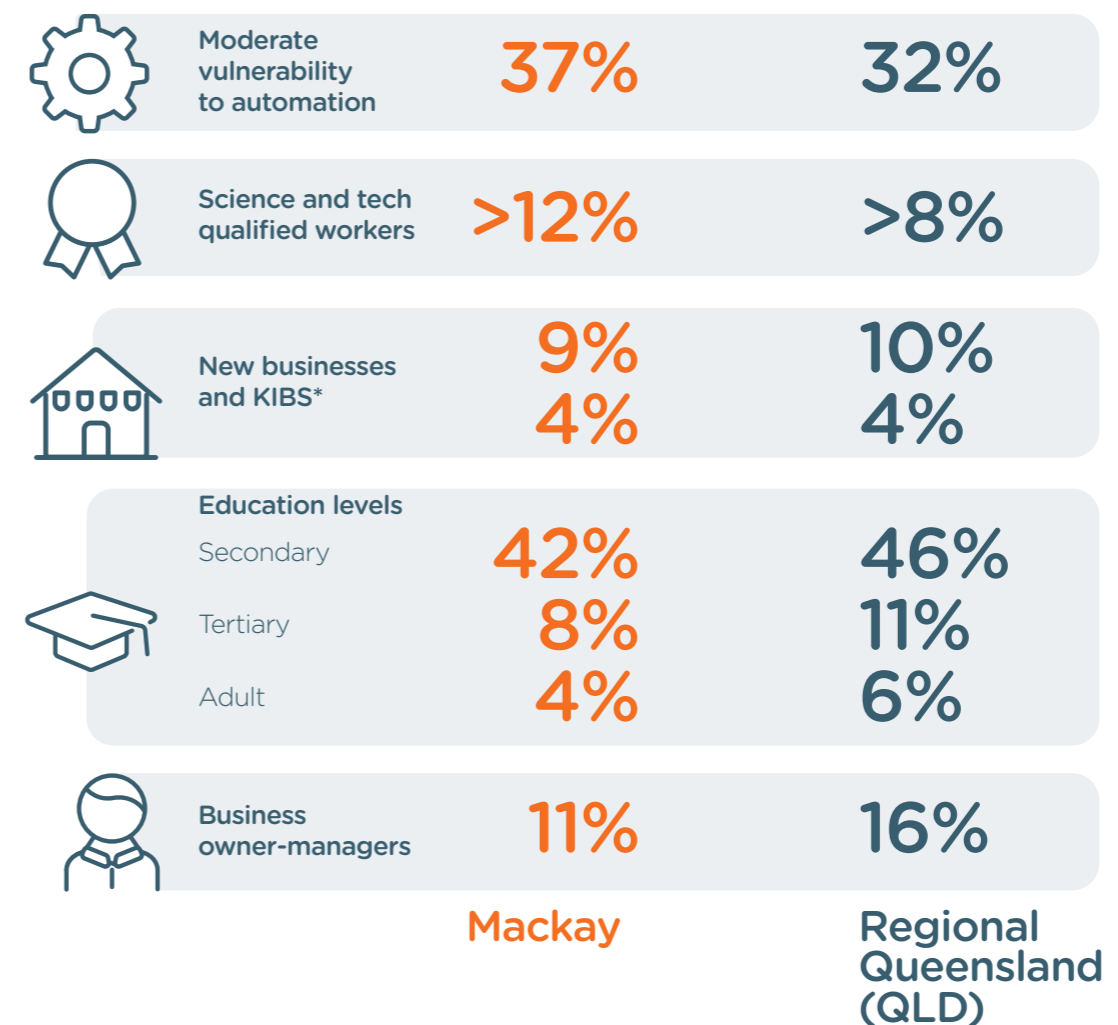


Figure 2 | Source: Regional Australia Institute 2018 | \*KIBS: knowledge intensive business service

# Weaknesses





“With secure high speed broadband regional tourism could embrace 360° footage and real time promotion such as ‘in the moment’ social media posts, aligning their digital tools, online presence and engagement to industry best practice.”

**Tas Webber**  
General Manager Mackay Tourism

Fast broadband will assist local businesses in Mackay by allowing them to tap into applications such as cloud computing and video conferencing to reach new markets and compete globally.

Industries which have large data transfer requirements (such as mining, agriculture, METS and tourism) will be able to more easily reach and engage their audiences without being competitively disadvantaged (compared to city counterparts or other regions) by technology limitations.

Tas Webber, General Manager of Mackay Tourism, says that with secure high speed broadband regional tourism could embrace 360° footage and real time promotion such as ‘in the moment’ social media posts, aligning their digital tools, online presence and engagement to industry best practice.

Coordinating small business start-up programs in the region, including digital marketing, promotion and e-commerce elements, could stimulate entrepreneurs to pursue their business ideas due to access to fast broadband.

Helping existing businesses become aware of and implement the productivity and efficiency improvements provided by fast broadband and digital technologies should also assist them in their ongoing viability and improve business retention in the region.

Intentionally promoting innovation and entrepreneurship will raise awareness of business opportunities and connect residents in the region with the prospect of being able to have fast broadband and their regional lifestyle too.

This fosters new business development, population retention and regional growth.

Research illustrates the scale of growth the Mackay region can expect to see by 2021 from learning to harness the opportunities provided by fast broadband. According to a report by alphaBeta and 89 Degrees East and commissioned by NBN Co, over the next three years it is forecasted that 240-700 additional business and 1,720 to 3,420 additional digital jobs will be a direct result of the nbn™ access network.

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## Connecting Australia - Mackay

The impact of the nbn™ access network on the lives of Australians and the economy\*

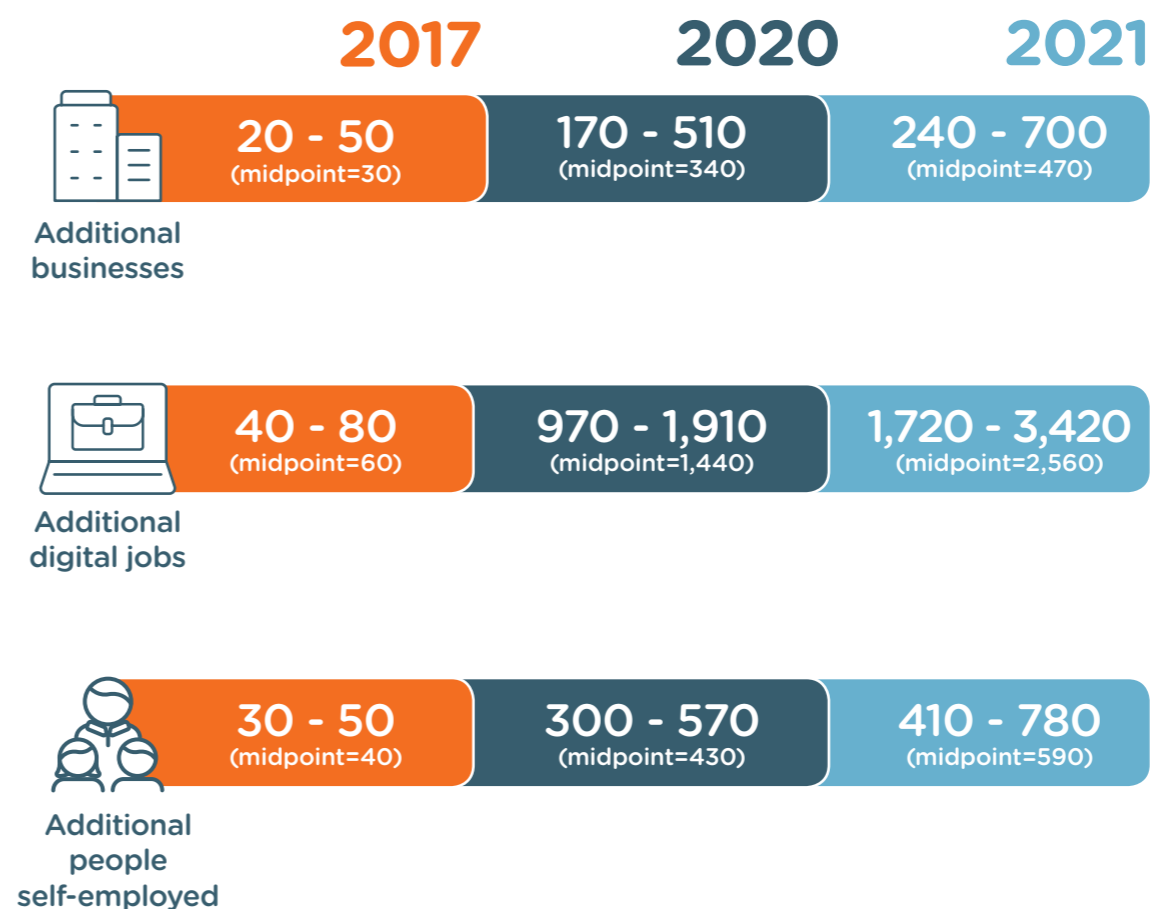


Figure 3 | Source: Regional Australia Institute 2018 | \*alphaBeta and 89 Degrees East (2018)



This section presents a summary of key data that highlights the current occupation mix in the region and performance on human capital and innovation measures in relation to other regional cities in Queensland.

Understanding the current occupation mix in Mackay highlights what occupations are mostly found in the region and in turn the proportion of jobs that are vulnerable to automation.

This allows for businesses in the region to be aware of potential jobs that may be impacted and the necessary reskilling needed.

It also means being able to tap into strengths in areas of human capital or innovation to take advantages of the new job opportunities as a result of automation and digitisation.

### Occupational mix and vulnerability to automation

At the RAI, we have calculated a job vulnerability index to determine the level of vulnerability to automation within a region.

This index has drawn on the widely adopted work by Frey and Osborne's (2013) 'The future of employment: How susceptible are jobs to computerisation' as well as automation scores from Edmonds and Bradley's (2015) 'Mechanical boon: will automation advance Australia?'

The RAI job vulnerability index classifies occupations with automation scores of below 40 as having low vulnerability, jobs at or above 40 and at or below 80 as medium vulnerability, and jobs which have an automation score above 80 as high vulnerability.

Based on this, we are able to identify the percentage of jobs in the region with low, medium and high vulnerability to automation.

Mackay has a high concentration of technicians and trades workers, accounting for at least 18 per cent of the total known jobs<sup>3</sup> in the region.

This is followed relatively closely by professionals (16%).

## Mackay's occupational mix

### Machinery operators and drivers



### Community and personal service workers



### Sales workers



### Labourers



### Managers



### Clerical and administrative workers



### Professionals



### Technicians and trades workers



Figure 4 | Source: Regional Australia Institute 2018

More specifically, the top 10 jobs in Mackay have been identified in the graphic below.

While other jobs have relatively similar numbers of people, there were clearly a large number of sales assistants and salespersons, with more than 3,000 people in these jobs and accounting for 7.7 per cent of all total known jobs.

However, sales assistants and salespersons are occupations considered to be highly vulnerable to automation as they often involve tasks that can be easily replicated and replaced by machines.

Of the remaining 9 occupations, general clerks as well as accounting clerks and bookkeepers are also considered to be highly vulnerable to automation.

## Top 10 jobs in Mackay

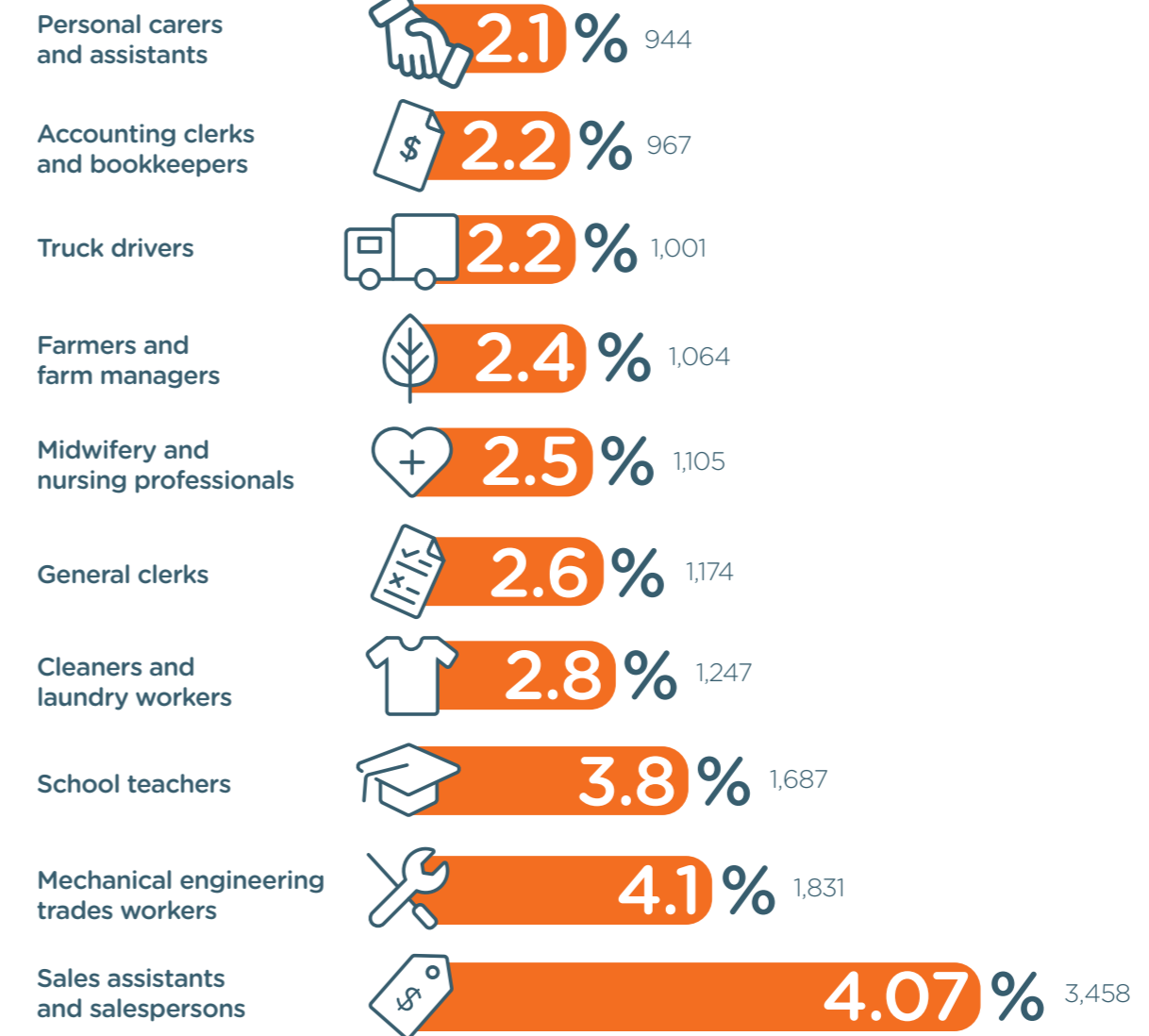


Figure 5 | Source: Regional Australia Institute 2018



Overall, most of the jobs in Mackay are considered to be moderately vulnerable (37%), while only around 28 per cent of jobs are highly vulnerable to automation. Mackay is considered to be a regional city based on RAI's classification of Australia's regional communities and in comparison other regional cities, Mackay has a relatively lower proportion of jobs that are considered to be low vulnerability. The proportion of high vulnerability jobs is similar to that of regional cities.

Additionally, between 2011 and 2016 the percentage of jobs in Mackay that were considered high vulnerability decreased slightly.

This was matched with an increase in the percentage of low vulnerability jobs. This is an important transition for the region to either reduce the reliance of jobs that are highly vulnerable to automation or ensure the reskilling of workers for future jobs.

## Vulnerability to automation

Regional QLD Mackay



Figure 6 | Source: Regional Australia Institute 2018

## Human capital and lifelong learning

The RAI's [In]Sight data tool<sup>5</sup> provides a snapshot of the competitiveness of Australia's regional Local Government Areas (LGAs) by ranking the region's performance on various indicators for ten different themes.

It highlights elements that the region has strengths in or areas for improvement. The human capital theme, focuses on understanding the skills and capabilities of people.

Building a more agile and skilled workforce that is ready to adapt to changes and have relevant skills for future jobs is increasingly important. Therefore, having a good understanding of Mackay's human capital is fundamental to securing future economic development and helping businesses identify the capabilities of the workforce.

It is measured by a range of indicators such as the proportion of Mackay's population with university qualifications, technical qualifications, high school completion, primary and secondary school literacy and numeracy, level of early childhood development, the proportion of the population who are learning or earning, the workforce skill mix as well as the rates of adult learning.

Mackay ranks 11 out of the 73 LGAs within regional QLD. Mackay is stronger in technical qualifications, with 26.2 per cent of the total population with certificate and diploma qualifications, similar to regional QLD. On the other hand, despite being home to the Central Queensland University as well as a James Cook University campus, university qualifications are less prevalent in Mackay (8.4%) compared to regional QLD (11%).

In addition, completing high school is considered to have an influence on whether people would pursue higher education and therefore is an important aspect for developing a skilled workforce.

However, high school completion in Mackay (42.4%) is also slightly lower than regional QLD (46.5%). This in turn could be partly due to primary (442.3) and secondary (540.1) literacy and numeracy rates being lower than regional QLD levels (444 and 546.1), which are associated with completion of secondary education.

Mackay has a proportion of jobs that are vulnerable to automation and future jobs will also be impacted by the increasing use of digital technology.

The demand for skills will continue to change and workers will be expected to learn new skills to meet these needs. Adult learning rates provide an indication of how engaged the population is with lifelong learning. Regional QLD has around 5.78 per cent of population aged 25-64 engaged in learning, while Mackay has around 4.76 per cent.

## Human capital indicators

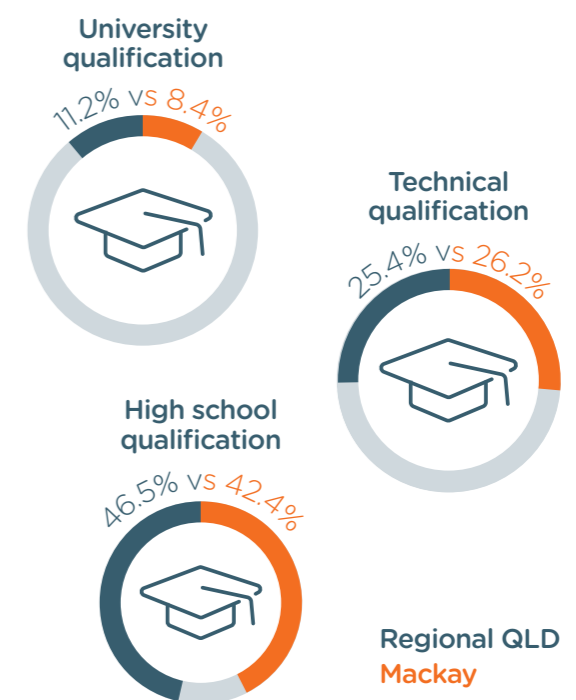


Figure 7 | Source: Regional Australia Institute 2018

Overall on the human capital indicator Mackay does relatively well when compared to regional QLD average, particularly in technical qualifications. However, when compared to other regional cities in QLD that have similar population sizes, such as Cairns, Fraser Coast and Bundaberg<sup>6</sup>, where adult learning rates are around 4.9 per cent to 6.8 per cent, Mackay is not doing as well.

For more information on human capital and lifelong learning see the RAI's report on Bridging The Education Divide - <http://www.regionalaustralia.org.au/home/2017/03/bridging-education-divide-building-culture-learning-across-lifecycle-regional-australia/>



The innovation theme combines traditional measures focused on Research and Development (R&D) and science, as well as aspects related to the commercial environment (i.e. Business Dynamo) such as number of business entries.

The level of innovation in the region is important in driving productivity growth and to take advantage of future opportunities as the Australian economy transitions towards more knowledge and service products.

Mackay has performed well in this area, ranking 12 out of the 73 LGAs within regional QLD. Mackay does have some strengths in the area of innovation, however there are opportunities for increasing that.

Indicators for R&D and science includes the number of people in Mackay who are science and tech qualified, number of R&D managers, number of registered research service providers, as well as number of patent applications.

Mackay has generally performed well in this aspect with the percentage of science and tech qualified people (12.2%) higher than regional QLD (8.6%), and patent applications similar to that of regional QLD (refer to Figure 8).

## Research and development

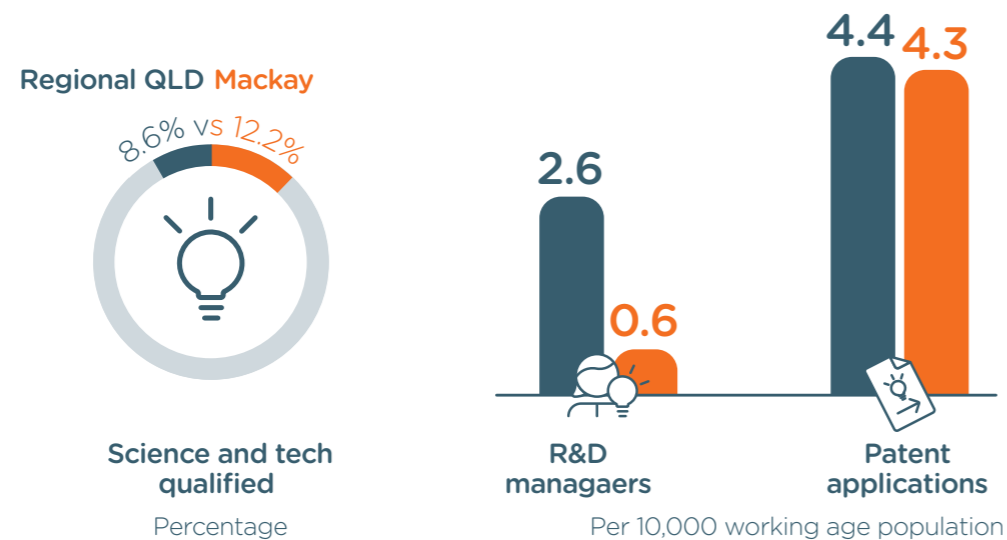


Figure 8 | Source: Regional Australia Institute 2018

The business dynamo aspect focuses more on the environment in which businesses are operating and the level of innovation and entrepreneurial capacity in Mackay. It measures the number of business entries, owner-managers, trademark applications and knowledge-intensive business services (KIBS).

Overall, Mackay performed relatively well for business dynamo, ranking 23 out of the 73 LGAs within regional QLD.

In particular, Mackay performed relatively similar on business entries (9.1%) and KIBS (4.4%) to that of regional QLD, which were 9.9 per cent and 4.5 per cent respectively.

Additionally, compared to another 3 regional cities in QLD that have similar population sizes, Mackay performed comparatively well on these indicators only scoring below Cairns.

Having a high level of new businesses in the region suggests the presence of a supportive business environment, which often also brings new capacities and innovation.

Similarly, KIBS requires specific and professional knowledge to provide knowledge-intensive support to other organisations' business processes.

Thus, a high KIBS level not only suggests a skilled workforce but at the same time the knowledge produced by KIBS is considered to contribute to innovation.

## Business dynamo

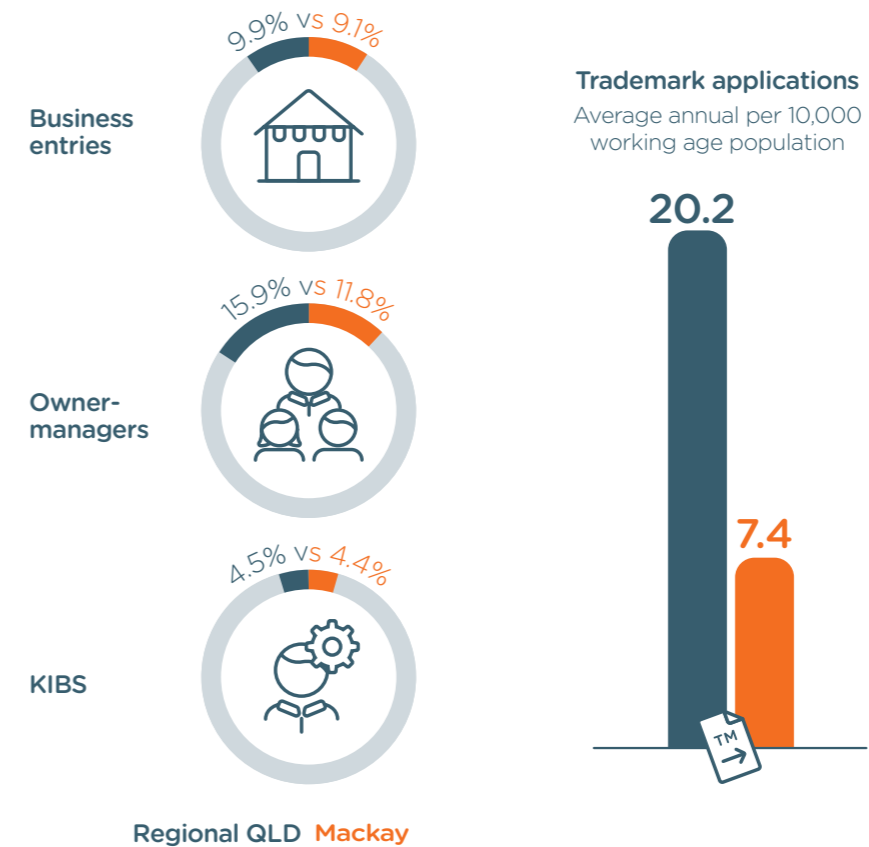


Figure 9 | Source: Regional Australia Institute 2018

However, Mackay has not performed as well in terms of the number of owner-managers (11.8%), which is an indicator of the level of entrepreneurship in the area, compared to Regional QLD (16%).

Additionally, Mackay has significantly lower levels of trademark applications, approximately 7.4 trademark applications per 10,000 working age population, although this in part is due to high numbers contributed by specific LGAs such as Diamantina (63.3), Noosa (45.7) and Gold Coast (43.2).

Nonetheless, Mackay has lesser trademark applications as compared to the other similar sized regional cities, which have 9.2 to 13.8 trademark applications per 10,000 working age population.

Therefore, ensuring a supportive environment for business innovation and entrepreneurial capacity is an important aspect for Mackay.

Mackay demonstrated an overall environment that has generally been supportive of innovation, which can bring new opportunities for businesses through greater innovation and entrepreneurship as well as having positive spill over effects on other businesses.

For businesses to carry out innovation, a skilled workforce with the necessary research and technical skills will be needed.

Mackay has a high level of science and tech qualified people to support that but does lack in other areas of human capital such as university qualifications, high school completion as well as adult learning.

Additionally, trademark applications in particular are lacking as well as room for growth in new business entries to match those of regional QLD.





# Access to fast broadband in the Mackay region will stimulate business growth

## Conclusion

Mackay's future will be influenced significantly by the health and vitality of the local businesses.

Automation and the digital economy are real drivers of business viability and fast broadband enables competitive participation.

Access to fast broadband in the Mackay region will stimulate business growth, if a proactive approach is taken to connect and learn how to take full advantage of digital technologies.

The 'boom and bust' cycle of Mackay, attributed to dependence on the resource and agriculture sectors, can be disarmed through diversification by innovation from within those sectors, increased competitiveness and from new business entrants.

**Embracing digital technology to leverage existing strengths and develop new industries can bring the economic resilience and regional prosperity which Mackay desires.**

Innovation and entrepreneurship which can be pursued with full access to high speed digital technology, along with the skills required, will enable Mackay to continue to offer the benefits of regional living and lifestyle with the attraction of globally competitive business options.

Commencing programs now across the region which promote and educate on the business possibilities from access to fast broadband, can encourage latent innovators and entrepreneurs in the community and existing business operators to embrace digital technology, pursue new ideas and invest in growth.





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