bull + bear
economics

14 March 2023

Griffith Employment Lands Strategy: Economic Analysis

PSA Consulting

Document History

Version	Date Issued	Reviewed by	Approved by	Date Approved	Revision Type
Rev A	29 October 2022	S McCormack	S McCormack	29 October 2022	Draft
Rev B	31 October 2022	S McCormack	S McCormack	31 October 2022	Draft
Rev C	20 December 2022	S McCormack	S McCormack	20 December 2022	Draft
Rev 0	09 March 2023	S McCormack	S McCormack	09 March 2023	Final
Rev 1	14 March 2023	S McCormack	S McCormack	14 March 2023	Final

Distribution of Copies

Version	Date Issued	Issued to
Rev A	29 October 2022	K Burke
Rev B	31 October 2022	K Burke
Rev C	20 December 2022	K Burke
Rev 0	09 March 2023	K Burke
Rev 1	14 March 2023	K Burke

Document Summary

Last Saved	14 March 2023
Author	M. McCarthy, M. Parker, E. Foots, S. McCormack
Project Manager	S. McCormack
Client	Griffith City Council
Document Title	220040 RPT BBE Griffith Employment Lands Strategy REV0 090323
Document Version	Rev 1
Project Number	220040

Table of Contents

List of Tables

List of Figures

1 Introduction

Bull & Bear Economics, in conjunction with PSA Consulting, were engaged by Griffith City Council to undertake the Griffith Employment Lands Strategy. The purpose of the Griffith Employment Lands Strategy is to guide the planning and delivery of a suitable supply of employment lands, meeting projected demand for sustainable employment growth in the Griffith local government area (LGA).

The Griffith Employment Lands Strategy: Economic Analysis provides the evidence base to inform recommendations that will offer strategic direction in line with the priorities and opportunities identified through practical, economy growing interests to benefit the Griffith community.

1.1 Report Structure

The report is structured as follows:

- **Section 1 Introduction:** summarises the purpose of the report and outlines report structure;
- **Section 2 Economic Context:** provides a high-level overview of resident and employment characteristics of Griffith City Council, based on data published by Informed Decisions;
- **Section 3 Employment Trends and Themes:** identifies key employment trends at the State and National level which have implications for employment within Griffith City in the future;
- **Section 4 Existing Activity within Employment Lands:** provides an overview of existing activity within employment zoned land in Griffith City;
- **Section 5 Retail Floor Space Expenditure:** provides an assessment of the demand for additional retail floor space within Griffith City to 2041, through consideration of projected household expenditure patterns, converted to supportable floor space estimates;
- **Section 6 Employment Projections:** details employment projections for Griffith City, which represent a key input into the assessment of commercial office floor space and industrial land demand;
- **Section 7 Commercial Floor Space Demand Assessment:** highlights the commercial floorspace demand within Griffith City, derived from two-digit employment projections in Section 6 of the report;
- **Section 8 Industrial Land Demand:** estimates the projected demand for industrial land within Griffith City, derived from two-digit employment projections in Section 6 of the report;
- **Section 9 Strategic Recommendations:** provides an overview of the key findings of the study, including strategic recommendations which will inform subsequent stages of the Griffith Employment Lands Strategy;
- **Section 10 References:** details the sources used in preparing this report; and
- **Section 11 Appendix:** summarises the data sources utilised in preparing this report.

2 Economic Context

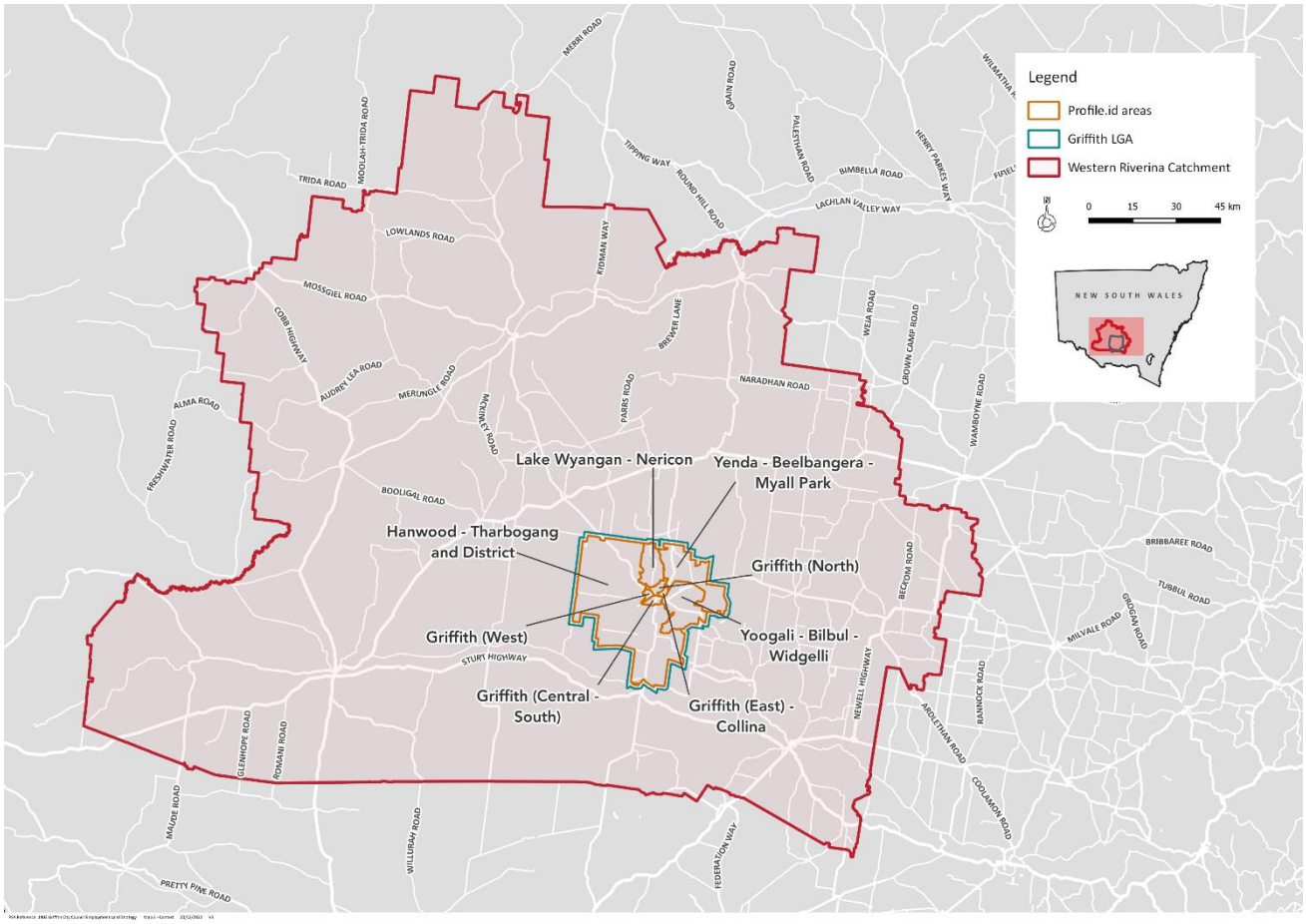
The purpose of this section of the report is to provide a high-level overview of resident and employment characteristics of Griffith City Council, based on data published by Informed Decisions. At the time of report compilation, 2021 Census data was being released progressively by Informed Decisions. As such, this assessment has included data from both the 2021 and 2016 Census.

This section also considers the economic context at a sub-regional level, based on the catchments defined by Informed Decisions.

Griffith City is located in the Riverina Region of south western New South Wales, approximately 450 kilometres north of the Melbourne CBD and 570 kilometres west of the Sydney CBD. Griffith City is accessed via Burley Griffin Way to the east and Kidman Way to the south and north west. The region can also be accessed via the Griffith Airport via direct flights from Sydney.

Figure 2-1 provides an overview of the geographic boundaries of Griffith City, Western Riverina and the catchments as discussed in this chapter.

Figure 2-1 Geographic Overview of Griffith City, Western Riverina and Catchments



2.1 Socio-Economic Profile

The 2021 Census of Population and Housing[1] has been utilised to construct a socio-economic summary of Griffith City, benchmarked to Western Riverina and New South Wales.

The key demographic and socio-economic characteristics of the Griffith City population as of the 2021 Census are summarised below:

- In 2021, Griffith City and Western Riverina recorded a significant proportion of persons aged between 0 and 14 years (19.4% and 19.6% of residents, respectively) when compared to New South Wales (18.2% of residents);
- Corresponding with the high incidence of residents under 14 years old, Griffith City was characterised by a lower average age than New South Wales;
- With respect to household composition, Griffith City recorded a higher incidence of couple families with children (33.0% of families), compared to Western Riverina and New South Wales (28.8% and 32.1% of families, respectively). Griffith City also recorded a higher incidence of couple families without children (26.8% of families) compared to New South Wales (26.0% of families), but a lower incidence when compared to Western Riverina (27.4% of families);
- Average household size in 2021 was slightly higher in Griffith City than the benchmarked regions;
- Average vehicle ownership in Griffith City and Western Riverina was slightly higher than New South Wales;
- The proportion of households fully owning a home was higher in Griffith City (31.3% of households) compared to New South Wales (30.3% of households), but lower when compared to Western Riverina (33.9% of households);
- Notably, the proportion of households renting a home in Griffith City (30.5% of households) was higher than in Western Riverina (27.3% of households) but marginally lower than the proportion of households renting in New South Wales (31.3% of households);
- In 2021, average weekly household income was significantly higher in Griffith City ($2,011 per week) compared to Western Riverina ($1,833 per week), but considerably lower than the state average ($2,279 per week);
- In line with average weekly household income, average monthly housing loan repayments were higher in Griffith City ($1,632 per month) when compared to Western Riverina ($1,459 per month) but lower when compared to New South Wales ($2,425 per month);
- In 2021, average weekly rent payment was significantly lower in Griffith City ($283 per week) compared to New South Wales ($441 per week);
- The incidence of full-time employment within Griffith was significantly higher than in New South Wales;
- In 2021, labour market outcomes were relatively favourable in Griffith City, with a lower unemployment rate despite higher labour force participation rates compared to both Western Riverina and New South Wales;
- Persons within Griffith City were less likely to have a post-school qualification than in New South Wales. Residents in Griffith City who held a post-school qualification were most likely to hold a certificate qualification;

[1] 2021 Census Data will be released in stages throughout 2022 with the publishing of key population data to be in June 2022 and additional location variables and employment data to be published in October 2022.

- As of the 2021 Census, both Griffith City and Western Riverian were characterised by a higher incidence of lower blue collar workers, reflective of the dominance of agriculture and manufacturing within these regions; and
- In 2021, the most significant industries of employment for employed residents in Griffith City were manufacturing, agriculture, forestry and fishing and health care and social assistance.

Table 2-1 Socio-Economic Profile – Griffith City, Western Riverina, and New South Wales, 2016 and 2021

	Griffith City	Western Riverina	New South Wales
Age Distribution (2021)			
0-14 years	19.4%	19.6%	18.2%
15-24 years	12.1%	11.8%	11.8%
25-34 years	14.8%	13.2%	14.1%
35-44 years	12.5%	11.7%	13.7%
45-54 years	12.7%	12.4%	12.6%
55-64 years	11.9%	13.0%	11.9%
65+ years	16.6%	18.3%	17.6%
Average age (years)	39.4	40.4	40.2
Household Type (% of families) (2021)			
Couple families with children	33.0%	28.8%	32.1%
Couple families without children	26.8%	27.4%	26.0%
Single parent family	10.6%	10.9%	11.1%
Other	24.2%	27.0%	24.6%
Average household size	2.7	2.6	2.6
Average vehicle ownership	2.1	2.1	1.8
Household Finances (2021)			
% of households fully owning home	31.3%	33.9%	30.3%
% of households purchasing home	27.0%	25.7%	31.0%
% of households renting	30.5%	27.3%	31.3%
Average weekly household income	$2,011	$1,833	$2,279
Average monthly housing loan repayment	$1,632	$1,459	$2,425
Average weekly rent payment	$283	$247	$441
Average housing costs (as a % of income)	9.4%	8.4%	13.7%
Labour Market (2016)			
Full-time employment (% labour force)	62.9%	63.4%	60.3%
Part-time employment (% labour force)	32.2%	32.0%	33.3%
Unemployment rate	4.9%	4.6%	6.4%
Participation rate (% of population > 15 years)	60.1%	60.1%	58.7%
Qualifications (2016)			
% of persons with a post-school qualification	37.4%	37.9%	50.4%
% of persons with Bachelor or higher	10.5%	10.1%	23.4%
% of persons with Diploma	6.0%	6.0%	8.9%
% of persons with Certificate	20.9%	21.8%	18.1%

	Griffith City	Western Riverina	New South Wales
Occupation (2016)			
Upper White Collar			
Managers	15.7%	13.7%	19.2%
Professionals	13.4%	24.1%	12.5%
Subtotal	29.1%	37.8%	31.7%
Lower White Collar			
Clerical and Admin Workers	11.9%	14.1%	11.2%
Community & Personal Service Workers	9.0%	10.6%	8.9%
Sales Workers	10.8%	9.4%	8.7%
Subtotal	31.7%	34.0%	28.7%
Upper Blue Collar			
Technicians & Trades Workers	14.0%	12.9%	13.1%
Subtotal	14.0%	12.9%	13.1%
Lower Blue Collar			
Machinery Operators & Drivers	7.0%	6.2%	8.3%
Labourers	18.2%	9.0%	18.2%
Subtotal	25.2%	15.2%	26.5%
Employment by Industry (% of employees) (2016)			
Agriculture, forestry & fishing	11.8%	18.6%	2.3%
Mining	0.3%	0.2%	1.0%
Manufacturing	19.4%	16.0%	6.1%
Electricity, gas, water & waste services	1.6%	1.5%	1.0%
Construction	7.0%	6.8%	8.8%
Wholesale trade	2.6%	2.3%	3.2%
Retail trade	12.7%	10.4%	10.1%
Accommodation & food services	5.4%	5.5%	7.4%
Transport, postal & warehousing	3.1%	3.7%	4.9%
Information media & telecommunications	0.6%	0.3%	2.3%
Financial & insurance services	1.5%	1.3%	5.2%
Rental, hiring & real estate services	1.1%	0.7%	1.9%
Professional, scientific & technical services	3.5%	2.8%	8.5%
Administrative & support services	3.0%	2.7%	3.6%
Public administration & safety	4.4%	5.0%	6.3%
Education & training	6.9%	8.3%	8.8%
Health care & social assistance	10.3%	9.8%	13.1%
Arts & recreation services	0.6%	0.4%	1.6%
Other services	4.3%	3.7%	3.9%

Source: Australian Bureau of Statistics Census of Population and Housing (2016, 2021)

2.2 Population and Household Projections

2.2.1 Historic Population

As of 30 June 2021, the estimated residential population of Griffith City increased from 25,640 persons in 2012 to 27,227 persons in 2021, or by 0.7% per annum. The rate of population growth in Griffith City was particularly high in 2014, 2015, 2017 and 2018 at 1% per annum.

Over the assessment period the largest catchment within Griffith City was Griffith (East) – Collina, while the smallest catchment was Lake Wyangan – Nericon.

Across the ten-year period, population growth was highest in Griffith (West), with the catchment increasing by 1.3% per annum. Conversely, population growth was lowest in Hanwood – Tharbogang & District whereby the population decreased by 0.4% per annum.

Table 2-2 below summarises the historic population growth by catchment in Griffith City between 2012 and 2021.

Table 2-2 Historic Population by Informed Decisions Catchments, 2012 to 2021

	Griffith (Central – South)	Griffith (East) - Collina	Griffith (North)	Griffith (West)	Hanwood - Tharbogang & District	Lake Wyangan - Nericon	Yenda - Beelbangera - Myall Park	Yoogali - Bilbul - Widgelli	Griffith City
2012	4,536	6,355	4,702	2,357	2,409	1,263	2,092	1,927	25,640
2013	4,607	6,451	4,723	2,404	2,362	1,236	2,070	1,888	25,741
2014	4,645	6,525	4,771	2,465	2,371	1,242	2,104	1,876	26,000
2015	4,743	6,624	4,757	2,471	2,380	1,245	2,137	1,890	26,247
2016	4,776	6,695	4,771	2,497	2,353	1,231	2,137	1,897	26,358
2017	4,836	6,811	4,827	2,487	2,359	1,239	2,138	1,928	26,625
2018	4,967	6,885	4,853	2,517	2,352	1,245	2,134	1,930	26,884
2019	5,018	6,930	4,896	2,551	2,346	1,259	2,127	1,923	27,051
2020	5,082	6,972	4,891	2,611	2,344	1,272	2,123	1,937	27,232
2021	5,072	6,951	4,886	2,645	2,328	1,276	2,108	1,961	27,227
Average Growth, 2012-21	**1.2%**	**1.0%**	**0.4%**	**1.3%**	**-0.4%**	**0.1%**	**0.1%**	**0.2%**	**0.7%**

Source: Profile.ID (2022)

2.2.1.1 Historic Working Age Population

Working age population refers to the proportion of the population aged between 15 years and 64 years. Informed Decisions provides population estimates by five-year age groups between 2016 and 2021, as presented below. The working age population within Griffith City has increased by 0.2% per annum between 2016 and 2021, from 16,694 residents in 2016 to 16,834 residents in 2021. The largest increase was seen within the Griffith – (East) Collina catchment, whereby the working age population increased by 205 residents over the period. Oppositely, the largest decrease was seen within the Yenda – Beelbangera – Myall Park catchment, whereby the working age population decreased by 91 residents over the period. On average, the working age population within Griffith City has increased at a much slower rate than the overall population, representing an ageing population within the area. Notably, within the Lake Wyangan – Nericon catchment, the working age population has increased at a much higher rate than the overall population.

Table 2-3 below summarises the historic working age population within Griffith City and the respective catchment areas between 2016 and 2021.

Table 2-3 Historic Working Age Population by Informed Decisions Catchments, 2016 to 2021

	Griffith (Central – South)	Griffith (East) – Collina	Griffith (North)	Griffith (West)	Hanwood - Tharbogang & District	Lake Wyangan - Nericon	Yenda - Beelbangera - Myall Park	Yoogali - Bilbul - Widgelli	Griffith City
2016	3,035	4,139	3,061	1,565	1,586	776	1,352	1,180	16,694
2017	3,050	4,165	3,033	1,543	1,531	798	1,339	1,217	16,676
2018	3,058	4,190	3,040	1,529	1,515	799	1,325	1,241	16,697
2019	3,072	4,221	3,067	1,527	1,505	818	1,297	1,225	16,732
2020	3,056	4,281	3,066	1,547	1,499	824	1,287	1,237	16,797
2021	3,040	4,344	3,077	1,531	1,503	855	1,261	1,223	16,834
Average Growth, 2016-21	**0.0%**	**1.0%**	**0.1%**	**-0.4%**	**-1.1%**	**2.0%**	**-1.4%**	**0.7%**	**0.2%**

Source: Profile.ID (2022)

2.2.2 Household and Population Projections

Projections have been prepared using Profile. ID's projections (population, population by age, households and average household size) for Griffith City for the period between 2021 and 2036, however, the relevant period for this assessment is to 2041. As such, this assessment has assumed a contribution of the growth trend anticipated for 2031 to 2036 in order to estimate population and households in 2041.

2.2.2.1 Population

By 2041, Griffith City is projected to grow to a total population of 31,730 persons (increasing by 4,411 persons relative to 2021), representing an average growth rate of 0.8% per annum between 2021 and 2041. Population growth for this period is expected to be highest in the Griffith (East) – Collina (additional 2,355 persons in the 2021-41 period) and Lake Wyangan – Nericon catchments (additional 1,054 persons in the 2021-41 period).

Table 2-4 summarises the population projections by Informed Decision catchment between 2021 and 2041.

Table 2-4 Population Projections, Informed Decisions Catchments, Griffith City and New South Wales, 2021 to 2041

	2021	2026	2031	2036	2041	Ave. Ann Growth Rate (2021-41)
Griffith (Central – South)	4,927	4,937	4,992	5,032	5,072	0.1%
Griffith (East) – Collina	7,199	7,760	8,343	8,928	9,554	1.4%
Griffith (North)	4,833	4,867	4,887	4,946	5,006	0.2%
Griffith (West)	2,591	2,668	2,728	2,777	2,827	0.4%
Hanwood – Tharbogang & District	2,354	2,377	2,422	2,468	2,515	0.3%
Lake Wyangan – Nericon	1,331	1,569	1,826	2,087	2,385	3.0%
Yenda – Beelbangera – Myall Park	2,066	2,045	2,048	2,059	2,070	0.0%
Yoogali – Bilbul – Widgelli	2,018	2,084	2,127	2,212	2,300	0.7%
Griffith City	**27,319**	**28,307**	**29,373**	**30,509**	**31,730**	**0.8%**
New South Wales	**8,188,651**	**8,474,000**	**8,915,665**	**9,354,480**	**9,803,536**	**0.9%**

Source: Profile.ID

2.2.2.2 Working Age Population

For the purposes of the assessment the working age population has been defined as the number of persons aged 15-64 years.

By 2041, the working age population in Griffith City is projected to grow by 0.6% per annum from 16,834 persons in 2021 to 18,812 persons in 2041. The largest working age population is located in Griffith (East) – Collina catchment whereby the working age population is projected to increase to 5,662 persons by 2041, or by 1.3% per annum between 2021 and 2041.

Table 2-5 summarises the projected size of the working age population within Griffith City and its component Informed Decisions catchments between 2021 and 2041.

Table 2-5 Working Age Population Projections, Informed Decisions Catchments, Griffith City and New South Wales, 2021 to 2041

	2021	2026	2031	2036	2041	Ave. Ann Growth Rate (2021-41)
Griffith (Central – South)	3,040	2,736	2,964	2,947	2,930	-0.2%
Griffith (East) – Collina	4,344	4,621	4,957	5,298	5,662	1.3%
Griffith (North)	3,077	3,067	3,044	3,100	3,157	0.1%
Griffith (West)	1,531	1,535	1,559	1,606	1,654	0.4%
Hanwood – Tharbogang & District	1,503	1,507	1,521	1,553	1,586	0.3%
Lake Wyangan – Nericon	855	974	1,088	1,239	1,411	2.5%
Yenda – Beelbangera – Myall Park	1,261	1,188	1,163	1,151	1,139	-0.5%
Yoogali – Bilbul – Widgelli	1,223	1,196	1,185	1,228	1,273	0.2%
Griffith City	**16,834**	**16,824**	**17,481**	**18,122**	**18,812**	**0.6%**
New South Wales	**6,670,328**	**6,993,704**	**7,443,251**	**7,850,795**	**8,228,026**	**1.1%**

Source: Profile.ID

2.2.2.3 Average Household Size

As of 2021, average household size was highest in Yoogali – Bilbul – Widgelli (2.93 persons per household), whilst average household size was lowest in Griffith (North) (2.51 persons per household). Average household size projections were provided by Profile.ID between 2021 and 2036, thus, the projections for 2041 have assumed a contribution of the growth trend anticipated for 2031 to 2036 in order to estimate average household size. The average household size in all catchment areas is expected to range between 2.51 persons per household and 2.95 persons per household by 2041.Table 2-6 summarises the projected average household size by Informed Decisions catchment between 2021 and 2041.

Table 2-6 Projected Average Household Size, Informed Decisions Catchments, Griffith City and New South Wales, 2021 to 2041

	2021	2026	2031	2036	2041	Ave. Ann Growth Rate (2021-41)
Griffith (Central – South)	2.58	2.57	2.55	2.52	2.51	-0.1%
Griffith (East) – Collina	2.63	2.63	2.63	2.64	2.65	0.0%
Griffith (North)	2.51	2.52	2.52	2.53	2.54	0.1%
Griffith (West)	2.59	2.62	2.65	2.64	2.63	0.1%
Hanwood – Tharbogang & District	2.82	2.80	2.81	2.81	2.81	0.0%
Lake Wyangan – Nericon	2.92	2.92	2.93	2.94	2.95	0.1%
Yenda – Beelbangera – Myall Park	2.52	2.49	2.49	2.51	2.53	0.0%
Yoogali – Bilbul – Widgelli	2.93	2.89	2.86	2.86	2.86	-0.1%
Griffith City	**2.63**	**2.63**	**2.63**	**2.64**	**2.65**	**0.0%**
New South Wales	**2.60**	**2.59**	**2.59**	**2.58**	**2.57**	**0.0%**

Source: Profile.ID

2.2.2.4 Projected Households

Accordingly, household growth for the catchments is expected to range between 0.0% per annum and 2.9% per annum between 2021 and 2041. By 2041, Griffith City is projected to grow to a total of 11,995 households, representing average annual growth of 0.7% per annum. Comparatively, the number of households in New South Wales is anticipated to increase by 1.0% per annum across the period.

Consistent with population growth trends, whilst Griffith (East) – Collina is anticipated to record the highest growth in households (additional 868 households between 2021 and 2041), significant growth is also anticipated for the Lake Wyangan – Nericon catchment (with an additional 353 households between 2021 and 2041).

Table 2-7 summarises projected households by Informed Decisions catchment between 2021 and 2041.

Table 2-7Projected Households, Informed Decisions Catchments, Griffith City and New South Wales, 2021 to 2041	2021	2026	2031	2036	2041	Ave. Ann Growth Rate (2021-41)
Griffith (Central – South)	1,910	1,921	1,958	1,997	2,018	0.3%
Griffith (East) – Collina	2,737	2,951	3,172	3,382	3,605	1.4%
Griffith (North)	1,925	1,931	1,939	1,955	1,971	0.1%
Griffith (West)	1,000	1,018	1,029	1,052	1,075	0.4%
Hanwood – Tharbogang & District	835	849	862	878	895	0.3%
Lake Wyangan – Nericon	456	537	623	710	809	2.9%
Yenda – Beelbangera – Myall Park	820	821	822	820	818	0.0%
Yoogali – Bilbul – Widgelli	689	721	744	773	804	0.8%
Griffith City	**10,372**	**10,750**	**11,150**	**11,567**	**11,995**	**0.7%**
New South Wales	**3,149,481**	**3,267,391**	**3,446,295**	**3,624,969**	**3,808,495**	**1.0%**

Source: Profile.ID

2.3 Resident Incidence of Part/Full Time Employment

Between 2016 and 2021, there was a significant increase in the number of persons employed full time in Griffith City, increasing by 1,316 persons to 8,895 persons. Similarly, there was significant growth in the number of persons employed part time, increasing by 575 persons to 4,070 persons.

These improved labour market outcomes are attributable to both a significant increase in the size of the labour force in the 2016 to 2021 period relative to the 2011 to 2016 period, in conjunction with falls in the unemployment rate (falling to 3.0% in 2021 from 4.8% in 2016 and 4.9% in 2011). In 2021, full time employment represented 63.0% of the labour force and part time employment represented 28.8% of the labour force.

The largest increase in full time employment was captured within the Griffith (Central South) catchment, whereby full time employment increased by 620 persons over the 10-year period, with the majority of employment growth in the 2016-21 period. The Griffith (East) – Collina catchment recorded the highest increase in part time employment, increasing by 257 persons between 2011 and 2021, with employment growth concentrated in the 2016 to 2021 period. Overall, part time employment in Griffith City increased from 28.1% of the labour force in 2006 to 28.8% of the labour force in 2021.

Griffith City recorded significantly stronger labour market outcomes than New South Wales in 2021, with a significantly higher incidence of full time employment, translating to a lower unemployment rate (3.0% in Griffith City in 2021, 4.9% in New South Wales) despite marginally lower incidences of part time employment opportunities.

Table 2-8 below summarises the incidence of part time and full time employment within Griffith City and New South Wales between 2006 and 2016.

Table 2-8 Incidence of Part Time and Full Time Employment by Informed Decisions Catchments, Griffith City and New South Wales, 2006 to 2016

	Year			Proportion of Labour Force		
	2011	2016	2021	2011	2016	2021
Griffith (Central – South)						
Employed Full Time	1,013	1,096	1,633	58.2%	57.4%	63.9%
Employed Part Time	489	558	704	28.1%	29.2%	27.6%
Griffith (East) – Collina						
Employed Full Time	1,773	2,087	2,335	60.7%	64.5%	63.2%
Employed Part Time	817	892	1,074	28.0%	27.6%	29.1%
Griffith (North)						
Employed Full Time	1,333	1,434	1,604	61.6%	64.7%	63.4%
Employed Part Time	621	585	717	28.7%	26.4%	28.3%
Griffith (West)						
Employed Full Time	606	650	806	58.4%	59.2%	62.2%
Employed Part Time	279	317	363	27.0%	28.9%	28.0%
Hanwood – Tharbogang and District						
Employed Full Time	786	699	712	62.8%	59.9%	63.4%
Employed Part Time	320	347	335	25.6%	29.8%	29.8%
Lake Wyangan – Nericon						
Employed Full Time	423	395	384	62.8%	59.9%	60.1%
Employed Part Time	210	204	213	31.2%	31.0%	33.3%
Yenda – Beelbangera – Myall Park						
Employed Full Time	635	639	720	62.7%	60.8%	62.2%
Employed Part Time	265	295	320	26.2%	28.1%	27.7%
Yoogali – Bilbul – Widgelli						
Employed Full Time	592	596	701	63.0%	63.1%	63.0%
Employed Part Time	271	280	327	28.9%	29.6%	29.4%
Griffith City						
Employed Full Time	7,138	7,579	8,895	60.5%	61.6%	63.0%
Employed Part Time	3,308	3,495	4,070	28.1%	28.4%	28.8%
New South Wales						
Employed Full Time	2,007,796	2,134,527	2,136,610	60.2%	59.2%	55.2%
Employed Part Time	939,419	1,071,151	1,151,660	28.2%	29.7%	29.7%

Source: Profile.ID (2022)

2.4 Employment by Industry

Between 2016 and 2021, the number of workers in Griffith City increased from 12,134 persons in 2016 to 13,954 persons in 2021. The key sectors of employment within Griffith City were manufacturing,

health care and social assistance, agriculture, forestry and fishing and retail trade. Between 2016 and 2021, the key sectors of growth (in terms of additional workers) were manufacturing, health care and social assistance and agriculture, forestry and fishing.

Table 2-9 below displays the industry of employment for workers within Griffith City in 2016 and 2021.

Table 2-9 Worker Industry of Employment – Griffith City, 2015-16 and 2020-21

	Employed Persons			Proportion of Total	
	2016	2021	Change	2016	2021
Manufacturing	2,431	2,861	430	20.0%	20.5%
Health Care and Social Assistance	1,423	1,765	342	11.7%	12.7%
Agriculture, Forestry and Fishing	1,290	1,609	318	10.6%	11.5%
Retail Trade	1,549	1,555	6	12.8%	11.1%
Education and Training	831	996	164	6.9%	7.1%
Construction	727	886	159	6.0%	6.3%
Accommodation and Food Services	641	698	57	5.3%	5.0%
Public Administration and Safety	553	597	44	4.6%	4.3%
Other Services	512	572	59	4.2%	4.1%
Professional, Scientific and Technical Services	426	497	71	3.5%	3.6%
Transport, Postal and Warehousing	398	453	55	3.3%	3.2%
Wholesale trade	321	428	107	2.6%	3.1%
Administrative and Support Services	343	362	19	2.8%	2.6%
Electricity, Gas, Water and Waste Services	203	238	35	1.7%	1.7%
Financial and Insurance Services	203	159	-44	1.7%	1.1%
Rental, Hiring and Real Estate Services	128	112	-16	1.1%	0.8%
Arts and Recreation Services	66	87	21	0.5%	0.6%
Information Media and Telecommunications	82	64	-17	0.7%	0.5%
Mining	7	16	9	0.1%	0.1%
Total	12,134	13,954	1,820	100.0%	100.0%

Source: Profile.ID, (2022)

2.5 Resident Place of Work

As of the 2021 Census, employment within Griffith City was mostly self-contained (i.e. residents who live in Griffith City who also work in Griffith City). Approximately 95.1% of Griffith City resident workers were also employed within Griffith City. The most prominent employment locations for Griffith City resident workers outside of Griffith City were Murrumbidgee (215 workers) and Leeton (154 workers).

Table 2-10 below displays the employment location of Griffith City resident workers as of the 2021 census.

Table 2-10 Employment Location – Griffith City Resident Workers, 2021

Employment Location	No. of Workers	Proportion (%)
Griffith (C)	12,478	95.1%
Murrumbidgee (A)	215	1.6%
Carrathool (A)	186	1.4%
Leeton (A)	154	1.2%
Wagga Wagga (C)	40	0.3%
Narrandera (A)	19	0.1%
Bland (A)	13	0.1%

Employment Location	No. of Workers	Proportion (%)
Sydney (C)	10	0.1%
Total	**13,115**	**100.0%**

Source: Profile.ID, (2022)

2.6 Workforce Origin

As of the 2021 census, the most common place of usual residence for workers within Griffith City was also Griffith City. As stated in Section 2.3.2, employment within Griffith City was mostly self-contained. Hence, 91.5% of workers within Griffith City were also residents of Griffith City. The most common places of usual residence outside of Griffith City for workers within Griffith City were Leeton (3.7% of workers) and Murrumbidgee (1.8% of workers).

Table 2-11 below displays the most prominent locations of usual residence for workers within Griffith City as of 2021.

Table 2-11 Place of Usual Residence – Griffith City Workers, 2021

Place of Usual Residence	No. of Workers	Proportion (%)
Griffith (C)	12,478	91.5%
Leeton (A)	502	3.7%
Murrumbidgee (A)	248	1.8%
Carrathool (A)	212	1.6%
Narrandera (A)	111	0.8%
Wagga Wagga (C)	30	0.2%
Coolamon (A)	16	0.1%
Hay (A)	13	0.1%
Gold Coast (C)	13	0.1%
Canterbury-Bankstown (A)	10	0.1%
Mildura (RC)	10	0.1%
Total	**13,643**	**100.0%**

Source: Profile.ID, (2022)

2.6.1 Agricultural Production

Griffith City is the agricultural 'powerhouse' of the Riverina and is one of the most diverse and productive regions in Australia (Sivewright, 2022). As presented in Section 2.3.1, the manufacturing, and agriculture, forestry, and fishing industries were the two most highly employed industries amongst Griffith City residents. As of 2020/21, the two most highly employed manufacturing categories were food product manufacturing (987 workers, or 8.5% of total Griffith workers) and beverage, and tobacco product manufacturing (884 workers, or 7.6% of total Griffith workers). Evidently, agriculture and the processing of agricultural outputs are the most significant employment sectors within Griffith City as of 2020/21.

Informed Decisions provides agricultural data for Griffith City for the 2015/16 financial year, and hence, data for the Riverina SA4 and New South Wales have been extracted from the Value of Agricultural Commodities Produced 2015/16 report by the ABS for comparison. As of 2015/16, the highest value agricultural commodity produced within Griffith City was Livestock Slaughterings, in particular, poultry. The poultry industry within Griffith City is undergoing rapid expansion as a result of the Baiada/Steggles Hanwood plant expecting to process three million birds per week in the coming years (Sivewright, 2022). Poultry slaughterings within Griffith City accounted for 25.9% of the value of Riverina SA4 poultry slaughterings, and 5.4% of the total value of New South Wales poultry slaughterings. Cereal Crops was the second highest valued commodity within the Griffith region as

of 2015/16. Wheat produced for grain was the highest cereal crop commodity within the Griffith region, worth $37.93 million in 2015/16. Notably, the production of rice for grain within the Griffith region was worth 19.1% of the total value within the Riverina SA4, and 13.3% of total rice for grain production within New South Wales. Conversely, the lowest valued commodity with Griffith City was eggs worth $0.0 million ($2,007 as of 2015/16), and milk worth $0.01 million ($11,715 as of 2015/16).

Overall, the total value of agricultural commodities within the Griffith region in 2015/16 was $143.31 million. Agricultural commodities within Griffith City totalled 6.2% of the Riverina SA4's agricultural commodities, and 1.1% of all New South Wales agricultural commodities.

Table 2-12 below summaries the total value of agricultural commodities within Griffith City, the Riverina SA4, and New South Wales as of 2015/16.

Table 2-12 Value of Agricultural Commodities Produced – Griffith City, Riverina SA4, and New South Wales – 2015/16

	Total Value			Griffith City Proportion (%)	
	Griffith City	Riverina SA4	New South Wales	Riverina SA4	New South Wales
Cereal Crops	**$37.93**	**$743.29**	**$3,022.76**	**5.1%**	**1.3%**
Wheat for Grain	$18.15	$474.50	$1,863.58	3.8%	1.0%
Rice for Grain	$14.67	$76.93	$109.90	19.1%	13.3%
Barley for Grain	$3.39	$145.43	$690.17	2.3%	0.5%
Citrus Fruit	**$11.63**	**$131.80**	**$178.96**	**8.8%**	**6.5%**
Oranges	$10.85	$116.91	$148.05	9.3%	7.3%
Grapefruit	$0.52	$4.06	$5.24	12.8%	9.9%
Lemons	$0.17	$6.21	$11.95	2.7%	1.4%
Crops for Hay	**$0.48**	**$53.29**	**$327.59**	**0.9%**	**0.1%**
Eggs	**$0.00**	**$1.36**	**$258.15**	**0.1%**	**0.0%**
Grapes	**$14.68**	**$89.98**	**$211.97**	**16.3%**	**6.9%**
Grapes - Wine	$14.57	$88.39	$147.54	16.5%	9.9%
Grapes - Other	$0.11	$1.59	$64.44	6.9%	0.2%
Livestock Slaughterings	**$51.36**	**$564.23**	**$4,390.69**	**9.1%**	**1.2%**
Poultry	$47.62	$183.72	$874.99	25.9%	5.4%
Cattle and Calves	$2.29	$262.10	$2,561.88	0.9%	0.1%
Sheep and Lambs	$1.22	$99.80	$734.53	1.2%	0.2%
Milk	**$0.01**	**$22.23**	**$593.69**	**0.1%**	**0.0%**
Nurseries & Cut Flowers	**$1.50**	**$13.85**	**$300.06**	**10.9%**	**0.5%**
Nurseries	$1.47	$10.62	$146.92	13.8%	1.0%
Cultivated Turf	$0.03	$3.23	$81.83	1.1%	0.0%
Nuts	**$1.98**	**$60.26**	**$160.79**	**3.3%**	**1.2%**
Other Nuts	$1.03	$27.60	$39.21	3.7%	2.6%
Almonds	$0.95	$32.65	$34.86	2.9%	2.7%
Other Broadacre Crops	**$15.60**	**$391.22**	**$2,000.96**	**4.0%**	**0.8%**
Cotton	$13.57	$188.40	$874.14	7.2%	1.6%
Canola	$0.67	$160.21	$485.76	0.4%	0.1%
Other Oilseeds	$0.39	$6.32	$25.78	6.2%	1.5%
Other Fruit	**$1.24**	**$109.98**	**$435.01**	**1.1%**	**0.3%**
Other Stone Fruit	$0.86	$6.45	$10.97	13.3%	7.8%
Cherries	$0.21	$3.75	$21.73	5.6%	1.0%

	Total Value			Griffith City Proportion (%)	
	Griffith City	Riverina SA4	New South Wales	Riverina SA4	New South Wales
Vegetables	**$5.30**	**$76.64**	**$419.92**	**6.9%**	**1.3%**
Potatoes	$2.45	$36.27	$72.07	6.7%	3.4%
Melons	$1.10	$17.09	$58.18	6.4%	1.9%
Pumpkins	$0.92	$11.05	$22.00	8.3%	4.2%
Wool	**$1.59**	**$126.91**	**$946.10**	**1.3%**	**0.2%**
Agriculture - Total Value	**$143.31**	**$2,324.78**	**$13,085.85**	**6.2%**	**1.1%**

Source: Profile. ID (2022), Australia Bureau of Statistics (ABS) (2016)

2.7 Summary

The socio-economic profile of Griffith City identifies a region that is younger compared to the region and New South Wales, with a relatively high incidence of couple families with children. The region is considered relatively affordable, with significantly lower mortgage and rent payments compared to New South Wales.

Workers within the region are less likely to have a post school qualification, which may somewhat be influenced by fewer in-person training opportunities than larger regional centres. The key sectors of employment within the region are manufacturing, retail trade, agriculture, forestry and fishing and health care and social assistance. Between 2016 and 2021, these sectors, except for retail trade, were key drivers of additional employment opportunities within the region. Workers within Griffith City were typically sourced locally or from the surrounding local government areas of Murrumbidgee, Carrathool and Leeton.

Within Griffith City, the population of the region has increased by 0.7% per annum in the past ten years, with the rate of population growth in Griffith (West), in Griffith (Central – South) and Griffith (East) – Collina exceeding 1% per annum in this period. The rate of population growth in Griffith City was particularly high in 2014, 2015, 2017 and 2018 at 1.0% per annum.

Outside of Griffith (East) – Collina, there has been relatively little growth in the size of the working age population. Over the next twenty years, population projections prepared by Informed Decisions suggest growth is anticipated to be highest in Griffith (East) – Collina and Lake Wyangan – Nericon.

Despite relatively steady population growth in the past ten years in Griffith City, the employment outcomes of residents have improved significantly between 2016 and 2021, as evidenced by growth in the number of persons employed full time, translating to a significant decline in the unemployment rate to 3% in 2021.

The key agricultural commodities in Griffith City include poultry processing , cereal crops, grapes and oranges. Poultry processing is particularly significant within the regional context, accounting for approximately a quarter of the value of production within the Riverina SA4.

This background analysis identifies Griffith City is agriculturally focussed, both in terms of production and processing. There has been significant growth in employment within Griffith City between 2016 and 2021, translating to a significant decline in the unemployment rate, indicative of a prosperous regional economy. Whilst Griffith City offers affordable housing relative to other parts of New South Wales, the analysis also indicates a lower skilled workforce. To ensure the continued success of Griffith City, it is imperative to ensure that the skills of the workforce remain tailored to the evolving needs of established businesses, particularly given that labour is typically sourced from within Griffith, as opposed to surrounding areas.

3 Employment Trends and Themes

Trends are gradual and deep-set trajectories of change which will, at some point, reshape business and alter policy environments. This section identifies key employment trends at the State and National level which will have implications for employment within Griffith City in the future. These trends change the way in which employment is anticipated to evolve over time and the land use implications and considerations necessary to cater for these changes..

This section has considered the following employment trends and the implications for Griffith City:

- Increased Connectivity and Integration;
- Flexible Enterprises;
- Rising Entrepreneurism;
- Divergent Demographics;
- Rising Knowledge Intensity;
- Tangible Intangibles;
- Online Retail; and
- Robotics, Automation, and Artificial Intelligence.

These trends have been identified by the CSIRO in their report 'Tomorrow's Digitally Enabled Workforce' (January 2016) and through industry research.

3.1 Increased Connectivity and Integration

This trend is centred around the exponential growth in device connectivity, data availability, volumes, and computing speed, combined with the rapid advancements in automated systems and artificial intelligence. These advancements enable systems and software to perform many tasks quicker, more efficiently and more safely than humans. The growth in technological capabilities is transforming supply chains, reshaping the workforce, and redefining jobs. The challenging prospect is that the growth is not linear (constant), but rather exponential.

From this connectivity, the Internet of Things (IoT) industry has been established as an integral part of economic activity around the world. The IoT is a system of interrelated computing devices, mechanical and digital machines which can transfer data over a network without requiring human intervention. For all industries, the benefits can include improved supply chain transparency/provenance, safety, efficiency, and environmental sustainability due to efficient resource planning.

The poultry sector, which is a key driver of economic activity in Griffith City, has benefited significantly from the IoT, with automatic data collection allowing for real-time collection of data such as body and egg weights and feed and water consumption of poultry. Additionally, this technology can provide real time monitoring of environmental conditions, allowing for timely and more precise modifications as required. Additionally, monitoring systems can detect bacterial and viral infections such as salmonella and E. coli, ensuring food safety and control of infectious diseases promptly.

The continued growth in the IoT will also increase the demand for electronics and telecommunications products, often requiring a bespoke design response. To deliver this response, manufacturers will need increased collaboration with research institutions as well as the establishment of industry (or enterprise) funded research bodies. Similarly, major research institutions

are developing commercialisation capability. Co-location of industry and research institutions creates knowledge and technology precincts (KTPs).

In the Griffith context, we would anticipate over time, food and beverage processing, which are key employers within the region, will become increasingly sophisticated, with manual tasks increasingly becoming automated. The workforce within these sectors will increasingly need to upskill to meet the evolving needs of businesses. These sectors will also provide additional opportunities for professional and programme-based occupations within the region, both in the development of bespoke design responses for industry and repair and maintenance of these systems over time.

Whilst Griffith is not anticipated to have significant growth in mixed use industry and research hubs in the region, it is understood that the NSW Department of Primary Industries already has two facilities within Griffith, namely The Centre (located at the corner of Murray Road and Research Road, Hanwood) which comprises offices, laboratory, glasshouses, preparation areas, storage sheds and The Farm (i.e. perennial plantings not under roof), irrigated by a combination of drip and microspray systems, with electrical soil moisture monitoring equipment. This hub will further research best practice approaches within the agriculture sector to optimise crop yields.

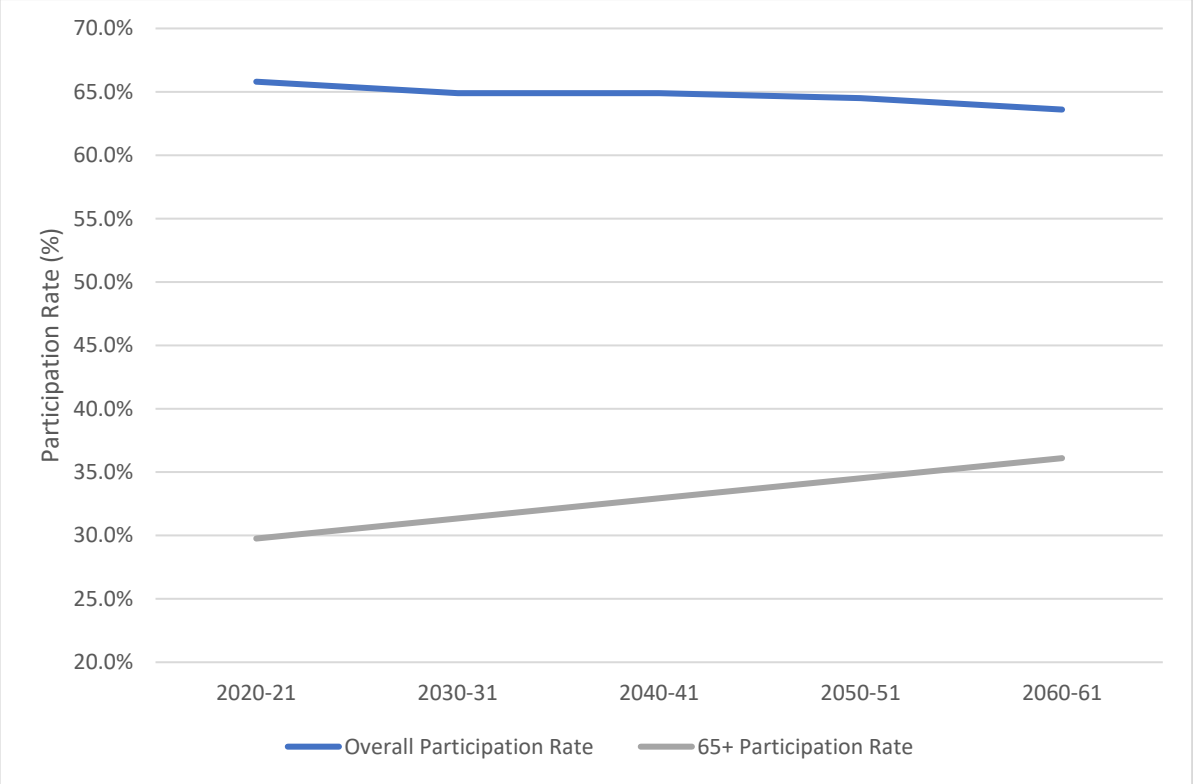
3.2 Divergent Demographics

As with many other developed countries, Australia's population is ageing with growing life expectancies. As per 2016 ABS Census Data the Australian population aged over 65 was projected to nearly double by 2035 to reach 19.4% of the total population and the average life expectancy for men and women is projected to reach 84.9 years, and 87.9 years (CSIRO, 2016). An increasing proportion of elderly persons implies an increasing dependency on the workforce of Australia. The numbers of aged care services and staff will also need to expand considerably to meet the growing demand from an ageing population, therefore the aged care system is likely to need new models of care and adopt new technological solutions in order to meet the expected quantity.

Despite Australian's working for longer before retiring (it is estimated the retirement age will increase to 70 years by 2035), it is expected that there will be a significant overall decrease in the participation rate. The reasons behind it might include jobseekers becoming discouraged, casualisation of work, and the increasing potential for technological unemployment. However, estimates from the treasury Intergenerational Report, 2021, outline that among older Australians the participation rate will continue to rise.

Figure 3-1 outlines the projected workforce participation rate by age group, as of 2021.

Figure 3-1 Projected Workforce Participation Rate, Australia, 2020-21 to 2060-61



Source: The Treasury Intergenerational Report (2021)

Working into older age is widely accepted as being more feasible for knowledge workers compared to manual workers who are likely to require complementary technology. Employers in Australia will need to manage a diverse labour force of different age groups, health and social statuses and genders.

Female participation in the workforce is continuing to grow, while male participation is on the decline, primarily due to a significant proportion of the male labour force occupying previously low skilled jobs (CSIRO, 2016). As women continue to account for an increasing proportion of the labour market, there will be greater pressure on employers to offer flexible working arrangements to employees as more participants will need to balance family and responsibilities and work.

In recent years Australia has had a significant increase in the number of skilled migrant workers. In 2013, migration accounted for 60.0% of total population growth in the country, and over the last decade 83.0% of all migrants were of working age (aged between 15 and 64 years). Migration is estimated to continue to be a significant contributing factor to the Australian population, however the country of origin is expected to continue to shift from being predominantly European migrants, to migrants from Asia (CSIRO, 2016). This shift in migratory origins implies that the offering of aged care facilities in the future will need to provide culturally appropriate care and linguistically diversified aged care services.

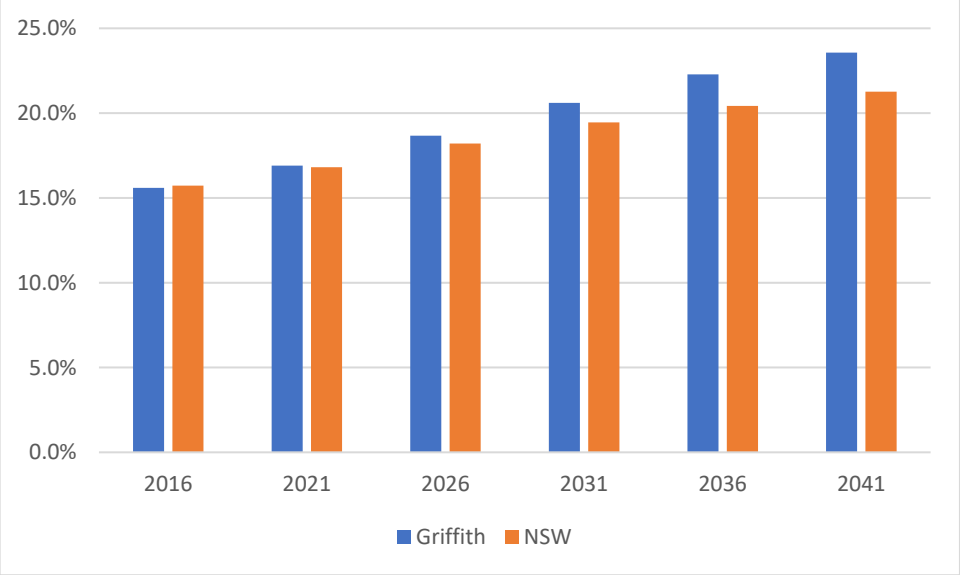
The prevalence of obesity and mental health issues are becoming increasingly significant to the Australian Workforce. Employers in the future will need to address these conditions and provide working environments which are beneficial to employee health. More specialists in exercise, diet and mental well-being will be required. New medical technology as well as automation in medical diagnostics and care are likely to complement labour in the health care sector to meet the increasing demand.

Between 2006 and 2016, Griffith City had a slight increase in the average age of residents totalling 2.0 years. A similar trend, although to a lesser extent, was represented in New South Wales as a whole. This information indicates that Griffith City is no exception to the ageing population trend seen throughout Australia. Furthermore, although the proportion of persons aged 65 years and over in Griffith City was slightly lower in 2016 compared to New South Wales, it is anticipated that the proportion of persons aged 65 years and older in Griffith City will exceed that of New South Wales. This indicates that in comparison to New South Wales, the City of Griffith has a rapidly aging population.

In 2016, over 15.0% of the population of Griffith City was aged 65 years and over, and as the ageing population grows, there is potential that Griffith City will experience workforce shortages. Therefore, Griffith City must consider this issue, as well as how to care for residents as the population becomes progressively aged (e.g. through ensuring the health workforce is of sufficient size and skill level to cater for the needs of an ageing population).

This trend is demonstrated in Figure 3-2 below.

Figure 3-2 Projected Proportion of Griffith City, Aged over 65 Years



Source: The Department of Planning, Industry and Environment, (2019)

In 2021, Griffith City demonstrated a relative significance in employment in the manufacturing industry compared to New South Wales. However, as the size of the ageing population grows, younger people will need to be recruited to this industry. By taking advantage of educational opportunities in regional New South Wales and in Sydney, and by participating in the implementation of new technologies, the region could have an advantage within the manufacturing sector. Collaboration with universities, research institutes and commercialised service providers would be integral in realising the potential in Griffith.

3.3 Rising Knowledge Intensity

Global economies are increasingly moving away from manufacturing and agriculture to service-based economies, with a growing demand for knowledge and information (Witt & Gross, 2019). The shift in the economic landscape has resulted in automated systems requiring high skill levels, with low skilled jobs being moved to less developed countries. This shift has resulted in a "higher bar" being set, with many professions requiring high level skills and education for entry positions.

In the knowledge-based economy, employment is correlated with an obtainment of higher education, which corresponds with technology awareness and increased productivity. Enrolments in higher education has increased across Australia, particularly in the society and culture studies, education and health courses. A decline in enrolment in sectors such as IT and engineering has seen demand for migrant skilled workers grow (CSIRO, 2016).

A knowledge economy requires employees trained in science, technology, engineering and mathematics (STEM), with the vast majority Australia's fastest-growing professions requiring training in STEM. However, interest and performance in the STEM fields has declined among Australia's school and university aged population. Increasing costs of higher education has also attributed to declining enrolments in STEM courses. The decline in interest in the STEM fields is anticipated to greatly impact future workforce, innovation and Australia's competitiveness in the global labour market. The growing popularity of open online courses is anticipated to provide individuals, especially individuals from low income socio- economic backgrounds, access to tertiary education at low cost than traditional higher education institutes and offers flexibility by providing learning material accessible online at any time.

Income inequality has continued to grow in Australia over the last few decades, especially among individuals with and without higher education. However, by providing equal opportunities to education to all individuals, more equal distribution of income is obtained. Although the number of university graduates (i.e. with bachelor's degree or higher) finding employment after graduation has declined over the last decade, obtaining higher education qualifications still offers better employment prospects than having no higher education qualification.

Additionally, employers are increasingly becoming interested in the 'soft skills' of future employees. Soft skills such as interpersonal and organization skills are integral for critical or problem solving and innovation and are often an addition to university degrees.

Griffith City has less than half the proportion of professional, scientific and technical service industry employment of New South Wales. This demonstrates a weakness in the City, which could lead to economic losses as the Australian economy moves towards a primarily service-based workforce. Despite the lack of employment in the professional services industry, Griffith City has experienced growth between 2011 and 2016 in the health care and social assistance sector as well as in the education and training sector. Furthermore, the agriculture, forestry and fishing sector is a particularly strong industry within Griffith City, and has the potential to become a high-skill, knowledge intensive field when opportunities for education and training are provided, further creating potential opportunities for Griffith City to specialise.

Opportunities to upskill or obtain higher qualifications within Griffith City in-person include TAFE NSW Griffith, which has a particular focus in wine and food technology, and Western Riverina Community College. Notably, TAFE NSW Griffith also offers certificates in agriculture and agricultural mechanical technology while Western Riverina Community College provides vocational training and education programs. The highest level of education offered at Griffith TAFE is a diploma, while Western Riverina Community College offers a range of national-recognised qualifications.

The Country University Centres (CUC) Western Riverina provides support to distance education students and provides a smooth pathway for TAFE students to transition to Charles Sturt University. Local students studying any degree, diploma or Cert IV pathway are able to access CUC Western Riverina facilities for free (located at Griffith and Leeton). The CUC Western Riverina has risen in popularity, particularly since COVID-19, when students were forced to undertake tertiary studies remotely and recognised the advantages of being able to remain locally in Griffith City and study remotely through CUC Western Riverina.

Data provided from Council indicated in the first semester of 2022, there were over 290 students registered at CUC Western Riverina, with the facility averaging 192 student access hours per month.

Table 3-1summarises the tertiary institutions and services

Table 3-1 Tertiary Institutions and Services in Griffith City, 2022

Facility	Address	Course Offering
TAFE NSW Riverina Institute	Neville Place, Griffith	Automotive, Engineering, Construction, Early childhood, hair and beauty training academy, nursing student training facilities, wine and food technology centre
Western Riverina Community College	23 Hickey Cres, Griffith	Music, business, community services and health, beauty and hairdressing, hospitality, professional development
CUC Western Riverina	2/1 Olympic Street, Griffith Sycamore Street, Leeton (inside Leeton Shire Library)	Free access to support facilities for local students studying any degree, diploma or Cert IV pathway.

Source: Bull & Bear Economics Analysis (2022)

Through increased access to education, an opportunity arises for the income disparity between Griffith City and New South Wales as a whole to be reduced and wage inequality within Griffith to decrease over time.

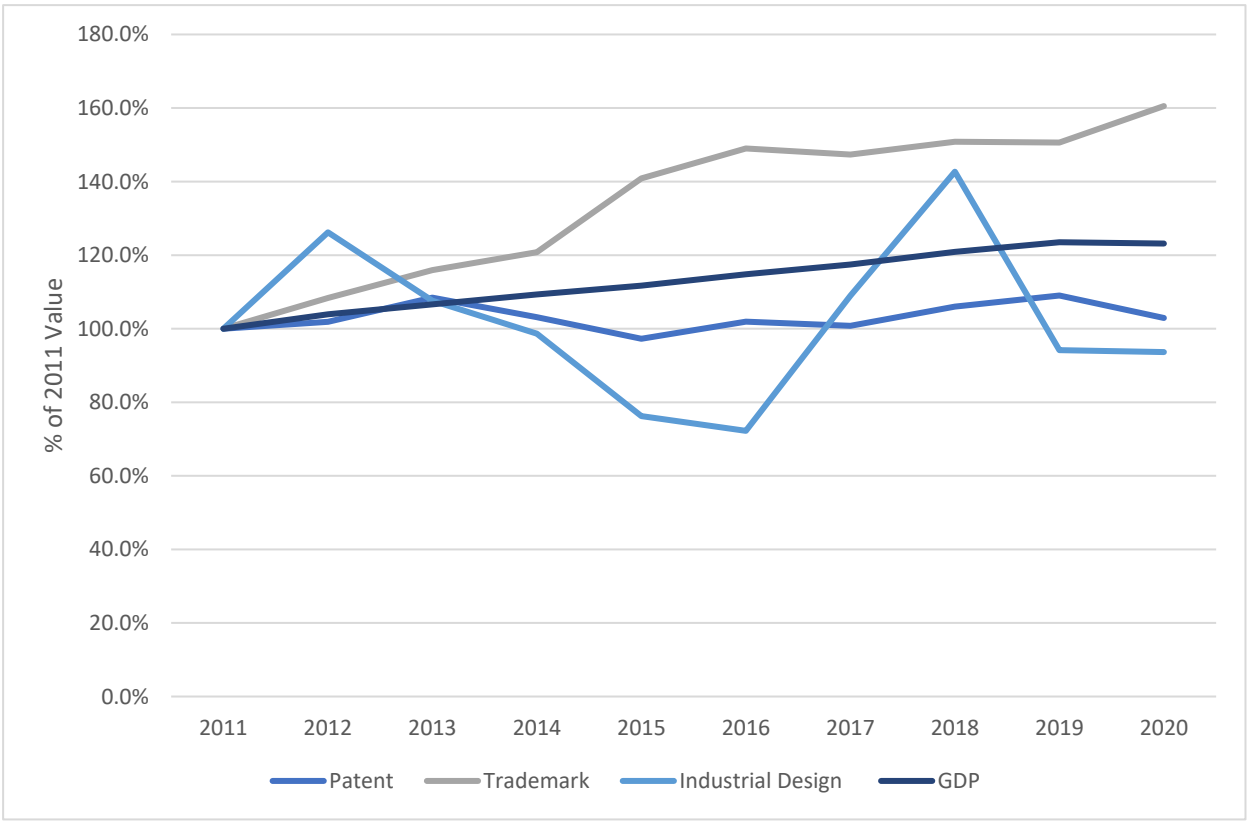
Given the existing economic structure within the region, it is integral that additional training opportunities are focussed toward understanding automated systems within poultry and agricultural operations and the development of bespoke systems to enhance automation within manufacturing businesses, with a focus on the food and beverage processing sectors. Understanding the repair and maintenance of automated systems within the agriculture / processing sectors will also be a critical skill required within Griffith into the future. It is anticipated that these skills / training opportunities would be delivered both through the TAFE NSW Riverina Institute and universities (course work to be delivered online).

3.4 Tangible Intangibles

A growing subset of Australia's service economy is the knowledge-based economy, contributing to employment and value add across various industries. Knowledge economies are often measured by patent growth, a key indicator of innovation. Although the number of patent applications have increased in Australia over the last few decades, it is modest by global comparisons.

Figure 3-3 details the intellectual property filings and GDP growth in Australia (indexed 2011 -100%) between 2011 to 2020.

Figure 3-3 Intellectual Property Filings and GDP Growth in Australia (indexed 2011 -100%), 2011 to 2020



Source: World Intellectual Property Organisation (2021)

The experience economy, where businesses create memorable events for clients, is continuing to grow as a component of Australia's service economy. Personal trainers, life advisors, tourism and entertainment advisors are expected to play a key role in the growth of the experience economy (CSIRO, 2016).

The growth in the creative sector largely attributable to the digital revolution involves various skill sets ranging from arts to science and knowledge. The value added to the GDP of Australia by the creative sector has increased significantly over the last decade and is anticipated to become an important element of the economy. Generation Z, people born between 1995 and 2009, grew up in a world of digital technology will be a key contributor to the growth of the creative sector and are expected to bring a set of intangible experiences to labour force (CSIRO, 2016). Some of the key features which Gen-Z will bring to the workforce in the future include;

- Constantly connected online: strong communication skill through online methods;
- Entrepreneurial in nature: high proportion of Gen-Z intend to start their own business;
- Collaboration: preference to work in collaboration with a small team; and
- Continuing learners: appreciate a working environment which can provide them with continuing learning and mentoring opportunities.

Generation Z might therefore bring a new set of intangible experiences they expect from their work environment. That might imply a need to develop new solutions for the working environment and recruiting, such as bring your own device policy, creativity, and learning-stimulating working arrangements.

With respect to land use planning, some key considerations for Griffith City relating to the tangible intangibles trend are as follows:

- Increased demand for a range of lifestyle opportunities and services by knowledge workers, rather than simply a place to work. Griffith City would need to ensure that employment precincts such as the town centres, neighbourhood centres, and industrial areas are considered appealing and offered a range of services and facilities to attract and retain knowledge workers; and
- Increased office space (available for short term leasing) or co-working facilities may be demanded within Griffith City, which is understood to be limited in its availability. It is imperative that these facilities are well connected to the global network through substantial technological infrastructure.

3.5 Online Retail

Online retailing is defined as industry retailers operating websites which enable consumers to purchase a range of products such as apparel, computers, recorded music, electronic goods, general merchandise, and groceries. As a result of changing consumer attitudes and the mass adoption of in-home technologies over the past decade, online retailing has significantly grown throughout Australia.

Some key industry performance indicators which detail the significance of online retailing in Australia were outlined in IBISWorld's Online Shopping in Australia report (Australia Industry (ANZSIC) Report X0004), 2021 and are as follows:

- Total Revenue in 2020-21: $43.9 billion;
- Annual growth between 2021 and 2026: 6.9% per annum; and
- Number of businesses 2021and 2026: 5.0% per annum.

There are five key external driving factors which have been identified as contributing significantly to the online growth in the above detailed sectors, both to date and moving forward. The key driving factors are as follows (IBISWorld, 2021):

- **Internet Subscribers:** increases in internet penetration, particularly in regional areas of the country, allows more consumers to engage in transactions online. Therefore, online retailers have access to a growing pool of customers. The number of internet subscribers is expected to decrease in 2020-21;
- **Real Household Discretionary Income:** increasing discretionary income provides consumers with more opportunity to spend on a broader product range where online retailing facilitates the purchase of many specialty goods. Real household discretionary income is expected to decrease in 2020-21, threatening industry growth;
- **Consumer Sentiment Index:** consumer sentiment influences consumer demand for discretionary goods at the retail level. Consumer sentiment is expected to rise but remain negative in 2020-21;
- **Demand from Department Store:** rising demand from department stores increases competition for the industry. Demand from department stores is expected to decline in 2020-21; and
- **Mobile Telecommunications Density:** consumers are increasingly using mobile devices to make online purchases. As the density of mobile telecommunications increases, consumers are more likely to make online purchases using mobile devices, supporting industry demand. Mobile telecommunications density is expected to increase in 2020-21.

These external driving factors, and their relative trends, are expected to propel the value added from online shopping to increase at an annualised 11.7% over the 10 years. This is a significant

outperformance compared with anticipated annual GDP growth of 2.1% over the same period (IBISWorld, 2021). Therefore, the online shopping industry is growing significantly faster than the Australian economy.

There are noteworthy consequences which arise as a result of the continued growth in online shopping (particularly over the next decade). Bricks and mortar retailers are faced with competing against virtual stores with none of the retail overheads, while simultaneously bricks and mortar retailers are developing their own virtual stores that compete against their own shops. Companies such as Uber Eats and MenuLog have demonstrated that there are few products which cannot be fulfilled through technological advancements and online platforms utilised by the consumer. As demonstrated, online retailers sell a broad range of products and product types.

Online retailing is already changing how retail developments are delivered, with retail centres moving away from their traditional retail focus towards more lifestyle-oriented centres. Online retailing will and already is having substantial impacts on retailers that have traditionally relied on large format stores (e.g., supermarkets, discount department stores, department stores, category killers). The ultimate consequence will be an overall reduction in the demand for physical retail floor space per capita.

In the Griffith context, it is anticipated that the demand for physical retail floor space per capita is likely to decrease, with the sectors of retail activity to remain prominent within Griffith including groceries, fresh food retailing and dining and a reduced number of speciality retailers, with speciality retailing needs increasingly met through online channels.

The growth in online retailing also has significant indirect effects on the economy, most significantly, rapid growth will be required in logistics and freight networks and in the availability of vacant industrial tenancies. Freight and logistics companies will need to sustain the increased demand for the fulfillment of online orders. While additional industrial space will be required by retailers and wholesalers in order to store and maintain the increased inventory levels required to meet the growing demand (Maria Lee - Oxford Economics, 2020).

Griffith City is connected to the State classified road network via Kidman Way and Burley Griffin Way, with connections to the Hume, Newell and Mid-Western Highways. As such, this proximate location could make Griffith an affordable and convenient location for online businesses to locate. Griffith City is located 450 kilometres north of Melbourne, 550 kilometres west of Sydney, 790 kilometres east of Adelaide and 350 kilometres west of Canberra. However, the distance from Griffith City to the major cities could also act as a deterrent to these businesses.

We would anticipate that online businesses that operate out of Griffith City would be focussed on the sale of quality agricultural outputs (leverage off the existing strengths of the region) as opposed to attracting online businesses more broadly, which would be more likely to have a preference to locate within an hour of a capital city, to benefit from proximity, but also relatively affordable sites for their business operations.

3.6 Robotics, Automation and Artificial Intelligence

3.6.1 Technology and Employment

The global economy has been primarily driven by major technological changes which have raised global living standards. However, these technological changes are causing considerable short-term disruptions for individuals and society, including the loss of income and wealth. The fear that technological progress will cause unemployment is not a new phenomenon having been

experienced numerous times throughout history. The short-term disruptions are more often outweighed by the long-term benefits of increased productivity and living standards.

Whilst increased technological advancements can mean that farming machinery takes jobs from people, it has the benefit of supporting the financial feasibility of some crop production which was not feasible because of labour costs. Griffith farmers have and will continue to see the benefits of these new technologies by taking advantage of new machinery to help expand the selection of the crops they produce.

Additionally, as identified above, technological changes have revolutionised the poultry industry, allowing for more precise monitoring of farming practices and ensuring manufacturing processes both optimise yield and ensure food safety.

3.6.2 Globalisation

The increasing efficiency and effectiveness of digital technologies has facilitated globalisation by greatly reducing the costs associated with long distance communication. A key area that has been substantially impacted is international trade, generating net economic benefit to various nations. However, increased globalisation has also impacted certain industries and workers who vulnerable to cheap foreign labour and imports. One of those domestic industries impacted by globalisation is manufacturing, declining by approximately 15% over the last 20 years. As the skill level in lower wage countries continues to rise, especially in Asia, this will leave Australian workers exposed to potential job losses. Although cheap foreign labour costs reduce employment in Australia, it has been shown that this will lead to increased investment, innovation and wages, especially among higher skilled workers.

3.6.3 In the Griffith context, continued innovation in the agricultural sector will ensure an increased number of higher skilled employment opportunities are available locally. Automation

Automation, which is the process by which human workers are replaced by machines or computers, has also impacted local employment. Automation has substituted workers across a range of industries that require routines tasks, making some occupations redundant. This has made 'middle class' jobs increasingly scarce as they are being replaced by technology in advance economies such as the United States of America. However, workers who have skills which compliment technology have seen an increase in productivity, resulting in increased wages and opportunities.

As highlighted above, jobs considered routine (i.e. jobs that follow defined procedures) are most vulnerable to automation. As technological change progresses, tasks which require high cognitive abilities, such as scientific research, are becoming increasingly automated. A study by the University of Oxford which compartmentalised jobs into their component tasks and activities to estimate how vulnerable they are to automation, found approximately 47% of US workers were at risk of losing their job to automation. The same methodology applied to the Australian context estimates 44% of jobs at risk to automation.

Automation can also complement and substitute human labour, presenting various opportunities for human workers to become more productive. A good example of this is the banking industry, which has seen the number of bank tellers decrease due to automated tellers' machines but has created opportunity in other banking related services.

Automation in key sectors is already relevant within Australia with the implementation of hands free farming. The global population is expected to reach 10 billion people by 2050, requiring the agriculture industry to increase food production by 70% to sustain current growth (Brown, 2018). As

such, farm automation, or smart farming, has become increasingly important. Farm automation is a method that entails the use of drones, robotics, and software to transform the existing agriculture industry (Land Income, 2022). These robots can perform operational tasks while intelligently responding to their environment and once automated, these robots can perform these tasks independently. Smart farming leads to increased production efficiency and improved quality of agricultural products. It also improves the quality of life for farm workers by reducing heavy labour and tedious tasks.

In May 2021, Charles Stuart University in Wagga Wagga announced that it will create the first fully automated farm in Australia (Claughton & Condon, 2021). This "hands-free farm", situated on a 1,900 hectare property, will utilise the following:

- Robotic tractors;
- Harvesters;
- Survey equipment and drones;
- Artificial intelligence that will control sowing, dressing and harvesting;
- New sensors to measure plants, soils, and animals; and
- Carbon management tolls to minimise the farm's carbon footprint.

The farm is currently operating commercially, growing a range of broadacre crops, including wheat, canola and barley, as well as a vineyard, cattle and sheep. The automation of the farm will begin with autonomous vehicles that could harvest crops while the farmers sleeps.

In Griffith, whilst the automation of manufacturing processes has not had significant impacts on displacing unskilled workers to date (on the job training has likely been sufficient for upskilling for employees), employment opportunities for the monitoring of automated systems in the manufacturing process, the repair and maintenance of machinery used in manufacturing which is increasingly sophisticated and the development of bespoke technology responses to support the manufacturing sector is anticipated to only increase over time.

We would anticipate that in the Griffith context, whilst agricultural and manufacturing processes have become increasingly automated over time, the ability for automation to replace human labour in other sectors appears limited at this stage.

3.6.4 Augmentation

It is critical to understand ways technology can augment the value of human labour. Technology can help individuals to accomplish more tasks, access more tools and information, solve complex tasks and be able to spend more time on valuable tasks as opposed to routine ones. Technological augmentation is the key driver behind increasing skilled employment seen across Australia over the last two decades. Whilst employment in occupations which require lower skill levels has declined, this has opened more opportunities for more skilled workers in related occupations. However, not all displaced workers have reaped the benefits of technological changes. In the Griffith context, in the absence of upskilling (which can occur through obtaining additional tertiary qualifications or on the job training depending on the skills required), workers with lower skill levels have access to fewer job opportunities than in the past.

3.6.5 Jobs of the Future

The emergence of technological changes coupled with demographic changes will give rise to brand new jobs. However, there is no precise means of forecasting future jobs. In considering abovementioned trends and insights provided in this chapter, the following six jobs are deemed as jobs of the future:

- Big Data Analysts, i.e. data scientists who can spot trends in increasingly large and varying datasets;
- Complex Decision Support Analysts;
- Remote Controlled Vehicle Operators;
- Customer Experience Experts;
- Personalised and Preventative Health Helpers; and
- Online Chaperones.

In the Griffith context, driverless tractors (which fall within the category of remote controlled vehicle operators) is anticipated to be of relevance. John Deere announced in June 2022 that an autonomous battery powered electric tractor would be launched in Australia in 2026, allowing agricultural businesses to reduce carbon emissions and boost productivity on farm.

Additionally, big data analysts are anticipated to represent a key occupation to support continued innovation with the agriculture and manufacturing sectors, along with complex decision support analysts. However, this is not to say these jobs would be based locally, with these local needs potentially delivered by providers within the broader region.

3.6.5.1 Case Study: Alternative Farming Methods

3.6.5.1.1 Precision Agriculture

In the Netherlands, Dutch potato farmer Jacob Van den Borne has improved his crop yield significantly through agriculture technology. By monitoring two drones, a driverless tractor, and an unmanned quad copter, Van den Borne is able to obtain detail information regarding soil quality, water contents, nutrient levels, and growth. This allows Van den Borne to monitor the progress of every plant down to the individual potato which has permitted him to fulfill the needs of each individual plant, rather than treating the whole field the same. This optimised method has resulted in the reduction of both fertiliser and herbicide by 20%, allowing Van den Borne to achieve a 1% annual average yield increase each year since taking over his family's farm in 2006 (Lee, 2019).

The type of farming Van den Borne has adopted is referred to as "precision agriculture". This farming system seeks to exert more control over a production system by recognising variation and managing different areas of land differently, according to a range of economic and environmental goals (CSIRO, 2021). To do this, the tools of precision agriculture are used to collect large amounts of data on crop or animal performance and the attributes of the individual production areas (e.g. fields, paddocks and blocks) at a high spatial resolution.

Technology is crucial to precision agriculture, often involving the use of a global positioning system (GPS), geographical information systems (GIS), Variable-Rate Technology (VRT), soil sensors and yield monitors which in conjunction with GPS, enable georeferenced records of yield to be collected during harvest. With this technology, growers are better able to observe, understand and manage the variability in their production systems by tailoring inputs to desired outputs. Successful implementation of precision agriculture could help growers gain further yield and profitability, as seen in the case of Van den Borne.

3.6.5.2 Case Study: Utilisation of By-Products of Poultry Processing

It is understood that research is currently underway to utilise by-products of poultry processing, namely feathers, blood and bones. In Griffith, it is understood that reuse of by-products from poultry processing already occurs, but the outcomes of research may broaden the range of opportunities to use by-products, or alternatively improve the yield of by-product reuse.

A partnership between Singapore's Nanyang Technological University (NTU) and poultry producer Leong Hup Singapore has developed techniques to create meat storage trays and a cell culture medium that could be utilised to product lab grown meat.

In the creation of the meat storage trays, feathers are washed in distilled water to remove contaminants, dried at 27 degrees Celsius for four days and then pulverised. The resulting feather fibres, which contain keratin, are then combined with an unsaturated polymer resin which is placed in a glass tray mould and left to cure for a day.

Testing of these polymer trays identified they were just as flexible as traditional trays made with petroleum based plastics but were able to withstand almost twice as much force without breaking.

The cell culture medium, on the other hand, requires the breaking down of blood, bone gristle and skin to extract amino acids, vitamins, glucose, inorganic salts and growth factors. These nutrients create a serum with the potential to be used as a cell growth medium to create lab grown meat.

Whilst both techniques are currently being tested and refined, these represent potential opportunities within the poultry sector to consider in the reuse of by-products and the creation of additional products to bring to market.

3.7 Implications for Griffith City

A review of a range of employment trends and themes highlights that technology advancements have allowed for increasingly automated processes. In the Griffith context, these innovations have enhanced both crop and manufactured yields, enhanced quality control and allowed for early intervention when growing or manufacturing conditions require adjustment.

However, automation can also displace low skilled workers (in the absence of on the job training), with manual jobs increasingly declining. This highlights the importance of upskilling the local workforce, to ensure skill sets of the local workforce continue to align with the evolving needs of businesses. In the Griffith context, it is anticipated that additional skill sets required would be delivered both through local training institutions and through remote learning (e.g. through CCU Western Riverina).

In Griffith, whilst the automation of manufacturing processes is anticipated to reduce the reliance on low skilled labour locally in the longer term, it can enhance employment opportunities for the monitoring of automated systems in the manufacturing process, the repair and maintenance of machinery used in manufacturing which is increasingly sophisticated and the development of bespoke technology responses to support the manufacturing sector. It is anticipated that these opportunities would be delivered both locally and through businesses servicing the Griffith region (but based outside of the region).

There are a number of innovative approaches being established to both intensify agricultural and horticultural production, which have the potential to be applied in the Griffith context. Overseas research is also being conducted into the a range of uses for by-products of poultry processing, which has the potential to be applied in Griffith and can act as an opportunity to promote the reuse of by-products more broadly in industrial processes.

4 Existing Activity within Employment Lands

The purpose of this section of the report is to outline the existing activity within employment lands in Griffith City.

In December 2021, the reform of employment zones in New South Wales was finalised, with five employment zones and three supporting zones introduced into the Standard Instrument (Local Environmental Plans) Order 2006, to replace the existing zones.

The new employment zones, which replace the existing zones are as follows:

- E1 Local Centre;
- E2 Commercial Centre;
- E3 Productivity Support;
- E4 General Industrial;
- E5 Heavy Industrial;
- MU1 Mixed Use;
- SP4 Local Enterprise; and
- W4 Working Foreshore.

In Griffith, the following employment zones are of relevance:

- E1 Local Centre;
- E3 Productivity Support;
- E4 General Industrial;
- E5 Heavy Industrial;
- MU1 Mixed Use; and
- RU6 – Transition.

A brief discussion has also been provided regarding centres activity occurring on RU5 Village zoned land and the Woolworths anchored centre on R1 General Residential zoned land.

There was typically a direct translation between the previous employment land zoning and the new zoning, with the exception of a parcel of B7 zoned land in the city centre, which was adjusted to have a split E3 / E4 zoning (as illustrated in Figure x).

Table 4-1 details the correspondence of current zonings and new zonings within Griffith City.

Table 4-1 Translation of Current and New Zonings within Griffith City

Previous zoning	New Zoning
IN1 General Industrial	E4 General Industrial
IN3 Heavy Industrial	E5 Heavy Industrial
B7 Business Park	Mostly to E3 Productivity Support, with a land parcel to E4 General Industrial
B6 Enterprise Corridor	E3 Productivity Support
B4 Mixed Use	MU1 Mixed Use
B1 Neighbourhood Centre	E1 Local Centre
B2 Local Centre	E1 Local Centre

In September 2022, a comprehensive inventory was undertaken within these zonings to verify the role and function of activity within each of the relevant zones and to identify vacant tenancies, vacant land and remnant housing within each zone.

The NSW Government recognises the Local Centre (E1) and Commercial Centre (E2) zones represent zoning for centres, the General Industrial (E4) and Heavy Industrial (E5) are the key industrial zones and Productivity Support (E3) provides a transition between the centres and industrial zones. The Productivity Support (E3) land has been considered as industrial activity only as it represents the ability to accommodate light industry and showroom type uses into the future, unlike the centres type zonings. In the case of the Mixed Use (MU1) zone it is clear that the intent is focussed towards retail and residential type uses, as opposed to industrial uses.

The outcomes of the employment land assessment have been grouped up into the following categories, considering the strategic intent of the land (as identified in the Employment zone reform):

- Centres activity:
  - E1 Local Centre;
  - MU1 Mixed Use;
- Industrial activity:
  - E3 Productivity Support;
  - E4 General Industrial; and
  - E5 Heavy Industrial.

Figure 4-1 provides an overview of the geographic location of employment zones within Griffith City.

Figure 4-1 Overview of Employment Zones within Griffith City

As part of the inventory, a qualitative assessment of the quality of each tenancy was undertaken, with each tenancy classified as being of a low, medium or high quality based on the following criteria, as summarised in Table 4-2.

Table 4-2 Qualitative Assessment Criteria for Tenancies

Condition	Qualitative Criteria
Low	▪ Generally older built form showing signs of need for repair; ▪ Façade showing signs of ageing, e.g. faded or cracking paint; ▪ Roofing in serviceable condition but showing signs of wear; ▪ Internals of tenancies appearing dated, e.g. flooring in poor condition, paint on walls in need of refresh.
Medium	▪ Generally bult form less than 30 years old; ▪ Façade showing signs of ageing but in reasonable condition; ▪ Roofing in good condition; ▪ Signs of refurbishment in the past 10 to 15 years (either internally, externally or both); and ▪ Internals of tenancies appear to have signs of refurbishment/modernisation (e.g. repainted walls, flooring that has been replaced/refreshed).
High	▪ Generally modern or recently refurbished (<5 years) built form; ▪ Façade appears freshly painted in immaculate condition; ▪ Roofing recentre replaced or refurbished/restored; and ▪ Internals of tenancies in very good/immaculate condition (freshly painted, modern flooring).

4.1 Centre and Industry Zone Hierarchy

The NSW Department of Planning and Environment have implemented the employment zones with proposed amendments to individual local environmental plans (LEPs) across NSW. Table 4-3 below provides an overview of the centre and industry zones within Griffith City based on the employment zone intent as detailed in the Employment Zones Reform Implementation, published the NSW Department of Planning and Environment in May 2022.

Table 4-3 Retail and Industry Zone Hierarchy – Griffith City

	Strategic Intent	Desired Characteristics	Longer Term Considerations
Centre Uses			
E1 Local Centre	To provide centres of all sizes and scales that offer: ▪ A diversity of retail, business, office, community, accommodation and entertainment uses to the community ▪ A focus for active vibrant communities to come together ▪ Employment opportunities in accessible locations ▪ Where available, a focus for public transport	▪ Commercial focus, either as offices, retail and business premises or a mix of uses ▪ A range of uses and services commensurate to the size of the centre ▪ Entertainment and dining options, tourist and visitor accommodate, after hours uses, community and social infrastructure	▪ Facilitate centres as community hubs, offering shopping services and events ▪ Support the night-time economy ▪ Accommodate collaborative and co-working spaces ▪ Potentially include residential development on upper levels to establish a population catchment for a vibrant centre ▪ Accommodate some local light industries
MU1 Mixed Use	▪ To support a mix of compatible land uses including residential, commercial and light industrial ▪ To transition between sues (e.g. a centre and another land use such as residential) ▪ To apply to mixed use centres, along corridor, or surrounding centres where genuine mixed uses are sought ▪ Can continue to be applied to existing B4 areas that are primarily residential	▪ Activities at ground floor and on street fronts ▪ Differentiation between a centre and urban support areas in a mix of zones to manage the impacts of out of centre development ▪ Well-designed mixed use developments are vibrant and support community needs	▪ Manage out of centre development ▪ Use permitted land uses to shape the intent and desired outcome of the area
Industrial Uses			
E3 Productivity Support	To provide land and floor space for: ▪ A range of urban or rural services that cater to and support the local population and businesses ▪ Businesses not suited to a centre location Industries and activities that are lower on the land vale hierarchy than retail and commercial office sues	▪ Fine grain and/or large format employment ▪ Land and floorspace responses to local business need ▪ Mix of specialised niche or trade focussed retail, including business focused retail ▪ Mix of light industrial, office, infrastructure and other urban service uses ▪ Capability to service the needs of local workers with food and drink, convenience retail and child care ▪ Low impact creative and emerging industries	▪ Allow a broader range of permissible land uses to accommodate emerging and changing industries ▪ Cater to a range of floor pate and floor to ceiling requirements across a variety of locations

	Strategic Intent	Desired Characteristics	Longer Term Considerations
E4 General Industrial	To provide suitable land and floor space for a range of industrial activities	▪ General and light industries, warehousing and supporting businesses ▪ Complementary uses including office (associated with industrial), auto-related industry (excluding sales), large format indoor recreation, artisan food and drink ▪ Capability to service the needs of local workers ▪ Access to arterial roads and freight routes ▪ Diversity of lot sizes, with capability to support a mix of fine grain and large format retail uses	▪ Protect land for industrial purposes ▪ Accommodate new industries and changing requirements of industries ▪ Allow for industries to innovate and evolve ▪ Co-locate industry with businesses that directly support industry or have similar amenity impacts
E5 Heavy Industrial	▪ To provide suitable areas for industries that need to be separated from other land uses ▪ To minimise the impact of heavy industry on other land uses ▪ To protect land suited to heavy industries	▪ Capability to support hazardous or offensive industry and storage with buffers to sensitive receptors ▪ Capability to support depots, warehousing and storage premises that support heavy industry ▪ Physically separate from other higher amenity land uses ▪ Good access to arterial roads and freight routes ▪ Large lot as required by safety and amenity	▪ Continue to provide sites suited to heavy industry

Source: Griffith City Council Local Environmental Plan (2014)

4.1 Industrial Activity

4.1.1 Industrial Activity in Griffith City

As identified in Section 4.1 above, the following zones were identified as industrial zones:

- E3 Productivity Support;
- E4 General Industrial; and
- E5 Heavy Industrial.

As of September 2022, 341 businesses were identified on industrial zoned land in Griffith City. Notably, RU6 Transition zoned land was excluded from this assessment as the majority of this zoned area is used for farming and residential purposes. However, it is understood that a range of industrial activities are permitted with consent on this land, including freight transport activities, light industry, rural industry, warehouse or distribution centres and vehicle body repair shops. Furthermore, it is also understood that Griffith City Council has a desire for industrial uses on this land to be mostly restricted to industrial activity that directly relates to agricultural activities occurring on this land, as opposed to industrial uses that serve the general industrial market more broadly.

The most significant industries (by number of businesses) on industrial zoned land were the following:

- Construction services: 13.2% of businesses (45 businesses);
- Repair and maintenance: 7.9% of businesses (27 businesses);
- Agriculture: 6.7% of businesses (23 businesses); and
- Warehousing and storage services: 6.7% of businesses (23 businesses).

These four industries account for 34.5% of all businesses on industrial zoned land in Griffith City.

Within industrial zoned land in Griffith City there was 102 lots not currently used for business purposes. These include private sheds, vacant lots, residential lots, lots under construction, vacant tenancies and privately owned buildings.

Table 4-4 displays the number of businesses on industrial zoned land within Griffith City classified by two-digit ANZSIC code based on business activities.

Table 4-4 Industrial Zoned Businesses by 2-Digit ANZSIC – Griffith City, 2022

Industry (ANZSIC)	Number of Businesses	% of Activity
Construction Services	45	13.2%
Repair and Maintenance	27	7.9%
Agriculture	23	6.7%
Warehousing and Storage Services	23	6.7%
Professional, Scientific and Technical Services (except Computer System Design and Related Services)	19	5.6%
Machinery and Equipment Wholesaling	18	5.3%
Other Store-Based Retailing	17	5.0%
Motor Vehicle and Motor Vehicle Parts Retailing	15	4.4%
Food Product Manufacturing	15	4.4%
Agriculture, Forestry and Fishing Support Services	12	3.5%
Road Transport	11	3.2%
Fabricated Metal Product Manufacturing	10	2.9%
Beverage and Tobacco Product Manufacturing	9	2.6%
Machinery and Equipment Manufacturing	9	2.6%

Industry (ANZSIC)	Number of Businesses	% of Activity
Fuel Retailing	7	2.1%
Sports and Recreation Activities	7	2.1%
Food and Beverage Services	6	1.8%
Personal and Other Services	6	1.8%
Furniture and Other Manufacturing	4	1.2%
Postal and Courier Pick-up and Delivery Services	4	1.2%
Public Administration	4	1.2%
Gas Supply	3	0.9%
Water Supply, Sewerage and Drainage Services	3	0.9%
Waste Collection, Treatment and Disposal Services	3	0.9%
Other Goods Wholesaling	3	0.9%
Accommodation	3	0.9%
Transport Support Services	3	0.9%
Rental and Hiring Services (except Real Estate)	3	0.9%
Building Cleaning, Pest Control and Other Support Services	3	0.9%
Printing (including the Reproduction of Recorded Media)	2	0.6%
Transport Equipment Manufacturing	2	0.6%
Electricity Supply	2	0.6%
Water Transport	2	0.6%
Property Operators and Real Estate Services	2	0.6%
Administrative Services	2	0.6%
Public Order, Safety and Regulatory Services	2	0.6%
Medical and Other Health Care Services	2	0.6%
Pulp, Paper and Converted Paper Product Manufacturing	1	0.3%
Building Construction	1	0.3%
Motor Vehicle and Motor Vehicle Parts Wholesaling	1	0.3%
Grocery, Liquor and Tobacco Product Wholesaling	1	0.3%
Food Retailing	1	0.3%
Insurance and Superannuation Funds	1	0.3%
Computer System Design and Related Services	1	0.3%
Preschool and School Education	1	0.3%
Residential Care Services	1	0.3%
Creative and Performing Arts Activities	1	0.3%
Summary of Businesses	341	100.0%

Source: Bull & Bear Economics Analysis, (2022)

4.1.2 Vacant and Underutilised Land

In Griffith, vacant land was identified as sites that did not accommodate an existing use, whereas underutilised sites were characterised as those sites which accommodated a dwelling. In the case that a site accommodated farming activity, it was assumed to be taken-up, reflective of the fact that the site was not available for an alternative use.

The Kidman Way Heavy Industrial Area (located in the suburb of Tharbogang) is mostly occupied by farming and offers significant opportunity to accommodate future industrial activity but requires infrastructure upgrades to support future development. This assessment has focussed on vacant and underutilised industrial land that is development ready in terms of infrastructure servicing to

understand the need and timing to activate the Kidman Way Heavy Industrial Area and to consider whether other alternatives are worthy of consideration within Griffith City.

The inventory identified there was limited opportunity to accommodate additional industrial activity on vacant land and underutilised sites occupied by housing outside of the 61.2 hectare site within the E4 zone in Yenda, which is understood to be owned by Casella Wines (with approval for an ammunition factory in place). Outside of this large land parcel, the composition of vacant and underutilised lots within the E4 General Industrial zone typically do not align with the future needs of industrial users in the region and are mostly located to the east of the Griffith CBD, as detailed in subsequent sections of this report.

The E3 Productivity Support land can only accommodate limited industrial uses and can only meet a small portion of future demand within Griffith, as explored in subsequent sections of the report.

Table 4-5 below displays the total volume of development ready vacant and underutilised industrial land within Griffith City categorised by zone as of September 2022.

Table 4-5 Volume of Vacant and Underutilised Industrial Zoned Land (Ha) – Griffith City, 2022

Zone	Vacant	Underutilised	Total
E4 General Industrial	85.8	6.8	92.6
E3 Productivity Support	17.6	3.5	21.1
Total	103.4	10.3	113.7

Source: Bull & Bear Economics Analysis (2022)

Tables 4-6 and 4-7 outline the composition of vacant and underutilised land within the E3 Productivity Support and E4 General Industrial zones. This table clearly demonstrates that vacant and underutilised lots are typically less than 5,000sqm in size, with very limited opportunities in the form of larger allotments.

Table 4-6 Vacant and Underutilised Land in E4 General Industrial Zone

Lot Size	Vacant		Underutilised	
	No of Lots	Total Area (ha)	No of Lots	Total Area (ha)
<5,000sqm	19	2.2	17	3.3
5,000sqm-1ha	5	3.1	2	1.3
1-2 ha	2	2.6	2	2.2
2-5ha	3	10.4	0	0.0
5+ ha	2	67.5	0	0.0
Total	31	85.8	21	6.8

Source: Bull & Bear Economics Analysis (2022)

Table 4-7 Vacant and Underutilised Land in E3 Productivity Support Zone

Lot Size	Vacant		Underutilised	
	No of Lots	Total Area (ha)	No of Lots	Total Area (ha)
<5,000sqm	13	1.2	4	0.6
5,000sqm-1ha	3	2.2	1	0.9
1-2 ha	5	8.6	1	2.0
2-5ha	2	5.6	0	0.0
5+ ha	0	0.0	0	0.0
Total	23	17.6	6	3.5

Source: Bull & Bear Economics Analysis (2022)

The quality of industrial businesses throughout Griffith City were typically of medium quality (59.5%) with only a small amount (3.0%) considered to be of low quality and 37.5% of high quality. Notably, the productivity support zone had the highest proportion of high quality businesses; while, heavy industrial zoned land had the highest proportion of medium quality businesses.

Table 4-8 below provides a summary of the quality of businesses on industrial zoned land within Griffith City by zone.

Table 4-8 Quality of Business within Industrial Zones – Griffith City, 2022

Zone	Low	Medium	High
E3 Productivity Support	0.0%	61.9%	38.1%
E4 General Industrial	4.3%	58.1%	37.6%
E5 Heavy Industrial	0.0%	75.0%	25.0%
All Industrial Zones	**3.0%**	**59.5%**	**37.5%**

Source: Bull & Bear Economics Analysis (2022)

4.1.3 Industrial Activity by Suburb

The following sections of the report provide an overview of the industrial activity identified within the following suburbs in Griffith City, including a breakdown by zone:

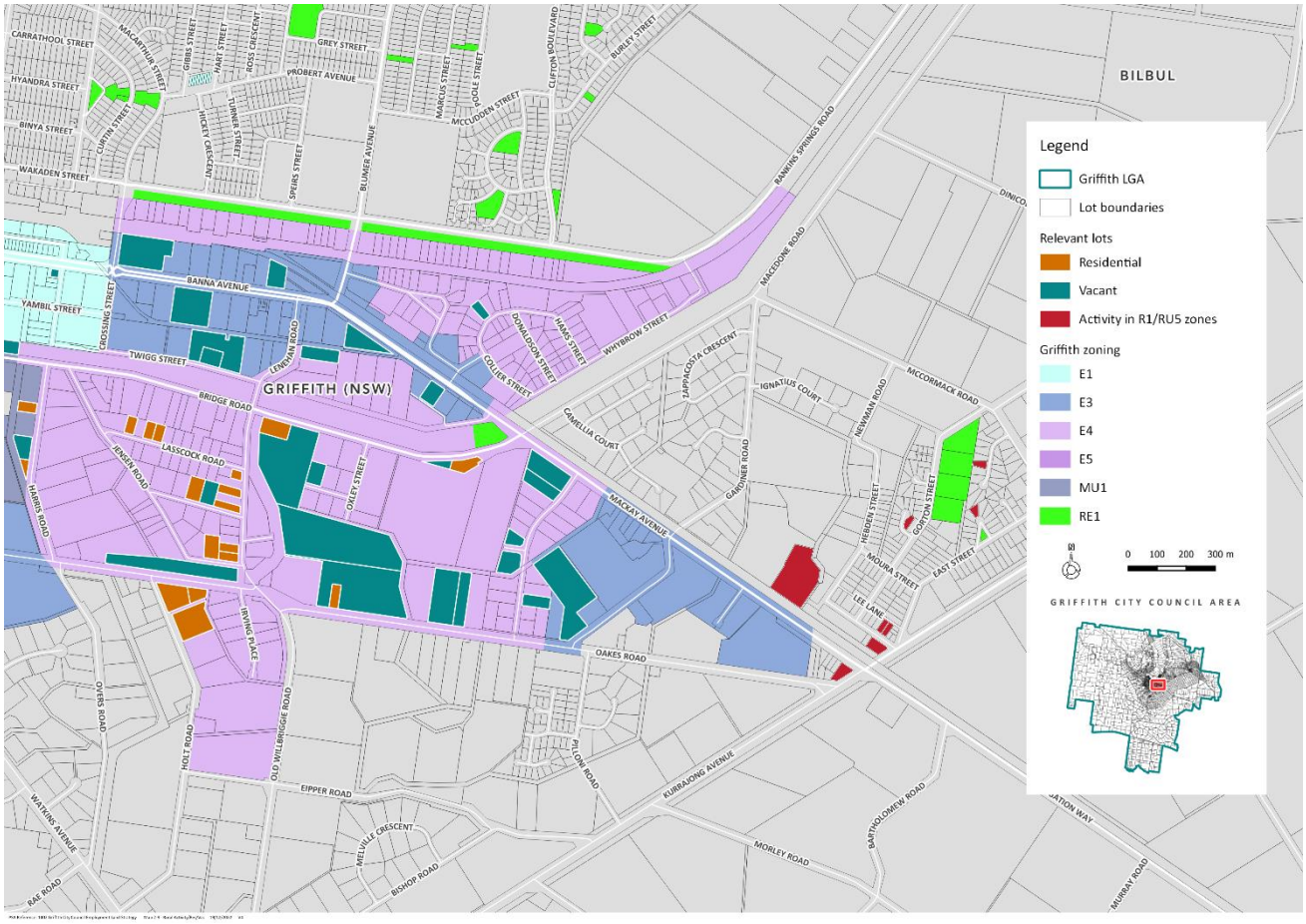
- Griffith;
- Yoogali;
- Yenda;
- Hanwood;
- Tharbogang
- Beelbangera; and
- Bilbul.

4.1.3.1 Griffith (Suburb)

The suburb of Griffith includes industrial land zoned E4 General Industrial and E3 Productivity Support. These industrial areas are located proximate to the Griffith CBD making them a convenient location for businesses.

Figure 4-2 outlines the extent of industrial activity within the suburbs of Griffith and Yoogali. A single map has been presented for both areas given the continuity of the industrial zoning. The western boundary of the Yoogali suburb is the industrial area along Battista Street and also incorporates E3 Productivity Support land along Oakes Road.

Figure 4-2 Industrial Activity within Griffith and Yoogali



In total there were 288 businesses identified on industrial zoned land within the Griffith suburb.

The most significant industries (by number of businesses) were as follows:

- Construction services: 14.2% of businesses (41 businesses);
- Repair and maintenance: 9.4% of businesses (27 businesses); and
- Warehousing and storage services: 6.6% of businesses (19 businesses).

Most businesses within the industrial zones in Griffith are situated within the E4 General Industrial zone, totalling 207 businesses. The general industrial zones are situated east of the Griffith CBD predominantly south of Bridge Street and along the eastern end of Wakaden Street. Within the general industrial zone, the most significant industries are construction services with 36 businesses, repair and maintenance with 23 businesses and professional, scientific and technical services with 14 businesses.

There were 81 businesses identified in the E3 Productivity Support zoned land within Griffith suburb which is situated south of Griffith CBD along Kidman way and along the east end of Banna Avenue. The most significant industries (by number of businesses) in this zone were other store-based retailing (11 businesses), agriculture (nine businesses) and motor vehicle and motor vehicle parts retailing (seven businesses).

There were vacant land parcels identified within the E3 Productivity Support and E4 General Industrial zones in Griffith, with remnant housing also identified within the E4 General Industrial zone in Griffith.

Table 4-9 details the industrial zoned land by two digit ANZSIC within the Griffith suburb as per the site visit done by Bull and Bear Economics staff in September 2022.

Table 4-9 Businesses Located on Industrial Zoned Land by 2-Digit ANZSIC and Zone – Griffith Suburb, 2022

	E4 – General Industrial	E3 – Productivity Support	Total Businesses	% of Businesses
Construction Services	36	5	41	14.2%
Repair and Maintenance	23	4	27	9.4%
Warehousing and Storage Services	14	5	19	6.6%
Other Store-Based Retailing	6	11	17	5.9%
Professional, Scientific and Technical Services (except Computer System Design and Related Services)	14	3	17	5.9%
Agriculture	6	9	15	5.2%
Machinery and Equipment Wholesaling	13	2	15	5.2%
Food Product Manufacturing	11	0	11	3.8%
Motor Vehicle and Motor Vehicle Parts Retailing	4	7	11	3.8%
Machinery and Equipment Manufacturing	3	5	8	2.8%
Road Transport	7	1	8	2.8%
Agriculture, Forestry and Fishing Support Services	5	2	7	2.4%
Fabricated Metal Product Manufacturing	7	0	7	2.4%
Fuel Retailing	3	4	7	2.4%
Sports and Recreation Activities	3	4	7	2.4%
Food and Beverage Services	4	2	6	2.1%
Personal and Other Services	5	1	6	2.1%
Furniture and Other Manufacturing	3	1	4	1.4%
Postal and Courier Pick-up and Delivery Services	4	0	4	1.4%
Public Administration	3	1	4	1.4%
Gas Supply	2	1	3	1.0%
Water Supply, Sewerage and Drainage Services	3	0	3	1.0%
Waste Collection, Treatment and Disposal Services	3	0	3	1.0%
Other Goods Wholesaling	3	0	3	1.0%
Transport Support Services	3	0	3	1.0%
Rental and Hiring Services (except Real Estate)	2	1	3	1.0%
Printing (including the Reproduction of Recorded Media)	2	0	2	0.7%
Transport Equipment Manufacturing	1	1	2	0.7%
Accommodation	0	2	2	0.7%
Water Transport	1	1	2	0.7%
Property Operators and Real Estate Services	0	2	2	0.7%
Administrative Services	2	0	2	0.7%
Building Cleaning, Pest Control and Other Support Services	2	0	2	0.7%
Public Order, Safety and Regulatory Services	2	0	2	0.7%
Medical and Other Health Care Services	0	2	2	0.7%
Beverage and Tobacco Product Manufacturing	1	0	1	0.3%
Pulp, Paper and Converted Paper Product Manufacturing	1	0	1	0.3%
Electricity Supply	0	1	1	0.3%

	E4 – General Industrial	E3 – Productivity Support	Total Businesses	% of Businesses
Building Construction	1	0	1	0.3%
Motor Vehicle and Motor Vehicle Parts Wholesaling	1	0	1	0.3%
Grocery, Liquor and Tobacco Product Wholesaling	1	0	1	0.3%
Food Retailing	0	1	1	0.3%
Insurance and Superannuation Funds	0	1	1	0.3%
Preschool and School Education	1	0	1	0.3%
Residential Care Services	0	1	1	0.3%
Creative and Performing Arts Activities	1	0	1	0.3%
Summary of Businesses	**207**	**81**	**288**	**100.0%**

Source: Bull & Bear Economics (2022)

The quality of industrial businesses throughout the Griffith suburb were typically of medium quality (61.6%) with only a small amount (3.2%) considered to be of low quality and 35.2% of high quality. Notably, the E3 Productivity Support zone had the highest proportion of high quality businesses; while, E4 General Industrial zoned land had the highest proportion of low and medium quality businesses. However, the proportion of low, medium and high quality businesses remains relatively similar across each zone.

Table 4-10 below provides a summary of the quality of businesses on industrial zoned land within Griffith suburb by zone.

Table 4-10 Quality of Business within Industrial Zones – Griffith Suburb, 2022

Zone	Low	Medium	High
E4 General Industrial	4.4%	61.8%	33.8%
E3 Productivity Support	0.0%	61.2%	38.8%
All Industrial Zones	**3.2%**	**61.6%**	**35.2%**

Source: Bull & Bear Economics Analysis, (2022)

4.1.3.2 Yoogali

Yoogali is situated directly to the east of Griffith, the urban sprawl and industrial areas of Griffith suburb continue into Yoogali. The industrial zones in Yoogali consists of E4 General Industrial and E3 Productivity Support. Yoogali only captures a small part of the industrial zones and as such has a much smaller number of businesses in its industrial zones in comparison to Griffith suburb.

Yoogali's industrial zone hosts 29 businesses across a variety of industries. The most significant industries (by number of businesses) were as follows:

- Construction services: 13.8% of businesses (four businesses);
- Motor vehicle and motor vehicle parts retailing: 13.8% of businesses (four businesses);
- Agriculture, forestry and fishing support services: 10.3% of businesses (three businesses);
- Machinery and equipment wholesaling: 10.3% of businesses (three businesses); and
- Warehousing and storage services: 10.3% of businesses (three businesses).

Over 50% of the businesses in Yoogali industrial zones are situated within the E4 General Industrial zone, totalling 17 businesses. The most significant industries within this zone were construction services with four businesses and motor vehicle and motor vehicle parts retailing with three businesses.

The E3 Productivity Support zone in Yoogali consists of 12 businesses, two of which are in the agriculture industry and all other businesses are spread across several industries as listed in Table 4-11 below.

Table 4-11 Businesses by 2-Digit ANZSIC and Zone – Yoogali, 2022

Activity / Use	E4 – General Industrial	E3 – Productivity Support	Total Businesses	% of Businesses
Construction Services	4	0	4	13.8%
Motor Vehicle and Motor Vehicle Parts Retailing	3	1	4	13.8%
Agriculture, Forestry and Fishing Support Services	2	1	3	10.3%
Machinery and Equipment Wholesaling	2	1	3	10.3%
Warehousing and Storage Services	2	1	3	10.3%
Agriculture	0	2	2	6.9%
Fabricated Metal Product Manufacturing	1	1	2	6.9%
Road Transport	1	1	2	6.9%
Professional, Scientific and Technical Services (except Computer System Design and Related Services)	1	1	2	6.9%
Machinery and Equipment Manufacturing	0	1	1	3.4%
Accommodation	0	1	1	3.4%
Computer System Design and Related Services	0	1	1	3.4%
Building Cleaning, Pest Control and Other Support Services	1	0	1	3.4%
Summary of Businesses	**17**	**12**	**29**	**100.0%**

Source: Bull & Bear Economics (2022)

The quality of industrial businesses throughout Yoogali were typically of high quality (55.2%) with only a small amount (3.4%) considered to be of low quality and 41.4% of medium quality. Notably, the E4 General Industrial zone had the highest proportion of high quality businesses; while, E3 Productivity Support zoned land had a significantly higher proportion of medium quality businesses.

Table 4-12 below provides a summary of the quality of businesses on industrial zoned land within Yoogali by zone.

Table 4-12 Quality of Business within Industrial Zones – Yoogali, 2022

Zone	Low	Medium	High
E4 General Industrial	5.9%	23.5%	70.6%
E3 Productivity Support	0.0%	66.7%	33.3%
All Industrial Zones	**3.4%**	**41.4%**	**55.2%**

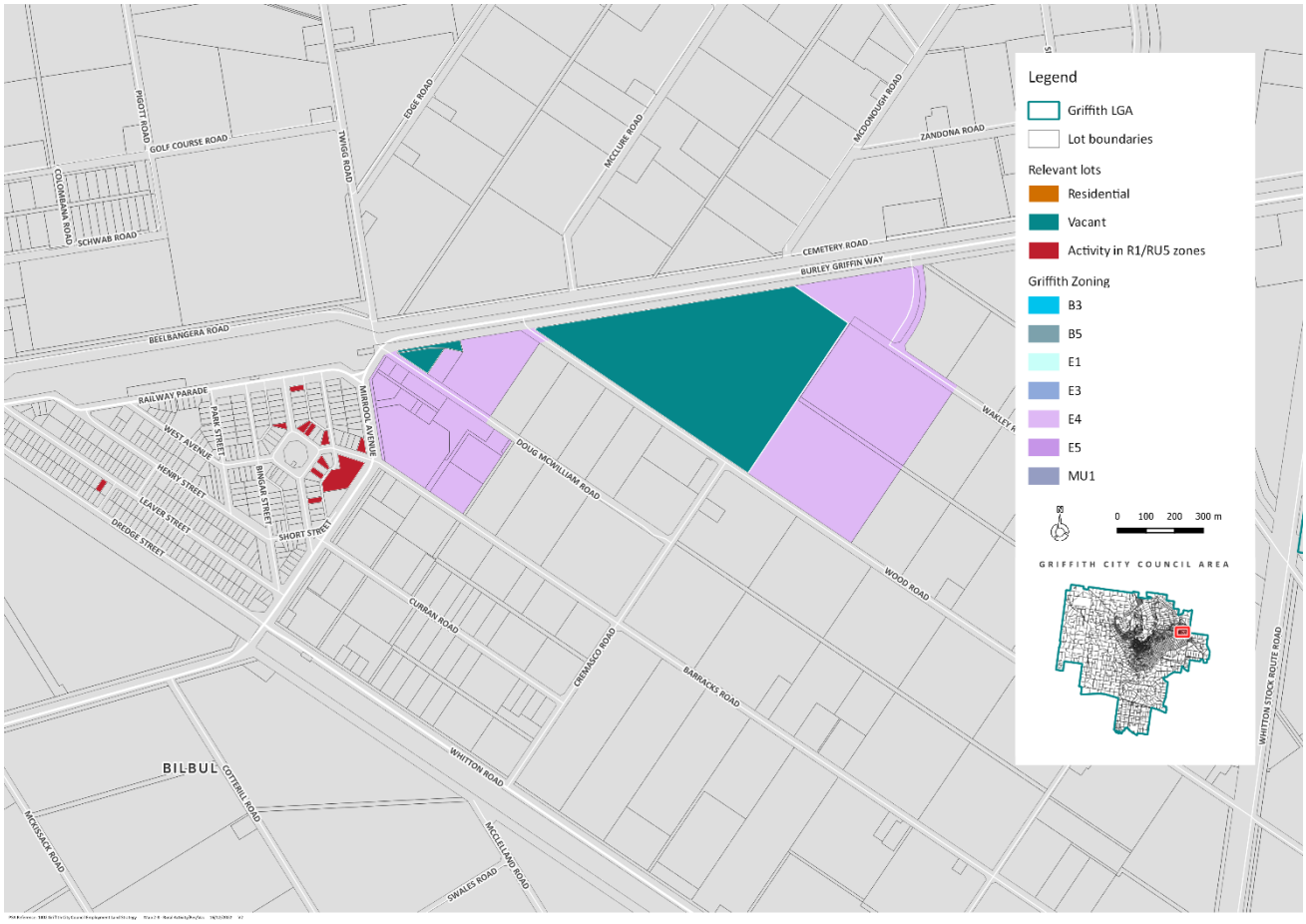
Source: Bull & Bear Economics Analysis, (2022)

4.1.3.3 Yenda

Yenda is a small village situated in the north-east corner of the Griffith LGA. It has a small amount of E4 General Industrial zoned land centred around the Casella winery and Edengate winery.

Figure 4-3 illustrates the geographic boundary of the Yenda industrial area.

Figure 4-3 Yenda Industrial Area



In total Yenda's industrial zone consists of six businesses. Unsurprisingly, the most significant industrial was beverage and tobacco product manufacturing with two businesses, other industries listed in table each have one business each. Other significant businesses in the industrial estate include Rice Growers Australia, the Yenda Producers Co-operative Society and Compost Carbon Fertilisers.

Table 4-13 Businesses by 2-Digit ANZSIC and Zone – Yenda, 2022

Activity / Use	E4 – General Industrial	% of Businesses
Beverage and Tobacco Product Manufacturing	2	33.3%
Road Transport	1	16.7%
Agriculture, Forestry and Fishing Support Services	1	16.7%
Warehousing and Storage Services	1	16.7%
Food Product Manufacturing	1	16.7%
Summary of Businesses	**6**	**100.0%**

Source: Bull & Bear Economics (2022)

There are three lots on industrial zoned land in Yenda which were identified as not having a business on them. Two of these lots were vacant and one was a residential lot. It is understood that the largest vacant lot has a development approval for an ammunition factory.

The quality of industrial business in Yenda is split equally between medium and high quality.

4.1.3.4 Hanwood

Hanwood is a small village situated in south of the Griffith CBD along Kidman Way. It has a small amount of E4 General Industrial zoned land primarily for supporting the agriculture businesses of the area.

Figures 4-4 and 4-5 outline the geographic extent of E4 General Industrial zoned land in Hanwood.

Figure 4-4 General Industrial Zoned Land in Hanwood (Harvey Fresh Juice and Almondco Riverina)

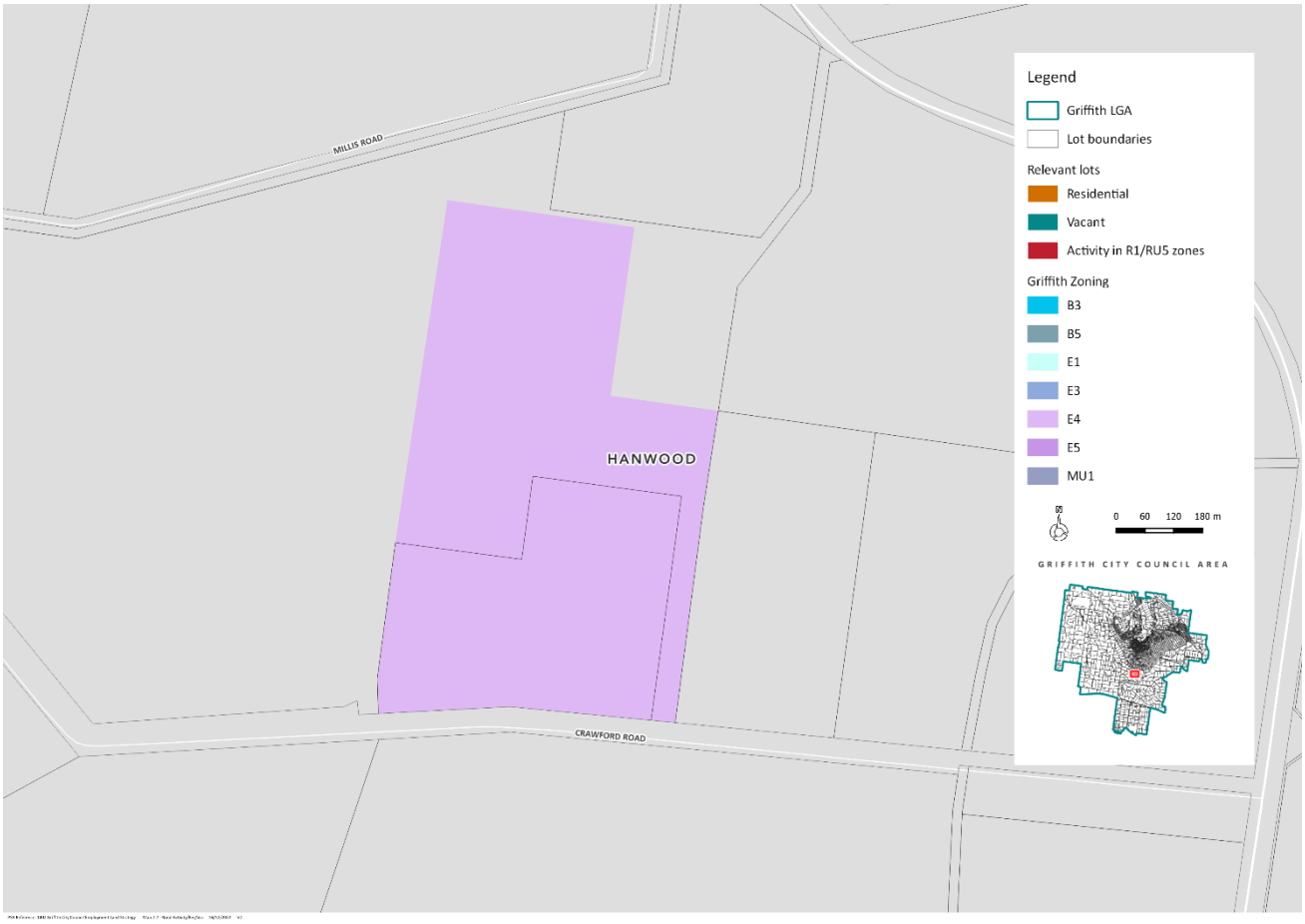


Figure 4-5 General Industrial Zoned Land in Hanwood (Baiada Processing Plant, Baiada Feedmill and McWilliams Wines)

The most significant industry on industrial zoned land in Hanwood was food product manufacturing with three businesses, followed by beverage and tobacco product manufacturing with two businesses. Significant industrial businesses in Hanwood include Almondco Riverina, Harvey Fresh Juice, McWilliams Wine Estate and the Baiada processing plant.

Table 4-14 Businesses by 2-Digit ANZSIC and Zone – Hanwood, 2022

Activity / Use	E4 – General Industrial	% of Businesses
Food Product Manufacturing	3	50.0%
Beverage and Tobacco Product Manufacturing	2	33.3%
Electricity Supply	1	16.7%
Summary of Businesses	**6**	**100.0%**

Source: Bull & Bear Economics (2022)

There were no lots on general industrial zoned land in Hanwood which were identified as not having a business on them.

The quality of industrial business in Hanwood is favoured towards high quality businesses with 83.3% of business considered to be of high quality and only 16.7% of businesses considered to be of medium quality.

4.1.3.5 Tharbogang

Tharbogang is situated north-west of Griffith CBD with some limited industrial zoned land primarily centred around the Wanburn Estate, Summertime Fruit Juices and Yenda Producers.

Figures 4-6 and 4-7 outline the industrial zoned areas within Tharbogang.

Figure 4-6 Industrial Zoned Land in Tharbogang (E4 – General Industrial Land)

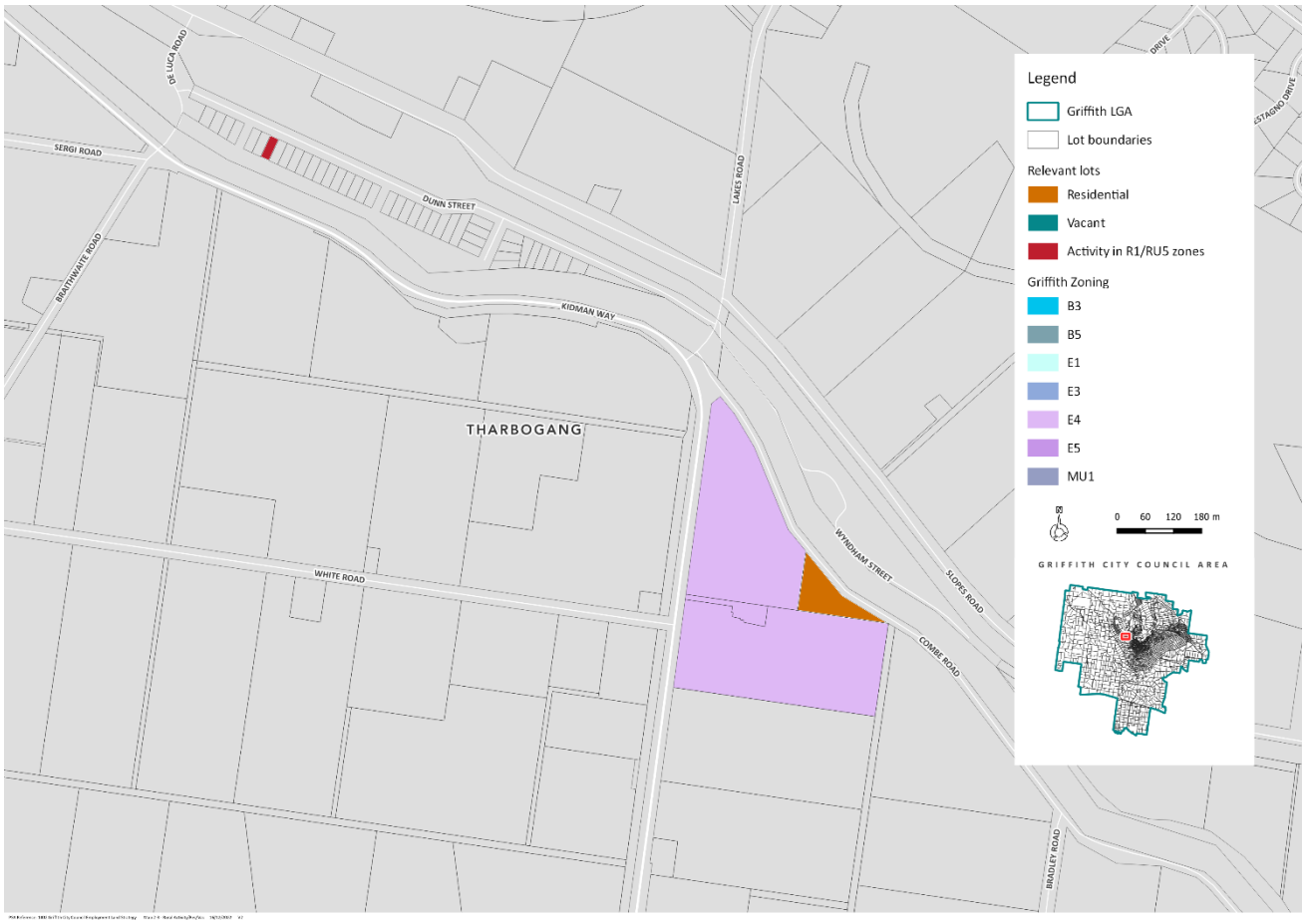
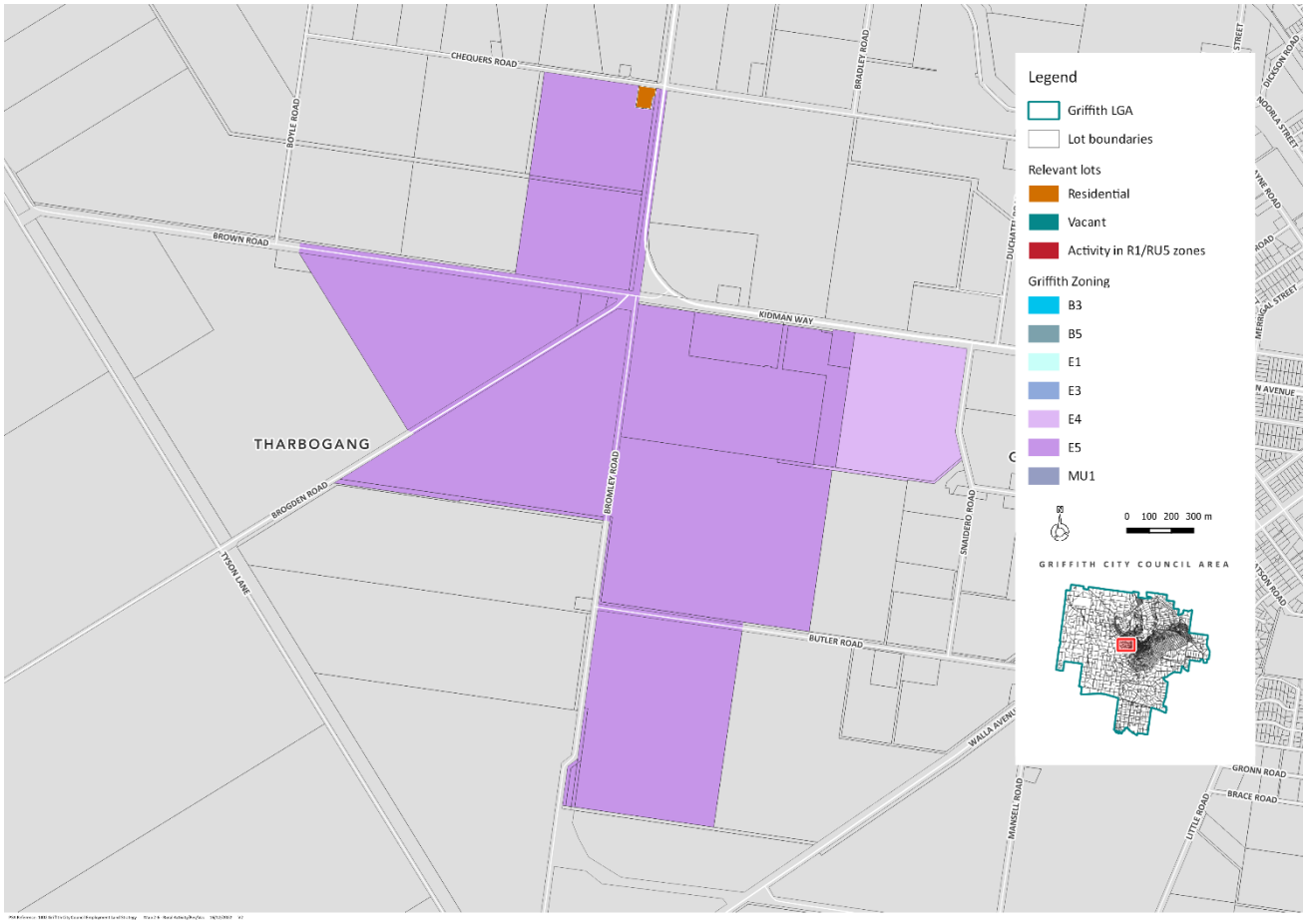


Figure 4-7 Industrial Zoned Land in Tharbogang (E5 – Heavy Industrial Land)



The industrial zone in Tharbogang hosts 10 businesses. Eight of these businesses are within the E5 Heavy Industrial zone and only two are situated in the E4 General Industrial zone. Over both zones the most significant industry was agriculture with six businesses in total (60% of industrial businesses). Beverage and tobacco product manufacturing was the next most significant industry with two businesses.

Table 4-15 details the industrial zoned land by 2-Digit ANZSIC within Tharbogang as per the site visit done by Bull and Bear Economics staff in September 2022.

Table 4-15 Businesses by 2-Digit ANZSIC and Zone – Tharbogang, 2022

Activity / Use	E4 – General Industrial	E5 – Heavy Industrial	Total	% of Businesses
Agriculture	1	5	6	60.0%
Beverage and Tobacco Product Manufacturing	1	1	2	20.0%
Agriculture, Forestry and Fishing Support Services	0	1	1	10.0%
Fabricated Metal Product Manufacturing	0	1	1	10.0%
Summary of Businesses	**2**	**8**	**10**	**100.0%**

Source: Bull & Bear Economics (2022)

Within industrial zoned land in Tharbogang there were two residential lots (one in each zone) which are underutilised given their location in an industrial zone.

Whilst the majority of E5 Heavy Industrial land is currently under farming, it is intended to transition in the longer term to accommodate industrial business growth within Griffith.

The quality of industrial businesses were typically of medium quality (80.0%) with the remaining 20% considered to be of high quality. Table 4-16 below provides a summary of the quality of businesses on industrial zoned land within Tharbogang by zone.

Table 4-16 Quality of Business within Industrial Zones – Tharbogang, 2022

Zone	Low	Medium	High
E4 General Industrial	0.0%	100.0%	0.0%
E5 Heavy Industrial	0.0%	75.0%	25.0%
All Industrial Zones	**0.0%**	**80.0%**	**20.0%**

Source: Bull & Bear Economics Analysis, (2022)

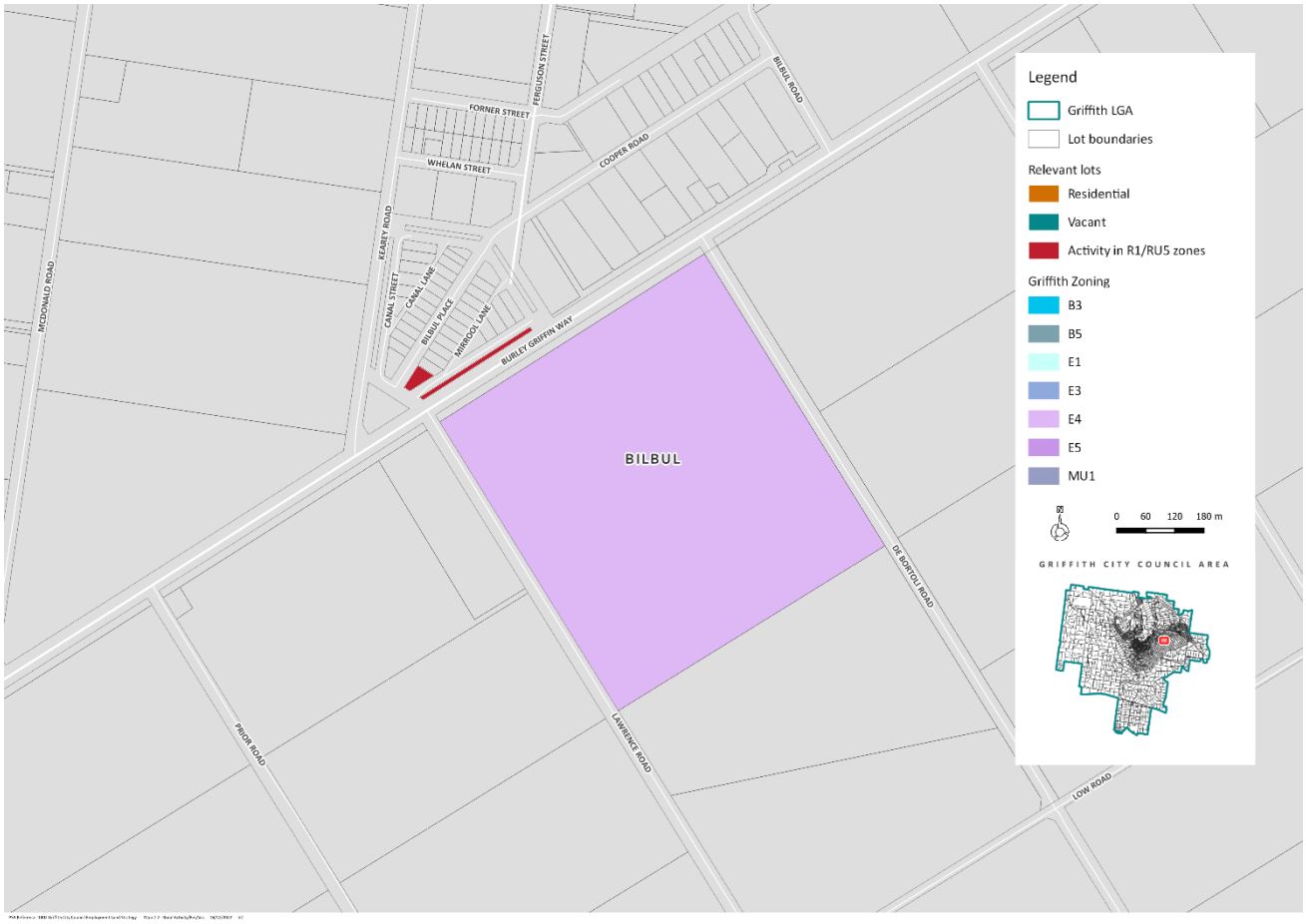
4.1.3.6 Beelbangera & Bilbul

Beelbangera and Bilbul only have one E4 General Industrial zoned lot each, both of which host a winery (Tarac in Beelbangera and De Bortoli Wines in Bilbul).

Figures 4-8 and 4-9 outline the geographic location of industrial zones in Beelbangera and Bilbul

Figure 4-8 Beelbangera Industrial Area

Figure 4-9 Bilbul Industrial Area



The quality of built form on these lots is split equally between medium and high quality.

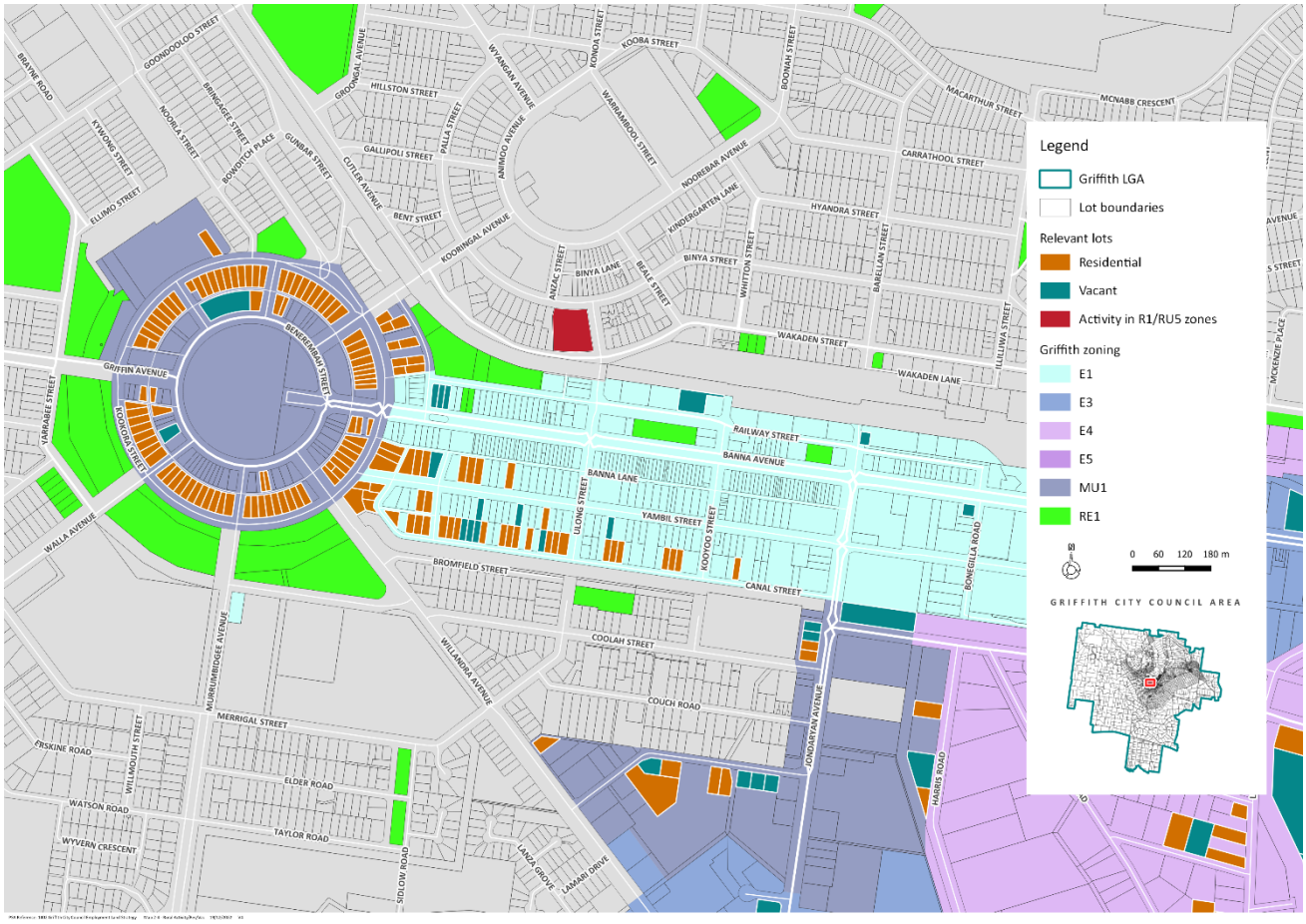
4.2 Centres Activity

4.2.1 Retail and Commercial Office Activity in Griffith City

As of September 2022, there was 110,512sqm of retail and commercial floor space identified within the centre zones in Griffith City, i.e. E1 Local Centre and MU1 Mixed Use. Of this floor space, 65.8% was classified as retail floorspace, with 34.2% classified as commercial floor space.

Figure 4-10 outlines the geographic extent of centres zoned land in Griffith City, including the presence of resident and vacant land allotments.

Figure 4-10 Centres Zoned Land in Griffith City



Across Griffith City the most significant retail industry was dining and take-away food with 16,028sqm of floor space, closely followed by clothing, footwear and apparel with 13,506sqm and groceries and take-home food with 13,752sqm. The most significant commercial areas across Griffith City were professional, scientific and technical services with 10,252sqm, public administration and safety with 9,441sqm, followed by health care and social assistance with 6,093sqm.

The retail and commercial floor space within the MU1 Mixed Use zone surrounding the TAFE and Griffith City Council (MU1 – Benerembah Street) is most significantly used for groceries and take-home food (3,902sqm). The next most significant industry (by proportion of retail and commercial floorspace) is public administration and safety, due to the Griffith City Council building (20.4% of retail and commercial floorspace within the zone).

The main retail and commercial areas in Griffith exist along Banna Avenue and Yambil Street which is zoned E1 Local Centre. These two streets are host to 76% of all retail floorspace within Griffith LGA centre zones. The most significant retail industries were clothing, footwear and apparel which accounted for 15.3% of all retail and commercial floorspace within the E1 Local Centre zone, followed by dining and take-away food accounting for 12.2% of floorspace. The most significant commercial industries within this zone were professional, scientific and technical services accounting for 11.3% of retail and commercial floorspace, follow by public administration and safety which accounted for 8.6%.

The zone along Jondaryan Avenue is an MU1 Mixed Use zone accommodating a variety of uses. Approximately 88.9% of the retail and commercial floorspace within this area is used for retail

purposes, of which 4,465sqm or 38.1% of all retail and commercial floorspace was used for dining and take-away food purposes. The next most significant industry in this area was groceries and take-home food with 2,628sqm. Commercial uses within this zone consists of health care and social assistance (1,300sqm).

There was 1,463sqm of retail and commercial floorspace identified at the two smaller centre zoned areas at Drivers Plaza and in East Griffith. This floorspace was predominantly used for retail purposes, the most significant retail use was groceries and take-home food accounting for 39.3% of the retail and commercial floorspace within these smaller centre zones.

The vacant tenancy rate is highest in the MU1 zone around Benerembah street where 51.1% of tenancies available for or currently used for retail or commercial uses were vacant. Our assessment also noticed that these tenancies were of significantly deteriorating quality. Banna Avenue and Yambil Street also had a significant vacancy rate of 20.1%. Overall, the vacancy rate in Griffith City was estimated at 22.4%.

Table 4-17 details the centre zoned land business activity by use and zone within Griffith City as per the site visit conducted by Bull and Bear Economics staff in September 2022.

Table 4-17 Centre Zoned Floorspace by Retail and Commercial Use and Zone (sqm) – Griffith City, 2022

	MU1 - Benerembah Street		E1 - Banna Avenue and Yambil Street		MU1 - Jondaryan Avenue		E1 - Drivers Plaza, East Griffith		Griffith City	
	sqm	%	sqm	%	sqm	%	sqm	%	sqm	%
Retail Classes										
Groceries and take-home food	3,902	20.5%	6,620	6.0%	2,628	22.4%	575	36.6%	13,725	9.6%
Dining and take-away food	444	2.3%	10,749	9.8%	4,465	38.1%	371	23.6%	16,028	11.3%
Clothing, footwear and apparel	0	0.0%	13,506	12.3%	0	0.0%	0	0.0%	13,506	9.5%
Personal and other goods	534	2.8%	18,443	16.8%	1,931	16.5%	246	15.7%	21,154	14.8%
Core bulky goods	600	3.1%	2,556	2.3%	1,392	11.9%	0	0.0%	4,548	3.2%
Ancillary bulky goods	0	0.0%	3,295	3.0%	0	0.0%	0	0.0%	3,295	2.3%
Hardware	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Take away liquor	0	0.0%	482	0.4%	0	0.0%	0	0.0%	482	0.3%
Total Retail	5,480	28.7%	55,650	50.5%	10,416	88.9%	1,192	75.9%	72,737	51.1%
Commercial Classes										
Financial and insurance services	387	2.0%	4,189	3.8%	0	0.0%	0	0.0%	4,576	3.2%
Rental, hiring and real estate services	0	0.0%	2,106	1.9%	0	0.0%	0	0.0%	2,106	1.5%
Health care and social assistance	752	3.9%	3,925	3.6%	1,300	11.1%	116	7.4%	6,093	4.3%
Professional, scientific and technical services	300	1.6%	9,907	9.0%	0	0.0%	45	2.9%	10,252	7.2%
Administrative and support services	517	2.7%	4,459	4.0%	0	0.0%	32	2.0%	5,008	3.5%
Public administration and safety	1,900	10.0%	7,541	6.8%	0	0.0%	0	0.0%	9,441	6.6%
Education and Training	0	0.0%	221	0.2%	0	0.0%	78	5.0%	299	0.2%
Total Commercial	3,856	20.2%	32,347	29.4%	1,300	11.1%	271	17.3%	37,774	26.5%
Summary Retail and Commercial	**9,336**	**48.9%**	**87,997**	**79.9%**	**11,716**	**100.0%**	**1,463**	**93.1%**	**110,512**	**77.6%**
Vacant Tenancy	9,739	51.1%	22,106	20.1%	0	0.0%	108	6.9%	31,953	22.4%
Total (including vacant tenancy)	**19,075**	**100.0%**	**110,103**	**100.0%**	**11,716**	**100.0%**	**1,571**	**100.0%**	**142,465**	**100.0%**

Source: Bull & Bear Economics (2022)

4.2.2 Other Business Uses within Centre Zoned Land

There were 110 businesses identified within the centre zones in Griffith which do not fit neatly in either retail or commercial categories, but represent uses often found in centre zones, such as recreational services (such as gyms), industrial businesses, accommodation providers, community services and car washes. The majority (55.5%) of these businesses were industrial businesses with 61 businesses identified, 18 were accommodation providers and a further 18 were community services. These businesses were predominantly located within the E1 Local Centre zone along Banna Avenue and Yambil street, as well as several in the MU1 Mixed Use zone surrounding the TAFE.

Table 4-18 below details the number of industrial and accommodation businesses within Griffith City centre zones by area.

Table 4-18 Centre Zoned Other Businesses – Griffith City, 2022

	MU1 - Benerembah Street	E1 - Banna Avenue and Yambil Street	MU1 - Jondaryan Avenue	E1 - Drivers Plaza, East Griffith	Griffith City
Recreational Services	1	7	0	2	10
Industrial	13	35	12	1	61
Accommodation	4	11	3	0	18
Community	7	10	1	0	18
Car Wash	0	2	1	0	3
Summary	**25**	**65**	**17**	**3**	**110**

Source: Bull & Bear Economics (2022)

4.2.3 Non-Business Uses within the Centre Zone

Across the centre zones in Griffith City there were several lots which were identified as not having an existing business on the lot. These included private sheds, vacant lots, residential lots, carparks and lots under construction. In total 27.7 hectares of non-business land was identified within the centre zones, with just over half of this land occupied by remnant housing (15.7 hectares).

There was an estimated 4.1 hectares of vacant centres land identified within Griffith City, with the majority identified on within the MU1 zone on Jondaryan Avenue (2.2 hectares) and the E1 zone on Banna Avenue and Yambil Street (1.9 hectares).

Table 4-19 below details the amount and proportion of centre zoned land not used for business purposes as of September 2022.

Table 4-19 Centre Zoned Non-Business Land by Use and Zone (sqm) – Griffith City, 2022

	MU1 - Benerembah Street		E1 - Banna Avenue and Yambil Street		MU1 - Jondaryan Avenue		E1 - Drivers Plaza, East Griffith		Griffith City	
	sqm	%	sqm	%	sqm	%	sqm	%	sqm	%
Carpark	3,542	3.5%	24,780	28.7%	0	0.0%	0	0.0%	28,322	10.2%
Vacant Land	0	0.0%	19,307	22.3%	22,043	24.9%	0	0.0%	41,350	14.9%
Residential	95,878	94.2%	37,949	43.9%	23,223	26.2%	0	0.0%	157,050	56.8%
Under construction	0	0.0%	4,142	4.8%	42,034	47.5%	0	0.0%	46,176	16.7%
Privately Owned	2,344	2.3%	272	0.3%	1,193	1.3%	0	0.0%	3,809	1.4%
Summary	**101,764**	**100.0%**	**86,449**	**100.0%**	**88,493**	**100.0%**	**0**	**0.0%**	**276,706**	**100.0%**

Source: Bull & Bear Economics (2022)

The quality of retail and commercial centre zoned businesses throughout Griffith City were typically of medium quality (51.7%) with only a small amount (2.8%) considered to be of low quality and 45.5% of high quality. The difference between retail and commercial business quality within the same area is minimal, the more significant difference is the difference in quality between the different zones/areas. Notably, the MU1 Mixed Use zone around Jondaryan Avenue had the highest proportion of high quality tenancies (over 75% for both retail and commercial businesses); while, the MU1 Mixed Use zone around Benerembah Street had the highest proportion of low quality tenancies (over 25% for both retail and commercial businesses).

Whilst overall the mix of quality is reasonable, it is important to note that the differences between medium quality and low quality business/buildings was significant especially along Yambil Street for example where there were buildings with their roofs caving in adjacent to well-maintained tenancies.

Table 4-20 below provides a summary of the quality of retail and commercial businesses on centre zoned land within Griffith City by area.

Table 4-20 Quality of Businesses within Centre Zones – Griffith City, 2022

Zone	Low	Medium	High
MU1 - Benerembah Street			
Retail	25.0%	50.0%	25.0%
Commercial	37.5%	25.0%	37.5%
E1 - Banna Avenue and Yambil Street			
Retail	1.6%	47.5%	50.8%
Commercial	0.8%	54.7%	44.5%
MU1 - Jondaryan Avenue			
Retail	0.0%	25.0%	75.0%
Commercial	0.0%	0.0%	100.0%
E1 - Drivers Plaza and East Griffith			
Retail	0.0%	100.0%	0.0%
Commercial	0.0%	100.0%	0.0%
Griffith City			
Retail	2.7%	49.3%	47.9%
Commercial	2.8%	54.2%	43.0%
Griffith City Retail and Commercial	2.8%	51.7%	45.5%

Source: Bull & Bear Economics (2022)

4.2.4 Outside of Centre Zone Retail/Commercial Supply

This assessment has also considered retail/commercial supply outside of the centre zones. This predominantly includes the Woolworths situated on Burrell Place (within the R1 General Residential zone) as well as retail/commercial businesses within the RU5 Rural Villages zone in Hanwood, Yoogali, Tharbogang, Yenda, Beelbangera and Bilbul.

A total of 16,386sqm of retail and commercial floorspace was identified outside of the centre zones. The most significant industries were dining and take-away food with 6,976sqm and groceries and take-home food with 5,334sqm. These are largely due to the Yoogali Club, the Yenda Hotel, Griffith North Woolworths and Yenda Foodworks.

Table 4-21 details the retail and commercial business activity outside of centre zones by use within Griffith City. Appendix A shows a breakdown of retail and commercial business activity outside of centre zones by suburb.

Table 4-21 Retail and Commercial Floorspace Outside of Centre Zones – Griffith City, 2022

	Floorspace	% of Activity
Retail Classes		
Groceries and take-home food	5,334	32.6%
Dining and take-away food	6,976	42.6%
Clothing, footwear and apparel	0	0.0%
Personal and other goods	1,829	11.2%
Core bulky goods	0	0.0%
Ancillary bulky goods	483	2.9%
Hardware	0	0.0%
Take away liquor	0	0.0%
Summary Retail Floor Space	14,622	89.2%
Commercial Classes		
Financial and insurance services	0	0.0%
Rental, hiring and real estate services	0	0.0%
Health care and social assistance	828	5.1%
Professional, scientific and technical services	936	5.7%
Administrative and support services	0	0.0%
Public administration and safety	0	0.0%
Education and Training	0	0.0%
Summary Commercial Floor Space	1,764	10.8%
Summary of Retail and Commercial Floor Space	16,386	100.0%

Source: Bull & Bear Economics (2022)

Along with the above identified businesses there were 12 industrial businesses (six of which were situated in Hanwood and another four of which were post offices in Tharbogang, Yoogali, Yenda and Bilbul). As well as one accommodation business, the Village Stay in Bilbul.

Yenda was specifically identified as having a vacant tenancy (totalling 1,089sqm). Notably, the quality of businesses in Yenda is considered to be quite low with 89% of retail and commercial businesses identified as being of low quality.

Across all retail and commercial businesses outside of the centre zones, 36% are considered to be of low quality, 59% of medium quality and only 5% are considered to be of high quality.

4.3 Summary

The assessment identifies that there is a range of industrial activity within Griffith City, with an estimated 341 businesses identified on industrial zoned land at the time of the site inventory. The inventory identified 113.7 hectares of vacant and underutilised land to accommodate future growth, mostly within the E4 General Industrial and E3 Productivity Support zones. Whilst this quantum of vacant and underutilised land seems significant, the availability and suitability of this land does not align with the demand profile of the region (explored further in Section 8 and 9 of the report).

The largest vacant allotment within the E4 zone (61.9 hectares), which represented over half of the remaining supply, is not available for development due to an existing approval for an ammunition factory. Additionally, the composition of vacant and underutilised lots elsewhere in Griffith (both in terms of size and location) are suited only for low impact and service industry uses and do not align with the future demand profile within the region (which is further explored in Section 8 of the report).

The inventory identified persistently high vacancy rates within centres zones in Griffith City, suggestive of an oversupply of retail floor space within the region. Whilst the quantum of vacant land within centres zones (4.1 hectares) was significantly lower than for industry zones, it was also noted that significant housing was within the centre zones, particularly within the MU1 Mixed Use - Benerembah Street precinct, which also had the highest centres vacancy rate.

5 Retail Floor Space Expenditure

This section of the report provides an assessment of the demand for additional retail floor space within the Griffith City centres network to 2041, through consideration of projected household expenditure patterns, converted to supportable floor space estimates (after adjusting for net inflows/outflows of retail expenditure).

5.1 Retail Expenditure

Retail expenditure patterns are estimated based on the Bull & Bear Economics retail expenditure model which generates small area retail expenditure estimates based on a simulation utilising a range of small area demographic data sourced from the Census and ATO; regional level data from the ABS Household Expenditure Survey; and broader state and national level data from state and national accounts.

Expenditure categories relevant to retail and commercial centres in Griffith City are as follows:

- Groceries & take-home food;
- Dining & take away food;
- Clothing, footwear & apparel;
- Personal & other goods;
- Core bulky goods;
- Ancillary bulky goods;
- Hardware; and
- Takeaway liquor.

5.1.1 Retail Expenditure

5.1.1.1 Weekly Household Retail Expenditure

Weekly household retail expenditure estimates are presented in 2021 dollars and assume real expenditure growth of 1.0% per annum, as per standard industry practice. Weekly household retail expenditure within Griffith City is projected to increase from $568.78 per week in 2021 to $698.77 pers week in 2041, as summarised in Table 5-1.

Table 5-1 Weekly Household Retail Expenditure, Griffith City, 2021-2041

	2021	2026	2031	2036	2041
Groceries & take home food	$215.71	$227.05	$238.96	$251.46	$264.64
Dining & take away food	$89.67	$94.54	$99.61	$104.94	$110.60
Clothing, footwear & apparel	$47.04	$49.56	$52.20	$54.97	$57.90
Personal & other goods	$81.64	$86.00	$90.55	$95.34	$100.40
Core bulky goods	$36.58	$38.54	$40.58	$42.72	$44.99
Ancillary bulky goods	$54.33	$57.19	$60.19	$63.33	$66.65
Hardware	$17.19	$18.09	$19.03	$20.02	$21.06
Takeaway liquor	$26.60	$27.97	$29.41	$30.92	$32.52
Total Grocery & Specialty	***$460.65***	***$485.11***	***$510.73***	***$537.64***	***$566.06***
Total Bulky Goods	***$108.11***	***$113.82***	***$119.80***	***$126.08***	***$132.71***
Total	***$568.76***	***$598.94***	***$630.53***	***$663.71***	***$698.77***

Source: Derived from ABS (2016) Retail Trade Publication and ABS (2017) Household Expenditure Survey

5.1.1.2 Annual Available Retail Expenditure

To convert average weekly household estimates to annual available expenditure estimates, the assessment has utilised the household projections reported in Section 2.3.2. Extrapolating the average annual weekly expenditure per household to an annual figure, then multiplying this value by the number of households yields a total annual available expenditure within Griffith City over the projection horizon.

Annual available expenditure within Griffith City is projected to increase from $306.76 million in 2021 to $435.84 million in 2041, or by 1.8% per annum.

Table 5-2 Annual Available Expenditure ($m, 2021 Dollars) – Griffith City, 2021 to 2041

	2021	2026	2031	2036	2041
Groceries & take home food	$116.34	$126.92	$138.55	$151.25	$165.06
Dining & take away food	$48.36	$52.85	$57.76	$63.12	$68.98
Clothing, footwear & apparel	$25.37	$27.70	$30.26	$33.06	$36.11
Personal & other goods	$44.03	$48.07	$52.50	$57.35	$62.62
Core bulky goods	$19.73	$21.54	$23.53	$25.70	$28.06
Ancillary bulky goods	$29.30	$31.97	$34.90	$38.09	$41.57
Hardware	$9.27	$10.11	$11.03	$12.04	$13.14
Takeaway liquor	$14.34	$15.63	$17.05	$18.60	$20.28
Total Grocery & Specialty	**$248.45**	**$271.18**	**$296.12**	**$323.39**	**$353.06**
Total Bulky Goods	**$58.31**	**$63.63**	**$69.46**	**$75.84**	**$82.78**
Total	**$306.76**	**$334.80**	**$365.58**	**$399.23**	**$435.84**

Source: Derived from ABS (2018) Retail Trade Publication, ABS (2018) Household Expenditure Survey

5.1.2 Adjusted Retail Expenditure

According to the 2020 eCommerce Industry Report (Australia Post, 2020), it has been estimated that by the end of 2020, online spending will account for 15.0% of the total retail market in Australia. Therefore, adjusting retail expenditure estimates to account for an ongoing shift to online purchasing and fulfilment is paramount. Based on the regional nature of Griffith City, it is likely that the shift towards online shopping, particularly with respect to grocery shopping, will be slower than in metropolitan areas (as discussed in Section 3.2). This is largely due to online grocery orders ultimately being fulfilled by local supermarkets, as opposed to dark stores, as is the case in the metropolitan context. However, a small allowance for online expenditure for groceries and take home-food has been accounted for, recognising that grocery needs may partially be met by online retailers without a local retail shopfront.

As such, the proportion of retail expenditure attributable to online shopping is likely to vary across the retail expenditure categories and is also likely to continue to increase over time as online shopping becomes increasingly accessible. The proportion of sales attributable to online retailers is likely to be significantly higher for the comparison retail categories and has likely been accelerated by the COVID-19 pandemic, with residents adjusting their shopping habits permanently within these categories.

Table 5-3 below summaries the proportion of retail expenditure which is likely to be leaked from Griffith City due to online sales, by retail expenditure category over the projection horizon.

Table 5-3 Proportion of Retail Sales Attributable to Online Shopping – Griffith City, 2021 to 2041

Online Leakage	2021	2026	2031	2036	2041
Groceries & take-home food	2.5%	3.1%	3.8%	4.4%	5.0%
Dining & take away food	5.0%	5.5%	6.0%	6.5%	7.0%
Clothing, footwear & apparel	20.0%	22.5%	25.0%	27.5%	30.0%
Personal & other goods	20.0%	22.5%	25.0%	27.5%	30.0%
Core bulky goods	20.0%	22.5%	25.0%	27.5%	30.0%
Ancillary bulky goods	20.0%	22.5%	25.0%	27.5%	30.0%
Hardware	10.0%	11.3%	12.5%	13.8%	15.0%
Takeaway liquor	5.0%	5.6%	6.3%	6.9%	7.5%
Average	**12.8%**	**14.4%**	**16.1%**	**17.7%**	**19.3%**

Source: Bull & Bear Economics Analysis (2022)

As such, the annual available expenditure estimates have been adjusted based on the assumed leakage to online sales using the proportions outlined above. Adjusted annual available retail expenditure within Griffith City is projected to increase from $276.10 million in 2021 to $368.75 million in 2041, as summarised in Table 5-4 below.

Table 5-4 Annual Available Expenditure ($m, 2021 Dollars) After Adjusting for Online Retailing – Griffith City, 2021 to 2041

	2021	2026	2031	2036	2041
Groceries & take home food	$113.43	$122.95	$133.35	$144.64	$156.81
Dining & take away food	$45.95	$49.94	$54.29	$59.02	$64.15
Clothing, footwear & apparel	$20.29	$21.47	$22.70	$23.97	$25.28
Personal & other goods	$35.23	$37.26	$39.38	$41.58	$43.84
Core bulky goods	$15.78	$16.70	$17.65	$18.63	$19.65
Ancillary bulky goods	$23.44	$24.78	$26.17	$27.62	$29.10
Hardware	$8.34	$8.97	$9.66	$10.39	$11.17
Takeaway liquor	$13.63	$14.76	$15.99	$17.32	$18.76
Total Grocery & Specialty	***$228.53***	***$246.37***	***$265.70***	***$286.53***	***$308.84***
Total Bulky Goods	***$47.57***	***$50.45***	***$53.47***	***$56.64***	***$59.91***
Total	***$276.10***	***$296.82***	***$319.18***	***$343.17***	***$368.75***

Source: Derived from ABS (2018) Retail Trade publication, ABS (2018) Household Expenditure

5.2 Supermarket Demand Assessment

5.2.1 Available Supermarket Expenditure

The estimates in Table 5-3 above provide a high-level overview of the total available retail expenditure within Griffith City both before and adjusting for retail expenditure leakage to online retailers.

When assessing supermarket demand the retail category of relevance is the groceries and take-home food category. Our assessment has focussed on available supermarket expenditure, excluding liquor purchases.

By nature of the groceries and take-home food sector, these estimates include purchases which are not likely to occur at a supermarket, such as bakeries, butchers and greengrocers. Additionally, supermarkets also sell non-grocery items. As such, the analysis of available supermarket expenditure within Griffith City relies on the following assumptions:

- 77.5% of available expenditure on grocery and take-home food is captured by supermarkets. Typically, supermarkets capture in the order of 75-80% of grocery and take-

home expenditure, with our analysis adopting the midpoint of this range. This assumption is held constant over the projection period; and

+ 7.5% of total expenditure at supermarkets is spent on general merchandise (non-grocery items). Supermarkets generally generate between 5% and 10% of their turnover from general merchandise items. This assessment has assumed that 7.5% of total expenditure at supermarkets within the trade area is spent on general merchandise, with this assumption held constant over the projection period.

This translates to annual available supermarket expenditure of $95.04 million in 2021, increasing to $131.38 million in 2041.

Table 5-5 below denotes supermarket expenditure (groceries plus general merchandise) in Griffith City between 2021 and 2041.

Table 5-5 Annual Available Supermarket Expenditure ($m) and Supportable Floor Space (sqm), Griffith City, 2021 to 2041

Groceries and Take-Home Food	Assumption	2021	2026	2031	2036	2041
Available Grocery and Take Home Food Expenditure	-	$113.43	$122.86	$133.14	$144.30	$156.31
% Captured by Supermarkets (77.5%)	77.5%	$87.91	$95.29	$103.35	$112.09	$121.53
Uplift for General Merchandise (7.5%)	7.5%	$7.13	$7.73	$8.38	$9.09	$9.85
Total Expenditure Available to Supermarkets		$95.04	$103.01	$111.73	$121.18	$131.38
Assumed Turnover Density ($/sqm)		$9,500	$9,740	$9,986	$10,238	$10,497
Supportable Floor Space (sqm)		10,004	10,576	11,188	11,837	12,516

Source: Bull & Bear Economics Estimates (2022)

5.2.2 Supply-Demand Balance

Our assessment has included the existing and approved supermarket floor space within Griffith City Council against the projected demand generated by residents within Griffith City Council (after adjusting for expenditure outflows attributable to online retailing) as discussed in Section 5.1.2 of the report.

The analysis indicates there is sufficient provision of supermarket floor space within Griffith City Council over the projection horizon, as summarised in Table 5-6.

Table 5-6 Supermarket Floorspace Supply Demand Balance (sqm) – Griffith LGA, 2021 to 2046

	2021	2026	2031	2036	2041
Supply	19,059	19,059	19,059	19,059	19,059
Demand	10,004	10,576	11,188	11,837	12,516
Supply-Demand Balance	9,055	8,483	7,871	7,222	6,543

Source: Bull & Bear Estimates (2022)

5.3 Retail Floorspace Demand Assessment

Section 5.2 of the report focused on the demand for supermarket floorspace within Griffith City. The purpose of this section of the report is to identify the demand for additional retail floorspace within Griffith City more broadly, to understand whether need exists to accommodate additional retail floorspace, particularly within the comparison categories of specialty retail and bulky goods/showroom floorspace.

In addition to retail expenditure inflows to the region, there are significant expenditure outflows, predominantly to online retailers, which offers a broader range of products and services. This study

has assumed that Griffith City represents the appropriate area of assessment, particularly within the comparison retail categories.

The prevalence of online retailing has increased significantly subsequent to the completion of this study. Therefore, on balance, we have assumed that net outflows of expenditure by retail expenditure category are consistent with those presented in Table 5-4 of the report.

5.3.1 Supportable Retail Floorspace

The total supportable retail floorspace is dependent on the retail turnover productivities of each retail expenditure category. Industry averages suggest an average turnover per square metre of between $3,500 per square metre (hardware retailing) to $9,500 per square metre (groceries and take-home food) in 2021, with assumed turnover per square metre increasing by 0.5% per annum.

Table 5-7 below details the assumed turnover productivities adopted in this assessment for each retail expenditure category.

Table 5-7 Annual Turnover Productivities by Retail Expenditure Category, Griffith City – $/sqm

Retail Expenditure Categories	2021	2026	2031	2036	2041
Groceries & take-home food	$9,500	$9,740	$9,986	$10,238	$10,497
Dining & take-away food	$5,500	$5,639	$5,781	$5,927	$6,077
Clothing, footwear & apparel	$5,500	$5,639	$5,781	$5,927	$6,077
Personal & other goods	$5,500	$5,639	$5,781	$5,927	$6,077
Core bulky goods	$4,500	$4,614	$4,730	$4,850	$4,972
Ancillary bulky goods	$5,500	$5,639	$5,781	$5,927	$6,077
Hardware	$3,500	$3,588	$3,679	$3,772	$3,867
Takeaway liquor	$9,000	$9,227	$9,460	$9,699	$9,944
Average	**$6,063**	**$6,216**	**$6,373**	**$6,533**	**$6,698**

Source: Bull & Bear Estimates (2022)

Applying the turnovers in Table 5-8 to the adjusted retail expenditure estimates summarised in Table 5-4, supportable retail floorspace estimates can be calculated. Overall, supportable retail floor space in Griffith City is projected to increase from 42,057sqm in 2021 to 50,384sqm in 2041, as summarised in Table 5-8.

Table 5-8 Supportable Retail Floorspace – Griffith City, 2021 to 2041

	2021	2026	2031	2036	2041
Groceries & take-home food	11,940	12,623	13,354	14,128	14,939
Dining & take-away food	8,354	8,856	9,391	9,958	10,557
Clothing, footwear & apparel	3,690	3,808	3,926	4,044	4,160
Personal & other goods	6,405	6,607	6,811	7,014	7,214
Core bulky goods	3,508	3,619	3,731	3,842	3,951
Ancillary bulky goods	4,263	4,394	4,527	4,660	4,789
Hardware	2,384	2,501	2,624	2,754	2,888
Takeaway liquor	1,514	1,599	1,690	1,786	1,887
Total Grocery & Specialty	***31,903***	***33,494***	***35,172***	***36,930***	***38,756***
Total Bulky Goods	***10,154***	***10,514***	***10,882***	***11,255***	***11,628***
Total	***42,057***	***44,007***	***46,054***	***48,185***	***50,384***

Source: Bull & Bear Estimates (2022)

5.3.2 Supply-Demand Balance

Our assessment has compared the existing retail floor space within Griffith City Council against the projected demand generated by residents within Griffith City Council (after adjusting for expenditure outflows attributable to online retailing) as discussed in Section 5.1.2 of the report.

A comparison of existing supply against projected demand highlights an existing oversupply of retail floor space, indicative of existing tenants likely trading below benchmark trading levels.

Whilst the degree of oversupply is anticipated to decrease over time, the analysis clearly highlights there is sufficient retail floor space within Griffith City to accommodate projected demand over the next twenty years to 2041.

Table 5-9 Retail Floorspace Supply Demand Balance (sqm) – Griffith LGA, 2021 to 2046

	2021	2026	2031	2036	2041
Supply	68,301	68,301	68,301	68,301	68,301
Demand	42,057	44,007	46,054	48,185	50,384
Supply-Demand Balance	26,244	24,293	22,247	20,116	17,917

Source: Bull & Bear Estimates (2022)

6 Employment Projections

This section details employment projections for Griffith City, which represent a key input into the assessment of projected demand for both commercial office floor space demand and industrial land demand.

In late 2022, Transport for NSW undertook employment projections for all local government areas in New South Wales from 2016 to 2066 (annual between 2021 and 2026, five yearly form 2026-2066),. The Transport for NSW projections rely on a range of data inputs, including:

- 2016 Census journey to work data (as the projections relied on best available information from early-mid 2022, prior to the release of 2021 Census data);
- State level employment projections undertaken by Victoria University on behalf of NSW Treasury;; and
- Future Employment Development Database (FEDD) – a custom dataset compiled by Transport for NSW in late 2019 and updated in mid 2022 that presents the number of jobs expected from major projects based on publicly available documents.

As a starting point, we have reviewed the latest employment outlook anticipated by Transport for NSW (late 2022) and then compared this against recent growth trends in Griffith City to determine the appropriateness of adopting this growth outlook, recognising that the Transport for NSW projections are unlikely to have fully captured the strong economic growth recorded in Griffith City between 2016 and 2021, given the reliance on 2016 Census, as opposed to 2021 Census data.

From here, adjustments to the growth outlook, based on historic trends and anticipated investment in the region, have been undertaken as appropriate to inform our preferred employment projection dataset.

6.1 Transport for NSW Employment Projections

The Transport for NSW Employment Projections for Griffith City anticipated total employment to increase from 14,716 persons in 2016 to 15,351 persons in 2021, or by 0.8% per annum. In the 2021 to 2041 period, the projections anticipate a slower rate of growth, with employment anticipated to increase by 0.6% per annum to 17,419 persons in 2041.

In the 2016 to 2021 period, the projections anticipated health care and social assistance, agriculture, forestry and fishing, education and training, construction and professional, scientific and technical services to be the key drivers of growth, with employment declines in the manufacturing sector, particularly within food and beverage product manufacturing. Whilst health care and social assistance was the second fastest growing sector in terms of employment in Griffith City in the 2016 to 2021 period, manufacturing was also a significant contributor to employment growth in Griffith City, recording the most significant growth in additional employed persons in 2016 to 2021 (additional 430 employed persons).

In the 2021 to 2041 period, Transport for NSW anticipate significant employment growth within the agriculture, forestry and fishing, manufacturing, health care and social assistance and professional, scientific and technical services sectors.

.

Table 6-1 reports Transport for NSW's employment projections by industry for the Griffith City local government area between 2016 and 2041.

Table 6-1 Transport for NSW Employment Projections– Griffith City, 2016-2041

	2016	2021	2026	2031	2036	2041	Ave. Ann. Growth, 2016-21	Ave Ann Growth, 2021-41
Agriculture, Forestry and Fishing	1,453	1,586	1,501	1,847	2,088	2,362	1.8%	2.0%
Mining	0	0	0	0	0	0	-3.0%	-1.4%
Manufacturing	1,393	1,240	1,158	1,267	1,334	1,404	-2.3%	0.6%
Food Product Manufacturing	1,558	1,385	1,296	1,410	1,468	1,531	-2.3%	0.5%
Beverage and Tobacco Product Manufacturing	8	8	8	8	9	9	0.8%	0.5%
Textile, Leather, Clothing and Footwear Manufacturing	13	12	11	12	13	14	-1.3%	0.6%
Wood Product Manufacturing	42	37	34	37	39	41	-2.5%	0.5%
Pulp, Paper and Converted Paper Product Manufacturing	34	31	29	32	34	36	-2.2%	0.7%
Printing (including the Reproduction of Recorded Media)	0	0	0	0	0	0	-	-
Petroleum and Coal Product Manufacturing	18	16	15	16	17	18	-2.4%	0.5%
Basic Chemical and Chemical Product Manufacturing	12	11	10	11	11	11	-1.2%	0.3%
Polymer Product and Rubber Product Manufacturing	36	33	30	33	34	35	-1.7%	0.3%
Non-Metallic Mineral Product Manufacturing	99	100	92	99	102	107	0.2%	0.3%
Primary Metal and Metal Product Manufacturing	68	66	60	65	68	71	-0.7%	0.4%
Fabricated Metal Product Manufacturing	38	35	32	35	36	38	-1.4%	0.3%
Transport Equipment Manufacturing	177	175	160	173	183	193	-0.3%	0.5%
Machinery and Equipment Manufacturing	25	22	20	22	24	25	-2.4%	0.6%
Furniture and Other Manufacturing	262	269	284	288	297	307	0.6%	0.7%
Electricity, Gas, Water and Waste Services	1,034	1,146	1,152	1,134	1,158	1,171	2.1%	0.1%
Construction	406	361	359	366	379	389	-2.3%	0.4%
Wholesale Trade	1,763	1,855	1,868	1,834	1,822	1,843	1.0%	0.0%
Retail Trade	682	694	647	658	687	720	0.4%	0.2%
Accommodation and Food Services	514	533	512	526	547	554	0.7%	0.2%
Transport, Postal and Warehousing	79	72	61	66	71	74	-1.9%	0.2%
Information Media and Telecommunications	194	222	238	248	266	283	2.7%	1.2%
Financial and Insurance Services	151	155	168	170	177	183	0.5%	0.9%
Rental, Hiring and Real Estate Services	521	624	731	720	744	779	3.7%	1.1%
Professional, Scientific and Technical Services	449	474	500	517	539	559	1.1%	0.8%
Administrative and Support Services	558	659	685	675	685	681	3.4%	0.2%
Public Administration and Safety	842	969	1,016	1,016	1,018	1,034	2.8%	0.3%
Education and Training	1,563	1,805	1,944	1,917	1,967	2,071	2.9%	0.7%
Health Care and Social Assistance	99	108	119	122	127	132	1.8%	1.0%
Arts and Recreation Services	624	650	684	697	717	744	0.8%	0.7%
Other Services	14,716	15,351	15,423	16,020	16,659	17,419	0.8%	0.6%
Total	1,453	1,586	1,501	1,847	2,088	2,362	1.8%	2.0%

Source: Transport for NSW (2020) and ABS Census of Population and Housing (2021)

6.2 Historic Distribution of Employment

Our review of Census data (rebased to remove not further defined and assuming that not classified/not stated employment is consistent with the overall employment profile of the region) indicates that between 2016 and 2021, over half of all employment growth occurred within the manufacturing (primarily food product manufacturing and beverage and tobacco product manufacturing), health care and social assistance and agriculture, forestry and fishing sectors.

This was significantly different from the outlook anticipated by the Transport for NSW projections, which anticipated a decline in employment in the manufacturing sector.

Table 6-2 reports the distribution of employment by industry for Griffith City based on working population data.

Table 6-2 Historic Distribution of Employment by Industry – Griffith City, 2011, 2016 & 2021

	Employment			% of Employment		
	2011	2016	2021	2011	2016	2021
Agriculture, Forestry and Fishing	1,107	1,290	1,609	10.4%	10.6%	11.5%
Mining	8	7	16	0.1%	0.1%	0.1%
Manufacturing	2,003	2,431	2,861	18.9%	20.0%	20.5%
Food Product Manufacturing	709	1,046	1,304	6.7%	8.6%	9.3%
Beverage and Tobacco Product Manufacturing	889	994	1,169	8.4%	8.2%	8.4%
Textile, Leather, Clothing and Footwear Manufacturing	4	7	10	0.0%	0.1%	0.1%
Wood Product Manufacturing	22	7	8	0.2%	0.1%	0.1%
Pulp, Paper and Converted Paper Product Manufacturing	24	20	35	0.2%	0.2%	0.2%
Printing (including the Reproduction of Recorded Media)	14	22	22	0.1%	0.2%	0.2%
Petroleum and Coal Product Manufacturing	0	0	3	0.0%	0.0%	0.0%
Basic Chemical and Chemical Product Manufacturing	18	14	10	0.2%	0.1%	0.1%
Polymer Product and Rubber Product Manufacturing	3	3	3	0.0%	0.0%	0.0%
Non-Metallic Mineral Product Manufacturing	39	27	22	0.4%	0.2%	0.2%
Primary Metal and Metal Product Manufacturing	67	65	60	0.6%	0.5%	0.4%
Fabricated Metal Product Manufacturing	64	47	47	0.6%	0.4%	0.3%
Transport Equipment Manufacturing	10	27	20	0.1%	0.2%	0.1%
Machinery and Equipment Manufacturing	122	130	118	1.1%	1.1%	0.8%
Furniture and Other Manufacturing	18	21	33	0.2%	0.2%	0.2%
Electricity, Gas, Water and Waste Services	209	203	238	2.0%	1.7%	1.7%
Construction	555	727	886	5.2%	6.0%	6.3%
Wholesale trade	416	321	428	3.9%	2.6%	3.1%
Retail Trade	1,562	1,549	1,555	14.7%	12.8%	11.1%
Accommodation and Food Services	544	641	698	5.1%	5.3%	5.0%
Transport, Postal and Warehousing	302	398	453	2.8%	3.3%	3.2%
Information Media and Telecommunications	72	82	64	0.7%	0.7%	0.5%
Financial and Insurance Services	231	203	159	2.2%	1.7%	1.1%
Rental, Hiring and Real Estate Services	118	128	112	1.1%	1.1%	0.8%
Professional, Scientific and Technical Services	395	426	497	3.7%	3.5%	3.6%
Administrative and Support Services	197	343	362	1.9%	2.8%	2.6%
Public Administration and Safety	536	553	597	5.1%	4.6%	4.3%
Education and Training	745	831	996	7.0%	6.9%	7.1%
Health Care and Social Assistance	1,091	1,423	1,765	10.3%	11.7%	12.7%
Arts and Recreation Services	65	66	87	0.6%	0.5%	0.6%
Other Services	449	512	572	4.2%	4.2%	4.1%
Total	**10,605**	**12,134**	**13,954**	**100.0%**	**100.0%**	**100.0%**

Source: ABS Census of Population and Housing (2011, 2016 & 2021)

6.3 Rebased Employment Projections and Implications for Griffith City

In rebasing the employment projections, our analysis has adopted the following approach:

- Adopt 2021 Census working population employment by industry estimates as a baseline (as opposed to the Transport for NSW estimates, which significantly underestimate employment within the agriculture, forestry and fishing sector as of 2021);
- Adopt projected growth rates at five year intervals between 2021 and 2041 as per Transport for NSW, with the following exceptions, as detailed below:
    - Agriculture, forestry and fishing: The Transport for NSW projections anticipate overall growth in the agriculture, forestry and fishing sector of 2.0% per annum in the 2021 to 2041 period, with positive growth in the sector to occur from 2026 onwards. We would anticipate that positive rates of growth would occur from 2021, as opposed to 2026, reflective of the fact that agriculture, forestry and fishing was a key driver of growth in Griffith City between 2016 and 2021. The adopted growth rates have assumed significant employment growth within the sector in the 2021 to 2041 period;
    - Food product manufacturing: The Transport for NSW projections anticipate overall growth of 0.6% per annum between 2021 and 2041, despite actual growth of 4.5% per annum in the 2016 to 2021 period. We would anticipate continued growth in this sector, albeit at a lower rate in the 2021-2041 period;
    - Beverage and tobacco product manufacturing: The Transport for NSW projections anticipate overall growth of 0.5% per annum in this sector between 2021 and 2041, despite actual growth of 3.3% per annum in the 2016 to 2021 period. We would anticipate continued growth in this sector, albeit at a lower rate in the 2021-2041 period;
    - Other manufacturing sectors: The Transport for NSW projections anticipate a general decline in manufacturing employment in the 2021-26 period, despite this generally not being the case in 2016-21. Our assessment has made adjustments to the employment growth outlook for the following sub-sectors in the 2021-26 period:
        - Textile, leather, clothing and footwear manufacturing;
        - Wood product manufacturing;
        - Pulp, paper and converted paper product manufacturing;
        - Polymer product and rubber product manufacturing;
        - Furniture and other manufacturing;
    - Wholesale trade: The Transport for NSW projections anticipate a decline in the sector in the 2021-26 period, reverting to minimal growth from 2026 onwards. The revised projections anticipate a more optimistic outlook for the sector throughout the projection horizon;
    - Transport, postal and warehousing: The Transport for NSW projections anticipate overall growth of 0.2% per annum in this sector between 2021 and 2041, with the rate of growth negative in 2021-26, shifting to a low growth outlook from 2026 onwards.. We would anticipate growth in the transport, postal and warehousing sector to be higher than anticipated by Transport for NSW, to support increased activity with the agriculture and food processing sectors;
    - Health care and social assistance: The Transport for NSW employment projections anticipate a decline in the sector in the 2021-26 period, despite significant growth in 2021-26. It is also noted the long term outlook appears overly pessimistic.

Table 6-3 below summarises our adjusted growth rate assumptions for the sectors identified above.

Table 6-3 Adjustments to Growth Rate Assumptions in Selected Sectors, 2021 to 2041

Industry Sector	2021-26	2026-31	2031-36	2036-41
Transport for NSW Projected Growth Rates				
Agriculture, forestry and fishing	-1.1%	4.2%	2.5%	2.5%
Food product manufacturing	-1.4%	1.8%	1.0%	1.0%
Beverage and tobacco manufacturing	-1.3%	1.7%	0.8%	0.8%
Textile, Leather, Clothing and Footwear Manufacturing	-1.5%	1.5%	1.0%	0.8%
Wood Product Manufacturing	-1.4%	-1.4%	-1.4%	-1.4%
Pulp, Paper and Converted Paper Product Manufacturing	-1.4%	-1.4%	-1.4%	-1.4%
Polymer Product and Rubber Product Manufacturing	-1.9%	-1.9%	-1.9%	-1.9%
Furniture and Other Manufacturing	-1.4%	-1.4%	-1.4%	-1.4%
Wholesale trade	-0.1%	-0.1%	-0.1%	-0.1%
Transport, postal and warehousing	-0.8%	-0.8%	-0.8%	-0.8%
Education and training	0.9%	0.9%	0.9%	0.9%
Health care and social assistance	0.9%	0.9%	0.9%	0.9%
Adopted Growth Rates				
Agriculture, forestry and fishing	2.8%	2.6%	2.5%	2.5%
Food product manufacturing	2.5%	1.9%	1.5%	1.3%
Beverage and tobacco manufacturing	2.0%	1.8%	1.4%	1.2%
Textile, Leather, Clothing and Footwear Manufacturing	2.0%	1.5%	1.0%	0.8%
Wood Product Manufacturing	1.0%	1.7%	1.2%	1.1%
Pulp, Paper and Converted Paper Product Manufacturing	2.0%	1.5%	1.2%	1.0%
Polymer Product and Rubber Product Manufacturing	1.5%	1.4%	0.9%	0.8%
Furniture and Other Manufacturing	1.8%	1.7%	1.2%	1.0%
Wholesale trade	2.7%	2.3%	2.0%	1.8%
Transport, postal and warehousing	1.8%	1.5%	1.0%	0.8%
Education and training	2.0%	1.5%	1.2%	1.0%
Health care and social assistance	2.5%	2.5%	2.1%	2.1%

Source: Transport for NSW and Bull & Bear Economics

Based on the above assumptions, employment in Griffith City is projected to increase from 13,954 persons in 2021 to 18,230 persons in 2041, or by 1.3% per annum.

These projections identify that the key sectors of growth within Griffith City are anticipated to be within the following sectors:

- Agriculture, forestry and fishing: Additional 1,076 persons between 2021 and 2041, mostly within the agriculture sub-sector. This is reflective of the anticipated continued strength of the poultry and cereal cropping sectors within the region. Employment growth within this sector would be primarily accommodated on rural zoned land;
- Manufacturing: Additional 1,050 persons between 2021 and 2041, driven primarily by growth within the food and beverage product manufacturing sub-sectors, representative of continued growth in the processing of agricultural outputs, such as poultry and wine. It is anticipated that this employment growth would drive demand for additional industrial land within the region; and
- Health care and social assistance: Additional 1,016 persons between 2021 and 2041, to support continued population growth within the region.

Table 6-4 summarises the employment projections at the one digit ANZSIC level, with Appendix B reporting employment projections for Griffith City at the two digit ANZSIC level.

Table 6-4 Projected Employment by Industry, Griffith City, 2021-2041

	2021	2026	2031	2036	2041
Agriculture, Forestry and Fishing	1,609	1,847	2,100	2,374	2,685
Mining	16	15	15	13	12
Manufacturing	2,861	3,138	3,434	3,682	3,912
Electricity, Gas, Water and Waste Services	238	251	254	263	271
Construction	886	890	876	895	905
Wholesale trade	428	489	548	605	661
Retail Trade	1,555	1,566	1,537	1,528	1,545
Accommodation and Food Services	698	650	661	690	723
Transport, Postal and Warehousing	453	496	534	561	584
Information Media and Telecommunications	64	55	59	64	67
Financial and Insurance Services	159	170	177	190	203
Rental, Hiring and Real Estate Services	112	122	124	129	133
Professional, Scientific and Technical Services	497	583	574	593	621
Administrative and Support Services	362	382	395	411	427
Public Administration and Safety	597	621	612	621	617
Education and Training	996	1,099	1,184	1,257	1,321
Health Care and Social Assistance	1,765	1,997	2,260	2,507	2,782
Arts and Recreation Services	87	95	97	101	106
Other Services	572	602	614	631	655
Total	**13,954**	**15,066**	**16,055**	**17,113**	**18,230**

Source: Bull & Bear Economics estimates, informed by Transport for NSW

7 Commercial Floor Space Demand Assessment

This section highlights the commercial floorspace demand in Griffith City more broadly, derived from the two-digit employment projections estimated in the preceding section.

7.1 Sectors that Typically Utilised Commercial Office Space

The demand for commercial office space has been estimated in terms of traditional office space. The sectors that traditionally utilise commercial office space at the two-digit ANSZIC level are summarised in Table 7-1.

Table 7-1 Two Digit ANZSIC Sectors which Typically Require Commercial Office Space

One Digit ANZSIC Sectors	Two Digit ANZSIC Sectors
Financial and Insurance Services	▪ Finance ▪ Insurance and Superannuation Funds ▪ Auxiliary Finance and Insurance Services
Professional, Scientific & Technical Services	▪ Professional, Scientific and Technical Services (except Computer System Design and Related Services) ▪ Computer System Design and Related Services
Health Care & Social Assistance	▪ Medical and Other Health Care Services
Rental, Hiring & Real Estate Services	▪ Property Operators and Real Estate Services
Public Administration & Safety	▪ Public Administration
Information Media and Telecommunications	▪ Internet Publishing and Broadcasting ▪ Internet Service Providers, Web Search Portals and Data Processing Services
Administrative & Support Services	▪ Administrative services

Source: Bull & Bear Economics, 2022

7.2 Projected Employment in Commercial Office Sectors

Based on the employment projections generated in Section 6 of the report and sectors requiring commercial floorspace, total employment in the commercial office sector is anticipated to increase from 1,740 workers in 2021 to 2,214 workers in 2041.

Table 7-2 summarises the total employment in commercial office sectors between 2021 and 2041 within Griffith City.

Table 7-2 Projected Total Employment in Commercial Office Sectors – Griffith City, 2021 to 2041

	2021	2026	2031	2036	2041
Finance	108	116	120	129	138
Insurance and Superannuation Funds	14	15	15	16	18
Auxiliary Finance and Insurance Services	37	40	41	44	47
Professional, Scientific and Technical Services (except Computer System Design and Related Services)	451	529	521	538	564

	2021	2026	2031	2036	2041
Computer System Design and Related Services	46	54	53	55	57
Medical and Other Health Care Services	446	504	570	633	702
Property Operators and Real Estate Services	77	84	85	89	92
Public Administration	450	468	461	468	465
Internet Publishing and Broadcasting	0	0	0	0	0
Internet Service Providers, Web Search Portals and Data Processing Services	4	4	4	4	4
Administrative services	108	114	118	123	127
Total	**1,740**	**1,926**	**1,989**	**2,099**	**2,214**

Source: Bull & Bear Economics Analysis (2022)

The accommodation requirements of businesses within these sectors vary depending on employment size. Typically, requirements can be considered in terms of businesses that are sole traders or employing businesses (i.e. business that employ more than one person). Sole traders can often work from home and as such, do not require commercial office space.

To estimate the proportion of employment contained as sole traders and within employing businesses, the assessment has utilised data from the ABS Counts of Australian businesses publication (Cat. No. 8165010) for Griffith City.

Table 7-3 below summarises the distribution of employment by business size by relevant digit industry sectors in Griffith City in 2021.

For the purpose of this assessment, it was assumed that the proportion of employment contained within sole traders in 2021 remains constant throughout the projection period.

Table 7-3 Proportion of Employment in Service Office Sectors by Employment Size – Griffith City, June 2021

Sectors	% Sole Trader	% in Employing
Information Media and Telecommunications	65.0%	35.0%
Financial and Insurance Services	80.0%	20.0%
Rental, Hiring & Real Estate Services	90.0%	10.0%
Professional, Scientific & Technical Services	50.0%	50.0%
Administrative & Support Services	40.0%	60.0%
Public Administration & Safety	65.0%	35.0%
Health Care & Social Assistance	45.0%	55.0%

Note: Estimates are rounded to the nearest 5%.
Source: Bull & Bear Economics Analysis (2022)

Applying the proportion of employment within sole traders to the employment estimates in Table 7-2 provides an estimate on the number of persons employed as sole traders and persons in employing businesses within the trade areas and Griffith City more broadly.

Based on these assumptions, the number of persons employed as sole traders and in employing businesses within Griffith City is anticipated to increase as follows:

- Sole traders: anticipated to increase from 984 workers in 2021 to 1,227 workers in 2041; and
- Employing businesses: anticipated to increase from 757 workers in 2021 to 987 workers in 2041.

Table 7-4 summarises the number of employees in sole trader or employing businesses in Griffith City between 2021 and 2041.

Table 7-4 Employment in Sole Trader and Employing Businesses - Griffith City, 2021 to 2041

Industry Sector	2021	2026	2031	2036	2041
Sole Trader Employment					
Finance	86	92	96	103	110
Insurance and Superannuation Funds	11	12	12	13	14
Auxiliary Finance and Insurance Services	30	32	33	35	38
Professional, Scientific and Technical Services (except Computer System Design and Related Services)	225	264	260	269	282
Computer System Design and Related Services	23	27	26	27	29
Medical and Other Health Care Services	201	227	257	285	316
Property Operators and Real Estate Services	69	75	77	80	82
Public Administration	293	304	300	304	302
Internet Publishing and Broadcasting	0	0	0	0	0
Internet Service Providers, Web Search Portals and Data Processing Services	3	2	3	3	3
Administrative services	43	46	47	49	51
Total	**984**	**1,082**	**1,111**	**1,169**	**1,227**
Employment within Employing Businesses					
Finance	22	23	24	26	28
Insurance and Superannuation Funds	3	3	3	3	4
Auxiliary Finance and Insurance Services	7	8	8	9	9
Professional, Scientific and Technical Services (except Computer System Design and Related Services)	225	264	260	269	282
Computer System Design and Related Services	23	27	26	27	29
Medical and Other Health Care Services	245	277	314	348	386
Property Operators and Real Estate Services	8	8	9	9	9
Public Administration	158	164	161	164	163
Internet Publishing and Broadcasting	0	0	0	0	0
Internet Service Providers, Web Search Portals and Data Processing Services	1	1	1	1	2
Administrative services	65	68	71	74	76
Total	**757**	**844**	**878**	**930**	**987**
Total Employment					
Finance	108	116	120	129	138
Insurance and Superannuation Funds	14	15	15	16	18
Auxiliary Finance and Insurance Services	37	40	41	44	47
Professional, Scientific and Technical Services (except Computer System Design and Related Services)	451	529	521	538	564
Computer System Design and Related Services	46	54	53	55	57
Medical and Other Health Care Services	446	504	570	633	702
Property Operators and Real Estate Services	77	84	85	89	92
Public Administration	450	468	461	468	465
Internet Publishing and Broadcasting	0	0	0	0	0
Internet Service Providers, Web Search Portals and Data Processing Services	4	4	4	4	4
Administrative services	108	114	118	123	127

Industry Sector	2021	2026	2031	2036	2041
Total	**1,740**	**1,926**	**1,989**	**2,099**	**2,214**

Source: Bull & Bear Economics Analysis (2022)

7.3 Projected Employment Accommodated in Commercial Office Space

7.3.1 Employment to be Accommodated in Commercial Office Space

Persons who are employed in commercial office sectors can either undertake their work in commercial office premises, choose to work from home or utilise shared workspace facilities (where available).

Our assessment has made the following assumptions relating to the proportion of employment accommodated in dedicated commercial office premises:

- Sole traders: 50.0% of sole traders will require commercial office space; and
- Employing businesses: 94.7% of employed persons within commercial office sectors will require commercial office space, reflecting that as of the 2021 Census, 5.3% of persons worked from home in Griffith City.

Based on the above assumptions, persons employed as sole traders and in employing businesses requiring commercial office spaces within Griffith City is anticipated to increase from 1,208 workers in 2021 to 1,548 workers in 2041, as shown in Table 7-5.

Table 7-5 Persons Employed as Sole Traders and in Employing Businesses Requiring Commercial Office Space – Griffith City, 2021 to 2041

	2021	2026	2031	2036	2041
Sole Trader Employment					
Finance	43	46	48	52	55
Insurance and Superannuation Funds	5	6	6	7	7
Auxiliary Finance and Insurance Services	15	16	17	18	19
Professional, Scientific and Technical Services (except Computer System Design and Related Services)	113	132	130	134	141
Computer System Design and Related Services	11	13	13	14	14
Medical and Other Health Care Services	100	113	128	142	158
Property Operators and Real Estate Services	35	38	38	40	41
Public Administration	146	152	150	152	151
Internet Publishing and Broadcasting	0	0	0	0	0
Internet Service Providers, Web Search Portals and Data Processing Services	1	1	1	1	1
Administrative services	22	23	24	25	25
Total	**492**	**541**	**556**	**584**	**614**
Employment within Employing Businesses					
Finance	20	22	23	24	26
Insurance and Superannuation Funds	3	3	3	3	3
Auxiliary Finance and Insurance Services	7	8	8	8	9
Professional, Scientific and Technical Services (except Computer System Design and Related Services)	214	250	247	255	267
Computer System Design and Related Services	22	25	25	26	27

	2021	2026	2031	2036	2041
Medical and Other Health Care Services	232	263	297	330	366
Property Operators and Real Estate Services	7	8	8	8	9
Public Administration	149	155	153	155	154
Internet Publishing and Broadcasting	0	0	0	0	0
Internet Service Providers, Web Search Portals and Data Processing Services	1	1	1	1	1
Administrative services	61	65	67	70	72
Total	**717**	**800**	**831**	**881**	**935**
Total Employment					
Finance	64	68	71	76	81
Insurance and Superannuation Funds	8	9	9	10	10
Auxiliary Finance and Insurance Services	22	23	24	26	28
Professional, Scientific and Technical Services (except Computer System Design and Related Services)	326	383	377	389	408
Computer System Design and Related Services	33	39	38	40	41
Medical and Other Health Care Services	332	376	425	472	524
Property Operators and Real Estate Services	42	46	46	48	50
Public Administration	295	307	303	307	305
Internet Publishing and Broadcasting	0	0	0	0	0
Internet Service Providers, Web Search Portals and Data Processing Services	3	2	3	3	3
Administrative services	83	87	90	94	98
Total	**1,208**	**1,340**	**1,387**	**1,465**	**1,548**

Source: Bull & Bear Economics Analysis (2022)

7.4 Projected Commercial Office Floor Space Demand

To convert employment projections to commercial office floor space demand, the analysis has assumed the following floor space provision:

- Sole traders: floor space requirement of 30 sqm per worker; and
- Employing businesses: floor space requirement of 20 sqm per worker.

These assumed ratios are marginally higher than what is typically achieved in metropolitan contexts and are reflective of usage patterns identified in non-metropolitan localities such as Griffith.

Based on the above assumptions, commercial office floor space demand in Griffith City is projected to increase from 29,084 sqm in 2021 to 37,100 sqm in 2041, with the professional, scientific and technical services sector and the medical and other health care services sector being the major drivers of demand.

Table 7-6 reports projected demand for commercial office floor space in Griffith City derived from the employment projections between 2021 and 2041.

Table 7-6 Projected Commercial Office Floor Space Demand (sqm) - Griffith City, 2021 to 2041

	2021	2026	2031	2036	2041
Sole Trader Employment					
Finance	1,294	1,387	1,445	1,551	1,653
Insurance and Superannuation Funds	165	177	184	198	211
Auxiliary Finance and Insurance Services	444	476	496	532	567
Professional, Scientific and Technical Services (except Computer System Design and Related Services)	3,382	3,967	3,906	4,034	4,228
Computer System Design and Related Services	344	403	397	410	430
Medical and Other Health Care Services	3,008	3,403	3,850	4,272	4,740
Property Operators and Real Estate Services	1,042	1,130	1,149	1,196	1,236
Public Administration	4,388	4,562	4,498	4,564	4,535
Internet Publishing and Broadcasting	0	0	0	0	0
Internet Service Providers, Web Search Portals and Data Processing Services	41	35	38	41	43
Administrative services	647	683	706	735	764
Total	**14,754**	**16,223**	**16,670**	**17,532**	**18,405**
Employment within Employing Businesses					
Finance	408	438	456	489	522
Insurance and Superannuation Funds	52	56	58	62	66
Auxiliary Finance and Insurance Services	140	150	157	168	179
Professional, Scientific and Technical Services (except Computer System Design and Related Services)	4,271	5,009	4,933	5,093	5,339
Computer System Design and Related Services	434	509	501	518	543
Medical and Other Health Care Services	4,642	5,252	5,942	6,593	7,314
Property Operators and Real Estate Services	146	159	161	168	173
Public Administration	2,983	3,102	3,058	3,103	3,083
Internet Publishing and Broadcasting	0	0	0	0	0
Internet Service Providers, Web Search Portals and Data Processing Services	28	24	26	28	29
Administrative services	1,225	1,294	1,337	1,392	1,446
Total	**14,330**	**15,991**	**16,629**	**17,614**	**18,695**
Total Employment					
Finance	1,702	1,825	1,902	2,040	2,174
Insurance and Superannuation Funds	217	233	242	260	277
Auxiliary Finance and Insurance Services	584	626	652	700	746
Professional, Scientific and Technical Services (except Computer System Design and Related Services)	7,653	8,976	8,839	9,127	9,566
Computer System Design and Related Services	778	912	899	928	972
Medical and Other Health Care Services	7,650	8,655	9,792	10,864	12,054
Property Operators and Real Estate Services	1,188	1,289	1,310	1,364	1,409
Public Administration	7,371	7,664	7,555	7,667	7,619
Internet Publishing and Broadcasting	0	0	0	0	0
Internet Service Providers, Web Search Portals and Data Processing Services	69	59	64	68	72
Administrative services	1,872	1,977	2,043	2,127	2,210

	2021	2026	2031	2036	2041
Total	**29,084**	**32,214**	**33,298**	**35,146**	**37,100**

Source: Bull & Bear Economics Analysis (2022)

7.5 Supply Demand Balance

Our assessment has included the existing commercial office floor space within Griffith City Council against the projected demand generated by workers within Griffith City Council. This analysis is suggestive of an oversupply of commercial office floor space of approximately 9,000sqm.

The supply demand balance for commercial floor space within Griffith City Council is summarised in Table 7-7.

Table 7-7 Commercial Floorspace Supply Demand Balance (sqm) – Griffith LGA, 2021 to 2041

	2021	2026	2031	2036	2041
Supply	37,774	37,774	37,774	37,774	37,774
Demand	29,084	32,214	33,298	35,146	37,100
Supply-Demand Balance	8,690	5,560	4,476	2,628	674

Source: Bull & Bear Estimates (2022)

However, discussions with local real estate agents indicated there is a lack of suitable commercial office floor space available to purchase or rent, with available opportunities mostly on the second floor, which does not provide the exposure, access and parking demanded by prospective tenants. Additionally, there has been some misalignment between spaces demanded (typically between 20sqm and 150sqm) and space available to rent as evidenced by the relative difficulty in leasing larger spaces.

Therefore, in reality it is likely that the office market is relatively balanced in Griffith at present, with tenants occupying larger spaces than what is suggested by the modelling (i.e. more than an average of 20 sqm per worker).

However, this analysis, when considered in conjunction with the quantum of vacant tenancies within the centre zone, highlights limited need to provide additional commercial office floor space in Griffith City, over and above what is already available. However, consultation has also identified that tenants in some cases have had to upgrade their offering to meet the expectations of clients. There may potentially be a role in incentivising tenancy refurbishment / upgrades to reduce the level of centre vacancy within Griffith City.

8 Industrial Land Demand

For the purpose of this assessment, the demand for industrial land within Griffith City has been calculated using an employment based approach.

8.1 Employment Based Approach

The employment-based approach for estimating industrial land demand is typically the most robust assessment of future demand as it considers employment growth in industrial industries within a given region and considers the net floorspace required for each industry.

8.1.1 Sectors that Utilised Industrial Land

The assessment utilises employment projections at the two-digit ANZSIC industry sector level derived from Transport for NSW's employment projections by industry sector Griffith City for the 2016 to 2041 period. For conciseness, the body of the report presents employment and land demand projections for each of the defined broad categories, with two-digit ANZSIC projections presented in Appendix E.

Industrial activity can be classified into four broad categories, these being:

- Large footprint and general industry;
- Service industry;
- Warehousing & storage; and
- Transport uses.

Table 8-1 outlines the two-digit ANZSIC sectors which are contained within each of the four broad categories.

Table 8-1 Two Digit ANZSIC Sectors which Typically Require Industrial Land

Broad Categories	Two Digit ANZSIC Sectors
Large Footprint and General Industry	Wood Product Manufacturing Pulp, Paper, and Converted Paper Product Manufacturing Petroleum and Coal Product Manufacturing Basic Chemical and Chemical Product Manufacturing Polymer Product and Rubber Product Manufacturing Non-Metallic Mineral Product Manufacturing Primary Metal and Metal Product Manufacturing Machinery and Equipment Manufacturing Fabricated Metal Product Manufacturing Transport Equipment Manufacturing Furniture and Other Manufacturing Beverage and Tobacco Product Manufacturing Food Product Manufacturing
Service Industry	Textile, Leather, Clothing and Footwear Manufacturing[1] Printing (including Reproduction of Recorded Media) Publishing (except Internet and Music Publishing) Construction Services Repair and Maintenance
Warehousing & Storage	Basic Material Wholesaling

Broad Categories	Two Digit ANZSIC Sectors
	Machinery and Equipment Wholesaling
	Motor Vehicle and Motor Vehicle Parts Wholesaling
	Grocery, Liquor and Tobacco Product Wholesaling
	Other Goods Wholesaling
	Warehousing and Storage Services
Transport Uses	Motor Vehicle and Motor Vehicle Parts Retailing
	Road Transport
	Rail Transport
	Transport Support Services
	Postal and Courier Pick-up and Delivery Services

Source: Bull & Bear Economics (2022)

8.1.2 Projected Industrial Employment

Industrial employment within Griffith City is anticipated to increase from 4,768 workers in 2021 to 5,598 workers by 2041, or by 1,461 additional workers over the projection period. Industrial employment growth is anticipated to be concentrated within the large footprint and general industry sub-sectors, particularly within food and beverage manufacturing.

Table 8-2 summarises the industrial employment projections by the four broad categories between 2021 and 2041. Detailed employment projections at the two-digit ANZSIC category are provided in Appendix E.

Table 8-2 Projected Employment in Industrial Sectors – Griffith City, 2021 to 2041

	2021	2026	2031	2036	2041	Ave. Ann. Growth, 2021-41
Employment						
Large Footprint and General Industry	2,830	3,106	3,400	3,646	3,874	1.6%
Service Industry	924	944	944	968	990	0.3%
Warehousing & Storage	426	486	544	600	655	2.2%
Transport Uses	587	629	662	687	710	1.0%
Total Industrial Employment	4,768	5,165	5,551	5,901	6,229	1.3%
Incremental Employment						
Large Footprint and General Industry	-	277	570	816	1,044	-
Service Industry	-	20	20	44	66	-
Warehousing & Storage	-	60	118	173	228	-
Transport Uses	-	41	75	100	123	-
Incremental Industrial Employment	-	397	783	1,133	1,461	-

Source: Bull & Bear Economics (2022)

8.1.3 Projected Industrial Land Demand

To convert the projected employment in industrial sectors, as detailed in Table 8-2 above, into land demand estimates for Griffith City, this assessment has assumed between 15 and 40 workers per hectare, as highlighted in Table 8-3 below.

Table 8-3 Industrial Employment Densities

	Emp / ha (industrial uses)
Large Footprint and General Industry	
Food Product Manufacturing	40
Beverage and Tobacco Product Manufacturing	35
Wood Product Manufacturing	30
Pulp, Paper and Converted Paper Product Manufacturing	30
Petroleum and Coal Product Manufacturing	30
Basic Chemical and Chemical Product Manufacturing	20
Polymer Product and Rubber Product Manufacturing	35
Non-Metallic Mineral Product Manufacturing	35
Primary Metal and Metal Product Manufacturing	35
Fabricated Metal Product Manufacturing	35
Transport Equipment Manufacturing	40
Machinery and Equipment Manufacturing	35
Furniture and Other Manufacturing	35
Service Industry	
Textile, Leather, Clothing and Footwear Manufacturing	35
Printing (including the Reproduction of Recorded Media)	35
Construction Services	35
Warehousing and Storage Services	20
Publishing (except Internet and Music Publishing)	35
Repair and Maintenance	30
Transport Uses	
Motor Vehicle and Motor Vehicle Parts Retailing	20
Road Transport	20
Rail Transport	15
Postal and Courier Pick-up and Delivery Services	35
Transport Support Services	35
Warehousing & Storage	
Basic Material Wholesaling	35
Machinery and Equipment Wholesaling	35
Motor Vehicle and Motor Vehicle Parts Wholesaling	35
Grocery, Liquor and Tobacco Product Wholesaling	35
Other Goods Wholesaling	35

Source: Bull & Bear Economics Estimates (2022)

Over the next twenty years to 2041, industrial land demand within Griffith City is projected to increase by 42.1 hectares, with demand driven by growth within the large footprint and general industry sector, in particular activity within the food and beverage manufacturing sub-sectors.

Table 8-4 Projected Industrial Land Demand (Ha) – Griffith City, 2021 to 2041

	2021	2026	2031	2036	2041	Ave. Ann. Growth, 2021-41
Land Demand (Ha)						
Large Footprint and General Industry	76.6	83.9	91.8	98.3	104.5	1.6%
Service Industry	28.0	28.6	28.6	29.4	30.1	0.4%
Warehousing & Storage	12.5	14.3	15.9	17.6	19.1	2.1%
Transport Uses	27.1	29.0	30.4	31.5	32.6	0.9%
Total Industrial Land Demand	144.1	155.7	166.8	176.8	186.3	1.3%
Incremental Demand (Ha)						
Large Footprint and General Industry	-	7.3	15.2	21.8	27.9	-
Service Industry	-	0.6	0.7	1.4	2.1	-
Warehousing & Storage	-	1.7	3.4	5.0	6.6	-
Transport Uses	-	1.9	3.3	4.4	5.5	-
Incremental Industrial Land Demand	-	11.5	22.6	32.7	42.1	-

Source: Bull & Bear Economics Estimates (2022)

8.2 Supply Demand Balance

Our assessment has compared the remaining vacant industrial land within Griffith City against the projected demand for industrial land to identify any modelled shortfalls over the next twenty years to 2041.

A direct comparison of remaining supply against projected demand would suggest that Griffith City has sufficient zoned industrial zoned land to2036, with a small shortfall by 2041. However, further investigations into the composition of remaining supply clearly identify this is not the case, with remaining supply either not suitable for the majority of industrial activity or not appropriately located to service the future needs of local businesses.

The following text provides additional detail relating to the appropriateness of remaining supply to accommodate projected demand, whether a need exists to transition existing industrial land precincts due to encroachment of incompatible uses (e.g. residential), whether the remaining zoned supply is appropriately serviced and the realistic availability of this land for industrial development.

The demand profile presented in Table 8-4 above clearly identifies future industrial land demand is for general industry activity, as opposed to light industry activity.

However, most of the serviced vacant E4 General Industrial zoned land that could accommodate industry activity within Griffith is in proximity to Oakes Road and Lenehan Road. These lots are unlikely to accommodate activity of a medium impact nature due to the proximity of nearby remnant housing immediately to the west of Lenehan Road. It is also considered likely the allotments occupied by housing will be difficult to transition to industrial uses due to the small size of these lots and the very limited uses that would consider these lots of suitable size to establish business operations.

Whilst vacant land has also been identified in the E3 Productivity Support zone, these lots are suited only for light impact industry activity (e.g. service industry and warehousing & storage uses) and hence only accommodate to a small proportion of industrial land within the region.

There is significant remaining supply within the E5 Heavy Industry precinct in Tharbogang. However, this supply faces a myriad of challenges and is not immediately suitable for occupation due to an absence of connection to sewer. It is also understood that an urban release area falls over part of the E5 Heavy Industry area, which will partially or potentially fully restrict the intensity of activity within this precinct.

The above factors are suggestive of the need to identify alternative locations to accommodate future industrial land demand within Griffith. It is understood that several industrial businesses within Griffith require direct road train access, which cannot be provided by existing industrial areas, particularly those within proximity to the centre of Griffith. The Southern Industrial Link Road provides an opportunity to establish an industrial area that offers direct access for road trains.

9 Strategic Recommendations

This section of the report provides strategic recommendations to inform the Griffith Employment Lands Strategy, based on the outcomes of previous sections of this report.

9.1 Centres Land

Section 4 of the report identified that significant levels of vacancy in centres zones exist within Griffith City, particularly within the B2 zone along Banna Avenue and Yambil Street (22,106sqm of vacant tenancies or a 20.1% vacancy rate) and the B4 zone on Benerembah Street (9,739sqm of vacant tenancies of a 51.1% vacancy rate).

A review of the B4 zone in Benerembah Street identified that a significant quantum of tenancies were identified as being of a poor standard, which is likely contributing to relatively high vacancy rates in this part of Griffith City. There is also little incentive to improve the shopfronts in this part of Griffith, given that the outlook for centres floor space demand indicates there is more than sufficient capacity within existing vacant tenancies to accommodate projected growth to 2041. Whilst the tenancy quality in the centre core is of a higher standard, high vacancy rates also persist, due to low growth in demand for centres floor space in Griffith.

Given the modest growth outlook for centres floorspace in Griffith, it is suggested that Council seek to limit approvals of centre uses outside of centres zones and support tenants who wish to transition their existing tenancy for an alternative use (e.g. residential or community based use). This is line with the recommendations in the Griffith Local Strategic Planning Statement which are supportive of additional residential development around the CBD on the south side of Yambil Street and on vacant sites along Banna Avenue, Railway Street, Kookora Street and Benerembah Street. It is anticipated that the most significant challenge faced by prospective developers would be the assembly of a suitably large site, given the existing fragmentation of lots within centre zones in Griffith.

9.2 Industrial Land

Over the next 20 years, there is anticipated to be demand for an additional 42.1 hectares of industrial land in Griffith City, driven by growth in food and beverage product manufacturing and the road transport sector. At a modelled level, there is sufficient industrial land to meet future needs to 2036 (with a small shortfall by 2041), based on an estimated remaining supply of 38.4 hectares of vacant zoned industrial land.

However, the composition of remaining supply does not align with the future needs of businesses within Griffith due to the following factors:

- The largest vacant industrial land lot identified within Griffith City is at Yenda, at the corner of Burley Griffin Way and Wood Road. It is noted that this vacant lot is surrounded by Casella Wines (and vineyards) immediately to the west. Advice from Council has indicated that this lot has an approval for an ammunition factory, hence is not available for development for industrial uses. This lot accounts for over half of the remining industrial land supply so its exclusion is significant;
- The remainder of zoned land suited to accommodate industrial activity falls within the E4 General Industrial and E3 Productivity Support to the east of the Griffith centre. The remaining E3 Productivity Support allotments are suited to only a small portion of industrial land demand (i.e. population serving activity such as warehousing and storage). On the other hand, the E4

General industrial Land is mostly located on Oakes Road, which does not offer direct access to road trains, which is increasingly required by industrial businesses in Griffith. Additionally, the intensity of activity that can be supported on these lots is limited by the presence of remnant housing, mostly to the west of Lenehan Road.

Furthermore, as residential activity intensifies in Griffith, this is likely to only place further pressure on industrial development on the fringe of the Griffith township to locate within other parts of the local government area, particularly if the business is reliant on heavy vehicle freight movements or has reverse amenity impacts which would impact surrounding residential development.

Additional industrial zoned land (E5 Heavy Industrial) was released to the west of the Griffith urban area along Kidman Way, but this land is mostly yet to be taken up and is predominately occupied by farming activity. However, the establishment of the Kurrajong Avenue / Thorne Road bypass route (which will ensure heavy vehicles, including road trains, avoid Griffith's urban areas) will likely enhance the appeal and marketability of this land to prospective industrial land users, provided that appropriate infrastructure and services are delivered.

It is also anticipated that the establishment of this land would encourage the relocation of industrial users within the Griffith township that rely on heavy vehicle movements, given the connectivity offered by the bypass route relative to the local road network servicing existing industrial estates.

However, the opportunities presented by this land are potentially limited due to the urban release area layer which is partially located over this land. Should significant residential development occur within this precinct, the opportunity to establish industrial activity may be fully extinguished. Additionally, the demand profile indicates most of the projected demand would be best accommodated within E4 General Industrial land, with limited need for the E5 Heavy Industrial zoning.

It is suggested that further investigations identify the potential to establish an industrial precinct directly off the Southern Industrial Link Road to meet the future needs of the region and allow for the relocation of existing businesses who are looking to expand and that require direct road train access.

To ensure the success of any newly established industrial precinct, the provision of trunk infrastructure is critical, as is the delivery of larger lots (at least one hectare in size) to accommodate manufacturing and processing facilities, along with associated transport uses.

It is noted that larger scale food processors in the region have sites of approximately 20 hectares in size. It is suggested that future industrial areas offer a range of lots at least one hectare in size and ensuring sites of five or more hectares are available within this precinct, to meet an existing market gap of the region and reflecting the requirements of prospective land users.

10 References

Bartholomeusz, S. (2020, April 29). *A retail property apocalypse is unfolding - and it's going to be unpleasant*. Retrieved from The Sydney Morning Herald: https://www.smh.com.au/business/companies/a-retail-property-apocalypse-is-unfolding-and-it-s-going-to-be-unpleasant-20200429-p54o7t.html

Bowery Farming. (2021). *Vision*. Retrieved from Bowery Farming: https://boweryfarming.com/vision/

Brown, M. (2018, March 15). *Smart Farming - Automated Connected Agriculture*. Retrieved from engineering.com: https://www.engineering.com/story/smart-farming-automated-and-connected-agriculture

Business Wire. (2021, June 4). *Coworking Space Global Market Report 2021: COVID-19 Growth and Change to 2030 - ResearchAndMarkets.com*. Retrieved from Business Wire: https://www.businesswire.com/news/home/20210604005309/en/Coworking-Space-Global-Market-Report-2021-COVID-19-Growth-and-Change-to-2030---ResearchAndMarkets.com

Claughton, D., & Condon, M. (2021, May 27). *Robots and artificial intelligence to guide Australia's first fully automated farm*. Retrieved from ABC News: https://www.abc.net.au/news/rural/2021-05-27/automated-farm-to-use-robots-and-artificial-intelligence/100169302

CSIRO. (2016). *Tomorrow's Digitally Enabled Workforce*. Brisbane: CSIRO.

CSIRO. (2021, March 29). *Precision Agriculture*. Retrieved from CSIRO: https://www.csiro.au/en/research/plants/crops/farming-systems/precision-agriculture

Forbes. (2018, October 23). *The Nature Of Leadership In A Flat Organization*. Retrieved from Forbes: https://www.forbes.com/sites/williamcraig/2018/10/23/the-nature-of-leadership-in-a-flat-organization/?sh=460cec135fe1

IBISWorld. (2021). *Online Shopping in Australia (X0004)*. IBISWorld.

Knoema. (2019). *Global entrepreneurship index*. Retrieved from Knoema: World Data Atlas: https://knoema.com/atlas/topics/World-Rankings/World-Rankings/Global-entrepreneurship-index

Land Income. (2022, January 24). *5 Automation Technologies That Improve Agricultural Returns*. Retrieved from Land Income: https://landincome.com/blog/5-automation-technologies-that-improve-agricultural-returns

Lee, S. M. (2019, May 21). *Meet the Elon Musk of Potatoes*. Retrieved from Medium: https://medium.com/hungry-for-disruption/meet-the-elon-musk-of-potatoes-f97b2d2cf42b

Maria Lee - Oxford Economics. (2020, April 23). Webinar: Relative winners and losers across Australia's property markets. *Oxford Economics*.

OECD. (2020). *Mobile Broadband Subscriptions*. Retrieved from OECD Data: https://data.oecd.org/broadband/mobile-broadband-subscriptions.htm

Port Technology International Team. (2018, June 8). *Kalmar and Navis Automate First Intermodal Terminal*. Retrieved from Port Technologies: https://www.porttechnology.org/news/kalmar_and_navis_equip_first_automated_intermodal_terminal/

Sivewright, K. (2022). *Griffith City Investment Prospectus 2022*. Griffith: Griffith City Council.

Urban Green Farms. (2016). *About Vertical Farming*. Retrieved from Urban Green Farms: https://www.urbangreenfarms.com.au/vertical-farming#:~:text=Vertical%20farming%20is%20the%20practice,aeroponics%20in%20vertically%20stacked%20layers.

Witt, U., & Gross, C. (2019). The rise of the "service economy" in the second half of the twentieth century and its energetic contingencies. *Journal of Evolutionary Economics*.

11 Appendices

11.1 Appendix A Retail/Commercial Land Supply

Table 11-1 Retail and Commercial Businesses Outside of Centre Zoned Land– Griffith City, 2022

	R1 - Griffith (Woolworths)		RU5 - Yoogali		RU5 - Hanwood		RU5 - Yenda		Total	
	sqm	%	sqm	%	sqm	%	sqm	%	sqm	%
Retail Classes										
Groceries and take-home food	2,843	100.0%	0	0.0%	767	28.3%	1,724	33.6%	5,334	32.6%
Dining and take-away food	0	0.0%	3,789	66.5%	486	17.9%	2,701	52.6%	6,976	42.6%
Clothing, footwear and apparel	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Personal and other goods	0	0.0%	664	11.6%	1,165	43.0%	0	0.0%	1,829	11.2%
Core bulky goods	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Ancillary bulky goods	0	0.0%	483	8.5%	0	0.0%	0	0.0%	483	2.9%
Hardware	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Take away liquor	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Summary Retail Floor Space	2,843	100.0%	4,936	86.6%	2,418	89.3%	4,425	86.2%	14,622	89.2%
Commercial Classes										
Financial and insurance services	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Rental, hiring and real estate services	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Health care and social assistance	0	0.0%	0	0.0%	290	10.7%	538	10.5%	828	5.1%
Professional, scientific and technical services	0	0.0%	766	13.4%	0	0.0%	170	3.3%	936	5.7%
Administrative and support services	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Public administration and safety	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Education and Training	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Summary Commercial Floor Space	0	0.0%	766	13.4%	290	10.7%	708	13.8%	1,764	10.8%
Summary of Retail and Commercial Floor Space	2,843	100.0%	5,702	100.0%	2,708	100.0%	5,133	100.0%	16,386	100.0%

Source: Bull & Bear Economics Analysis, (2022)

11.2 Appendix B Employment Projections

Table 11-2 Two Digit Employment Projections – Griffith City, 2021 to 2041

	2021	2026	2031	2036	2041
Agriculture	1,363	1,565	1,779	2,011	2,274
Aquaculture	28	32	36	41	46
Forestry and Logging	0	0	0	0	0
Fishing, Hunting and Trapping	3	4	4	5	5
Agriculture, Forestry and Fishing Support Services	215	247	281	317	359
Agriculture, Forestry and Fishing	1,609	1,847	2,100	2,374	2,685
Coal Mining	0	0	0	0	0
Oil and Gas Extraction	0	0	0	0	0
Metal Ore Mining	0	0	0	0	0
Non-Metallic Mineral Mining and Quarrying	7	7	7	6	6
Exploration and Other Mining Support Services	8	8	8	7	6
Mining	16	15	15	13	12
Food Product Manufacturing	1,304	1,475	1,621	1,746	1,862
Beverage and Tobacco Product Manufacturing	1,169	1,291	1,411	1,513	1,606
Textile, Leather, Clothing and Footwear Manufacturing	10	11	12	12	13
Wood Product Manufacturing	8	8	9	9	10
Pulp, Paper and Converted Paper Product Manufacturing	35	38	41	44	46
Printing (including the Reproduction of Recorded Media)	22	21	22	24	25
Petroleum and Coal Product Manufacturing	3	3	3	3	3
Basic Chemical and Chemical Product Manufacturing	10	9	10	10	11
Polymer Product and Rubber Product Manufacturing	3	4	4	4	4
Non-Metallic Mineral Product Manufacturing	22	20	21	22	23
Primary Metal and Metal Product Manufacturing	60	55	59	61	63
Fabricated Metal Product Manufacturing	47	43	46	48	50
Transport Equipment Manufacturing	20	18	19	20	21
Machinery and Equipment Manufacturing	118	108	118	124	131
Furniture and Other Manufacturing	33	36	39	41	43
Manufacturing	2,861	3,138	3,434	3,682	3,912
Electricity Supply	48	50	51	53	54
Gas Supply	0	0	0	0	0
Water Supply, Sewerage and Drainage Services	159	167	170	175	181
Waste Collection, Treatment and Disposal Services	32	33	34	35	36
Electricity, Gas, Water and Waste Services	238	251	254	263	271
Building Construction	174	174	172	175	177
Heavy and Civil Engineering Construction	145	146	143	147	148
Construction Services	567	570	561	573	579

	2021	2026	2031	2036	2041
Construction	886	890	876	895	905
Basic Material Wholesaling	155	177	198	219	239
Machinery and Equipment Wholesaling	159	182	204	225	246
Motor Vehicle and Motor Vehicle Parts Wholesaling	24	27	31	34	37
Grocery, Liquor and Tobacco Product Wholesaling	65	74	83	92	100
Other Goods Wholesaling	8	9	10	11	12
Commission-Based Wholesaling	17	20	22	25	27
Wholesale Trade	428	489	548	605	661
Motor Vehicle and Motor Vehicle Parts Retailing	157	159	156	155	156
Fuel Retailing	42	42	41	41	42
Food Retailing	556	560	550	546	553
Other Store-Based Retailing	796	802	787	782	791
Non-Store Retailing and Retail Commission Based Buying	3	3	3	3	3
Retail Trade	1,555	1,566	1,537	1,528	1,545
Accommodation	129	120	122	128	134
Food and Beverage Services	569	529	539	562	590
Accommodation and Food Services	698	650	661	690	723
Road Transport	305	333	359	377	392
Rail Transport	11	12	13	14	14
Water Transport	0	0	0	0	0
Air and Space Transport	8	9	9	10	10
Other Transport	0	0	0	0	0
Postal and Courier Pick-up and Delivery Services	75	82	88	93	97
Transport Support Services	39	43	46	49	50
Warehousing and Storage Services	16	17	18	19	20
Transport, Postal and Warehousing	453	496	534	561	584
Publishing (except Internet and Music Publishing)	0	0	0	0	0
Motion Picture and Sound Recording Activities	20	17	18	20	21
Broadcasting (except Internet)	16	13	15	16	16
Internet Publishing and Broadcasting	0	0	0	0	0
Telecommunications Services	18	15	17	18	19
Internet Service Providers, Web Search Portals and Data Processing Services	4	4	4	4	4
Library and Other Information Services	6	5	6	6	7
Information Media and Telecommunications	64	55	59	64	67
Finance	108	116	120	129	138
Insurance and Superannuation Funds	14	15	15	16	18
Auxiliary Finance and Insurance Services	37	40	41	44	47
Financial and Insurance Services	159	170	177	190	203
Rental and Hiring Services (except Real Estate)	35	38	38	40	41
Property Operators and Real Estate Services	77	84	85	89	92

	2021	2026	2031	2036	2041
Rental, Hiring and Real Estate Services	112	122	124	129	133
Professional, Scientific and Technical Services (except Computer System Design and Related Services)	451	529	521	538	564
Computer System Design and Related Services	46	54	53	55	57
Professional, Scientific and Technical Services	497	583	574	593	621
Administrative Services	108	114	118	123	127
Building Cleaning, Pest Control and Other Support Services	254	268	277	288	299
Administrative and Support Services	362	382	395	411	427
Public Administration	450	468	461	468	465
Defence	0	0	0	0	0
Public Order, Safety and Regulatory Services	147	153	151	153	152
Public Administration and Safety	597	621	612	621	617
Preschool and School Education	878	970	1,045	1,109	1,166
Tertiary Education	66	73	79	83	88
Adult, Community and Other Education	51	56	61	65	68
Education and Training	996	1,099	1,184	1,257	1,321
Hospitals	569	644	728	808	896
Medical and Other Health Care Services	446	504	570	633	702
Residential Care Services	346	391	443	491	545
Social Assistance Services	405	458	518	575	638
Health Care and Social Assistance	1,765	1,997	2,260	2,507	2,782
Heritage Activities	26	29	30	31	32
Creative and Performing Arts Activities	6	7	7	7	8
Sports and Recreation Activities	54	59	61	63	66
Gambling Activities	0	0	0	0	0
Arts and Recreation Services	87	95	97	101	106
Repair and Maintenance	326	343	349	359	373
Personal and Other Services	246	259	264	272	282
Private Households Employing Staff and Undifferentiated Goods	0	0	0	0	0
Other Services	572	602	614	631	655
Total	**13,954**	**15,066**	**16,055**	**17,113**	**18,230**

Source: Bull & Bear Economics (2022)

11.3 Appendix C Industrial Land Demand

Table 11-3 Total Industrial Employment – Griffith City, 2021 to 2041

	2021	2026	2031	2036	2041
Large Footprint and General Industry					
Food Product Manufacturing	1,304	1,475	1,621	1,746	1,862
Beverage and Tobacco Product Manufacturing	1,169	1,291	1,411	1,513	1,606
Wood Product Manufacturing	8	8	9	9	10
Pulp, Paper, and Converted Paper Product Manufacturing	35	38	41	44	46
Petroleum and Coal Product Manufacturing	3	3	3	3	3
Basic Chemical and Chemical Product Manufacturing	10	9	10	10	11
Polymer Product and Rubber Product Manufacturing	3	4	4	4	4
Non-Metallic Mineral Product Manufacturing	22	20	21	22	23
Primary Metal and Metal Product Manufacturing	60	55	59	61	63
Fabricated Metal Product Manufacturing	47	43	46	48	50
Transport Equipment Manufacturing	20	18	19	20	21
Machinery and Equipment Manufacturing	118	108	118	124	131
Furniture and Other Manufacturing	33	36	39	41	43
Service Industry					
Textile, Leather, Clothing and Footwear Manufacturing	10	11	12	12	13
Printing (including the Reproduction of Recorded Media)	22	21	22	24	25
Construction Services	567	570	561	573	579
Warehousing and Storage Services	16	17	18	19	20
Publishing (except Internet and Music Publishing)	0	0	0	0	0
Repair and Maintenance	326	343	349	359	373
Transport Uses					
Motor Vehicle and Motor Vehicle Parts Retailing	157	159	156	155	156
Road Transport	305	333	359	377	392
Rail Transport	11	12	13	14	14
Postal and Courier Pick-up and Delivery Services	75	82	88	93	97
Transport Support Services	39	43	46	49	50
Warehousing & Storage					
Basic Material Wholesaling	155	177	198	219	239
Machinery and Equipment Wholesaling	159	182	204	225	246
Motor Vehicle and Motor Vehicle Parts Wholesaling	24	27	31	34	37
Grocery, Liquor and Tobacco Product Wholesaling	65	74	83	92	100
Other Goods Wholesaling	8	9	10	11	12
Total	**4,768**	**5,165**	**5,551**	**5,901**	**6,229**

Source: Bull & Bear Economics (2022)

Table 11-4 Industrial Land Demand – Griffith City, 2021 to 2041

	2021	2026	2031	2036	2041
Large Footprint and General Industry					
Food Product Manufacturing	32.6	36.9	40.5	43.6	46.6
Beverage and Tobacco Product Manufacturing	33.4	36.9	40.3	43.2	45.9
Wood Product Manufacturing	0.3	0.3	0.3	0.3	0.3

	2021	2026	2031	2036	2041
Pulp, Paper, and Converted Paper Product Manufacturing	1.2	1.3	1.4	1.5	1.5
Petroleum and Coal Product Manufacturing	0.1	0.1	0.1	0.1	0.1
Basic Chemical and Chemical Product Manufacturing	0.5	0.5	0.5	0.5	0.5
Polymer Product and Rubber Product Manufacturing	0.1	0.1	0.1	0.1	0.1
Non-Metallic Mineral Product Manufacturing	0.6	0.6	0.6	0.6	0.7
Primary Metal and Metal Product Manufacturing	1.7	1.6	1.7	1.7	1.8
Fabricated Metal Product Manufacturing	1.3	1.2	1.3	1.4	1.4
Transport Equipment Manufacturing	0.5	0.4	0.5	0.5	0.5
Machinery and Equipment Manufacturing	3.4	3.1	3.4	3.5	3.7
Furniture and Other Manufacturing	0.9	1.0	1.1	1.2	1.2
Service Industry					
Textile, Leather, Clothing and Footwear Manufacturing	0.3	0.3	0.3	0.3	0.4
Printing (including the Reproduction of Recorded Media)	0.6	0.6	0.6	0.7	0.7
Construction Services	16.2	16.3	16.0	16.4	16.6
Warehousing and Storage Services	0.8	0.9	0.9	1.0	1.0
Publishing (except Internet and Music Publishing)	0.0	0.0	0.0	0.0	0.0
Repair and Maintenance	10.9	11.4	11.6	12.0	12.4
Transport Uses					
Motor Vehicle and Motor Vehicle Parts Retailing	7.9	7.9	7.8	7.7	7.8
Road Transport	15.2	16.6	17.9	18.8	19.6
Rail Transport	0.7	0.8	0.9	0.9	1.0
Postal and Courier Pick-up and Delivery Services	2.1	2.3	2.5	2.7	2.8
Transport Support Services	1.1	1.2	1.3	1.4	1.4
Warehousing & Storage					
Basic Material Wholesaling	4.4	5.1	5.7	6.3	6.8
Machinery and Equipment Wholesaling	4.6	5.2	5.8	6.4	7.0
Motor Vehicle and Motor Vehicle Parts Wholesaling	0.7	0.8	0.9	1.0	1.1
Grocery, Liquor and Tobacco Product Wholesaling	1.9	2.1	2.4	2.6	2.9
Other Goods Wholesaling	0.2	0.2	0.3	0.3	0.3
Total	**144.1**	**155.7**	**166.8**	**176.8**	**186.3**

Source: Bull & Bear Economics (2022)